SUPPLEMENT ANALYSIS

WESTERN AREA POWER ADMINISTRATION
SACRAMENTO VALLEY RIGHT-OF-WAY MAINTENANCE PROGRAM
ENVIRONMENTAL ASSESSMENT
DOE/EA-1395-SA-01

FINAL

Western Area Power Administration

SIERRA NEVADA REGION
U.S. DEPARTMENT OF ENERGY
114 Parkshore Drive
Folsom, CA 95630

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CONTENTS

Chapter 1 Introduction 1-1
1.1 Background 1-1
1.2 Purpose and Need for the Sacramento Valley Program 1-1
1.3 Purpose and Need for the Supplemental Analysis 1-2

Chapter 2 Review of Project Changes 2-1
2.1 Changes in the Project Area and Project Activities 2-1
2.1.1 Changes in Project Area 2-3
2.1.2 Changes in Project Activities 2-4

Chapter 3 Analysis 3-1
3.1 Introduction 3-1
3.2 Analysis 3-1
3.2.1 Land Use 3-7
3.2.2 Habitats and Vegetation 3-8
3.2.3 Wildlife 3-9
3.2.4 Special-Status Species 3-10
3.2.5 Fisheries 3-16
3.2.6 Geology and Soils 3-16
3.2.7 Air Quality 3-17
3.2.8 Water Quality 3-23
3.2.9 Public Health and Safety 3-24
3.2.10 Recreation 3-24
3.2.11 Cultural Resources 3-25
3.2.12 Paleontological Resources 3-26
3.2.13 Aesthetics 3-27
3.2.14 Noise 3-27
3.2.15 Transportation 3-28
3.2.16 Environmental Justice 3-28
3.2.17 Intentional Destructive Acts 3-29
3.2.18 Climate Change 3-30

Chapter 4 Conclusion 4-1

Chapter 5 Determination 5-1

Chapter 6 References 6-1

LIST OF TABLES

Table 2-1.	Category A: Inspection and Minor Maintenance Activities	2-8
Table 2-2.	Category B: Routine Maintenance Activities	2-12
Table 2-3.	Category C: New Infrastructure	2-14
Table 2-4	Comparison of SOPs with Avoidance Measures from August 2005 Final EA	2-17
Table 3-1	Summary of the Results of the Analysis	3-1
Table 3-2	ESA and CESA Status Changes Since the August 2005 Final EA	3-12
Table 3-3	CESA Listing/Candidate Changes Since the August 2005 Final EA	3-13
Table 3-4	California and National Air Quality Standards for Air Pollutants	3-18
Table 3-5	Air Pollutant Designation for Counties within the Sacramento Valley Program Project Area	3-19
Table 3-6	Air Pollutant Thresholds of Significance	3-19
Table 3-7	Operations and Maintenance Equipment and Vehicles	3-20
Table 3-8	Sacramento Valley ROW Maintenance Emission Estimates	3-21
Table 3-9	Estimated GHG Emissions	3-32

LIST OF FIGURES

Figure 1-1	Sacramento Valley EA Program Area

APPENDICES

Appendix A	Sacramento Valley Program: Applicable Project Conservation Measures
Appendix B	Air Quality and Greenhouse Gas Emission Calculations

Acronyms and Abbreviations

AAQS	ambient air quality standards
ACHP	Advisory Council on Historic Preservation
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
EA	Environmental Assessment
EAs	Environmental Assessments
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
FONSI	Finding of No Significant Impact
GIS	geographic information system
GHG	greenhouse gas
GPS	global positioning system
HR	hydrologic region
IEEE	Institute of Electrical and Electronics Engineers
IVM	Integrated Vegetation Management
kV	kilovolt
MOU	Memorandum of Understanding
MT/year	metric tons per year
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NERC	North American Electric Reliability Council
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NRHP	National Register of Historic Places
O_3	Ozone
O&M	Operations and Maintenance
PA	Programmatic Agreement
PCM	Project Conservation Measure
PCMs	Project Conservation Measures
PM	particulate matter
$PM_{2.5}$	inhalable particulate matter less than 2.5 microns in diameter
PM_{10}	inhalable particulate matter less than 10 microns in diameter
ppb	parts per billion by volume
ppm	parts per million by volume
ROW	right-of-way
ROWs	rights-of-way

RWQCBs	Regional Water Quality Control Boards
SA	Supplement Analysis
Sacramento Valley Program	Sacramento Valley Right-of-Way Maintenance Program
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SOPs	Standard Operating Procedures
TCPs	traditional cultural properties
USFWS	U.S. Department of the Interior, Fish and Wildlife Service
WAPA	Western Area Power Administration
WSCC	Western Systems Coordinating Council
$\mu g/m^3$	micrograms per cubic meter of air.

Chapter 1. Introduction

Western Area Power Administration (WAPA), Sierra Nevada Region, has prepared this Supplement Analysis (SA) in accordance with the U.S. Department of Energy (DOE) National Environmental Policy Act (NEPA) regulations (10 CFR 1021.330(d) and (e)), and Council on Environmental Quality regulations which require an evaluation of the adequacy of "site-wide" NEPA documents at least every five years. This SA addresses the Final Environmental Assessment (EA) prepared by WAPA in August 2005 for the Sacramento Valley Right-of-Way Maintenance Program (Sacramento Valley Program) and provides the information and analysis necessary to determine if there have been any "substantial" changes in the proposed action and if there are any "significant" new circumstances or information relevant to environmental concerns and impacts.

1.1 Background

WAPA is a power marketing administration of the DOE. WAPA owns, operates, and maintains all or a portion of seven 230-kilovolt (kV) transmission lines and one 115-kV transmission line in Placer, Sacramento, and Sutter counties, California (Figure 1-1).

The Sacramento Valley Program is an ongoing operations and maintenance (O&M) project. Routine O&M activities include, but are not limited to, facility inspection/repair (e.g., ground and area patrols, replacement of equipment within the confines of the existing fenced substation or facility perimeter, insulator maintenance), vegetation management (e.g., manual control, mechanical control), equipment upgrades (e.g., reconductoring, tower replacement), and maintenance and improvement of access roads. WAPA prepared a Final EA and Finding of No Significant Impact (FONSI) for the Sacramento Valley Program in August 2005 (WAPA, 2005)

1.2 Purpose and Need for the Sacramento Valley Program

The purpose of the Sacramento Valley Program is to maintain existing transmission line and access road rights-of-way (ROWs) in order to ensure reliability of the transmission system and safe, all-weather access to the transmission line structures. WAPA designed the Sacramento Valley Program to balance environmental protection with system reliability and compliance with the National Electric Safety Code (NESC), Electricity Coordinating Council (formerly Western Systems Coordinating Council [WSCC]) requirements, North American Electric Reliability Council (NERC) reliability standards, Institute of Electrical and Electronics Engineers (IEEE) standards, and WAPA directives for maintaining system reliability and protection of human safety. In meeting this purpose, WAPA's objectives are to maintain its transmission line ROWs to:

- to protect public safety;
- achieve technical and economic efficiency to minimize impacts on transmission line rates;
- prevent operational hazards;
- protect facilities from fire;
- control the spread of noxious weeds;
- maintain sound relationships with landowners and managers; and
- streamline regulatory permitting activities.

The need for the Sacramento Valley Program includes:

- eliminating the threat for vegetation to interfere with the lines and towers. Vegetation near transmission lines may pose a threat to public safety and the environment from arcing (which can cause fires) and from trees growing into or falling onto the transmission lines;
- controlling vegetation in a cost-effective manner that will benefit the public and avoid and minimize impacts on natural ecosystems; and
- maintaining the transmission line and legal access road ROWs in a manner that facilitates safe, year-round access to transmission line structures.

1.3 Purpose and Need for the Supplemental Analysis

The purpose of this SA is to:

- document whether there have been any changes in the project area or project activities for the Sacramento Valley Program since the August 2005 Final EA;
- document whether there are any new circumstances or information relevant to environmental changes or environmental impacts for the Sacramento Valley Program since the August 2005 Final EA;
- evaluate whether any project changes are "substantial" and if any new circumstances or information is "significant;"
- based on the information and analysis present in the SA, make one of the following determinations: 1) the Environmental Assessment should be supplemented; 2) a new Environmental Assessment should be prepared; or 3) no further NEPA documentation is required.

This SA for the Sacramento Valley Program is needed because:

- DOE NEPA regulations (10 CFR 1021.330(d) and (e)) require an evaluation of the adequacy of "site-wide" NEPA documents at least every five years. The Final EA for the Sacramento Valley Program was prepared by WAPA in August 2005.

Chapter 2. Review of Project Changes

2.1 Project Area and Project Activities

The Sacramento Valley Program is an ongoing O&M program historically supported by activity-specific NEPA compliance as appropriate. The Sacramento Valley Program transmission lines, communication and substation facilities, and other supporting infrastructure have been physically in place and part of the environmental setting for many years. O&M activities conducted for the Sacramento Valley Program have been ongoing since completion of construction and initial operation of the facilities. All of the O&M activities addressed in the August 2005 Final EA are conducted within the existing and approved boundaries of the Sacramento Valley Program transmission line ROWs, access roads, and communication and substation facilities.

One of the major purposes of preparing the August 2005 Final EA for the Sacramento Valley Program was to consolidate all the ongoing and routine O&M activities into one comprehensive and programmatic environmental analysis. This was necessary in order to appropriately and efficiently address NEPA requirements, and to minimize the potential need to develop separate NEPA documentation when a routine O&M activity is undertaken.

As detailed in the August 2005 Final EA, the project area for the Sacramento Valley Program Area includes transmission line ROWs, access roads that are owned, operated, and maintained by WAPA's Sierra Nevada Region, substations, and microwave communication facilities in Placer, Sacramento, and Sutter counties. The project area includes seven 230-kV transmission lines and one 115-kV transmission line. Substations include: O'Banion-Fiddyment, Roseville, Folsom, Sacramento Operations Center, Nimbus, Elverta-SMUD, Natomas, and Hurley. Microwave communication facilities, currently active and maintained by WAPA, are located at: Maxwell, Elverta, and Rancho Seco (not within boundaries of a WAPA facility).

The existing transmission lines and facilities are shown in Figure 1-1 and briefly described below.

Elverta-Hurley No. 1 and No. 2 230-kV

This transmission line consists of one row of double-circuit towers. The right-of-way (ROW) is 120 feet wide in total: 55 feet from centerline to the east/north and 65 feet from centerline to the west/south. The length of this ROW is 56,000 feet or 10.6 miles, with a ROW area of 154.3 acres.

Hurley-Tracy No. 1 and No. 2, ending at Sacramento-San Joaquin County Line 230-kV

This transmission line starts at the Hurley Substation and continues south to the Sacramento-San Joaquin County line. This transmission line has two different configurations and ROWs:

- From the Hurley Substation at tower 11/2 to tower 18/2, the transmission line continues with one row of double-circuit towers with the same 120-foot ROW as above. The length of this ROW segment is 34,300 feet or 6.5 miles, with a ROW area of 94.5 acres.

- From tower 18/2 to the Sacramento-San Joaquin County Line (tower 37/2), the transmission line splits into two separate ROWs, each with one row of single-circuit towers. Line No. 1 is on the east; line No. 2 is on the west. Each ROW is 125 feet wide in total: 62.5 feet on each side of centerline. The length of this ROW segment is 95,900 ft. or 18.16 miles, with a ROW area of 550.4acres.

Folsom-Nimbus 115-kV

This transmission line includes one row of single-circuit towers. The ROW width is 150 feet total: 75 feet on each side of centerline. The transmission line starts at the Folsom Substation and runs south and west to the Nimbus power plant. The length of this ROW is 32,400 feet or 6.14 miles, with a ROW area of 111.6 acres.

Folsom-Roseville 230-kV

This transmission line includes one row of single-circuit towers. The ROW is 250 feet wide in total: 62.5 feet from centerline to the north/east and 187.5 feet from centerline to the south/west. The transmission line starts at the Folsom Substation and runs north and west to Roseville Substation. The length of this ROW is 34,900 feet or 6.6 miles, with a ROW area of 200.3 acres.

Roseville-Elverta 230-kV (consisting of Roseville-Fiddyment and Fiddyment-Elverta; and Cottonwood-Roseville 230-kV)

These transmission lines share a ROW for a portion of their length. From Roseville Substation to just past the Sacramento County line there are two rows of towers. The row on the north is the single-circuit Cottonwood-Roseville transmission line. The row to the south is the double-circuit Roseville-Elverta transmission line. The ROW is 250 feet wide in total: the north boundary is 62.5 feet north of the Cottonwood-Roseville centerline; the south boundary is 53 feet south of the Roseville-Elverta centerline; the distance between these centerlines is 134.5 feet. The length of this portion of the ROW is 60,000 feet or 11.3 miles, with a ROW area of 344.3 acres.

At the Sacramento County line, the Roseville-Elverta transmission line turns south to the Elverta Substation. Through this portion of the route, the ROW is shared with the double-circuit 230-kV O'Banion-Elverta transmission line, to the west. The ROW is a total of 612.5 feet wide; the west boundary is 50 feet west of the O'Banion-Elverta centerline. The length of this portion of the ROW is 7,000 feet or 1.3 miles, with a ROW area of 98.4 acres.

At the Sacramento County line, the Cottonwood-Roseville transmission line turns north, sharing the ROW for the first portion with the O'Banion-Elverta transmission line. The Cottonwood-Roseville single-circuit row of towers is on the east and the O'Banion-Elverta double-circuit row of towers on the west. The ROW is 225 feet total. From the county line north to Cottonwood-Roseville tower 144/4 is 14,300 feet or 2.7 miles, with a ROW area of 73.9 acres.

North of tower 144/4 to the Sutter-Yuba County line, the Cottonwood-Roseville ROW is 100 feet total width: 50 feet on each side of centerline. The length of this portion of the ROW is 75,700 feet or 14.34 miles, with a ROW area of 173.8 acres.

O'Banion-Elverta No. 1 and No. 2 230-kV

This transmission line includes one row of double-circuit towers. Starting at the Elverta Substation, the ROW is shared with the Roseville-Elverta transmission line for 1.3 miles, and then with the Cottonwood-Roseville transmission line for 2.7 miles, as described above. At tower 157/4, the transmission line runs northwest to the Sutter- O'Banion Substation on the south side of O'Banion Road.

The ROW width varies along this transmission line:

- From tower 157/4 to 144/2, the ROW is a total of 125 feet wide, 62.5 feet on each side of centerline. The length of this portion of the ROW is 68,200 feet or 12.91 miles, with a ROW area of 195.7 acres.

- From tower 144/2 to O'Banion Road (tower 135/1), the ROW is a total of 112.5 feet wide, 50 feet to the west and 62.5 feet to the east of centerline. The length of this portion of the ROW is 44,000 feet or 8.3 miles, with a ROW area of 113.6 acres.

Most portions of the lines are located in rural, agriculturally dominated areas. However, major portions of the Folsom-Nimbus, Folsom-Roseville, Elverta-Hurley, and Hurley-Tracy lines are located in suburban/urban areas in or near the cities of Sacramento, Roseville, and Folsom.

The standard ROW width for legal access roads is 30 feet. The legal access road ROWs are located along the following transmission lines:

- Folsom-Nimbus between towers 0/2 and 0/3
- Elverta-Hurley at towers 9/3 and 11/1
- Hurley-Tracy at towers 11/2 through 12/1, 16/2 through 16/5, 26/2, 27/2, 28/4, 29/2, 29/3, 30/1, and 33/3

The total length of the legal access road ROWs is 9.7 miles, with a ROW area of 35.3 acres.

A review of whether there have been any changes in the project area or project activities for the Sacramento Valley Program since the August 2005 Final EA is provided below.

2.1.1 Changes in Project Area

The following facilities, described below, have been added to the Sacramento Valley Program since the August 2005 Final EA and each facility was reviewed for impacts to the resource areas described in the EA. All Sacramento Valley Program activities are conducted within the boundaries of transmission ROWs, access roads, and facilities, as described in the 2005 Final EA and this supplement.

Folsom Sierra Nevada Headquarters (Sierra Nevada Region HQ)

The Folsom Headquarters (HQ) facility is a 10.9-acre site that includes the Sacramento Power Operation (SPO) Center and the Sacramento Energy Services Center (SESC). The facility is located within an industrial park setting surrounded by oak woodlands, adjacent to Lake Natoma. The Sierra Nevada Region HQ includes the connected 40,000 square-foot SPO Center, built in 1995, and the 50,000 square-foot SESC, built in 1997, and a substation in the back between the buildings. The substation includes a

transformer, emergency generator, and control room. Activities at this substation are included as normal compliance and maintenance activities covered under the EA. WAPA conducted biological surveys and cultural resources surveys at the Folsom HQ facility prior to construction and performing activities that might impact resources. The northern side of the property includes a fenced area with five elderberry shrubs that were planted as mitigation to offset adverse impacts to the valley elderberry longhorn beetle during the construction of the facility.

O'Banion Sutter 230-kV

WAPA maintains the 230-kV transmission line and ROW from the O'Banion Substation north to the Sutter Power Plant (which is not a WAPA facility).

Elverta Maintenance Facility

The Elverta Maintenance Facility is co-located with the Elverta substation, and includes fuel pumps, garage, office, warehouse, hazardous materials shed, and washbay. The Elverta Microwave Facility is also located within the property.

Habitats and activities for these sites and transmission lines are similar to the other areas included in the 2005 EA. These additional facilities are considered an insignificant change to the 2005 EA.

2.1.2 Changes in Project Activities

There have been no substantial changes in project activities for the Sacramento Valley Program since the August 2005 Final EA. Project activities conducted under the Sacramento Valley Area Program are routine O&M activities and have been conducted in the same or substantially similar manner since initial construction and operation of the facilities.

While there have been no substantial changes in project activities for the Sacramento Valley Program since the August 2005 Final EA, WAPA has updated and standardized the classification and description of typical routine O&M activities. This updated classification and description was developed during preparation of the Environmental Assessments (EAs) for the North Area Right-of-Way Maintenance Program (June 2010) and the San Joaquin Valley Right-of-Way Maintenance Program (December 2011). In addition to providing additional descriptive detail for typical routine O&M activities, the updated classification and description serves to provide consistency among WAPA's northern California ROW maintenance programs.

Under the updated classification and description, routine O&M activities are classified into three categories as follows:

> **Category A**. Maintenance activities in Category A are primarily inspection-type actions, with some minor repairs that cause minimal, if any, soil disturbance.
>
> **Category B**. Maintenance activities in Category B include some of the typical repair tasks that occur along WAPA's ROWs.

Category C. Maintenance activities in Category C are generally those activities that disturb large areas and utilize heavy equipment.

Category A activities have the least potential to affect sensitive environmental resources, and Category C activities have the greatest potential to affect sensitive environmental resources. A listing of typical activities within each of the maintenance categories is provided below.

Tables 2-1, 2-2, and 2-3 below provide a comparison of the typical O&M activities in categories A–C with the project description information provided in the August 2005 Final EA and a determination as to whether any of this information constitutes a substantial change in project activities.

Category A- Inspection and Minor Maintenance Activities

Category A maintenance activities are primarily inspection-type actions, with some minor repairs that would result in only minimal, if any, soil disturbance. These maintenance tasks would result in only nominal or no effects on sensitive resources as long as applicable Standard Operating Procedures (SOPs) are followed. Typical Category A activities may include, but are not limited to:

Substation Maintenance:

A-1: Maintenance and replacement of transformers and breakers;
A-2: Servicing and testing of equipment at existing substations, including oil change-outs;
A-3: Installation or replacement of bushings;
A-4: Cleaning or replacement of capacitor banks;
A-5 Maintenance or installation of propane tanks within a substation yard;
A-6 Maintenance of switches, voltage regulators, reactors, tap changes, reclosers, and valves;
A-7 Replacement of wiring in substations and switchyards;
A-8 Replacement of existing substation equipment including regulators, capacitors, switches, wave traps, radiators, and lightning arresters;
A-9 Installation of cut-out fuses;
A-10 Adjustment and cleaning of disconnect switches;
A-11 Placement of temporary transformers;
A-12: Maintenance, installation, and removal of solar power arrays and controllers;
A-13 Installation of foundation for storage buildings above ground mat within existing substation yard;
A-14: New footings;
A-15: Ground mat repairs;
A-16: Remediation of small spills;
A-17: Clearing vegetation by hand within the property boundary of a fenced substation;
A-18: Application of soil sterilants and herbicides within the property boundary of a fenced substation;
A-19: Application of pesticides within the property boundary of a fenced substation and within 10 feet outside of the fencing, and
A-20: Maintenance or installation of oil containment structures.

Transmission Line Maintenance:

A-21: Ground and aerial patrols;
A-22: Ground wire maintenance;
A-23: Aircraft warning device maintenance;
A-24: Insulator maintenance;
A-25: Bird guard maintenance;
A-26: Cross-arm maintenance on wood pole structures;
A-27: Emergency manual removal and/or pruning of danger trees or vegetation;
A-28: Steel members of steel transmission line structures;
A-29: Hardware on wood and steel transmission line structures;
A-30: Dampener maintenance;
A-31: X-brace and knee brace maintenance;
A-32: Ground spike maintenance on wood pole structures;
A-33: Ground rod maintenance;
A-34: Armor rod maintenance and clipping-in structures;
A-35: Conductor upgrade, replacement, and/or maintenance;
A-36: Overhead ground-wire (OHGW) upgrade, replacement, and/or maintenance;
A-37: Wood preservative maintenance on wooden pole structures;
A-38: Routine minor erosion prevention at bases of poles or structures;
A-39: Emergency minor erosion control at bases of poles or structures to stabilize;
A-40: Remediation of small spills;
A-41: Antennae maintenance; and,
A-42: Structure mile marker maintenance.

Communication System:

A-43: Microwave radio tower maintenance;
A-44: Communication tower and antennae maintenance;
A-45: Light beacon maintenance;
A-46: Microwave dish maintenance;
A-47: Parabolic dish maintenance;
A-48: Periodic antenna tower climbing inspections, and
A-49: Maintenance or installation of propane tanks.

Facilities Maintenance:

A-50: Building maintenance including interior and exterior painting; and roof, ceiling, floor, window, and door maintenance;
A-48: Clearing vegetation by hand within the property boundary of fenced maintenance facilities;
A-49: Application of soil sterilants and herbicides within the property boundary of fenced maintenance facility; and,
A-50 Application of pesticides within the property boundary of fenced maintenance facility and within 10 feet outside of the fencing.

Category B-Routine Maintenance Activities

Category B maintenance activities include some of the typical repair tasks that occur along the existing ROWs. Category B actions have the potential to cause minimal effects on sensitive resources, and may include, but are not limited to, the use of rubber-tire vehicles such as bucket trucks, backhoes, front end loaders, cranes, auger trucks, bobcats, and pole trucks. In addition to the SOPs, WAPA implements all Project Conservation Measures (PCMs) identified for resources in the work area for Category B maintenance activities. Typical activities under Category B activities include, but are not limited to:

Transmission Line Maintenance:

B-1: Maintenance and repair of existing culverts;
B-2: Removal of soil deposition around tower legs;
B-3: Installation or replacement of underground and overhead power, communication, or ground electrical line (less than 100 feet);
B-4: Ground anchors maintenance;
B-5: Wood pole maintenance;
B-6: Maintenance, grading and repair of existing access roads to approved standards;
B-7: Remediation of erosional features on access roads, and sources or causes of the erosion;
B-8: Remediation of small spills;
B-9: Installation of minor rip-rap on creeks and rivers;
B-10: Application of herbicides or soil sterilants;
B-11: Placement of fill or rock(s) around existing culverts;
B-12: Placement of fill or rock(s) around existing towers or structures;
B-13: Vehicle and equipment staging;
B-14: Installation and repair of fences and gates;
B-15: Installation or replacement of underground and overhead power, communication, fiber optics, ground wire, or ground electrical line (less than 100 feet);
B-16: Installation or replacement of power, communication, fiber optics, OHGW, or electrical line over water features (less than 100 feet);
B-17: Manual removal and/or pruning of danger trees or vegetation; and,
B-18: Mechanical vegetation management by means of masticators or other similar mechanical equipment.

Communication System Maintenance:

B-19: Foundations or footings maintenance;
B-20: Installation of underground and overhead power, communication, fiber optics, ground wire, or ground electrical line (less than 100 feet);
B-21: Installation or replacement of power, communication, fiber optics, OHGW, or electrical line over water features (less than 100 feet);
B-22 Installation of equipment on existing towers; B-23: Maintenance and repair of existing culverts; B-24: Remediation of small spills;
B-25: Application of soil sterilants and herbicides; and, B-26: Maintenance and repair of existing access roads.

Category C-New Infrastructure

Maintenance activities in Category C have the potential to cause adverse effects on sensitive resources if PCMs are not implemented. Category C tasks are generally those maintenance activities that disturb larger areas and utilize heavy equipment. Category C maintenance equipment includes, but is not limited to, the use of steel-tracked and/or rubber-tire bulldozers, graders, backhoes, and front-end loaders. Typical activities under Category C activities include, but are not limited to:

Transmission Line and Communication System Maintenance:

C-1: Adding new access roads within the existing legal right-of-way;
C-2: Installation of new culverts;
C-3: Installation of new foundation for storage building at existing facilities;
C-4: Erosion-control projects at existing facilities;
C-5: Reconductoring;
C-6: Mechanical vegetation management by means of bulldozers or other similar mechanical equipment;
C-7: Tower/pole relocation/realignment within the existing right-of-way;
C-8: Installation or replacement of underground and overhead power, communication, fiber optics, or ground electrical line (greater than 100 feet);
C-9: Installation or replacement of power, communication, fiber optics, or electrical line over water features (greater than 100 feet); and,
C-10: Remediation of small spills.

Table 2-1. Category A: Inspection and Minor Maintenance Activities.
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Substation Maintenance		
A-1: Maintenance and replacement of transformers and breakers. A-2: Servicing and testing of equipment at existing substations, including oil change-outs. A-3: Installation or replacement of bushings. A-4: Cleaning or replacement of capacitor banks. A-5: Maintenance or installation of propane tanks within a substation yard. A-6: Maintenance of switches, voltage regulators, reactors, tap changes, reclosers, and valves.	Repairs and preventative maintenance. Based on needs identified during inspections or other reports, replace insulators; tighten, replace, or repair towers/poles or hardware; look for ROW encroachments. Performed wherever damage or deterioration of transmission lines or facilities poses a threat to safety or reliability.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.

Table 2-1. Category A: Inspection and Minor Maintenance Activities.
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Substation Maintenance		
A-7: Replacement of wiring in substations and switchyards. A-8: Replacement of existing substation equipment including regulators, capacitors, switches, wave traps, radiators, and lightning arresters. A-9: Installation of cut-out fuses. A-10: Adjustment and cleaning of disconnect switches. A-11: Placement of temporary transformers. A-12: Maintenance, installation, and removal of solar power arrays and controllers A-13: Installation of foundation for storage buildings above ground mat within existing substation yard. A-14: New footings. A-15: Ground mat repairs. A-16: Remediation of small spills. A-20: Maintenance or installation of oil containment structures.		
A-17: Clearing vegetation by hand within the property boundary of a fenced substation.	Manual and mechanical vegetation maintenance.	No. Typical routine O&M activities for vegetation control have remained unchanged. WAPA updated to provide additional descriptive detail.
A-18: Application of soil sterilants and herbicides within the property boundary of a fenced substation. A-19: Application of pesticides within the property boundary of a fenced substation and within 10 feet outside of the fencing.	Herbicides (WAPA-approved and registered for use in California).	No. Typical routine O&M activities for vegetation control have remained unchanged. WAPA updated to provide additional descriptive detail.
Transmission Line Maintenance		
A-21: Ground and aerial patrols.	Aerial and ground patrols. Inspection (climbing).	No. Typical ground and aerial patrols have remained unchanged.
A-22: Ground wire maintenance.	Repairs and preventative maintenance. Based on needs	No. Typical routine O&M activities have remained

Table 2-1. Category A: Inspection and Minor Maintenance Activities.
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Substation Maintenance		
A-23: Aircraft warning device maintenance. A-24: Insulator maintenance. A-25: Bird guard maintenance. A-26: Cross-arm maintenance on wood pole structures. A-28: Steel members of steel transmission line structures. A-29: Hardware on wood and steel transmission line structures. A-30: Dampener maintenance. A-31: X-brace and knee brace maintenance. A-32: Ground spike maintenance on wood pole structures. A-33: Ground rod maintenance. A-34: Armor rod maintenance and clipping-in structures. A-35: Conductor upgrade, replacement, and/or maintenance. A-36: Overhead ground-wire (OHGW) upgrade, replacement, and/or maintenance. A-37: Wood preservative maintenance on wooden pole structures. A-38: Routine minor erosion prevention at bases of poles or structures. A-39: Emergency minor erosion control at bases of poles or structures to stabilize. A-40: Remediation of small spills. A-41: Antennae maintenance. A-42: Structure mile marker maintenance.	identified during inspections or other reports, replace insulators; tighten, replace, or repair towers/poles or hardware; look for ROW encroachments. Performed wherever damage or deterioration of transmission lines or facilities poses a threat to safety or reliability.	unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
A-27: Emergency manual removal and/or pruning of danger trees or vegetation.	Manual and mechanical vegetation maintenance.	No. Typical routine O&M activities for vegetation control have remained unchanged. WAPA updated to provide additional descriptive detail.
Communication System Maintenance		
A-43: Microwave radio tower maintenance.	Repairs and preventative maintenance. Based on needs identified during inspections or	No. Typical routine O&M activities have remained unchanged. WAPA updated

Table 2-1. Category A: Inspection and Minor Maintenance Activities.
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Substation Maintenance		
A-44: Communication tower and antennae maintenance. A-45: Light beacon maintenance. A-46: Microwave dish maintenance. A-47: Parabolic dish maintenance. A-48: Periodic antenna tower climbing inspections. A-49: Maintenance or installation of propane tanks.	other reports, replace insulators; tighten, replace, or repair towers/poles or hardware; look for ROW encroachments. Performed wherever damage or deterioration of transmission lines or facilities poses a threat to safety or reliability.	and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
Facilities Maintenance		
A-50: Building maintenance including interior and exterior painting; and roof, ceiling, floor, window, and door maintenance.	Repairs and preventative maintenance. Based on needs identified during inspections or other reports, replace insulators; tighten, replace, or repair towers/poles or hardware; look for ROW encroachments. Performed wherever damage or deterioration of transmission lines or facilities poses a threat to safety or reliability.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
A-51: Clearing vegetation by hand within the property boundary of fenced maintenance facilities.	Manual and mechanical vegetation maintenance.	No. Typical routine O&M activities for vegetation control have remained unchanged. WAPA updated to provide additional descriptive detail.
A-52: Application of soil sterilants and herbicides within the property boundary of fenced maintenance facility. A-53: Application of pesticides within the property boundary of fenced maintenance facility and within 10 feet outside of the fencing.	Herbicides (WAPA-approved and registered for use in California).	No. Typical routine O&M activities for vegetation control have remained unchanged. WAPA updated to provide additional descriptive detail.

Table 2-2. Category B: Routine Maintenance Activities
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Transmission Line Maintenance and Communication Systems		
B-1: Maintenance and repair of existing culverts. B-9: Installation of minor rip-rap on creeks and rivers. B-11: Placement of fill or rock(s) around existing culverts.	Construction or replacement of culverts. Cleaning water crossings.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
B-6: Maintenance, grading and repair of existing access roads to approved standards. B-7: Remediation of erosional features on access roads, and sources or causes of the erosion.	Repairing. Grading. Filling. Repair or construction of water bars.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
B-10: Application of herbicides or soil sterilants.	Herbicides; spot, localized, broadcast (WAPA-approved and registered for use in California).	No. Typical routine O&M activities for vegetation control have remained unchanged. WAPA updated to provide additional descriptive detail.
B-3: Installation or replacement of underground and overhead power, communication, or ground electrical line (less than 100 feet). B-15: Installation or replacement of underground and overhead power, communication, fiber optics, ground wire, or ground electrical line (less than 100 feet). B-16: Installation or replacement of power, communication, fiber optics, OHGW, or electrical line over water features (less than 100 feet).	Underground water, power, communication, or ground electrical line. Repairs and preventative maintenance.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
B-17: Manual removal and/or pruning of danger trees or vegetation.	Manual and mechanical vegetation maintenance.	No. Typical routine O&M activities for vegetation control

Table 2-2. Category B: Routine Maintenance Activities
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Transmission Line Maintenance and Communication Systems		
B-18: Mechanical vegetation management by means of masticators or other similar mechanical equipment.		have remained unchanged. WAPA updated to provide additional descriptive detail.
B-2: Removal of soil deposition around tower legs. B-4: Ground anchors maintenance. B-5: Wood pole maintenance. B-8: Remediation of small spills. B-12: Placement of fill or rock(s) around existing towers or structures. B-13: Vehicle and equipment staging. B-14: Installation and repair of fences and gates.	Repairs and preventative maintenance. Based on needs identified during inspections or other reports, replace insulators; tighten, replace, or repair towers/poles or hardware; look for ROW encroachments. Performed wherever damage or deterioration of transmission lines or facilities poses a threat to safety or reliability.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
Communication System Maintenance		
B-19: Foundations or footings maintenance. B-22: Installation of equipment on existing towers. B-24: Remediation of small spills.	Repairs and preventative maintenance. Based on needs identified during inspections or other reports, replace insulators; tighten, replace, or repair towers/poles or hardware; look for ROW encroachments. Performed wherever damage or deterioration of transmission lines or facilities poses a threat to safety or reliability.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
B-20: Installation of underground and overhead power, communication, fiber optics, ground wire, or ground electrical line (less than 100 feet). B-21: Installation or replacement of power, communication, fiber optics, OHGW, or electrical line over water features (less than 100 feet).	Underground water, power, communication, or ground electrical line. Repairs and preventative maintenance.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
B-23: Maintenance and repair of existing culverts.	Construction or replacement of culverts. Cleaning water crossings.	No. Typical routine O&M activities have remained unchanged. WAPA updated and

Table 2-2. Category B: Routine Maintenance Activities
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Transmission Line Maintenance and Communication Systems		
		standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
B-25: Application of soil sterilants and herbicides.	Herbicides (WAPA-approved and registered for use in California).	No. Typical routine O&M activities for vegetation control have remained unchanged. WAPA updated to provide additional descriptive detail.
B-26: Maintenance and repair of existing access roads.	Repairing. Grading. Filling. Repair or construction of water bars.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.

Table 2-3. Category C: New Infrastructure
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Transmission Line and Communication System Maintenance		
C-1: Adding new access roads within the existing legal right-of-way.	Repairing. Grading. Filling.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to

Table 2-3. Category C: New Infrastructure
Comparison of Updated Description of Typical Activities with Description Provided in the August 2005 Final EA

Current Updated Description	Description from August 2005 Final EA	Substantial Change (Y/N)
Transmission Line and Communication System Maintenance		
		provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
C-2: Installation of new culverts.	Construction or replacement of culverts.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
C-3: Installation of new foundation for storage building at existing facilities. C-4: Erosion-control projects at existing facilities. C-5: Reconductoring. C-7: Tower/pole relocation/realignment within the existing right-of-way. C-10: Remediation of small spills.	Repairs and preventative maintenance. Based on needs identified during inspections or other reports, replace insulators; tighten, replace, or repair towers/poles or hardware; look for ROW encroachments; Performed wherever damage or deterioration of transmission lines or facilities poses a threat to safety or reliability.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.
C-6: Mechanical vegetation management by means of bulldozers or other similar mechanical equipment.	Manual and mechanical vegetation maintenance.	No. Typical routine O&M activities for vegetation control have remained unchanged. WAPA updated to provide additional descriptive detail.
C-8: Installation or replacement of underground and overhead power, communication, fiber optics, or ground electrical line (greater than 100 feet). C-9: Installation or replacement of power, communication, fiber optics, or electrical line over water features (greater than 100 feet).	Underground water, power, communication, or ground electrical line. Repairs and preventative maintenance.	No. Typical routine O&M activities have remained unchanged. WAPA updated and standardized the classification and description of typical routine O&M activities to provide additional descriptive detail and consistency among WAPA's northern California ROW maintenance programs.

Standard Operating Procedures and Project Conservation Measures

Since the August 2005 Final EA, WAPA has developed and standardized SOPs and PCMs and incorporated them into its ongoing O&M activities for all northern California ROW maintenance programs. The SOPs and PCMs are guidelines and directives utilized by WAPA's maintenance crews in planning and logistics to determine the ideal scheduling of specific O&M activities, as well as in determining how specific activities should be executed to avoid or minimize the potential for any adverse effects on environmental resources. These standardized SOPs and PCMs have replaced the avoidance measures presented in the August 2005 Final EA for the Sacramento Valley Program.

WAPA and its contractors follow the SOPs for every O&M activity, regardless of the activity category; and these SOPs are followed at all times throughout the project area. WAPA O&M personnel are subject to an annual training that includes SOPs, applicable environmental laws and regulations, and applicable agency requirements. SOPs are also included as part of the contract with any contractor selected to conduct O&M activities. Prior to conducting the O&M activity, WAPA's O&M personnel review the SOPs with the selected contractor to make sure the intent and background of each procedure is clearly understood. In addition, WAPA's O&M personnel monitor the contractor during maintenance activities, and conduct follow-up inspections of the job site at periodic intervals after the work has been completed.

WAPA developed PCMs to protect natural and cultural resources. PCMs have been integrated into WAPA's master geographic information system (GIS) database and are used in project planning to generate activity reports. These activity reports identify the sensitive resources within the target area and specify PCMs according to the occurrence of the specific resources and the type of activity proposed. PCMs include, among other things, identification of limited operating periods, pre-construction flagging of sensitive resource areas, and equipment restrictions.

Table 2-4 provides a comparison of the standardized SOPs with the avoidance measures provided in the August 2005 Final EA and a determination as to whether the changes constitute a substantial change in project activities. The PCMs applicable to the Sacramento Valley Program are provided in Appendix A. Applicable PCMs are implemented in addition to all standard SOPs. WAPA developed the PCMs to even further protect resources and avoid adverse impacts, and to maintain consistency with WAPA's other northern California O&M programs. Development and implementation of the PCMs is not considered a substantial change in project activities.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
Aesthetics		
AES-SOP-1: Material storage and staging areas will be selected to minimize views from public roads, trails, and nearby residences, to the extent feasible. During operations and maintenance (O&M), the work site will be kept clean of debris and construction waste. For areas where excavated materials will be visible from sensitive viewing locations, excavated materials will be disposed of in a manner that is not visually evident, in coordination with the land owner (as appropriate), and in compliance with applicable regulations. **AES-SOP-2:** Replacement structures and hardware (e.g., conductors and insulators) will be replaced in kind, to the extent feasible, while ensuring that structures and hardware that are visible from sensitive viewing locations will have appropriate colors, finishes, and textures to most effectively blend into the visible landscape. If structures are visible from more than one sensitive viewing location, and backdrops are substantially different from different vantage points, the darker color will be selected, because dark colors tend to blend into landscape backdrops. **AES-SOP-3:** Maintenance operations will be conducted in a manner that limits unnecessary scarring or defacing of the natural surroundings to preserve the natural landscape to the extent possible. To preserve vegetative screening from public areas, tree removal and vegetation clearing will be minimized along state highways and near recreation sites, and wherever possible along scenic roadways.	▪ Limit the use of broadcast foliar application of herbicide in high-traffic areas to reduce thecreation of large areas of browned vegetation. ▪ Where feasible, leave sufficient vegetation at road crossings, highways, visual overlooks, or other areas of high scenic value, to screen the view of the ROW. ▪ Consider planting low-growing tree seedlings adjacent to the ROW; softening the straight line of corridor edge by cutting some additional trees outside the ROW; if feasible, leaving some low-growing trees within the ROW; and conducting vegetation maintenance activities during winter when esthetic effects would be least noticeable if the area is a sensitive visual resource (for example, the American River Parkway or Folsom Lake State Recreation Area).	No. WAPA developed these SOPs to further protect aesthetic resources, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs. The SOPs provide equivalent or better avoidance/minimization of impacts on aesthetics than the avoidance measures identified in the August 2005 Final EA.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
Air Quality		
AQ-SOP-1: WAPA will adhere to all requirements of those agencies having jurisdiction over air quality matters, and any necessary permits for O&M activities will be obtained. **AQ-SOP-2:** Machinery and vehicles will be kept in good operating condition. Equipment will be replaced to ensure compliance with California emission standards; appropriate emissions-control equipment will be maintained for vehicles and equipment, per California, U.S. Environmental Protection Agency (USEPA), and WAPA air-emission requirements. **AQ-SOP-3:** Idle equipment will be shut down when not in active use; visible emissions from stationary generators will be controlled. **AQ-SOP-4:** Dust-control measures will be implemented in road construction and maintenance, as needed. Trucks transporting loose material will be covered or maintain at least 2 feet of freeboard and will not create any visible dust emissions. **AQ-SOP-5:** There will be no open burning of construction trash. **AQ-SOP-6:** Grading activities will cease during periods of high winds (as determined by local air quality management districts). **AQ-SOP-7:** Major operations will be avoided on days when the local Air Quality Index is expected to exceed 150.	▪ Keep the equipment in good operating condition to reduce exhaust emissions for all methods using machinery or vehicles (such as chainsaws, trucks, and graders). ▪ Keep equipment logs and set schedules for preventative maintenance; ▪ Periodically replace older equipment with equipment meeting more recent stringent California emission standards. ▪ Shut down rather than idle equipment not in active use. ▪ Avoid major operations on days when the local Air Quality Index is expected to exceed 150.	No. WAPA developed these SOPs to further protect air quality, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs. The SOPs provide equivalent or better avoidance/minimization of impacts on air quality than the avoidance measures identified in the August 2005 Final EA.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
Biological Resources		
B-SOP-1: All contract crews will complete biological pre-maintenance awareness training to ensure they are familiar with sensitive biological resources and associated Standard Operating Procedures (SOPs) and Project Conservation Measures (PCMs). All supervisors and field personnel will have on file a signed agreement that they have completed the training and understood and agreed to the terms. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance. **B-SOP-2:** WAPA crews will complete annual awareness training to ensure they are familiar with sensitive biological resources and associated SOPs and PCMs. All supervisors and field personnel will have on file a signed agreement that they have completed the training and understood and agreed to the terms. Further, WAPA crews will have access to the O&M Geographic Information System (GIS) database in the field to be able to identify sensitive resources and associated PCMs. **B-SOP-3:** O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day, or have escape ramps **Biological Resources (continued)**	▪ To avoid adverse effects on habitats and vegetation, WAPA would: ▪ Cut conifers below the lowest live limb to eliminate the continued growth of lateral branches. ▪ Use seeds, seedlings, or plants that are consistent with management objectives and adapted to climatic conditions, soils, landscape position, and the site itself. ▪ Use native seed/plants to the extent practical, or in accordance with management plans for recreational areas such as the Folsom Lake State Recreation Area. ▪ Follow herbicide product label directions for appropriate uses, restrictions, etc. ▪ Use herbicide-thickening agents (as appropriate), label instructions, and weather restrictions to reduce the drift hazard to non-target plants. ▪ Follow all herbicide spill requirements in the rare case of an herbicide spill, including containment and cleanup procedures. ▪ Visit ROWs after treatments to determine whether target vegetation was controlled and whether non-target plants were affected. Any unexpected results would be noted and procedures would be changed to	No. WAPA developed these SOPs to further protect biological resources, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs. The SOPs provide equivalent or better avoidance/minimization of impacts on biological resources than the avoidance measures identified in the August 2005 Final EA.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
provided to prevent the entrapment of wildlife. Trenches and holes will be inspected for entrapped wildlife before being filled. Any entrapped animals will be allowed to escape voluntarily before O&M activities resume, or they may be removed by qualified personnel, with an appropriate handling permit if necessary. **B-SOP-4:** Vehicle traffic will be restricted to designated access routes and the immediate vicinity of O&M sites. Vehicle speeds will not exceed 15 mph on access and maintenance roads and 10 mph on unimproved access routes. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas, to the maximum extent feasible. **B-SOP-5:** No pets or firearms will be permitted at project sites. **B-SOP-6:** At the end of each work day, O&M workers will leave work areas and adjacent habitats to minimize disturbance to actively foraging animals, and remove food-related trash from the work site in closed containers for disposal. Workers will not deliberately or inadvertently feed wildlife. **B-SOP-7:** Nighttime O&M activities will be minimized to emergency situations. If nighttime O&M work is required, lights will be directed to the minimum area needed to illuminate project work areas.	achieve better results during future treatments. ▪ Time maintenance activities to avoid sensitive periods. ▪ Conduct pre-maintenance surveys by a qualified biologist. ▪ To avoid adverse effects on wildlife, WAPA would: ▪ Where feasible and appropriate, top and leave tall dead trees (snags) in place for wildlife habitat. ▪ Not perform routine maintenance in flooded areas. ▪ Time maintenance activities to avoid sensitive periods. ▪ Conduct pre-maintenance surveys by a biologist during the period when birds protected under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act, could be nesting. This period would extend from January 1 through August 15. ▪ To avoid adverse effects on special-status vernal pool species, WAPA would: ▪ Establish buffer zones specific to the type of maintenance activity and season. ▪ To avoid adverse effects on special-status fish species, WAPA would: ▪ Trim trees providing shade to riverine areas only to the extent necessary. ▪ Define a 100-ft buffer on each side of all perennial watercourses. In this buffer, no	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
B-SOP-8: Where feasible and appropriate, tall dead trees will be topped and left in place as snags or as downed logs to support wildlife dependent on these important features, in coordination with the landowner. **B-SOP-9:** Mortalities or injuries to any wildlife that occur as a result of project- or maintenance-related actions will be reported immediately to the WAPA Natural Resources Department or other designated point of contact, who will instruct O&M personnel on the appropriate action, and who will contact the appropriate agency if the species is listed. The phone number for the WAPA Natural Resources Department or designated point of contact will be provided to maintenance supervisors and to the appropriate agencies. **B-SOP-10:** Caves, mine tunnels, and rock outcrops will never be entered, climbed upon, or otherwise disturbed. **B-SOP-11:** If a pesticide label stipulates a buffer zone width for protection of natural resources that differs from that specified in a PCM, the buffer zone width that offers the greatest protection will be applied. **B-SOP-12:** To protect nesting birds (birds not specifically protected by PCMs but protected by the Migratory Bird Treaty Act), whose nests could occur within the right-of-way, WAPA and its	chemicals would be mixed, no open petroleum products would be allowed and only hand clearing of vegetation would be permitted (no foliar application of herbicides). This buffer would not apply to cut-stump treatments using herbicides approved for aquatic use by the EPA, subject to any additional restrictions imposed by the State of California. ▪ To avoid adverse effects on the federally listed valley elderberry longhorn beetle, WAPA would: ▪ Adhere to the USFWS Conservation Guidelines for VELB, the terms and conditions of the applicable USFWS Biological Opinion, and WAPA's August 2005 Mitigation Action Plan for VELB. ▪ Fence and flag all areas to be avoided during maintenance activities. ▪ Brief contractors on the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements. ▪ Erect signs every 50 ft along the edge ofthe 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	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
subcontractors will perform Category B&C O&M activities outside the nesting season, which runs from March 1 through August 15 in the Sacramento Valley region and from January 1 through September 15 in the Redding/Trinity and Round Mountain/Modoc regions (within WAPA's other regions). Alternatively, a qualified biologist will conduct nesting-bird surveys prior to project activities. For special-status birds, see specific PCMs. ▪ An additional survey may be required if gaps between the survey and the project activity exceed three weeks. ▪ Should an active nest be discovered, the qualified biologist will establish an appropriate buffer zone (in which O&M activity is not allowed) to avoid disturbance in the vicinity of the nest. Maintenance activities will not take place until the biologist has determined that the nestlings have fledged or that maintenance activities will not adversely affect adults or newly fledged young. ▪ Alternatively, the qualified biologist will develop a monitoring/mitigation plan that permits the maintenance activity to continue in the vicinity of the nest while monitoring nesting activities to ensure that the nesting birds are not disturbed. WAPA finalized an avian protection plan in 2016 and WAPA will adhere to the	prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 ft, and must be maintained for the duration of construction. ▪ Instruct work crews about the status of the beetle and the need to protect its elderberry host plant. ▪ Avoid the use of insecticides, herbicides, fertilizers, or hazardous chemicals within established buffer zones. ▪ To avoid adverse effects on Swainson's hawk, WAPA would: ▪ Perform preconstruction surveys for Swainson's hawk within the ROW prior to conducting maintenance activities. ▪ Defer routine maintenance in the vicinity of an active nest until after the nesting season ▪ Avoid removal of nest trees (unless necessary for transmission line safety and to prevent fire) and monitor nest sites. ▪ Establish and maintain a 200-ft buffer for maintenance activities during the breeding season (March through July). This buffer could be adjusted, based on changes in sensitivity exhibited by birds over the course of the nesting season and the type of maintenance performed (high noise or human activity such as mechanical vegetation maintenance methods versus low noise or human activity such as semi-annual patrols).	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
guidance in that document (WAPA, 2016). **B-SOP-13:** Measures described in the Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee 2006) and Mitigation Bird Collisions with Power Lines: The State the Art in 1994 (Avian Power Line Interaction Committee 1994) will be implemented during O&M activities to minimize bird mortality and injury. WAPA finalized an avian protection plan and WAPA will adhere to the guidance in that document (WAPA, 2016). **B-SOP-14:** At completion of work and at the request of the landowner/manager, all work areas except access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion. **B-SOP-15:** Prior to any application of herbicide, WAPA will query the California Department of Pesticide Regulation PRESCRIBE database, entering location information by county, township, range, and section, entering both the commercial name and the formulation of the desired pesticide, and will follow all use limitations provided to ensure compliance with applicable pesticide standards. This database is currently located at http://www.cdpr.ca.gov/docs/endspec/prescint.h	▪ To avoid adverse effects on bank swallow, WAPA would: ▪ Avoid conducting ROW maintenance activities that could cause ground disturbance where suitable habitat exists at ROW crossings on the American River, Feather River, and Cosumnes River. ▪ Conduct pre-maintenance surveys by a qualified biologist to identify any habitat. ▪ Define a 100-ft buffer on each side of all perennial watercourses. In this buffer, no chemicals would be mixed, no open petroleum products would be allowed and only hand clearing of vegetation would be permitted (no foliar application of herbicides). This buffer would not apply to cut-stump treatments using herbicides approved for aquatic use by the EPA, subject to any additional restrictions imposed by the State of California. ▪ To avoid adverse effects on California tiger salamander, WAPA would: ▪ Use the results of the biological survey to determine the location of vernal pools and ponds and avoid them during routine maintenance activities. ▪ Identify areas where vernal pools and ponds are concentrated and establish avoidance buffers or prohibit routine maintenance activity in those areas during wet seasons.	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
tm. The measures generated by the PRESCRIBE database will supersede those in the PCMs where they are different.	▪ Locate wire pulling, wire splicing, and maintenance materials outside of vernal pool and pond habitats or on existingroads. ▪ To avoid adverse effects on giant garter snake, WAPA would: ▪ Avoid routine maintenance activities within 200 ft from the banks of giant garter snake aquatic habitat and confine movement of equipment to existing roadways to minimize habitat disturbance to the maximum extent feasible. If clearing or grading activities were required within giant garter snake habitat, a qualified biologist would be present during all operations. Vehicle speeds would not exceed 15 mph on unimproved access routes. ▪ Schedule ground-disturbing maintenance activities within habitat so that they occur between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened as snakes are expected to actively move to avoiddanger. ▪ Educate maintenance personnel to recognize giant garter snakes and their habitat. Specific information regarding giant garter snake avoidance measures would be provided to all WAPA maintenance employees and contractors prior to work in areas containing giant garter snake habitat. ▪ Avoid the use of herbicides in and around giant garter snake habitat.	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
	▪ Halt construction in the immediate area of an observed giant garter snake until it is determined that the snake will not be harmed. If necessary, the biological monitor would move the snake, by hand, from the maintenance or construction area to a safe location. ▪ To avoid adverse effects on riparian woodrat and riparian brush rabbit, WAPA would: ▪ Maintain, where appropriate, the low-growth elements (brush and shrubs) of suitable riparian habitat within the species range. Where conductor clearance permits, some trees native to the riparian habitat could also be allowed to grow at the ROW vegetation edges to minimize habitat fragmentation. Overall, establishment of this modified riparian habitat would lead to fewer disturbances for ROW maintenance, and would be consistent with the goals of the proposed action. ▪ To avoid adverse effects on fisheries, WAPA would: ▪ Define a 100-ft buffer on each side of all perennial watercourses. In this buffer, no chemicals would be mixed, no open petroleum products would be allowed and only hand clearing of vegetation would be permitted (no foliar application of herbicides). This buffer would not apply to cut-stump treatments using herbicides	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
	approved for aquatic use by the EPA and subject to any additional restrictions imposed by the State of California.	
Cultural Resources		
C-SOP-1: All contract crews will complete cultural resources pre-maintenance awareness training to ensure they are aware of the locations of cultural resource sites; maintenance methods to be used in areas with sensitive cultural resources; and restrictions required in cultural resources areas (i.e., SOPs and PCMs). Crews will be educated on the Archaeological Resources Protection Act, which makes it a Federal offense to willfully damage or remove any artifacts or materials from an archaeological site. All supervisors and field personnel will have on file a signed agreement that they had completed the training, and understood and agreed to the terms. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance. **C-SOP-2:** WAPA crews will complete annual awareness training to ensure they are familiar with sensitive cultural resources and associated SOPs and PCMs. All supervisors and field personnel will have on file a signed agreement that they had completed the training, and understood and agreed to the terms. Further, WAPA crews will have access to the O&M GIS	▪ Educate the monitoring crews and the vegetation, access road, and transmission line maintenance crews on where the cultural resource sites are located; what maintenance methods are to be used in those areas; what restrictions are required in those areas; and the importance of cultural resources and the legislation that protects them. ▪ Instruct crews to pay particular attention for the presence or discovery of cultural materials in areas where previously recorded archaeological sites were not re-located during the field surveys. If cultural resources were discovered, the crews would be trained to stop work near the discovery and notify an appropriate WAPA official, who would ensure that the resource is recorded and evaluated by a professional archaeologist. WAPA would consult with the California SHPO to determine measures to avoid the resource or mitigate during maintenance activities.	No. WAPA developed these SOPs to further protect cultural resources, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs. The SOPs provide equivalent or better avoidance/minimization of impacts on cultural resources than the avoidance measures identified in the August 2005 Final EA.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
database in the field to be able to identify sensitive resources and associated PCMs. **C-SOP-3:** Operation of vehicles or heavy construction equipment will be avoided in areas that are not designated transmission line and legal access road ROWs or other established transportation routes. This measure will minimize the possibility of disturbing unmapped cultural resources. **C-SOP-4a:** Upon discovery of potential buried, non-human remains cultural materials, work within 50 feet of the find will be halted and the discovery will be reported immediately to the WAPA Natural Resources Department or other designated point of contact. WAPA will comply with provisions in the NHPA and consult with the SHPO and appropriate tribes to determine measures to avoid the resource or mitigate during maintenance activities. **C-SOP-4b:** Upon inadvertent discovery of potential buried human remains, work within 50 feet of the find will be halted and the discovery will be reported immediately to the WAPA Natural Resources Department or other designated point of contact. WAPA will comply with provisions in the NHPA and the Native American Graves Protection and Repatriation Act (NAGPRA; 43 CFR Part 10) and consult with the SHPO and appropriate tribes to determine	▪ Maintain all hand-held motorized equipment and mechanical equipment in proper working condition to avoid gas or oil spills, thus eliminating the need for cleanup and decontamination of affected soils, especially within or near the four archaeological sites. ▪ Avoid driving any vehicles over the archaeological sites, though this would not be a concern for the bedrock mortar site. ▪ Conduct maintenance activities near site CA-SAC-94 only on the levee, with no work conducted between the levee and the ditch. ▪ Avoid operating vehicles away from the transmission line and access road ROWs or other established transportation routes during maintenance activities to minimize the possibility of disturbing unmapped cultural resources. ▪ Avoid use of vegetation maintenance methods that disturb the soil, cause erosion, or alter organic components. These methods could physically affect the four archaeological sites identified in the ROWs. To avoid any physical impacts to the four archaeological sites when conducting vegetation maintenance, WAPA would follow the restrictions in Table 3-9 within 15 ft of the sites.	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
measures to avoid the resource or mitigate during maintenance activities.		
Geology and Soils		
GS-SOP-1: Should WAPA need to modify or relocate a structure, WAPA will have a certified professional geotechnical engineer evaluate the potential for geotechnical hazards and unstable slopes. **GS-SOP-2:** Upon completing ground-disturbing work, all work areas will be left in a condition that facilitates natural and appropriate vegetation regrowth, provides for proper drainage, and prevents erosion. **GS-SOP-3:** All O&M activities must be in conformance with WAPA's Integrated Vegetation Management Environmental Guidance Manual and Erosion Control and Revegetation Plan. **GS-SOP-4:** Wet areas will be avoided to the extent practicable and all activity will be minimized during winter and other wet periods to prevent damage (e.g., rutting, erosion, soil compaction). If wet areas cannot be avoided, WAPA will use wide-track or balloon tire vehicles and equipment or timber mats.	▪ Avoid using ground-disturbing mechanical equipment to remove vegetation from slopes over 40 percent, unless the threat of erosion is minimal because of bedrock or reseeding will be performed. ▪ Use mechanical clearing or heavy equipment when the ground is dry to sustain the equipment and avoid severe rutting. ▪ Reseed or plant seedlings on slopes with erosion problems and/or take other erosion control measures as necessary. If reseeding or planting seedlings, WAPA would observe the following measures: – Use seeds, seedlings, or plants that are consistent with management objectives and adapted to climatic conditions, soils, landscape position, and the site itself. Coordinate with landowners to ensure consistency with their vegetation/landscaping strategies, if applicable. – Use native seed/plants if the species meet the objectives of the revegetation project	No. WAPA developed these SOPs to further protect geology and soils, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs. The SOPs provide equivalent or better avoidance/minimization of impacts on geology and soils than the avoidance measures identified in the August 2005 Final EA.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
GS-SOP-5: All excavated soil will be backfilled and tamped at the location of excavation and used to provide positive drainage, or will be hauled off site to an area appropriate for disposal of excavated material, in accordance with federal, state, and local regulations and in coordination with the landowner. **GS-SOP-6:** Use of ground-disturbing mechanical equipment to remove vegetation will be avoided on continuous slopes over 35 percent, unless the threat of erosion is minimal because of bedrock, or reseeding will be performed. Short distances on slopes up to 40 percent will be allowable. **GS-SOP-7:** Where soil has been severely disturbed and the establishment of vegetation will be needed to minimize erosion, appropriate measures will be implemented to establish an adequate cover of native grass or other native vegetation as needed. All mulch and seed will be of high purity to prevent the spread of noxious weeds. Soil preparation, seeding, mulching, and fertilizing will be repeated as necessary to ensure adequate soil stabilization and revegetation. **GS-SOP-8:** Disturbance and removal of soils and vegetation will be limited to the minimum area necessary for access and O&M activities. Grading will be minimized to the extent possible. When required, grading will be conducted such that run-off waters flow predominantly away from watercourses/washes to reduce the potential for material to enter the watercourse/wash.	– Use high-purity seed and take actions to prevent purchase of seed contaminated with noxious weeds. – Prepare seedbed properly. – Use proper planting time and dates to ensure enough moisture for germination and growth before frosts. – Use effective planting methods; drill seeding is most effective and broadcast methods are appropriate when the drill method is impractical. – Consider increasing seeding rates for critical erosion areas by 150 percent of recommended drill seeding rates.	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
	Land Use	
LU-SOP-1: Any damage (e.g., to fences and gates) during maintenance activities will be repaired or replaced, and restored to their preconstruction condition. **LU-SOP-2:** WAPA will notify affected land owners for vegetation management and encroachment activities, as appropriate. WAPA will post proper signage in areas requiring temporary closure or limited access due to O&M activities. **LU-SOP-3:** The spread of noxious weeds will be minimized. WAPA will clean seeds from ground-disturbing equipment before entering cropland or forestland, or moving between these subject areas. **LU-SOP-4:** WAPA will follow the guidelines established in Section 1, Chapter 3.1, "Protection of Underground Infrastructure," Article 2 of California Government Code4216 4216.9. WAPA will contact the appropriate regional notification center at least two days prior to any proposed excavation. This contact will result in an Underground Service Alert notifying the utilities that have buried lines within 1,000 feet of the proposed maintenance activities. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area. This activity will result in all underground electric, water, gas, cable, or telecommunications lines within the vicinity of the proposed excavation being marked. WAPA will avoid impacts to marked utility locations, and will coordinate with utility	▪ Follow best management practices described in Section 2.2.1.3. ▪ Read and follow herbicide label directions. ▪ Use growth regulators, after research, on landscape trees so they do not encroach on the transmission line. ▪ Continue to use appropriate methods (such as door hanger, letters, phone calls, e-mails, and/or meetings) during planning for vegetation control activities to notify landowners where WAPA has a ROW easement, to inform them of upcoming activities, and to request any information that needs to be considered. ▪ Minimize the spread of noxious weeds or contamination of cropland by other undesirable vegetation by cleaning seeds from equipment before entering cropland or moving between areas of different crops. ▪ Observe appropriate buffer zones necessary to ensure that no drift would affect crops for ROWs adjacent to agricultural fields. These buffer zones would vary based on wind speed and direction.	No. WAPA developed these SOPs to further avoid impacts on land use, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs. The SOPs provide equivalent or better avoidance/minimization of impacts on land use than the avoidance measures identified in the August 2005 Final EA.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
owners, as appropriate, to avoid impacts from project activities. **LU-SOP-5:** WAPA will coordinate, as necessary, with Federal, state, and local land use authorities, as applicable, required, and appropriate, as part of each proposed activity to ensure WAPA's activities are consistent with applicable land use plans and policies at the time of the activity.		
Noise		
NOISE-SOP-1: All vehicles and equipment will be equipped with required exhaust noise abatement devices. **NOISE-SOP-2:** For long-term O&M activities confined to a specific area, WAPA's Natural Resources Department will be contacted to evaluate local thresholds and all requirements of those agencies having jurisdiction over noise matters.	N/A	No. O&M activities are not anticipated to result in adverse effects from noise because activities are temporary and standard measures are employed to reduce noise. Since the August 2005 Final EA, WAPA has developed standard SOPs for noise to further avoid impacts, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
Public Health		
PH-SOP-1: For identified locations, structures and/or shield wire will be marked with highly visible devices (e.g., lights and marker balls) where required by governmental agencies (e.g., Federal Aviation Administration) with jurisdiction. **PH-SOP-2:** Signs and/or flags will be erected in areas of public access to indicate maintenance activities are taking place; workers will be conspicuous by wearing high-visibility vests and hardhats. **PH-SOP-3:** O&M excavations greater than three feet deep will be fenced, covered, or filled at the end of each working day, or have escape ramps provided to prevent injury of the public and workers. **PH-SOP-4:** With regard to herbicide use: ▪ All herbicide applicators will receive ongoing training and be licensed in appropriate application categories. WAPA's safety and hazard reduction training will emphasize prevention of herbicide spills and drift. ▪ Herbicide-free buffer zones will be maintained per label instructions. ▪ All herbicide label and material safety data sheet instructions will be followed regarding mixing and application standards and equipment-cleaning standards to reduce potential exposure to the public through drift and misapplication. ▪ WAPA will ensure that areas treated with herbicides will be posted and re-entry intervals specified and enforced in accordance with label instructions.	▪ Evaluate existing land uses (for example, agricultural and residential) along a ROW or surrounding a facility needing vegetation control to determine any constraints on vegetation control methods. ▪ Determine whether there are any existing landowner agreements with provisions that need to be followed regarding the vegetation maintenance of a specific portion of transmission line. ▪ Use an appropriate method (such as a doorhanger, letter, phone call, e-mail, and/or meeting) during planning for vegetation control activities to notify landowners where WAPA has a ROW easement to inform them of upcoming activities and request any information that needs to be considered. ▪ Determine whether there are other affected people or agencies that need to be notified or coordinated with and determine appropriate method(s) of notification and coordination. ▪ Erect signs and/or flags in areas of public access to indicate work activities are taking place. ▪ Make sure workers are conspicuous by wearing orange vests and hardhats. ▪ Protect drinking water sources by following all buffer zone restrictions. ▪ Ensure that treated areas are posted and re-entry intervals are specified and enforced in accordance with label instructions if using herbicides. ▪ Use only herbicides that are virtually non-toxic to animals in heavy public use areas.	No. WAPA developed these SOPs to further protect public health, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs. The SOPs provide equivalent or better avoidance/minimization of impacts on public health than the avoidance measures identified in the August 2005 Final EA.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
Herbicides and equipment will never be left unattended in areas with unrestricted access. ▪ Climate, geology, and soil types will be considered (including rainfall, wind, depth of aquifer, and soil permeability) in selecting the herbicide with lowest relative risk of migrating to water resources. ▪ Herbicides will be applied using land-based personnel and equipment. No aerial application of herbicides will occur. ▪ All herbicide spill requirements will be followed in the rare case of an herbicide spill, including containment, cleanup, and notification procedures. **PH-SOP-5:** With regard to hazardous materials: ▪ Hazardous materials will be contained in appropriate containers and labeled at all times. Hazardous materials will not be drained onto the ground, into streams, or into drainage areas. ▪ Any release, threat of release, or discharge of hazardous materials within the project area in connection with project activities will be cleaned up and/or remediated, in accordance with applicable federal, state, and local regulations. ▪ All construction waste, including trash and litter, other solid waste, petroleum products, and other potentially hazardous material will be removed and disposed of in accordance with applicable federal, state, and local regulations. ▪ Discovery of, or the accidental discharge of, a significant amount of hazardous materials will be immediately reported to WAPA's Dispatch and Natural Resources Department.	▪ Post treated areas with any restrictions on contact with treated vegetation clearly listed. ▪ Ensure that all herbicide applicators have received training and are licensed in appropriate application categories. ▪ Follow all herbicide label and material safety data sheet (MSDS) instructions regarding mixing and application standards to reduce potential exposure to the public through drift and misapplication. ▪ Comply with herbicide-free buffer zones, if any, as per label instructions if using herbicides near crops for consumption. ▪ Never leave herbicides or equipment unattended in unrestricted access areas. ▪ Closely follow all equipment-cleaning standards required by the herbicide label. ▪ In the event of a spill, immediately notify potentially affected parties.	

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
▪ There will be no storage of hazardous materials in the project area without approval from the authorized officer. ▪ Upon termination of the permit, a report will be submitted to determine whether there had been site contamination and if so, that the remediation met compliance with applicable laws. **PH-SOP-6:** All contract crews will complete hazardous materials pre-maintenance awareness training to ensure they are aware of SOPs and PCMs, as wells as pertinent regulations and the consequences for non-compliance. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance. **PH-SOP-7:** Contractors must submit a spill prevention, notification, and cleanup plan that is approved by WAPA. Clean-up actions and costs resulting from contractor misconduct will be the responsibility of the contractor and approved by WAPA's Natural Resources Department. **PH-SOP-8:** WAPA crews will complete annual awareness training to ensure they are familiar with SOPs and PCMs related to hazardous materials. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. **PH-SOP-9:** All flammable vegetation will be removed a minimum of 30 feet from tower center and conductors or as		

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
required by federal requirements, and to ensure access to towers. **PH-SOP-10:** WAPA and its contractors will comply with all applicable federal and state regulations regarding fire suppression, including but not limited to having all equipment be equipped with a shovel, water pump, and fire extinguisher, the use of spark arrestors on all internal and external combustion engines, verification of daily fire hazard levels during fire season, and a minimum 300-gallon water tank with at least 250 feet of hose when required.		
Recreation		
REC-SOP-1: WAPA will direct members of the public to alternate trails or recreation areas if blocked by machinery or for safety purposes. WAPA will coordinate such re-direction with the appropriate land management agency (ies).	▪ WAPA would, where feasible, direct recreationists to alternate trails if blocked by machinery or for safety purposes.	No. WAPA developed this SOP to further avoid impacts on recreation, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs. The SOP provides equivalent or better voidance/minimization of impacts on land use than the avoidance measure identified in the August 2005 Final EA.
Transportation		

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
TRANS-SOP-1: All lane closures or obstructions on major roadways associated with maintenance activities will be restricted to off-peak periods to minimize traffic congestion and delays, and will be coordinated with appropriate authorities (e.g., Caltrans).	N/A	No. O&M activities are not anticipated to result in adverse effects on transportation because activities are temporary and standard measures are employed to avoid or minimize impacts. Since the August 2005 Final EA, WAPA has developed a standard SOP for transportation to further avoid impacts, provide additional clarity and detail, and maintain consistency with WAPA's other northern California O&M programs.
	Water Resources	
WR-SOP-1: Non-biodegradable debris will not be deposited in the ROW. **WR-SOP-2:** Should WAPA need to relocate a structure or access road affecting waters of the United States or waters of the State, WAPA will first consult with TANC (for TANC-owned facilities), and as appropriate for TANC and WAPA, consult with the Corps and/or State Water Board. TANC will	▪ Use selective control methods in riparian areas and take care not to affect non-target vegetation; read and follow label directions. ▪ Leave vegetation intact in riparian areas, where feasible. ▪ Recognize that any discharge of material (displaced soils and, in certain circumstances, vegetation debris) within waters of the United States may be	No. WAPA developed these SOPs to further protect water resources, provide additional clarity and detail, and maintain consistency with WAPA's

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
be kept fully informed regarding these consultations, and will have the option of attending such meetings at TANC's discretion. Additional consultation with USFWS, NMFS, and CDFW may also be required under these same communication protocols. Bridges will be used at new stream crossings wherever possible. Any activity with the potential to cause the discharge of material (displaced soils and, in certain circumstances, vegetation debris) within waters of the United States will be subject to regulations enforced by the Corps under the CWA and could require a permit. WAPA Natural Resources Department will be contacted. Any discharge of material (displaced soils and, in certain circumstances, vegetation debris) within waters of the United States and waters of the State will be subject to State Water Board regulations under the applicable CWA and Porter-Cologne Water Quality Control Act regulations. **WR-SOP-3:** Sediment-control devices, such as placement of native rock, will be used at all dry wash crossings. **WR-SOP-4:** Run-off from the maintenance site will be controlled and will meet the Regional Water Quality Control Board storm water requirements in the Storm Water Pollution Prevention Plan, as appropriate. **WR-SOP-5:** Run-off control structures, diversion ditches, erosion-control structures, and energy dissipaters will be cleaned, maintained, repaired, and replaced to meet the standards set by WAPA or the applicable Federal land manager.	subject to U.S. Army Corps of Engineers regulations under the Clean Water Act. ▪ Keep the equipment in good operating condition to eliminate oil or fuel spills for all methods using machinery or vehicles (such as chainsaws, trucks, and graders). ▪ Do not wash equipment or vehicles at a stream. ▪ Follow herbicide product label directions for appropriate uses, restrictions etc. ▪ Use herbicide thickening agents (as appropriate), label instructions, and weather restrictions to reduce the drift hazard to water resources. ▪ Ensure that there is no danger of granular herbicides being washed from the areas of application. ▪ Always use siphon prevention devices/methods when filling herbicide tanks from domestic water supplies. ▪ Consider climate, geology, and soil types (including rainfall, wind, depth of aquifer, and soil permeability) in selecting the herbicide with lowest relative risk of migrating to water resources. ▪ Thoroughly review the ROW to identify and mark, if necessary, the buffer requirements before herbicide application. ▪ Monitor to determine whether desired results for water resources were achieved or whether follow-up avoidance measures are necessary (such as erosion control measures).	other northern California O&M programs. The SOPs provide equivalent or better avoidance/minimization of impacts on water resources than the avoidance measures identified in the August 2005 Final EA.

Table 2-4 Comparison of SOPs with Avoidance Measures from August 2005 Final EA
(Note: in addition to SOPs, PCMs have been developed for water, biological, cultural, and paleontological resources, and are implemented where applicable [see Appendix A])

Current SOP	Avoidance Measure from August 2005 Final EA	Substantial Change (Y/N)
WR-SOP-6: All contaminated discharge water created by O&M activities (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) will be contained and disposed of in accordance with applicable Federal, state, and local regulations.		
WR-SOP-7: Vehicles will be inspected daily for fluid leaks before leaving the staging area.		
WR-SOP-8: All fill or rip-rap placed within a stream or river channel will be limited to the minimum area required for access or protection of existing WAPA facilities.		

Chapter 3. Analysis

3.1 Introduction

This section presents the results of the analysis that was performed for each resource area addressed in the August 2005 Final EA. The purpose of the analysis is to review each of the resource areas and provide an evaluation of whether there have been any new circumstances or new information that may be relevant to environmental concerns or environmental impacts.

3.2 Analysis

The analysis performed for each resource area addressed in the August 2005 Final EA is provided below. Given that there have not been any substantial changes in the project area or project activities for the Sacramento Valley Program since the August 2005 Final EA, the analysis is focused on evaluating if there have been any new circumstances or information for the resource areas since the August 2005 Final EA. The results of the analysis are summarized in Table 3-1. A discussion of the results of the analysis for each of the resource areas is provided following the table.

Table 3-1 Summary of the Results of the Analysis

Resource Area	Summary	Significant New Circumstances or Information?
Land Use	As discussed in the August 2005 Final EA, portions of the Sacramento Valley Program traverse federal and state land (e.g., Bureau of Reclamation, California Department of Parks and Recreation, Folsom Prison). Activities in these areas may be subject to applicable plans and policies of the land management agency, as well as require various use permits from the agencies. As part of the ongoing Sacramento Valley Program, and in compliance with WAPA's SOPs for land use, WAPA continues to coordinate with state and federal agencies for activities on their lands to ensure that O&M activities continually comply with any revisions or amendments of applicable plans and policies. There are no new significant circumstances or information related to land use.	No
Habitats and Vegetation	No new significant impacts on habitats and vegetation beyond those identified in the August 2005 Final EA would occur as a result in minor changes in vegetation management to comply with current NERC standards and WAPA's vegetation management plans. WAPA also continues to implement SOPs and applicable PCMs to protect sensitive	No

Table 3-1 Summary of the Results of the Analysis

Resource Area	Summary	Significant New Circumstances or Information?
	resources during vegetation management activities. There are no new significant circumstances or information related to habitats and vegetation.	
Wildlife	WAPA continues to coordinate with land management agencies for activities on their lands to ensure that O&M activities continually comply with any revisions or amendments of applicable land management plans and policies. Additionally, WAPA continues to implement SOPs to protect biological resources during O&M activities. Among other measures, these SOPs include annual awareness training of WAPA crews for sensitive biological resources and biological pre-maintenance awareness training for contract crews. There are no new significant circumstances or information related to wildlife.	No
Special-Status Species	No plant species that could occur within the Sacramento Valley Program project area have been listed, proposed, or designated as candidate species under the ESA or CESA since the August 2005 Final EA. On August 11, 2005, USFWS designated critical habitat for two federally listed plant species with a potential to occur within the Sacramento Valley Program project area. These species include slender Orcutt grass (*Orcuttia tenuis*) and Sacramento Orcutt grass (*Orcuttia viscida*). Both of these species were addressed in the August 2005 Final EA and the Sacramento Valley Program project area does not overlap with the designated critical habitat. There are no new significant circumstances or information related to special-status plants. There are seven wildlife species for which there has been a change in ESA or CESA status since the August 2005 Final EA. These species are California tiger salamander (now state threatened), western yellow-billed cuckoo (now federal threatened), tricolored blackbird (now state threatened), foothill yellow-legged frog (now state threatened/ endangered[1]), Crotch bumble bee (now state candidate), bald eagle (now federally delisted), and American peregrine falcon (now state delisted). With the exception of Crotch bumble bee, which is largely extirpated from the Central Valley due to habitat conversion, WAPA currently implements PCMs for these species (PCM-B059 for California tiger salamander, PCM-B083 for western yellow-billed cuckoo, PCM-B081 for tricolored blackbird, PCM-B061 for foothill yellow-legged frog, PCM-B070 for bald eagle, and PCM-B069 for American peregrine falcon). No "take" of any of these species is anticipated to occur during O&M activities, and adverse effects are avoided or minimized to the extent practicable. . Additionally, WAPA implements all SOPs for	No

[1] Foothill yellow-legged frog was listed by clade (~geographic area); WAPA's project area straddles the East/Southern Sierra clade (endangered) and the Northeast/Northern Sierra clade (threatened).

Table 3-1 Summary of the Results of the Analysis

Resource Area	Summary	Significant New Circumstances or Information?
	biological resources. The changes in ESA and CESA listing status since the August 2005 Final EA are not considered significant new information or circumstances. On October 3, 2014, USFWS listed the western yellow-billed cuckoo as threatened under the ESA. The USFWS also proposed to designate critical habitat for yellow-billed cuckoo on August 15, 2014, and issued a revised proposal on February 27, 2020. None of theproposed areas are located within the Sacramento Valley Program project area. WAPA sent a letter to USFWS on February 5, 2016, requesting the addition of western yellow-billed cuckoo and a related PCM (PCM-B083) to the Programmatic Informal Consultation. On May 12, 2016, USFWS issued a letter incorporating the species and related PCM to the Programmatic Information Consultation and concurring with our determination that O&M was not likely to adversely affect the western yellow-billed cuckoo. Therefore, there are no significant new information or circumstances relating to western yellow-billed cuckoo. On September 2, 2005 NMFS designated critical habitat for Central Valley steelhead and Central Valley spring-run Chinook salmon. The Sacramento Valley Program project area intersects designated critical habitat at multiple locations. Both Central Valley steelhead and Central Valley spring-run Chinook salmon were addressed in the August 2005 Final EA and WAPA currently implements PCMs for these species in areas where there is a potential for their occurrence. Additionally, WAPA implements all SOPs for biological resources. O&M activities are not likely to adversely affect designated critical habitat for Central Valley steelhead or Central Valley spring-run Chinook salmon. NMFS concurred with this determination in their ESA consultation letter dated September 16, 2011. There are no significant new circumstances or information relating to designated critical habitat for Central Valley steelhead or Central Valley spring-run Chinook salmon. On June 6, 2006 NMFS listed green sturgeon as threatened under the ESA. October 9, 2009, NMFS designated critical habitat for green sturgeon. In California, the designated critical habitat includes the Sacramento River; lower Feather River; lower Yuba River; the Sacramento-San Joaquin Delta; and Suisun, San Pablo, and San Francisco bays. Within the Sacramento Valley Program project area, only the O'Banion-Elverta transmission line intersects designated critical habitat for green sturgeon. WAPA has developed a PCM for green sturgeon (PCM-B052) and implements this PCM in areas where this species may occur. Additionally, WAPA continues to implement all SOPs to protect biological resources. O&M activities are not likelyto	

Table 3-1 Summary of the Results of the Analysis

Resource Area	Summary	Significant New Circumstances or Information?
	adversely affect green sturgeon or designated critical habitat. NMFS concurred with this determination in their ESA consultation letter dated September 16, 2011. There are no significant new circumstances or information relating to green sturgeon or its designated critical habitat.	
Fisheries	WAPA's current SOPs and PCMs have been developed to ensure that the potential to adversely affect general fish species is avoided or minimized during O&M activities. As part of the ongoing Sacramento Valley Program, WAPA continues to coordinate with land management agencies for activities on their lands to ensure that O&M activities continually comply with any revisions or amendments of applicable land management plans and policies. Additionally, WAPA continues to implement SOPs to protect biological resources during O&M activities. Among other measures, these SOPs include annual awareness training of WAPA crews for sensitive biological resources and biological pre-maintenance awareness training for contract crews. There are no new significant circumstances or information related to fisheries.	No
Geology and Soils	WAPA has developed and implements SOPs (GS-SOP-1–GS-SOP-8) to protect geology and soils during O&M activities. Given that there have been no changes in the project area or project activities, they are no new concerns for geologic hazards, and that SOPs continue to be implemented, there are no new significant circumstances or information related to geology and soils.	No
Air Quality	WAPA implements SOPs (AQ-SOP-1–AQ-SOP-7) to protect air quality during O&M activities. Among other measures, these SOPs require WAPA to adhere to all requirements of those agencies having jurisdiction over air quality matters and to obtain any necessary permits from these agencies for O&M activities. Also, the SOPs require WAPA to keep machinery and vehicles in good operating condition and to replace equipment to ensure compliance with California emission standards. Given that there have been no changes in the project area or project activities and that SOPs continue to be implemented, there are no new significant circumstances or information related to air quality.	No
Water Quality	WAPA has developed and implements SOPs (WR-SOP-1–WR-SOP-8) and PCMs (PCM-W001 and PCM-W002) to protect water resources and aquatic habitats during O&M activities. Given that there have been no changes in the project area or project activities and that SOPs and applicable PCMs continue to be implemented, there are no new significant circumstances or information related to water quality.	No

Table 3-1 Summary of the Results of the Analysis

Resource Area	Summary	Significant New Circumstances or Information?
Public Health and Safety	WAPA implements SOPs (PH-SOP-1–PH-SOP-7) to protect public health and safety during O&M activities. Additionally, all of WAPA's operations, including all O&M activities, are conducted in coordination with federal, state and local emergency response and contingency plan requirements as outlined in WAPA's Hazardous Materials Business Plans and Spill Prevention, Control, and Countermeasures Plans. Given that there have been no changes in the project area or project activities and that SOPs and applicable PCMs continue to be implemented, there are no new significant circumstances or information related to public health and safety.	No
Recreation	Adverse effects on recreation are not expected to be significant because of the standard measures that WAPA incorporates into O&M activities to avoid or reduce the potential for impacts. The SOPs that WAPA routinely implements for recreation, aesthetics, air quality, noise, and public health ensure that impacts on recreational areas are minimized to acceptable levels. There are no significant concerns or new information related to recreation.	No
Cultural Resources	Given that WAPA: 1) has conducted extensive field surveys to inventory archaeological and historic sites within or near the Sacramento Valley Program facilities; 2) maintains a GIS database to document locations of cultural resource sensitivity; 3) implements SOPs and PCMs that protect both known and unknown sensitive cultural resources; and 4) complies with NHPA Section 106 requirements and ACHP regulations through adherence to the terms and measures of the February 2010 PA, there are no new significant circumstances or information for cultural resources.	No
Paleontological Resources	Given that: 1) there have been no changes in the project area or project activities since the August 2005 Final EA; 2) the ongoing O&M activities have been conducted in the same or substantially similar manner since initial construction and operation of the facilities; 3) the O&M activities have little to no potential to adversely affect paleontological resources; and 4) WAPA has developed and implements PCMs for paleontological resources to further minimize the potential for adverse effects, there are no new significant circumstances or information related to paleontological resources.	No
Aesthetics	WAPA implements SOPs (AES-SOP-1–AES-SOP-3) to protect aesthetics during O&M activities. Given that O&M activities have been occurring since initial construction and operation of the facilities and that they are conducted in the same or a substantially similar manner as identified in	No

Table 3-1 Summary of the Results of the Analysis

Resource Area	Summary	Significant New Circumstances or Information?
	the August 2005 Final EA, there are no new significant circumstances or information for aesthetics.	
Noise	Sacramento Valley Program O&M activities are not anticipated to result in adverse effects from noise because activities are temporary and standard measures are employed to reduce noise. As such, impacts on noise were not addressed in the August 2005 Final EA. Since the August 2005 Final EA, WAPA has developed and implements SOPs for noise (NOISE-SOP-1 and NOISE-SOP-2) to even further avoid or minimize the potential for impacts related to noise. Given that Sacramento Valley Program O&M activities have been occurring since initial construction and operation of the facilities and WAPA's implementation of standard measures and SOPs to minimize noise impacts, there are no new significant circumstances or information for noise.	No
Transportation	Sacramento Valley Program O&M activities are not anticipated to result in adverse effects on transportation because activities are temporary and standard measures are employed to reduce impacts. As such, impacts on transportation were not addressed in the August 2005 Final EA. Since the August 2005 Final EA, WAPA has developed and implements an SOP for transportation (TRANS-SOP-1) to even further avoid or minimize the potential for impacts on transportation. Given that Sacramento Valley Program O&M activities have been occurring since initial construction and operation of the facilities and WAPA's implementation of standard measures and the TRANS-SOP-1 to minimize transportation impacts, there are no new significant circumstances or information for transportation.	No
Environmental Justice	Given that O&M activities have been occurring since initial construction and operation of the facilities and that they are conducted in the same or a substantially similar manner as identified in the August 2005 Final EA, there are no new significant circumstances or information for environmental justice.	No
Intentional Destructive Acts	The O&M activities have occurred since initial construction and operation of the facilities and do not involve activities that would increase the potential for significant environmental effects due to intentional destructive acts. Based on past and current experience, intentional destructive acts are rare, limited in extent, and benign in overall impact. WAPA also takes reasonable and prudent measures to	No

Table 3-1 Summary of the Results of the Analysis

Resource Area	Summary	Significant New Circumstances or Information?
	protect its infrastructure from destructive acts, including regular monitoring and periodic patrols of the facilities.	
Climate Change	The O&M activities would not produce significant quantities of greenhouse gas emissions. Vegetation maintenance would continue to reduce the risk of wildfire.	No

3.2.1 Land Use

Land use is addressed in Section 3.2 of the August 2005 Final EA. Typical land uses surrounding the Sacramento Valley Program include:

- Agricultural (e.g., grazed pasture, field crops, rice field, orchards, vineyards);
- Residential (e.g., single-family residences, multi-family residences);
- Urban (e.g., commercial, streets, highways, cemeteries, landscaped, undeveloped);
- Public/Recreational (e.g., American River Parkway, Folsom Lake State Recreation Area, Sierra View County Club, Mahany Park); and
- Natural/Native Vegetation (e.g., riparian, wetlands, open water, floodplains, preserves).

Cities and counties in California are required by law to adopt a comprehensive, long-term General Plan for the physical development of their jurisdictional areas. These plans include land use elements that establish a pattern of appropriate land uses as well as policies and guidelines for the development of those uses. With specific regard to compliance with local requirements, WAPA has preemptive jurisdiction for O&M of the Sacramento Valley Program facilities and is not subject to local land use and permitting requirements. However, WAPA does attempt to follow some county codes and general plans to the extent that it does not conflict with appropriate management of the Sacramento Valley Program facilities and would not impose a direct regulation of WAPA. There are no new significant circumstances or information relating to local agency land use planning.

As discussed in the August 2005 Final EA, portions of the Sacramento Valley Program traverse federal and state land (e.g., Bureau of Reclamation, California Department of Parks and Recreation, Folsom Prison). Activities in these areas may be subject to applicable plans and policies of the land management agency, as well as require various use permits from the agencies. As part of the ongoing Sacramento Valley Program, and in compliance with WAPA's SOPs for land use, WAPA continues to coordinate with state and federal agencies for activities on their lands to ensure that O&M activities continually comply with any revisions or amendments of applicable plans and policies. There are no new significant circumstances or information related to land use on federal or state lands.

Conclusion

There are no new significant circumstances or information for land use and no further NEPA evaluation is required.

3.2.2 Habitats and Vegetation

The August 2005 Final EA (Section 3.3) describes a total of 15 habitat types as occurring in the project area. Of these, the dominant natural habitat types include elderberry savanna; vernal pools; riparian forest; woodland and scrub; perennial streams and rivers; and grassland.

Vegetation maintenance for the Sacramento Valley Program ensures that vegetation does not interfere with human safety, transmission line conductors, towers, other hardware, or impede access to the transmission line for maintenance crews. In general, vegetation maintenance is performed using a variety of methods including manual methods (hand-controlled, powered, or non-powered tools such as chainsaws and clippers), mechanical methods (such as heavy-duty mowers), and herbicidal applications (used either to prohibit or retard vegetative growth).

WAPA's current Integrated Vegetation Management (IVM) program (WAPA Area Power Administration 2007) identifies various vegetation maintenance approaches that are used in specific areas based on the sensitivity of resources, reliability and safety issues, and environmental laws and regulations. IVM is a practice of managing undesirable vegetation in which action clearance thresholds are established and proactively monitored. For those areas that are in violation of the threshold, all possible control options are evaluated, an appropriate option is selected, and then it is implemented. Control options are based on worker and public safety, environmental impact, effectiveness, site characteristics (existing vegetation and regrowth rates), appropriate easement rights, and economics. Control options are also based on coordination with the appropriate landowner and /or land manager and the corresponding easement documents.

A combination of vegetation management practices is implemented for the Sacramento Valley Program. These practices are consistent with the principles and objectives of IVM, contractual agreements in applicable easements, and current NERC transmission vegetation management reliability standards and required minimum clearance distances. WAPA's vegetation management plans stipulate line clearances to prevent hazards to system reliability. WAPA does not clear the ground of all vegetation, but instead directs that lower growing grasses and forbs be maintained to provide ground cover, prevent soil erosion, provide habitat, and minimize potential fire and flame length severity through reduced fuel loading.

WAPA has been conducting vegetation management activities since the Sacramento Valley Program facilities were constructed. WAPA is also required to comply with current NERC standards, and maintains coordination with land owners and land management agencies for vegetation management activities on their lands. NERC standards and required minimum clearance distances are subject to change as new information and agency direction on best practices to protect human safety and system reliability become available. No new significant impacts on habitats and vegetation beyond those identified in the August 2005 Final EA would occur as a result in minor changes in vegetation management to comply with current NERC standards and WAPA's vegetation management plans.

WAPA also continues to implement SOPs and applicable PCMs to protect sensitive resources during vegetation management activities.

Conclusion

There are no new significant circumstances or information for habitats and vegetation, and no further NEPA evaluation is required.

3.2.3 Wildlife

The August 2005 Final EA (Section 3.4) provides a description of the general wildlife resources and wildlife species associated with the Sacramento Valley Program project area. For purposes of the August 2005 Final EA and this SA, general wildlife refers to all mammal, bird, invertebrate, reptile, and amphibian species that do not meet the criteria for "special-status" wildlife species. In support of the preparation of the August 2005 EA, biological field surveys were conducted throughout the Sacramento Valley Program project area during September–December 2001; and periodic follow-up surveys have been regularly conducted by WAPA since the August 2005 Final EA.

As detailed in the August 2005 Final EA, O&M activities have the potential to adversely affect wildlife in a variety of ways, ranging from direct harm to indirect loss of habitat, from short-term and/or temporary impacts to long-term and/or permanent impacts. Adverse impacts may occur indirectly through habitat fragmentation or degradation (e.g., surface run-off from upland vegetation removal or access road maintenance). Additionally, adverse impacts may occur from the direct loss of life through disruption of breeding and consequent loss of eggs, chicks, or fledglings, through collision mortality on roads, or through direct or indirect contact with herbicides and/or mechanical equipment.

WAPA's current SOPs and PCMs have been developed to ensure that the potential to adversely affect general wildlife is avoided or minimized during O&M activities. As part of the ongoing Sacramento Valley Program, WAPA continues to coordinate with land management agencies for activities on their lands to ensure that O&M activities continually comply with any revisions or amendments of applicable land management plans and policies. Additionally, WAPA continues to implement SOPs to protect biological resources during O&M activities. Among other measures, these SOPs include annual awareness training of WAPA crews for sensitive biological resources and biological pre-maintenance awareness training for contract crews. Given WAPA's coordination with land management agencies when activities are conducted on their lands and WAPA's existing procedures for protection of biological resources, there are new significant circumstances or information related to wildlife.

Conclusion

There are no new significant circumstances or information for general wildlife and no further NEPA evaluation is required.

3.2.4 Special-Status Species

Special-status species are addressed in Section 3.5 of the August 2005 Final EA. For the purposes of the August 2005 Final EA and this SA, special-status species are defined as species whose geographic range and habitats overlap with the Sacramento Valley Program boundaries and are:

- federally or state-listed as threatened or endangered;
- proposed for federal listing as threatened or endangered; and,
- federal and state candidate species.

To support preparation of the August 2005 Final EA, biological surveys were conducted throughout the Sacramento Valley Program project area. The biological surveys were conducted from September 11 through December 10, 2001. Two-person survey teams consisted of a biologist familiar with habitats and threatened and endangered species in the project area and a field technician responsible for operation of a handheld data collection device with an attached global positioning system (GPS) receiver. A meandering pedestrian survey of the entire transmission line and access road ROWs recorded the locations of a variety of features of biological importance, including:

- rivers and streams;
- wetlands, including vernal pools; and
- habitats of threatened and endangered species.

Since the 2001 biological surveys, WAPA has conducted periodic follow-up surveys to review and assess any changing biological conditions within the Sacramento Valley Program project area. Additionally, WAPA continues to conduct/update Endangered Species Act (ESA) section 7 consultations with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) as necessary to maintain current ESA compliance under the Sacramento Valley Program.

On October 9, 2009, USFWS issued a concurrence letter under the Programmatic Informal Consultation for WAPA's North Area Right-of-Way Maintenance Program and determined that Category A, B, and C maintenance activities may affect but are not likely to adversely affect listed species or their designated critical habitats (USFWS, 2009). On January 11, 2011, WAPA sent a letter to USFWS requesting the inclusion of WAPA's San Joaquin Valley Right-of-Way Maintenance Program and Sacramento Valley Program to the Programmatic Informal Consultation. On June 6, 2011, USFWS issued a letter incorporating the San Joaquin Valley Right-of-Way Maintenance Program and Sacramento Valley Program to the Programmatic Informal Consultation (USFWS, 2011). On February 4, 2016, WAPA sent a letter to USFWS requesting the inclusion of the recently listed western yellow-billed cuckoo into the existing Programmatic Informal Consultation, given a new PCM for the species. On May 12, 2016, USFWS issued a letter of concurrence with a *may affect but not likely to adversely affect* determination and incorporated this to the Programmatic Informal Consultation.

On May 12, 2016, USFWS issued a concurrence letter under the Programmatic Informal Consultation for WAPA's North Area Right-of-Way Maintenance Program and determined that O&M operations may affect but are not likely to adversely affect the recently listed western yellow-billed cuckoo (USFWS, 2016).

On December 23, 2009, NMFS issued a concurrence letter under the Programmatic Informal Consultation and determined that Category A, B, and C maintenance activities under WAPA's North Area Right-of-Way Maintenance Program may affect but are not likely to adversely affect listed species or their designated critical habitats (NMFS, 2009). On April 15, 2011 WAPA sent a letter to NMFS requesting the inclusion of WAPA's San Joaquin Valley Right-of-Way Maintenance Program and Sacramento Valley Program to the Programmatic Informal Consultation. On September 16, 2011, NMFS issued a letter incorporating the San Joaquin Valley Right-of-Way Maintenance Program and Sacramento Valley Program to the Programmatic Informal Consultation (NOAA, 2011).

For the purposes of this SA, an updated information review was conducted to determine: 1) if any plant, wildlife, or fish species that could occur within the Sacramento Valley Program project area have been listed, proposed, or designated as candidate species under the ESA or California Endangered Species Act (CESA) since the August 2005 Final EA; or 2) if critical habitat has been designated or proposed for federally listed or proposed species within the boundaries of the Sacramento Valley Program since the August 2005 Final EA.

In February 2021, a review of the Threatened and Endangered Animal/Plant Species Lists, maintained by California Department of Fish and Wildlife (CDFW), and a review of California Native Plant Society (CNPS) databases was completed to identify listed species that may occur in the project area. Additionally, the USFWS Information for Planning and Consultation (IPaC) website was queried in February 2021. The lists compiled from these sources were compared against information from the biological surveys and habitat conditions within the Sacramento Valley Program project area.

Special-Status Plants

Based on the results of the review, no plant species that could occur within the Sacramento Valley Program project area have been listed, proposed, or designated as candidate species under the ESA or CESA since the August 2005 Final EA. On August 11, 2005, USFWS designated critical habitat for two federally listed plant species with a potential to occur within the Sacramento Valley Program project area. These species include slender Orcutt grass (*Orcuttia tenuis*) and Sacramento Orcutt grass (*Orcuttia viscida*). Both of these species were addressed in the August 2005 Final EA, and the Sacramento Valley Program project area does not overlap with the designated critical habitat.

As part of the ongoing Sacramento Valley Program, WAPA continues to coordinate with land management agencies for activities on their lands and continues to implement SOPs and applicable PCMs to protect biological resources during O&M activities. There are no new significant circumstances or information related to special-status plants.

Conclusion

There are no new significant circumstances or information for special-status plants and no further NEPA evaluation is required.

Special-Status Wildlife

There are two species addressed in the August 2005 Final EA for which there has been a change in ESA or CESA status since the August 2005 Final EA. These species include California tiger salamander (*Ambystoma californiense*) and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). The ESA and/or CESA status changes since the August 2005 Final EA for these species are provided in Table 3-2. Each of these species was addressed in the August 2005 Final EA and WAPA currently implements PCMs for these species in areas where there is a potential for their occurrence. Additionally, WAPA implements all SOPs for biological resources. There have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA, and thus no changes in impacts on California tiger salamander or western yellow-billed cuckoo. WAPA and the USFWS consulted in 2016 regarding western yellow-billed cuckoo, amending the programmatic agreement to include a revised PCM, reaching concurrence that the project was not likely to adversely affect the species (USFWS,2016). On August 15, 2014, USFWS proposed to designate critical habitat for yellow-billed cuckoo. The extent of proposed critical habitat was revised February 27, 2020. The proposed critical habitat extends along the Sacramento River in Colusa, Glenn, Butte, and Tehama counties and along a portion of the Sutter Bypass in Sutter County. None of these areas are located within the Sacramento Valley Program project area. Therefore, there are no significant new information or circumstances relating to proposed critical habitat for yellow-billed cuckoo.

The changes in ESA and CESA listing status since the August 2005 Final EA are not considered significant new information or circumstances.

Table 3-2 ESA and CESA Status Changes Since the August 2005 Final EA

Species Name Common/ *Scientific*	Current Status (State/ Federal)	Status in Aug 2005 Final EA (State/ Federal)	Date of Status Change	Significant New Information or Circumstances?
California tiger salamander *(Ambystoma californiense)*	T/T	SSC/T	California tiger salamander was listed as "threatened" under CESA on August 19, 2010.	No. This species was addressed in the August 2005 Final EA. WAPA has developed and currently implements PCMs for this species in areas where there is a potential for its occurrence. Additionally, WAPA has developed and implements standard SOPs for biological resources. There have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA, and thus no changes in impacts on California tiger salamander.
Western yellow-billed cuckoo *(Coccyzus americanus occidentalis)*	E/T	E/—	Western yellow-billed cuckoo was listed as "threatened" under ESA on	No. This species was addressed in the August 2005 Final EA. WAPA has developed and currently implements PCMs for this species in areas where there is a potential for its occurrence. WAPA and USFWS have amended the O&M programmatic agreement to include this species, with a "not likely to adversely affect" determination (USFWS

Table 3-2 ESA and CESA Status Changes Since the August 2005 Final EA

Species Name Common/ *Scientific*	Current Status (State/ Federal)	Status in Aug 2005 Final EA (State/ Federal)	Date of Status Change	Significant New Information or Circumstances?
			November 3, 2014.	2016). WAPA has developed and implements standard SOPs for biological resources. There have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA, and thus no changes in impacts on western yellow-billed cuckoo.

Note: T -Threatened, E-endangered, SSC-species of special concern

There are five species that were not addressed in the August 2005 Final EA, but whose statuses have changed under the CESA or ESA since the August 2005 Final EA. These species include foothill yellow-legged frog (*Rana boylii*), tricolored blackbird (*Agelaius tricolor*), Crotch bumble bee (*Bombus crotchii*), American peregrine falcon (*Falco peregrinus anatum*), and bald eagle (*Haliaeetus leucocephalus*). The CESA/ESA listing/candidate status changes since the August 2005 Final EA for these species are provided in Table 3-3.

Table 3-3 CESA/ESA Listing/Candidate Changes Since the August 2005 Final EA

Species Name Common/ *Scientific*	Current Status (State/ Federal)	Date of Status	Significant New Information or Circumstances?
Foothill yellow-legged frog (*Rana boylii*)	varies[a] / —	Foothill yellow-legged frog was listed under CESA on March 20, 2020. The East/Southern Sierra clade (southern half of project area) was designated as endangered; the Northeast/Northern Sierra clade (northern half of project area) was designated as threatened.	No. WAPA affords protection to state- and federally listed species throughout the Sacramento Valley Program project area and has developed PCMs for foothill yellow-legged frog (PCM-B061) and implements these PCMs in areas where the species may occur. Additionally, WAPA continues to implement all SOPs to protect biological resources. Given the implementation of SOPs and applicable PCMs for biological resources and WAPA's coordination with resource agencies and land managers, no "take" of foothill yellow-legged frog is anticipated to occur during O&M activities and adverse effects are avoided or minimized to the extent practicable.
Tricolored blackbird (*Agelaius tricolor*)	T/ —	Tricolored blackbird was designated as "threatened" under CESA on March 18, 2019.	No. WAPA affords protection to state- and federally listed species throughout the Sacramento Valley Program project area and has developed PCMs for tricolored blackbird (PCM-B081) and implements these PCMs in areas where the species may occur.

			Additionally, WAPA continues to implement all SOPs to protect biological resources. Given the implementation of SOPs and applicable PCMs for biological resources and WAPA's coordination with resource agencies and land managers, no "take" of tricolored blackbird is anticipated to occur during O&M activities and adverse effects are avoided or minimized to the extent practicable.
Crotch bumble bee (*Bombus crotchii*)	C/ —	Crotch bumble bee was designated as "candidate" under CESA on June 18, 2019.	No. This species, which requires open grassland and scrub habitat, has historically been found in the Central Valley, but it is largely extirpated due to land conversion to agriculture and urban use. WAPA continues to implement all SOPs to protect biological resources. Given the implementation of SOPs for biological resources and WAPA's coordination with resource agencies and land managers, no "take" of Crotch bumble bee is anticipated to occur during O&M activities and adverse effects are avoided or minimized to the extent practicable.
American peregrine falcon (*Falco peregrinus anatum*)	DR/DR	American peregrine falcon was delisted from CESA due to recovery on November 4, 2009.	No. Although this species is no longer listed, WAPA had developed PCMs for American peregrine falcon (PCM-B069) and implements these PCMs in areas where the species may occur. Additionally, WAPA continues to implement all SOPs to protect biological resources. Given the implementation of SOPs and applicable PCMs for biological resources and WAPA's coordination with resource agencies and land managers, adverse effects are avoided or minimized to the extent practicable.
Bald eagle (*Haliaeetus leucocephalus*)	E/DR	Bald eagle was delisted from ESA due to recovery on August 8, 2007.	No. Although this species is no longer listed under federal ESA, WAPA had developed PCMs for bald eagle (PCM-B070) and implements these PCMs in areas where the species may occur. Additionally, WAPA continues to implement all SOPs to protect biological resources. Given the implementation of SOPs and applicable PCMs for biological resources and WAPA's coordination with resource agencies and land managers, adverse effects are avoided or minimized to the extent practicable.

[a] Foothill yellow-legged frog was listed by clade (~geographic area); WAPA's project area straddles the line between the East/Southern Sierra clade (endangered) and the Northeast/Northern Sierra clade (threatened).
Note: T-threatened, E-endangered, C-candidate, DR-delisted due to recovery

WAPA affords protection to state- and federally listed species throughout the Sacramento Valley Program project area and has developed PCMs for foothill yellow-legged frog (PCM-B061), tricolored blackbird (PCM-B081), American peregrine falcon (PCM-B069), and bald eagle (PCM-B070) and implements these PCMs in areas where these species may occur. Additionally, WAPA continues to implementall

SOPs to protect biological resources. WAPA also continues to coordinate with appropriate resource agencies and land managers on major facilities maintenance and vegetation removal activities; providing a description of the maintenance task and coordinating with the agencies regarding WAPA's PCMs. Given the implementation of SOPs and applicable PCMs for biological resources and WAPA's coordination with resource agencies and land managers, no "take" of foothill yellow-legged frog, tricolored blackbird, or Crotch bumble bee is anticipated to occur during O&M activities and adverse effects are avoided or minimized to the extent practicable. The current CESA/ESA designations for these species are not considered significant new information or circumstances.

Conclusion

There are no new significant circumstances or information for special-status wildlife and no further NEPA evaluation is required.

Special-Status Fish

On September 2, 2005 NMFS designated critical habitat for Central Valley steelhead (*Oncorhynchus mykiss*) and Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*). The Sacramento Valley Program project area intersects designated critical habitat at multiple locations. Both Central Valley steelhead and Central Valley spring-run Chinook salmon were addressed in the August 2005 Final EA, and WAPA currently implements PCMs for these species in areas where there is a potential for their occurrence. Additionally, WAPA implements all SOPs for biological resources. With implementation of the SOPs and applicable PCMs, O&M activities are not likely to adversely affect designated critical habitat for Central Valley steelhead or Central Valley spring-run Chinook salmon. NMFS concurred with this determination in their ESA consultation letter dated September 16, 2011 (NMFS, 2011). There are no significant new circumstances or information relating to designated critical habitat for Central Valley steelhead or Central Valley spring-run Chinook salmon.

On June 6, 2006 NMFS listed green sturgeon (*Acipenser medirostris*) as threatened under the ESA. On October 9, 2009, NMFS designated critical habitat for green sturgeon. In California, the designated critical habitat includes the Sacramento River; lower Feather River; lower Yuba River; the Sacramento-San Joaquin Delta; and Suisun, San Pablo, and San Francisco bays. Within the Sacramento Valley Program project area, only the Hurley–Tracy transmission line intersects designated critical habitat for green sturgeon. WAPA has developed a PCM for green sturgeon (PCM-B052) and implements this PCM in areas where this species may occur. Additionally, WAPA continues to implement all SOPs to protect biological resources. With implementation of the SOPs and applicable PCMs, O&M activities are not likely to adversely affect green sturgeon or designated critical habitat. NMFS concurred with this determination in their ESA consultation letter dated September 16, 2011 (NMFS, 2011). There are no significant new circumstances or information relating to green sturgeon or its designated critical habitat.

Conclusion

There are no new significant circumstances or information for special-status fish and no further NEPA evaluation is required.

3.2.5 Fisheries

The August 2005 Final EA (Section 3.6) provides a description of the water bodies and fishery resources within the Sacramento Valley Program project area. For purposes of the August 2005 Final EA and this SA, general fish species to all fish species that do not meet the criteria for "special-status" fish species.

As discussed in the August 2005 Final EA, potential effects on fish are closely related to water quality; whenever the water quality of a fish-bearing stream is affected, so are fish. Specifically, turbidity, sedimentation, loss of large organic debris, loss of shading (and associated temperature increases), and exposure to hazardous substances affect fish.

WAPA's current SOPs and PCMs have been developed to ensure that the potential to adversely affect general fish species is avoided or minimized during O&M activities. As part of the ongoing Sacramento Valley Program, WAPA continues to coordinate with land management agencies for activities on their lands to ensure that O&M activities continually comply with any revisions or amendments of applicable land management plans and policies. Additionally, WAPA continues to implement SOPs to protect biological resources during O&M activities. Among other measures, these SOPs include annual awareness training of WAPA crews for sensitive biological resources and biological pre-maintenance awareness training for contract crews. Given WAPA's coordination with land management agencies when activities are conducted on their lands and WAPA's existing procedures for protection of biological resources, there are new significant circumstances or information related to fish.

Conclusion

There are no new significant circumstances or information for general fish species and no further NEPA evaluation is required.

3.2.6 Geology and Soils

The August 2005 Final EA (Section 3.7) describes the general soil types within the Sacramento Valley Program project area and evaluates the potential for O&M activities to adversely affect soils (e.g., erosion). The August 2005 Final EA does not address the potential for geologic hazards related to O&M activities (e.g., slope instability, effects of earthquake). In accordance with WAPA's SOPs, a certified professional geotechnical engineer evaluates the potential for geotechnical hazards and unstable slopes when O&M activities include modification of relocation of a structure. Adverse effects from earthquakes are not anticipated. In general, overhead transmission lines can withstand strong ground shaking. Design requirements for wind loading on overhead lines generally exceed those developed to address strong seismic ground shaking. It is anticipated that the original design considerations for wind effects, which were incorporated into the existing infrastructure, would also address the potential impacts of strong ground shaking. The potential exists for seismic damage to substation equipment; however, substation equipment used by WAPA is generally designed to withstand major seismic activity without release of hazardous materials or other environmental consequences.

As discussed in Section 2.1 (Changes in the Project Area and Project Activities) above, there have been no substantial changes in the project area or project activities since publication of the August 2005 Final

EA. As part of the ongoing Sacramento Valley Program, WAPA implements SOPs (GS-SOP-1–GS-SOP-8) to protect geology and soils during O&M activities

Given that there have been no changes in the project area or project activities, they are no new concerns for geologic hazards, and that SOPs continue to be implemented, there are no new significant circumstances or information related to geology and soils.

Conclusion

There are no new significant circumstances or information for geology and soils, and no further NEPA evaluation is required.

3.2.7 Air Quality

Air quality is addressed in Section 3.16 of the August 2005 Final EA. In general, the quality of surface air (air quality) is evaluated by measuring ambient concentrations of pollutants that are known to have deleterious effects on public health. The degree of air quality degradation is then compared to ambient air quality standards, such as the California and National Ambient Air Quality Standards (CAAQS and NAAQS).

Criteria air pollutants refer to a group of pollutants for which regulatory agencies have adopted ambient air quality standards and region-wide pollution reduction plans. Criteria air pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead. Toxic air contaminants refer to a category of air pollutants that pose a present or potential hazard to human health, but that tend to have more localized impacts than criteria air pollutants. Reactive organic gases (ROG) and nitrogen oxides (NO_x) are also regulated as criteria pollutants because they are precursors to O_3 formation. Certain ROGs may also qualify as toxic air contaminants. Two subsets of PM are inhalable: PM less than ten microns in diameter (PM_{10}) and fine PM less than 2.5 microns in diameter ($PM_{2.5}$).

Both California and the federal government have adopted air quality standards for criteria air pollutants that are known to have harmful effects on public health (CAAQS and NAAQS). Historically, CAAQS have been more stringent than NAAQS for the protection of public health. However, the U.S. Environmental Protection Agency (EPA) recently tightened federal air quality standards for PM and O_3 to achieve a similar level of protection (EPA 2014). The current CAAQS and NAAQS for criteria air pollutants are shown in Table 3-4.

Pursuant to the federal Clean Air Act, EPA designates counties as attainment, non-attainment, or unclassified for compliance with the NAAQS. If NAAQS are met, the county is given an “attainment” designation; if NAAQS are not met, the county is given a “nonattainment” designation; and if there is insufficient data to make a determination, the county is given an “unclassified” designation. The California Clean Air Act established the CAAQS. These standards are generally more stringent and include more pollutants than the NAAQS, and compliance is overseen by the California Air Resources Board (CARB). California contains a wide variety of climates, physical features, and emission sources, which makes the task of improving air quality complex. Therefore, to better manage common air quality problems, California is divided into 15 air basins. Within these air basins, and similar to the EPA, CARB

designates air basins or partial air basins as attainment, nonattainment, or unclassified for meeting the CAAQS. The Sacramento Valley Program facilities traverse Sacramento, Sutter, and Placer counties; and are located within the Sacramento Valley Air Basin.

All of the counties within the Sacramento Valley Program are currently identified as either attainment or unclassified for both NAAQS and CAAQS for lead, CO, NO_2, and SO_2 (CARB 2018a). Current attainment designations for individual counties within the Sacramento Valley Program for O_3, $PM_{2.5}$, and PM_{10} are identified in Table 3-5.

Table 3-4 California and National Air Quality Standards for Air Pollutants

Air Pollutant Standard	CAAQS	NAAQS	
		Primary[1]	Secondary[2]
1 Hour O_3	0.09 ppm	No Standard	Same as Primary Standard
8 Hour O_3	0.070 ppm	0.070 ppm, annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years	Same as Primary Standard
Annual Arithmetic Mean PM_{10}	20 µg/m^3	No Standard	Same as Primary Standard
24 Hour PM_{10}	50 µg/m^3	150 µg/m^3, not to be exceeded more than once per year on average over 3 years	Same as Primary Standard
Annual Arithmetic Mean $PM_{2.5}$	12 µg/m^3	12 µg/m^3, annual mean averaged over 3 years	15 µg/m^3
24 Hour $PM_{2.5}$	No Standard	35 µg/m^3, 98th percentile averaged over 3 years	Same as Primary Standard
1 Hour CO	20 ppm	35 ppm, not to be exceeded more than once per year	No Standard
8 Hour CO	9 ppm	9 ppm, not to be exceeded more than once per year	No Standard
30 Day Average Lead	1.5 µg/m^3	No Standard	No Standard
Calendar Quarter Lead	No Standard	1.5 µg/m^3 (for certain areas)[3]	Same as Primary Standard
3 Month Rolling Average Lead	No Standard	0.15 µg/m^3, not to be exceeded	Same as Primary Standard
1 Hour NO_2	0.18 ppm	100 ppb, 98th percentile averaged over 3 years	No Standard
Annual Arithmetic Mean NO_2	0.030 ppm	0.053 ppm, annual mean	Same as Primary Standard

1 Hour Average SO_2	0.25 ppm	75 ppb (0.075 ppm), 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	No Standard
3 Hour SO_2	No Standard	No Standard	50 ppb (0.05 ppm)
24 Hour SO_2	0.04 ppm	0.14 ppm	No Standard
Annual Arithmetic Mean SO_2	No Standard	0.030 ppm	No Standard

Key: ppb (parts per billion by volume), ppm (parts per million by volume), µg/m^3 (micrograms per cubic meter of air), O_3 (ozone), CO (carbon monoxide), NO_2 (nitrogen dioxide), SO_2 (sulfur dioxide), PM_{10} (particulate matter less than ten microns in diameter), and $PM_{2.5}$ (fine particulate matter less than 2.5 microns in diameter). Source: CARB 2016.
1,2 The Clean Air Act identifies two types of national ambient air quality standards. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (EPA 2015).
3. CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Table 3-5 Air Pollutant Designation for Counties within the Sacramento Valley Program Project Area

County	Ozone		$PM_{2.5}$		PM_{10}	
	California	National	California	National	California	National
Sacramento	NA	NA, M	A	NA, M	NA	A
Sutter	NA	PNA, M	A	U/A	NA	U
Placer	NA	PNA, M	U	U/A	NA	U/A

Key: NA (Nonattainment), A (Attainment), PNA (Partial Nonattainment), U (Unclassified), M (Moderate), Source: CARB 2018a, EPA 2018

Local Thresholds

The State is divided into Air Pollution Control Districts (APCD) and Air Quality Management Districts (AQMD), which are also called air districts. These agencies are county or regional governing authorities that have primary responsibility for controlling air pollution from stationary sources. The applicable authorities for the project include the Sacramento Metropolitan Air Quality Management District, Feather River Air Quality Management District, and Placer County Air Pollution Control District. The standards set by these authorities for those criteria pollutants designated as nonattainment are presented in Table 3-6.

Table 3-6 Air Pollutant Thresholds of Significance

	ROG	NO_x	$PM_{2.5}$	PM_{10}
Sacramento Metropolitan AQMD	65 lb/day	65 lb/day	82 lb/day 15 tpy[1]	80 lb/day 14.6 tpy[1]

Feather River AQMD	25 lb/day	25 lb/day	None	80 lb/day
Placer County APCD	55 lb/day	55 lb/day	None	82 lb/day

Key: AQMD (Air Quality Management District), APCD (Air Pollution Control District), ROG (reactive organic gases), NO_x (nitrogen oxides), $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter, lb/day (pound per day), PM_{10} (particulate matter less than 10 microns in diameter), lb/day (pound per day), tpy (tons per year)
1.Threshold applies if best available control technology (BACT) is used. If BACT is not used, the threshold is zero (0) lb/day.
Source: Feather River AQMD 2010, Sacramento Metropolitan AQMD 2015, Placer County APCD 2017

General Conformity

General conformity requirements were adopted as part of the federal Clean Air Act Amendments in 1990, and implemented by EPA in 1993. General conformity requires that all federal actions must conform to the EPA-approved SIP. The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine state or local efforts to achieve and maintain the NAAQS. EPA regulations in 40 CFR Part 93 Section 153(b)(1) exempt projects in nonattainment and maintenance areas from general conformity requirements if their projected emissions do not exceed specified *de minimis* levels. This analysis of general conformity was conducted for all categories of O&M activities in the original EA because several project counties are designated nonattainment for O_3 and $PM_{2.5}$. The *de minimis* levels applicable to the project are 100 tons per year (tpy) for O_3 precursors (ROG and NO_x) and 100 tpy for $PM_{2.5}$.

Project Emissions

As discussed in Section 2 (Changes in the Project Area and Project Activities), there have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA. The current workforce used to complete activities under the Sacramento Valley Program is the same size as when the August 2005 Final EA was published, and substantially the same size as when the facilities were originally put into service. As such, there has not been a significant increase in the number of vehicles used for the Sacramento Valley Program or vehicle emissions. A list of vehicles and off-road equipment utilized for all Category A, B, and C O&M activities is presented in Table 3-7.

Table 3-7 Operations and Maintenance Equipment and Vehicles

Off-Road
Aerial Lifts
Excavators
Forklifts
Skid Steer Loaders
Tractors/Loaders/Backhoes
All-terrain Vehicles (ATVs)
On-Road
Light Heavy Duty Vehicles
Medium Duty Vehicles
Medium Heavy Duty Diesel Trucks

Water Trucks	
Heavy Duty Diesel Trucks	
Aerial	
Helicopters	

Emissions were calculated using CalEEMod version 2016.3.2 for all O&M equipment based on use rates for 2017 and 2018 (in hours or miles, as applicable) and modeled for 2019 (Appendix B). Construction was assumed to be limited to regrading of 10% of access roads. All other activities were included as operational mobile and offroad equipment emissions. Construction of new access roads, new support buildings, and new transmission lines was not included in the emissions modeling because of the rarity of these activities. In the event they should occur, independent emissions modeling and evaluation will be conducted. Helicopter emissions were calculated using emissions factors from the Swiss Confederation Guidance on the Determination of Helicopter Emissions. Emissions calculations are presented in Appendix B. Emissions estimates with implementation of WAPA SOPs are presented in Table 3-8.

Table 3-8 Sacramento Valley ROW Maintenance Emission Estimates

	ROG	NO_x	PM_{10}	$PM_{2.5}$	CO	SO_x
Annual Emissions (tpy)						
Mobile	0.01	0.12	2.16	0.22	0.12	0.00
Offroad	0.02	0.19	0.01	0.01	0.21	0.00
Grading	0.00	0.01	0.01	0.00	0.01	0.00
Helicopter	0.01	0.01	0.00	0.00	0.02	0.00
Total	**0.04**	**0.33**	**2.18**	**0.23**	**0.36**	**0.00**
Annual Thresholds of Significance (tpy)						
De Minimis Threshold	100	100	100			
Sacramento Metropolitan AQMD	-	-	15	14.6	-	-
Average Daily Emissions (lb/day)						
Mobile	0.06	0.63	11.83	1.20	0.64	0.00
Offroad	0.10	1.05	0.05	0.05	1.17	0.00
Grading	0.00	0.06	0.08	0.01	0.07	0.00
Helicopter	0.08	0.06	0.00	0.00	0.10	0.00
Total	**1.30**	**1.80**	**11.97**	**1.26**	**1.98**	**0.00**
Maximum Daily Emissions (lb/day)						
Mobile	0.07	0.84	15.39	1.57	0.86	0.00
Offroad	1.14	11.86	0.61	0.56	13.67	0.02

Grading	0.18	3.15	4.94	0.61	3.66	0.01
Helicopter	14.12	11.37	0.36	0.36	17.59	0.00
Total	**15.52**	**27.22**	**21.29**	**3.09**	**35.79**	**0.03**
Daily Thresholds of Significance (lb/day)						
Feather River AQMD	25	25[1]	80	-	-	-
Placer County APCD	55	55	82	-	-	-
Sacramento Metropolitan AQMD	65	65	82	80	-	-

Key: AQMD (Air Quality Management District), APCD (Air Pollution Control District), ROG (reactive organic gases), NO_x (nitrogen oxides), PM_{10} (particulate matter less than 10 microns in diameter), $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter), CO (carbon monoxide), SO_2 (sulfur dioxide), lb/day (pound per day), tpy (tons per year)
1. Emissions standard based on average daily emissions, not maximum daily emissions.
Source: Appendix C

As part of the ongoing Sacramento Valley Program, WAPA implements SOPs (AQ-SOP-1 to AQ-SOP-7 in Table 2-4) to protect air quality during O&M activities. Among other measures, these SOPs require WAPA to adhere to all requirements of those agencies having jurisdiction over air quality matters and to obtain any necessary permits from these agencies for O&M activities. Also, the SOPs require WAPA to keep machinery and vehicles in good operating condition and to replace equipment to ensure compliance with California emission standards.

- AQ-SOP-1 WAPA will adhere to all requirements of those agencies having jurisdiction over air quality matters, and any necessary permits for O&M will be obtained.
- AQ-SOP-2 Machinery and vehicles will be kept in good operating condition and older equipment will be replaced with equipment meeting more stringent standards.
- California emission standards; appropriate emissions-control equipment will be maintained for vehicles and equipment, per California, EPA, and WAPA air-emission requirements.
- AQ-SOP-3 Idle equipment will be shut down when not in active use; visible emissions from stationary generators will be controlled.
- AQ-SOP-4 Dust-control measures will be implemented in road construction and maintenance, as needed. Trucks transporting loose material will be covered or maintain at least 2 feet of freeboard and will not create any visible dust emissions.
- AQ-SOP-5 There will be no open burning of construction trash.
- AQ-SOP-6 Grading activities will cease during periods of high winds (as determined by local air quality management districts).
- AQ-SOP-7 Major operations will be avoided on days when the local Air Quality Index is expected to exceed 150.

Summary

For O_3 precursors (ROG and NO_X) and $PM_{2.5}$, emissions would not exceed the *de minimis* thresholds in any of the ROW counties in nonattainment; therefore, the project is exempt from general conformity requirements. Emissions would also not exceed any emission standards set by local air quality districts; therefore, the project is in compliance with CAAQS and NAAQS.

WAPA would continue to employ vegetation management practices that would promote low-growing plant communities within the ROW, thereby minimizing long-term maintenance requirements and resulting in a long-term lessening of air quality emissions from management activities. Vehicles used to conduct project activities would be subject to EPA's and National Highway and Traffic Safety Administration (NHTSA) standards for heavy-duty trucks, which were issued in August 2011, to reduce air emissions. Additionally, all equipment used for project activities would be in compliance with the CARB On-Road Diesel, Off-Road Diesel, and Portable Diesel Equipment Requirements. Furthermore, SOPs AQ-SOP-1 through AQ-SOP-7 would remain in place to ensure that impacts to air quality are minimized.

Conclusion

Air emissions result mainly from equipment used for maintenance, as well as workers' vehicles and trucks transporting equipment, parts, and materials. The emissions modeling in this document (Appendix B) shows that project emissions would not exceed *de minimis* thresholds for criteria pollutants. Project activities would continue to be temporary, intermittent, of short duration, and generally widely dispersed along a narrow, long strip of land. Therefore, in accordance with the analysis in the 2005 EA, based on the results of the emissions modeling in this document, and the continued implementation of the SOPs described in this section, it is anticipated that the project would not cause a significant impact to air quality under the significance criteria in the 2005 EA. The project would also not exceed general conformity thresholds or local air district thresholds; therefore, the project would not exceed NAAQS and CAAQS, prevention of significant deterioration increments, or other significance criteria. Project activities and regulations would not cause a substantial or significant impact to the air quality and impacts from the project would remain less than significant.

3.2.8 Water Quality

The August 2005 Final EA (Section 3.9) describes the groundwater and surface water resources present within the Sacramento Valley Program project area. State and federal laws mandate a series of programs for the management of surface water quality. In the state of California, water resources are protected under the federal Clean Water Act of 1972, as amended (Title 33, United States Code Section 1251) and the state Porter-Cologne Water Quality Control Act of 1969. The latter Act created the State Water Resources Control Board and the nine Regional Water Quality Control Boards (RWQCBs)

The Sacramento Valley Program lies within the Sacramento River hydrologic region (HR) and crosses several water bodies including the Lower American River, Cosumnes River, Feather Rivers; the Natomas East Main Drainage Canal (Steelhead Creek), Dry creek, and several unnamed intermittent and ephemeral streams. The Sacramento River HR covers 27,210 square miles, includes the entire area drained by the Sacramento River, and is the main water supply for much of California's urban and agricultural areas. Annual run-off in the HR averages about 22.4 million acre-feet, which is nearly one-third of the state's total natural run-off (California Department of Water Resources 2003).

As part of the ongoing Sacramento Valley Program, WAPA has developed and implements SOPs (WR-SOP-1–WR-SOP-8) and PCMs (PCM-W001 and PCM-W002) to protect water resources and aquatic habitats during O&M activities. As discussed in Section 2.1 (Changes in the Project Area and Project Activities) above, there have been no substantial changes in the project area or project activities since

publication of the August 2005 Final EA. Given that there have been no changes in the project area or project activities and that SOPs and applicable PCMs continue to be implemented, there are no new significant circumstances or information related to water quality.

Conclusion

There are no new significant circumstances or information for water quality and no further NEPA evaluation is required.

3.2.9 Public Health and Safety

The August 2005 Final EA (Section 3.10) evaluates the potential for the Sacramento Valley Program to result in impacts on public health and safety. Potential impacts on public health are primarily related to physical hazards and exposure risks (e.g., herbicides). Adverse effects on public health and safety are not expected to be significant because of the standard measures that WAPA incorporates into O&M activities to avoid or reduce the potential for impacts.

As discussed in Section 2.1 above, there have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA. As part of the ongoing Sacramento Valley Program, WAPA implements SOPs (PH-SOP-1–PH-SOP-7) to protect public health and safety during O&M activities. Additionally, all of WAPA's operations, including all O&M activities, are conducted in coordination with federal, state and local emergency response and contingency plan requirements as outlined in WAPA's Hazardous Materials Business Plans and Spill Prevention, Control, and Countermeasures Plans.

The Sacramento Valley Program transmission infrastructure provides electricity for heating, lighting, and other services essential to public health and safety. The Sacramento Valley Program is designed to continue to operate the infrastructure in a safe, reliable and efficient manner. Given that there have been no changes in the project area or project activities and that SOPs and applicable PCMs continue to be implemented, there are no new significant circumstances or information related to public health and safety.

Conclusion

There are no new significant circumstances or information for public health and safety, and no further NEPA evaluation is required.

3.2.10 Recreation

As detailed in the August 2005 Final EA (Section 3.11), the Sacramento Valley Program transmission line ROWs pass through the Folsom Lake State Recreation Area and the American River Parkway. Both of these recreation areas contain extensive picnicking, walking/jogging, hiking, horseback riding, bicycling, opportunities for wildlife viewing, and opportunities for watersport activities. Portions of the transmission lines either cross rivers or are within the developed recreation areas as are some access roads. The proximity of the recreation facilities to the transmission infrastructure can result in conflicts between O&M activities and recreation activities. Adverse effects on recreation are not expected to be

significant because of the standard measures that WAPA incorporates into O&M activities to avoid or reduce the potential for impacts.

Since publication of the August 2013 Final EA, the region-wide population has increased, and it is presumed that there has been a corresponding increase in use of the region's recreational lands and facilities. All of the Sacramento Valley Program activities take place within existing transmission line ROWs; developed and maintained communication and substation sites; and access roads. These facilities have been part of the environment since their initial construction and operation. As such, there is little potential for conflict with recreational uses, even with an increase in population and use of recreational lands. The Sacramento Valley Program does not increase demand for recreation activities and does not result in the loss of recreational lands. However, when activities are conducted in proximity to recreational areas, short-term and temporary impacts can occur. These impacts are relatively minor and may include temporary restriction to trails or other facilities, or noise and other construction-related disturbance that can detract from the recreational experience.

The SOPs that WAPA routinely implements for recreation, aesthetics, air quality, noise, and public health ensure that impacts on recreational areas are minimized to acceptable levels. There are no significant concerns or new information for recreational impacts that warrant additional NEPA analysis.

Conclusion

There are no new significant circumstances or information for recreation and no further NEPA evaluation is required.

3.2.11 Cultural Resources

The August 2005 Final EA (Section 3.12) describes the cultural resources present within the Sacramento Valley Program project area. Cultural resources include features of the physical environment that relate to human culture and society and cultural institutions that hold communities together and link them to their surroundings. Once damaged or destroyed, these resources are essentially nonrenewable, though the tangible evidence of the past sometimes may be restored or reconstructed to some degree. They can include expressions of human culture and history in the physical environment (such as prehistoric and historic sites, buildings, structures, objects, districts, and other places, including natural features) considered important to a culture, subculture, or community.

To support preparation of the August 2005 Final EA, WAPA conducted a cultural resources survey of the entire Sacramento Valley Program ROW from August 2001 through February 2002 and recorded:

- cultural features;
- isolated artifacts, and
- historical features such as irrigation canals, levees, railroad beds, and mine tailings.

The cultural resources investigation also included archival research and consultation with Native American tribes to identify any traditional cultural properties (TCPs) and sacred and religious sites. The locations and boundaries of all cultural sites identified during the cultural resources investigation are recorded in WAPA's GIS database.

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of projects under their jurisdiction on properties listed or eligible for listing in the National Register of Historic Places (NRHP) (16 USC 470 et seq.). Consultation with the State Historic Preservation Officer (SHPO) is also required before granting permits, funding, or other authorization of the undertaking. In 2005, WAPA initiated consultation for its facilities in California with the Advisory Council on Historic Preservation (ACHP) and the California SHPO pursuant to 36 CFR §800.14(b) (iv) of the regulations implementing Section 106 of the NHPA. In February 2010, a Programmatic Agreement (PA) was executed. By carrying out the terms of the PA, WAPA fulfills its NHPA Section 106 obligations for activities at its California facilities.

In order to avoid adverse impacts on cultural resources, WAPA implements applicable SOPs and PCMs. The SOPs are implemented in all cases for all covered activities whether or not there is a presence of sensitive resources within close proximity to the immediate action. The PCMs are applied in a focused manner to protect specific targeted cultural resources that are known to occur.

Given that WAPA: 1) has conducted extensive field surveys to inventory archaeological and historic sites within or near the Sacramento Valley Program facilities; 2) maintains a GIS database to document locations of cultural resource sensitivity; 3) implements SOPs and PCMs that protect both known and unknown sensitive cultural resources; and 4) complies with NHPA Section 106 requirements and ACHP regulations through adherence to the terms and measures of the February 2010 PA, there are no new significant circumstances or information for cultural resources.

Conclusion

There are no new significant circumstances or information for cultural resources and no further NEPA evaluation is required.

3.2.12 Paleontological Resources

Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. The potential for occurrence is typically determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Specific field surveys for paleontological resources were not completed during preparation of the August 2005 Final EA because O&M activities would have little or no adverse effect on paleontological resources. The O&M activities conducted under the Sacramento Valley Program are not expected to adversely affect paleontological resources because: 1) the majority of activities would not involve substantial ground disturbance; 2) the activities that do involve ground disturbance would generally require only shallow excavations which are not likely to impact paleontological resources since such resources are typically uncovered during deeper excavations; and 3) O&M activities have been occurring since the facilities were initially constructed and no paleontological resources have been encountered to date. Nonetheless, WAPA's current conservation practices do include PCMs for paleontological resources to further minimize the potential for adverse effects. Among other measures, these PCMs require training crews to identify paleontological materials if they are encountered during O&M activities, stopping work if potential paleontological materials are encountered, and monitoring ground-disturbing activities in areas that could have paleontological materials.

Given that: 1) there have been no changes in the project area or project activities since the August 2005 Final EA; 2) the ongoing O&M activities have been conducted in the same or substantially similar manner since initial construction and operation of the facilities; 3) the O&M activities have little to no potential to adversely affect paleontological resources; and 4) WAPA has developed and implements PCMs for paleontological resources to further minimize the potential for adverse effects, there are no new significant circumstances or information related to paleontological resources.

Conclusion

There are no new significant circumstances or information for paleontological resources and no further NEPA evaluation is required.

3.2.13 Aesthetics

The visual resources, including landscapes, visual quality, and other aesthetic resources are detailed in Section 3.13 of the August 2005 Final EA. The transmission lines, communication and substation sites, and other supporting facilities in the Sacramento Valley Program project area have been physically in place and part of the environmental setting since completion of construction and initial operation. As such, they are an existing component of the viewshed and the aesthetic features of the landscape. As discussed in Section 2.1 above, there have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA.

As part of the ongoing Sacramento Valley Program, WAPA implements SOPs (AES-SOP-1–AES-SOP-3) to protect aesthetics during O&M activities. For the Sacramento Valley Program transmission system to operate in a safe, reliable, and efficient manner, system components will continue to be installed, replaced, or upgraded as needed based on the age, condition, and technology of the equipment. Given that these activities have been occurring since initial construction and operation of the facilities and that they are conducted in the same or a substantially similar manner as identified in the August 2005 Final EA, there are no new significant circumstances or information for aesthetics.

Conclusion

There are no new significant circumstances or information for aesthetics and no further NEPA evaluation is required.

3.2.14 Noise

Sacramento Valley Program O&M activities are not anticipated to result in adverse effects from noise because activities are temporary and standard measures are employed to reduce noise. As such, impacts on noise were not addressed in the August 2005 Final EA. All vehicles and equipment used to perform work for the Sacramento Valley Program are equipped with required exhaust-noise-abatement devices (e.g., muffler, catalytic converters); and work is generally not performed in areas located in close proximity to sensitive receptors. Furthermore, most noise-generating activities are temporary and conducted for a relatively short duration.

Since the August 2005 Final EA, WAPA has developed and implements SOPs for noise (NOISE-SOP-1 and NOISE-SOP-2) to even further avoid or minimize the potential for impacts related to noise. Given that Sacramento Valley Program O&M activities have been occurring since initial construction and operation of the facilities and WAPA's implementation of standard measures and SOPs to minimize noise impacts, there are no new significant circumstances or information for noise.

Conclusion

There are no new significant circumstances or information for noise and no further NEPA evaluation is required.

3.2.15 Transportation

As discussed in Section 3.1 of the August 2005 Final EA, Sacramento Valley Program O&M activities are not anticipated to result in adverse effects on transportation because activities are temporary and standard measures are employed to reduce impacts. As such, impacts on transportation were not addressed in the August 2005 Final EA. Since the August 2005 Final EA, WAPA has developed and implements an SOP for transportation (TRANS-SOP-1) to even further avoid or minimize the potential for impacts on transportation.

As discussed in Section 2.1 above, there have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA. The current workforce used to complete activities under the Sacramento Valley Program is approximately the same size as it was when the August 2005 Final EA was published. As such, there has not been a significant increase the number of vehicles used for the Sacramento Valley Program. Given that Sacramento Valley Program O&M activities have been occurring since initial construction and operation of the facilities and WAPA's implementation of standard measures and the TRANS-SOP-1 to minimize transportation impacts, there are no new significant circumstances or information for transportation.

Conclusion

There are no new significant circumstances or information for transportation and no further NEPA evaluation is required.

3.2.16 Environmental Justice

As detailed in the August 2005 Final EA (Section 5.1.2), on February 11, 1994, President Clinton issued Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-income Populations*. This order requires that "each Federal agency make achieving environmental justice part of its mission by identifying and addressing as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities, on minority populations and low-income populations…" (Executive Order 12898, 59 FR 7629 [section 1-101]).

In 1997, the EPA Office of Environmental Justice released the Environmental Justice Implementation Plan, supplementing the EPA environmental-justice strategy and providing a framework for developing specific plans and guidance for implementing Executive Order 12898. In 1998, the EPA provided federal

agencies with a framework for the assessment of environmental justice in the *Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis*.

Subsequent to the August 2005 Final EA, the DOE along with 16 other federal agencies signed an August 11, 2011 environmental justice Memorandum of Understanding (MOU) reflecting the Obama Administration's continuing efforts to protect the health of U.S. communities overburdened by pollution. The MOU recommitted the federal agencies to Executive Order 12898 and to "declare the continued importance of identifying and addressing environmental justice considerations in agency programs, policies, and activities as provided in Executive Order 12898". On February 10, 2014, in recognition of the 20th anniversary of Executive Order 12898, President Barack Obama issued a Presidential Proclamation on *the 20TH ANNIVERSARY OF EXECUTIVE ORDER 12898 ON ENVIRONMENTAL JUSTICE.*

As discussed in Section 5.1.2 of the August 2005 Final EA, the Sacramento Valley Program does not involve establishing new ROWs, and all activities are conducted within the existing ROWs. The maintenance activities that are needed are dictated by the condition of the facilities at a particular point within the ROWs. The activities that occur under the Sacramento Valley Program are required maintenance activities for existing facilities and do not have significant effects on the public (e.g., air quality, public health and safety). As such, no environmental justice effects are anticipated as a result of the Sacramento Valley Program.

As discussed in Section 2.1 (Changes in the Project Area and Project Activities) above, there have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA. For the Sacramento Valley Program transmission system to operate in a safe, reliable, and efficient manner, system components will continue to be installed, replaced, or upgraded as needed based on the age, condition, and technology of the equipment. Given that these activities have been occurring since initial construction and operation of the facilities and that they are conducted in the same or a substantially similar manner as identified in the August 2005 Final EA, there are no new significant circumstances or information for environmental justice.

Conclusion

There are no new significant circumstances or information for environmental justice and no further NEPA evaluation is required.

3.2.17 Intentional Destructive Acts

Intentional destructive acts could be directed at the Sacramento Valley Program transmission system and facilities. Destroying a tower or equipment could disrupt the supply of electricity, in turn affecting utility customers and end users. Air quality could temporarily decrease if those customers have to rely on backup generators. However, vandalism and theft are the more-likely forms of destruction. Although potentially costly, they do not usually disrupt the provision of electricity or have significant environmental effects. The incidence of an intentional destructive act is purely speculative and could occur at any location within the Sacramento Valley Program project area. If an act were to take place, however, it would likely not result in significant environmental impacts.

As discussed in Section 2.1 (Changes in the Project Area and Project Activities) above, there have been no substantial changes in the project area or project activities since publication of the August 2005 Final EA. The Sacramento Valley Program activities are maintenance activities that have occurred since initial construction and operation of the facilities; and they do not involve activities that would increase the potential for significant environmental effects due to intentional destructive acts. Based on past and current experience, intentional destructive acts are rare, limited in extent, and benign in overall impact. WAPA also takes reasonable and prudent measures to protect its infrastructure from destructive acts, including regular monitoring and periodic patrols of the facilities.

Conclusion

There are no new significant circumstances or information for intentional destruction acts and no further NEPA evaluation is required.

3.2.18 Climate Change

Climate change was not discussed in the original EA. This section describes the impacts to climate change that may result from the project.

Affected Environment

It is widely recognized that emissions of greenhouse gases (GHG) associated with human activities are contributing to changes in the global climate, and that such changes are having and will continue to have adverse effects on the environment, the economy, and public health.

Man-made GHG emissions are largely comprised of carbon dioxide (CO_2) from the combustion of fossil fuels. Other GHGs, such as methane (CH_4) and nitrous oxide (N_2O), also contribute to climate change but occur in much smaller quantities. When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to a CO_2 equivalent (CO_2e) emission rate. The major categories of fossil fuel combustion sources can be broken into sectors: residential, commercial, industrial, transportation, and electricity generation. The transportation sector includes all motor gasoline and diesel fuel combustion.

California's GHG emissions are large in a world-scale context. The State emitted 410.4 million metric tons CO_2e in 2015. Electricity generation within California contributed 19 percent of the total Statewide CO_2 emissions in 2015 (CARB 2018b). Fuel consumption estimates are included in Appendix B.

Regulatory Environment

Assembly Bill 32 (AB 32) requires that California's GHG emissions be reduced to 1990 levels by 2020 (CARB 2018c). GHG is defined as any gas that absorbs infrared radiation in the atmosphere. GHGs include CO_2, CH_4, and N_2O. AB 32 required the CARB to develop a Scoping Plan that describes the approach California will take to reduce GHGs to achieve the goal. The Scoping Plan was approved by the CARB in 2008 and must be updated every five years. CARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target established by Executive Order B-30-15. Executive Order B-30-15 aims to reduce emissions 40 percent below 1990 levels by 2030.

EPA and California have taken the following steps to limit emissions that cause climate change:

- EPA and the NHTSA worked together to set GHG and fuel economy standards for passenger vehicles in model years 2012-2016 and 2017-2025.
- EPA and NHTSA issued standards for heavy-duty trucks and buses in August 2011.
- In January 2011, states and EPA initiated Clean Air Act permitting of GHG pollution from the largest new and modified stationary sources. In the first year of permitting, dozens of large sources such as power plants, cement plants, refineries, and steel mills received pre-construction permits for GHG emissions.
- In March 2012, Executive Order B-16-2012 was signed affirming a long-range climate goal for California to reduce GHG from transportation to 80 percent below 1990 levels by 2050.
- In 2013, California launched a Cap and Trade Program for GHG emissions.
- In 2014, CARB in collaboration with the Climate Action Team, prepared the first update to the Climate Change Scoping Plan.
- On August 3, 2015, the EPA unveiled the Clean Power Plan, a historic and important step in reducing carbon pollution from power plants; however, the current EPA administration in 2017 repealed the plan, effective October.
- In 2017, CARB released an updated Climate Change Scoping Plan.

The EPA and NHTSA jointly finalized standards for medium- and heavy-duty vehicles to improve fuel efficiency and cut carbon pollution to reduce the impacts of climate change. The vehicle and engine performance standards cover model years 2018-2027 for certain trailers and model years 2021-2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks.

Local Authority

Placer County APCD, Sacramento Metropolitan AQMD, and Feather River AQMD are the applicable air authorities for the Project. Placer County APCD and Sacramento Metropolitan AQMD have set a threshold of significance for CO_2e emissions at 1,100 metric tons per year (MT/year). Feather River AQMD has not yet established any threshold for CO_2e.

Significance Criteria

A significant impact on climate change would result if any of the following were to occur:

- Generate GHG emissions that may exceed local district thresholds (1,100 MT/year CO_2e)
- Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHG

General Discussion

GHG emissions from vehicles and equipment used in performing ROW maintenance would result in the primary effect on climate change. Activities that would produce GHG emissions would consist of exhaust from vehicles carrying service technicians around the project area, helicopters and small planes conducting periodic aerial inspections, operation of maintenance equipment, and commuting of employees. The level of GHG emission-generating activity is low as WAPA has only one full-time crew (six employees) maintaining vegetation in the study area, although contractors are employed for some activities. No sulfur hexafluoride emissions would be generated during the project.

Estimated Emissions

Emissions were calculated using CalEEMod version 2016.3.2 with the same assumptions presented in Section 3.2.7, Air Quality. Table 3-9 presents emission estimates of approximately 82 MT/year CO_2e with implementation of WAPA SOPs (Appendix B). Project activities would not generate quantities of GHG to cause a substantial impact related to global climate change or disrupt the CARB progress on achieving the goals of the California Global Warming Solutions Act of 2006 (AB 32). Annual project emissions would not exceed 1,100 MT CO_2e in Placer or Sacramento County. The project remains consistent with the most recent CARB Climate Change Scoping Plan (CARB 2018c), which is based on continuing the reliable delivery of electricity to customers in California.

Table 3-9 Estimated GHG Emissions

	GHG Emissions (MT/year CO_2e)
Project Emissions	82
Thresholds of Significance	
Placer County APCD	1,100
Sacramento Metropolitan AQMD	1,100

Key: AQMD (Air Quality Management District), APCD (Air Pollution Control District), GHG (greenhouse gas), MT/year CO_2e (metric tons per year carbon dioxide equivalents)

In addition, climate change has increased the frequency of wildfire. Project O&M activities, such as vegetation removal, will reduce the risk of wildfire in the project area, thus reducing the impacts of climate change-induced wildfire on the infrastructure characterized in this document.

Standard Operating Procedures

As part of the ongoing Sacramento Valley Program, WAPA implements SOPs (Table 2-4) to protect air quality, including GHG emissions during O&M activities.

- AQ-SOP-1 WAPA will adhere to all requirements of those agencies having jurisdiction over air quality matters, and any necessary permits for O&M will be obtained.
- AQ-SOP-2 Machinery and vehicles will be kept in good operating condition and older equipment will be replaced with equipment meeting more stringent standards.
- California emission standards; appropriate emissions-control equipment will be maintained for vehicles and equipment, per California, EPA, and WAPA air-emission requirements.
- AQ-SOP-3 Idle equipment will be shut down when not in active use; visible emissions from stationary generators will be controlled.
- AQ-SOP-5 There will be no open burning of construction trash.

Conclusion

Emissions modeling in Appendix B illustrates that project GHG emissions would not exceed 1,100 MT CO_2e in the Sacramento Valley Air Basin or any individual district; therefore, the project vegetation management would not have a significant impact on climate change. In addition, the project would help to protect WAPA transmission and distribution assets from wildfire associated with climate change.

Chapter 4. Conclusion

The Final EA for the Sacramento Valley Program was prepared by WAPA in August 2005. This SA was prepared in accordance with DOE NEPA regulations (10 CFR 1021.330(d) and (e)) which require an evaluation of the adequacy of "site-wide" NEPA documents at least every five years.

The purpose of this SA is to: 1) document whether there have been any changes in the project area or project activities for the Sacramento Valley Program since the August 2005 Final EA; 2) document whether there are any new circumstances or information relevant to environmental changes or environmental impacts; 3) evaluate whether any project changes are substantial and if any new circumstances or information are significant in the context of NEPA; and 4) determine if additional NEPA documentation is required.

As discussed in Chapter 2 of this SA, there have been no changes to the project area for the Sacramento Valley Program since the August 2005 Final EA. All Sacramento Valley Program activities are conducted within the boundaries of transmission ROWs, access roads, and communication and substation facilities described in the August 2005 Final EA. Helicopter landing zones are evaluated on a case-by-case basis. There have also been no substantial changes in project activities for the Sacramento Valley Program since the August 2005 Final EA. Project activities conducted under the Sacramento Valley Program are routine O&M activities that have been occurring since initial construction and operation of the facilities, and they are conducted in the same or substantially similar manner as identified in the August 2005 Final EA.

Since the August 2005 Final EA, WAPA has developed and standardized SOPs and PCMs and incorporated them into its ongoing O&M activities for all northern California ROW maintenance programs. The SOPs and PCMs are guidelines and directives utilized by WAPA's maintenance crews in planning and logistics to determine the ideal scheduling of specific O&M activities, as well as in determining how specific activities should be executed to avoid or minimize the potential for any adverse effects on environmental resources. These standardized SOPs and PCMs have replaced the avoidance measures presented in the August 2005 Final EA for the Sacramento Valley Program. WAPA developed the SOPs and PCMs to even further protect resources and avoid adverse impacts, and to maintain consistency with WAPA's other northern California O&M programs. Development and implementation of the SOPs and PCMs is not considered a substantial change in project activities.

Chapter 3 of this SA presents the results of the analysis that was performed for each resource area addressed in the August 2005 Final EA. The purpose of the analysis is to provide an evaluation of whether there have been any significant new circumstances or new information that may be relevant to environmental concerns or environmental impacts. Given that there have not been any substantial changes in the project area or project activities for the Sacramento Valley Program since the August 2005 Final EA, the analysis is focused on evaluating if there have been any new circumstances or information for the resource areas since the August 2005 Final EA. The results of the analysis indicate that there are no significant new circumstances or information relevant to environmental concerns or impacts for the Sacramento Valley Program since the August 2005 Final EA.

Chapter 5. Determination

This SA has been prepared in accordance with DOE NEPA regulations (10 CFR 1021.314(c)) and ((d)) to determine whether supplemental or new NEPA documentation for the Sacramento Valley Program should be prepared. This SA provides an analysis of whether there have been any "substantial" project changes and if there have been any "significant" new circumstances or information in the context of NEPA since the August 2005 Final EA and FONSI.

The analysis in this SA indicates that there have no substantial project changes relevant to environmental concerns and that there are no new circumstances or information relevant to environmental concerns bearing on the Sacramento Valley Program or its impacts that are significant. On the basis of this analysis, WAPA has determined that preparation of supplemental or new NEPA documentation is not warranted and that no further NEPA analysis is required.

Based on my review of the information contained in this SA, I have determined that no further NEPA documentation for the Sacramento Valley Program is required at this time.

Latisha M. Saare

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Date: 2021.05.14 14:56:51 -07'00'

LaTisha Saare
Supervisory Environmental Protection Specialist

Date

SONJA ANDERSON

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Date: 2021.05.14 16:22:51 -07'00'

Sonja Anderson
Senior VP & Sierra Nevada Regional Manager

Date

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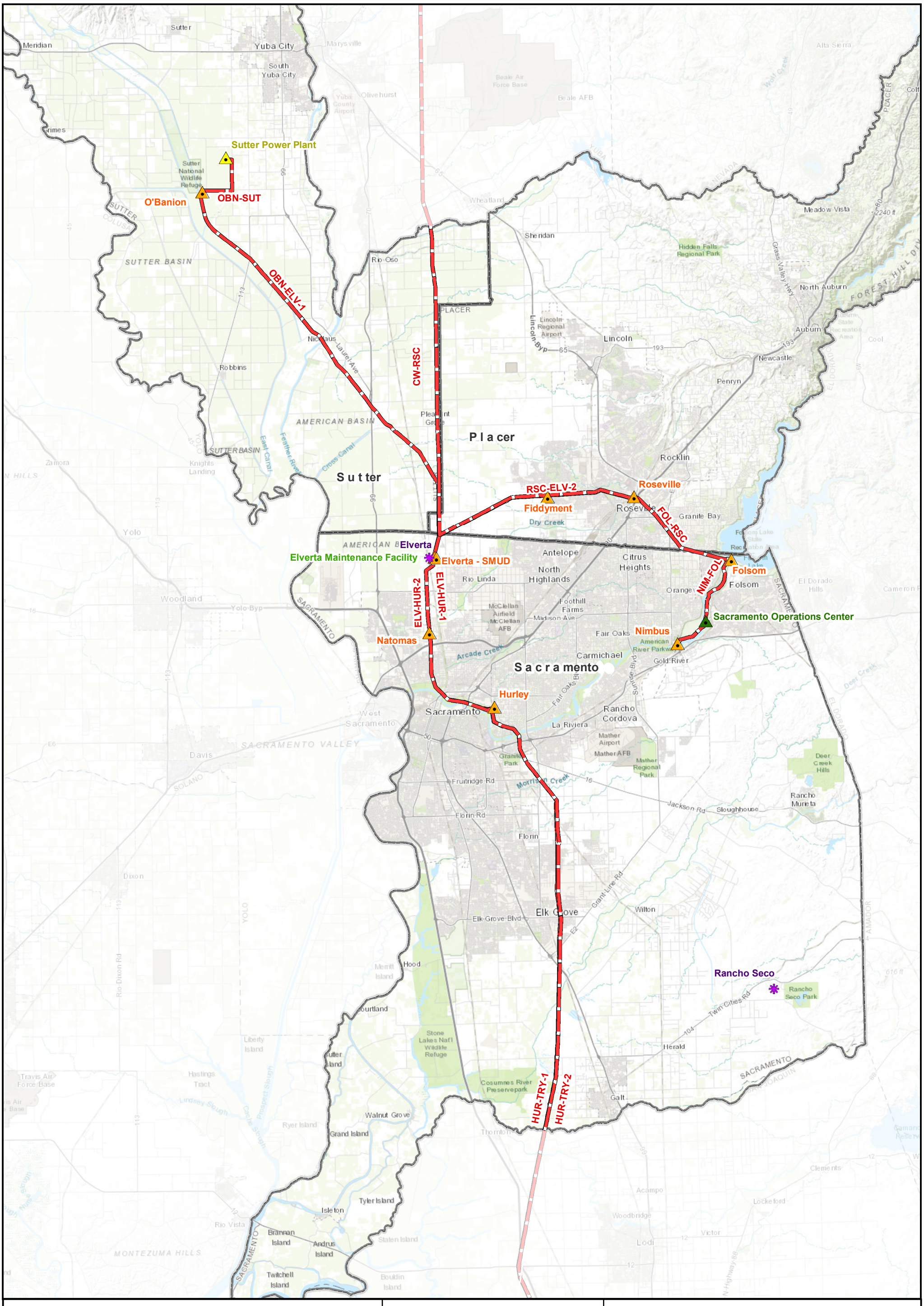

WAPA/SNR Facilities

- Service Center
- Substation
- Power Plant
- Microwave Sites

SNR Transmission Line Circuits

- WAPA Transmission Lines

N

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Miles

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UNITED STATES DEPARTMENT OF ENERGY

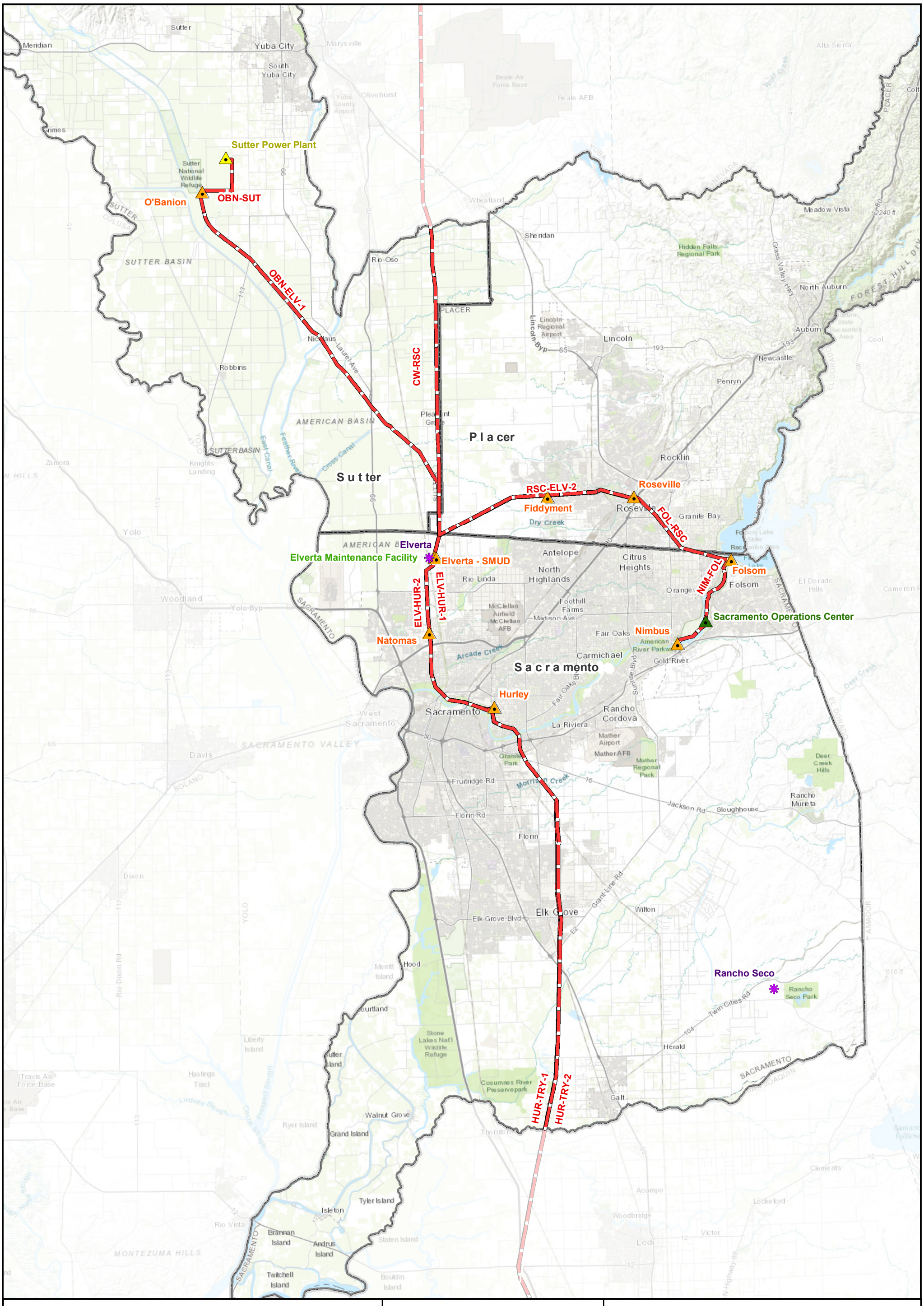
WESTERN AREA POWER ADMINISTRATION

SIERRA NEVADA REGION - FOLSOM, CALIFORNIA

SVEA PROGRAM AREA

Designed: D. Beecroft Approved: _____ Manager Title

GIS | Dec 15, 2020 | Fig. 1-1



WAPA/SNR Facilities

- Service Center
- Substation
- Power Plant
- Microwave Sites

SNR Transmission Line Circuits

- WAPA Transmission Lines

N

0 2.5 5

Miles

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UNITED STATES DEPARTMENT OF ENERGY

WESTERN AREA POWER ADMINISTRATION

SIERRA NEVADA REGION - FOLSOM, CALIFORNIA

SVEA PROGRAM AREA

Designed: D. Beecroft Approved: _____ Manager Title

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APPENDIX A

Sacramento Valley Program: Applicable Project Conservation Measures

Sacramento Valley Program Applicable Project Conservation Measures (PCMs)

Table A-1. Federally and State-Listed Plant Species PCMs

PCM-ID	Species Name	Status	Activity Category	PCM
			VERNAL POOL PLANT SPECIES	
PCM-B022	*Gratiola heterosepala* Boggs Lake hedge-hyssop	–/SE	A and B	▪ Follow SOPs, PCM-W001, and PCM-W002. ▪ Where impacts to listed plants cannot be avoided, the top 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards.
			C	▪ Follow all measures listed for A and B. ▪ Prior to site mobilization, WAPA will provide notification of the O&M activity to the appropriate federal land manager, landowner, or agency.
PCM-B031	*Orcuttia tenuis* Slender Orcutt grass	FT/SE	A and B	▪ Follow SOPs and PCM-W001. ▪ A description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
	Orcuttia viscida Sacramento Orcutt grass	FE/SE	C	▪ Follow all measures listed for A and B. ▪ Prior to site mobilization, WAPA will provide notification of the O&M activity to the appropriate federal land manager, landowner, or agency.
PCM-B031a			A, B, and C	▪ Critical Habitat: Follow PCM-W001a and PCM-B031.

PCM-ID	Species Name	Status	Activity Category	PCM

Notes:

- Annual herbs have limited operating periods (LOPs) for off-road travel, vegetation management, and ground disturbance that correspond to the life history of the plant (e.g., when the plant sets seed and/or is non-vegetative).
- In general, perennial herbs have LOPs for off-road travel and vegetation management that correspond to the life history of the plant (e.g., when the plant sets seed and/or is non-vegetative).
- Ground disturbance in suitable habitat for perennials requires a survey due to the presence of underground plant parts (e.g., roots, bulbs).
- There are no LOPs for shrubs because there is not a non-vegetative period.
- Herbicide use will be prohibited at all times (with the exception of direct application to target vegetation) in areas that could support special-status plants. Western will refer to the PRESCRIBE database for specific measures regarding herbicide application.

Table A-2. Federally and State-Listed Wildlife and Fish Species PCMs

PCM-ID	Species Name	Status[1]	Activity Category	PCM
			INVERTEBRATES	
PCM-B045	Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT/–	A	▪ Follow SOPs at all times and PCM-W002 for elderberries in riparian habitat.
			B	▪ Prior to initiating vegetation clearance in the Central Valley below 3,000 feet with elderberry plants present, qualified personnel[2] will clearly flag or fence each elderberry plant that has a stem measuring one inch or greater in diameter at ground level. If an elderberry plant meeting this criterion is present: ▪ A minimum buffer zone of 20 feet outside of the dripline of each elderberry plant will be provided during all routine O&M activities, within which only manual methods for vegetation clearing will be allowed. ▪ No insecticides, herbicides, fertilizers, or other chemicals will be used within 100 feet of an elderberry plant, except direct application to target vegetation (e.g., injection or cut- stump). ▪ Trimming, rather than removal of shrubs, will be used where feasible. Directional felling of trees and manual cutting of trees prior to removal will be used to minimize impacts to elderberries. ▪ Replacement of existing conductor or installation of additional lines will be performed by pulling the line from tower to tower without touching the vegetation in areas where elderberry plants are present.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
				▪ If elderberry plants meeting the size criterion cannot be avoided, mitigation guidelines specified in the biological opinion will be implemented. ▪ A description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
			C	▪ Follow all measures listed for A and B above. ▪ Prior to site mobilization, WAPA will provide notification of the O&M activity to the appropriate Federal land manager, landowner, or agency, as necessary.
PCM-B046	Vernal pool fairy shrimp *Branchinecta lynchi*	FT/–	A, B, and C	▪ Follow SOPs and PCM-W001. ▪ If vernal pool fairy shrimp habitat cannot be avoided, the following will be implemented. o Protocol-level preconstruction surveys will be required or species presence will be assumed. If vernal pool fairy shrimp are present or assumed present, WAPA will, for each acre of impact, preserve 2 acres of occupied habitat adjacent to the disturbed habitats or will purchase an equivalent of vernal pool preservation credits in a USFWS-approved mitigation bank, and will restore 1 acre of suitable habitat within the ROW or purchase an equivalent amount of vernal pool restoration credit in a USFWS-approved mitigation bank. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
PCM-B046a			A, B, and C	▪ Critical habitat: Follow PCM-B046. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
PCM-B047	Vernal pool tadpole shrimp *Lepidurus packardi*	FE/–	A, B, and C	▪ Follow PCM-W001. ▪ If vernal pool tadpole shrimp habitat cannot be avoided, the following will be implemented. o Protocol-level preconstruction surveys will be required or species presence will be assumed. If vernal pool tadpole shrimp are present or assumed present, WAPA will, for each acre of impact, preserve 2 acres

PCM-ID	Species Name	Status[1]	Activity Category	PCM
				of occupied habitat adjacent to the disturbed habitats or will purchase an equivalent of vernal pool preservation credits in a USFWS-approved mitigation bank, and will restore 1 acre of suitable habitat within the ROW or purchase an equivalent amount of vernal pool restoration credit in a USFWS-approved mitigation bank. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
PCM-B047a			A, B, and C	▪ Critical habitat: Follow PCM-B047. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
				FISH
PCM-B049	Central Valley spring-run chinook salmon *Oncorhynchus tshawytscha*	FT/ST	A	▪ Follow SOPs and PCM-W002.
			B	▪ Follow PCM-W002. ▪ To comply with the salmon injunction for herbicide applications, WAPA will ensure that there will be no ground application of any of the chemicals named in the injunction (http://www.cdpr.ca.gov/docs/endspec/salmonid.htm). Currently, the no-use buffer is 60 feet from any salmonid-supportingwaters. ▪ In-water or near-shore work will be performed within the dateranges below, unless otherwise authorized by NMFS: ▪ The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. ▪ The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. ▪ The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. ▪ Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
				▪ The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. ▪ Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodible, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria. ▪ A description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of NMFS reporting requirements.
			C	▪ Follow all measures listed for A and B above. ▪ Prior to site mobilization, WAPA will provide notification of the O&M activity to the appropriate Federal land manager, landowner, or agency.
PCM-B049a	Central Valley spring-run chinook salmon *Oncorhynchus tshawytscha* (cont.)	FT/ST	A, B, and C	▪ Critical habitat: Follow PCM-B049. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of NMFS reporting requirements.
PCM-B050	Central Valley steelhead *Oncorhynchus mykiss*	FT/–	A	▪ Follow SOPs and PCM-W002.
			B	▪ Follow PCM-W002. ▪ To comply with the salmon injunction for herbicide applications, WAPA will ensure that there will be no ground application of any of the chemicals named in the injunction (http://www.cdpr.ca.gov/docs/endspec/salmonid.htm). Currently, the no-use buffer is 60 feet from any salmonid-supportingwaters. ▪ In-water or near-shore work will be performed within the dateranges below, unless otherwise authorized by NMFS:

PCM-ID	Species Name	Status[1]	Activity Category	PCM
				▪ The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. ▪ The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. ▪ The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. ▪ Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. ▪ The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. ▪ Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodible, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria. ▪ A description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of NMFS reporting requirements.
PCM-B050 (cont.)	Central Valley steelhead *Oncorhynchus mykiss*	FT/–	C	▪ Follow all measures listed for A and B above. ▪ Prior to site mobilization, WAPA will provide notification of the O&M activity to the appropriate Federal land manager, landowner, or agency.
PCM-B050a			A, B, and C	▪ Critical habitat: Follow PCM-B050. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of NMFS reporting requirements.
PCM-B052		FT/–	A	▪ Follow SOPs and PCM-W002.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
	Green sturgeon *Acipenser medirostris*		B	▪ Follow PCM-W002. ▪ In-water or near-shore work will be performed within the dateranges below, unless otherwise authorized by NMFS: ▪ The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. ▪ The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. ▪ The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. ▪ Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. ▪ The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. ▪ Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodible, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria. ▪ A description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of NMFS reporting requirements.
			C	▪ Follow all measures listed for A and B above. ▪ Prior to site mobilization, WAPA will provide notification of the O&M activity to the appropriate Federal land manager, landowner, or agency.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B052a			A,B, and C	▪ Critical habitat: There may be additional conditions imposed on O&M activities in critical habitat, resulting from formal (Section 7) consultation with USFWS and NMFS. ▪ Follow PCM-B050. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of NMFS reporting requirements.
PCM-B056	Sacramento River winter-run chinook salmon *Oncorhynchus tshawytscha*	FE/SE	A	▪ Follow SOPs and PCM-W002.
			B	▪ Follow PCM-W002. ▪ To comply with the salmon injunction for herbicide applications, WAPA will ensure that there will be no ground application of any of the chemicals named in the injunction (http://www.cdpr.ca.gov/docs/endspec/salmonid.htm). Currently, the no-use buffer is 60 feet from any salmonid-supportingwaters. ▪ In-water or near-shore work will be performed within the date ranges below, unless otherwise authorized by NMFS: ▪ The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. ▪ The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. ▪ The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. ▪ Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. ▪ The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. ▪ Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms

PCM-ID	Species Name	Status[1]	Activity Category	PCM
				will be constructed using non-erodible, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria. ▪ A description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of NMFS reporting requirements.
			C	▪ Follow all measures listed for A and B above. ▪ Prior to site mobilization, WAPA will provide notification of the O&M activity to the appropriate federal land manager, landowner, or agency.
PCM-B056a	Sacramento River winter-run chinook salmon *Oncorhynchus tshawytscha* (cont.)	FE/SE	A, B, and C	▪ Critical habitat: Follow PCM-B056. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of NMFS reporting requirements.
AMPHIBIANS				
PCM-B059	California tiger salamander *Ambystoma californiense*	FT/ST	A	▪ Follow SOPs and PCM-W001.
			B and C	▪ Follow all measures for category A above. ▪ A USFWS-approved biologist[3] will identify potential California tiger salamander (CTS) breeding habitat and will flag a 500-foot buffer. The following restrictions apply within the buffer: ▪ Vehicles must remain on existing access roads and maintain a speed limit of 15mph; ▪ Only manual vegetation removal is allowed; ▪ Only direct (e.g., injection and cut-stump) herbicide application methods are allowed, except when otherwise restricted; ▪ No ground disturbance (e.g., digging or auguring); and ▪ Erosion-control devices will be of a material that will not entrap amphibians. ▪ If it is not possible to follow the above-stated measures, a preactivity survey will be conducted no more than 24 hours before O&M activities begin. A USFWS-approved biologist will remain on site during all activities to ensure protection of

PCM-ID	Species Name	Status[1]	Activity Category	PCM
				CTSs OR an exclusion barrier will be constructed around the work site, following USFWS-approved methods and materials, which will be removed at the end of the work activity. Crews will inspect trenches left open for more than 24 hours for trapped animals. Only a USFWS-approved biologist will remove trapped animals. ▪ A description of the O&M activity, including location and duration, will bekept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
PCM-B059a			A, B, and C	▪ Critical habitat: Follow PCM-B059. ▪ For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
PCM-B061	Foothill yellow-legged frog *Rana boylii*	–/(SE/ST)[5]	A	▪ Follow SOPs
			B	▪ Follow PCM-W002
				REPTILES
PCM-B066	Giant garter snake *Thamnophis gigas*	FT/ST	A	▪ Follow SOPs and PCM-W002 in aquatic giant garter snake (GGS) habitat.
			B	▪ Follow PCM-W002 in aquatic GGS habitat, which supersedes those belowwhere they are different. ▪ Use of herbicides (with the exception of direct application) within 200 feet of potential giant garter snake habitat will be prohibited at all times. ▪ Movement of heavy equipment will be confined to existing roadways to minimize habitat disturbance. Vegetation management will be confined to the minimum area necessary to facilitate O&M activities. ▪ GGS aquatic and upland habitats will be flagged as environmentally sensitive areas by a USFWS-approved biologist within or adjacent to the disturbance footprint. Only manual vegetation removal will be allowed within the flagged area. ▪ A USFWS-approved monitor will be present for O&M activities within the flagged area. Ground-disturbing activities will be avoided within 200 feet from the banks of GGS aquatic habitat. If this is not feasible, O&M activities will be conducted between May 1 and September 30, the giant garter snakeactive

PCM-ID	Species Name	Status[1]	Activity Category	PCM
				period, and all potentially affected aquatic habitats will be dewatered prior to any ground disturbance. Dewatered areas will remain dry with no puddled water remaining for at least 15 consecutive days prior to excavation or filling of that habitat. If a site cannot be completely dewatered, prey items will be netted or otherwise salvaged if present. ▪ Any temporary fill and debris will be immediately removed and disturbed areas restored to pre-project conditions prior to October 1. Restoration work could include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel. Filter fences and mesh will be of a material that will not entrap reptiles and amphibians. Erosion-control blankets will be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians. No monofilament plastics will be used for erosion control near aquatic features. ▪ If it is not feasible to conduct O&M activities between May 1 and September 30, WAPA would initiate consultation with USFWS on that action. ▪ A description of the O&M activity, including location and duration, will be kept on file at WAPA's Natural Resources Department in support of USFWS reporting requirements.
			C	▪ Follow all measures listed for A and B above. ▪ Prior to site mobilization, WAPA will provide notification of the O&M activity to the appropriate Federal land manager, landowner, or agency.
BIRDS				
PCM-B069	American peregrine falcon *Falco peregrinus* (nesting)	FDR/SDR	A	▪ Follow SOPs.
			B and C	▪ From January 1 to July 31 herbicide applications and noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be prohibited in the vicinity of potential peregrine falcon nesting habitat (cliffs) OR a qualified biologist[4] will conduct nesting surveys to verity absence. If a nest is detected, all O&M activities and all herbicide applications will be prohibited at a distance determined by the qualified biologist, based on topography and/or other environmental considerations.
PCM-B070		FDR/SE	A	▪ Follow SOPs.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
	Bald eagle *Haliaeetus leucocephalus* (nesting and wintering)		B and C	▪ From February 1 to August 15 herbicide application or noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be prohibited anywhere that bald eagles are known to nest OR a qualified biologist[4] will conduct nesting surveys using methods described in Jackman and Jenkins 2004. If a nest is detected, all herbicide application and O&M activities will be prohibited at a distance determined by the qualified biologist, based on topography and/or other environmental considerations.
PCM-B071	Bank swallow *Riparia riparia* (nesting)	–/ST	A	▪ Follow SOPs.
			B and C	▪ From April 1 to August 15 rip-rapping of vertical streambanks greater than 3 feet in height and herbicide application within 150 feet of such habitats will be prohibited OR a qualified biologist[4] will conduct nesting surveys prior to O&M activities that involve modifications to such streambanks. If a nesting colony is detected, a qualified biologist will mark and monitor an appropriate buffer zone within which all O&M activities and herbicide applications will be prohibited from April 1 to August 15. ▪ Follow PCM-W002.
PCM-B080	Swainson's hawk *Buteo swainsoni* (nesting)	–/ST	A, B, and C	▪ From April 1 to July 31 herbicide application and tree removal will be prohibited. ▪ A 0.25-mile buffer zone will be established and maintained around potential Swainson's hawk nest trees, within which there will be no intensive disturbance (e.g., use of heavy equipment, power saws, chippers, cranes, or draglines). This buffer may be adjusted, as assessed by a qualified biologist[4], based on changes in sensitivity exhibited by birds over the course of the nesting season and the type of O&M activity performed (e.g., high noise or human activity such as mechanical vegetation maintenance versus low noise or human activity such as semi-annual patrols). Within 0.25 mile of an active nest (as confirmed by a qualified biologist), routine O&M activities will be deferred until after the young have fledged or until it was determined by a qualified biologist that the activities will not adversely affect adults or young ▪ OR a qualified biologist will conduct nest surveys using methods described in SHTAC 2000 (or the most recent survey protocol) to determine absence.
PCM-B081		–/ST	A	▪ Follow SOPs.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
	Tricolored blackbird *Agelaius tricolor* (nesting colony)		B and C	▪ From March 15 to August 15 herbicide application (with the exception of direct application) and vegetation clearing/disturbance will be prohibited in marshes, willows, and blackberry thickets OR a qualified biologist[4] will conduct a nesting survey prior to O&M activities. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nesting colony within which all O&M activities and herbicide applications will be prohibited from March 15 to August 15. ▪ Follow PCM-W002.
PCM-B083	Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT/SE	A	▪ Follow SOPs and PCM-W002.
			B and C	▪ Follow PCM-W002. ▪ From May 1 to September 15, herbicide application (with the exception of direct application and tree/vegetation disturbance will be prohibited in Great Valley riparian forest and scrub habitats at the crossings of the Sacramento River and Butte Slough by the joint Olinda-O'Banion/Keswick-O'Banion lines, at the crossing of the Feather River by the joint O'Banion-Elverta #1/#2 and joint O'Banion Elverta (Sacramento Municipal Utility District)/O'Banion-Natomas lines, and where the Elverta-Hurley #1/#2 and Hurley-Tracy #1/#2 lines parallel the American River near Discovery Park and the California Expo Center. ▪ Trees that must be removed will be felled to avoid damaging riparian habitat to the maximum extent feasible. ▪ Tree removal in riparian or wetland areas will be done only by manual methods (e.g. crews with chain saws and pickup trucks, not heavy equipment).
				MAMMALS
PCM-B118	Riparian brush rabbit *Sylvilagus bachmani riparius*	FE/SE	A	▪ Follow SOPs and PCM-W002.
			B and C	▪ O&M activities will be limited in riparian areas to the extent possible. Vegetation will be left standing in riparian areas to the maximum extent possible.
PCM-B098	Riparian woodrat *Neotoma fuscipes riparia*	FE/–	A	▪ Follow SOPs and PCM-W002.
			B and C	▪ O&M activities will be limited in riparian areas to the extent possible. Vegetation will be left standing in riparian areas to the maximum extent

PCM-ID	Species Name	Status[1]	Activity Category	PCM
				possible. Snags and live trees will be left standing to the maximum extent possible.
			B and C	▪ Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of caves, mine tunnels, and rock outcrops. ▪ Snags and live trees will be left standing to the maximum extent possible.

[1] Status codes: FE = Federal endangered, FT = Federal threatened, FDR = Federal delisted (recovery), SE = state endangered, ST = state threatened, SC = state candidate, SDR = state delisted (recovery)
[2] Qualified personnel are those who are capable of consistently and accurately identifying the subject resource and have been approved by WAPA's Natural Resource Department.
[3] A USFWS-approved biologist is one whose resume has been submitted to and who has been formally approved by USFWS. This biologist's resume reflects a high level of experience with the Federally listed species covered by a particular PCM.
[4] A qualified biologist is one who has previous experience with the species covered by a particular PCM and who understands the habitat requirements of the species such that he/she can make a well-informed decision about potential presence, potential project-related impacts, and appropriate avoidance/minimization measures.
[5 a] Foothill yellow-legged frog was listed by clade (~geographic area); WAPA's project area straddles the line between the East/Southern Sierra clade (endangered) and the Northeast/Northern Sierra clade (threatened).

Table A-3. Water Resources/Aquatic Habitat PCMs

PCM-ID	Activity Category	PCM
		VERNAL POOLS, VERNAL POOL GRASSLANDS, AND SEASONAL WETLANDS
PCM-W001	A	▪ Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally June 1 to September 30, or as determined by qualified personnel based on personal observation of the soils). ▪ For patrolling the right-of-way off of established roads in a pickup truck, or for inspecting hardware on structures with a bucket truck, vernal pools, vernal pool grasslands, and seasonal wetlands will be avoided by 50 feet during the wet season. No avoidance will be necessary if soils are completely dry (generally June 1 to September 30).
	B and C	▪ Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally June 1 to September 30, or as determined by a qualified biologist based on personal observation of the soils).

PCM-ID	Activity Category	PCM
		▪ If vegetation-management activities are proposed within 250 feet of a vernal pool, vernal pool grassland, or seasonal wetland, a qualified biologist will be present at all times to ensure the protection of the work-area limits below OR qualified personnel will clearly fence the limits of the work area, according to limits presented in the following, prior to the maintenance activity. The herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different. ▪ Mixing or application of pesticides, herbicides, or other potentially toxic chemicals will be prohibited. ▪ Herbicide application to target vegetation by direct application methods (e.g., injection or cut-stump treatment) will be prohibited within 50 feet in the wet season (generally October 1 to May 31) and allowed up to the edge of the pool or seasonal wetland in the dry season (generally June 1 to September 30). ▪ Herbicide application by basal spray and foliage spray methods will be prohibited within 100 feet in anyseason. ▪ Manual clearing of vegetation (chainsaw, axe, clippers) will be allowed up to the edge of the pool or seasonal wetland in the wet season (generally October 1 to May 31); a buffer will not be necessary in the dry season (generally June 1 to September 30). ▪ Mechanical clearing of vegetation (heavy-duty mowers, crawler tractors, or chippers) will be prohibited within 100 feet in the wet season (generally October 1 to May 31); a buffer will not necessary in the dry season (generally June 1 to September 30). ▪ All equipment will be stored, fueled, and maintained in a vehicle staging area 300 feet or the maximum distance possible from any vernal pool, vernal pool grassland, or seasonal wetland, and no closer than 200 feet unless a bermed (no ground disturbance) and lined refueling area is constructed and hazardous-material absorbent pads are available in the event of a spill. Vehicles will be inspected daily for fluid leaks before leaving the stagingarea. ▪ When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas. For ground-disturbing activities, a 100-foot (wet season) or 50-foot (dry season) buffer zone from the edge of the vernal pool or wetland will be maintained and the vernal pool or wetland will be protected from siltation and contaminant run-off by use of erosion control. Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No monofilament plastics will be used for erosion control near vernal pools and seasonal wetlands. Erosion-control measures will be placed between the outer edge of the buffer and the activity area. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed. For ground-disturbing activities, such as installation or repair of underground components (water, power, communication, or ground electrical line) or soil borings, a 250-foot buffer zone will be maintained.
		SEEP, SPRING, POND, LAKE, RIVER, STREAM, AND MARSH
PCM-W002	A	▪ The following activities will be prohibited at all times within 100 feet of a seep, spring, pond, lake, river, stream, or marsh, and their associated habitats:

PCM-ID	Activity Category	PCM
		– vehicle access, except on existing access and maintenance roads – dumping, stockpiling, or burying of any material – mixing of pesticides, herbicides, or other potentially toxic chemicals – open petroleum products ▪ All equipment will be stored, fueled, and maintained in a vehicle staging area 300 feet or the maximum distance possible from any seep, spring, pond, lake, river, stream, marsh, or their associated habitats. Vehicles will be inspected daily for fluid leaks before leaving the staging area. If leaks are identified, appropriate measures will be taken to contain the leaking fluids until equipment can be repaired or replaced. Any fluids will be contained and disposed of in accordance with applicable federal, state, and local regulations. ▪ When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas.
	B and C	▪ The following activities will be prohibited at all times within 100 feet of a seep, spring, pond, lake, river, stream, or marsh, and their associated habitats: – vehicle access, except on existing access and maintenance roads – dumping, stockpiling, or burying of any material, except as required for specific O&M activities (e.g., rip-rap) – mixing of pesticides, herbicides, or other potentially toxic chemicals – open petroleum products ▪ Equipment will be stored, fueled, and maintained in a vehicle staging area 300 feet or the maximum distance possible from any seep, spring, pond, lake, river, stream, marsh, or their associated habitats. Vehicles will be inspected daily for fluid leaks before leaving the staging area. If leaks are identified, appropriate measures will be taken to contain the leaking fluids until equipment can be repaired or replaced. Any fluids will be contained and disposed of in accordance with applicable federal, state, and local regulations. ▪ When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas. ▪ For vegetation management or maintenance within 100 feet of any seep, spring, pond, lake, river, stream, or marsh, or any of their associated habitats, the following work-area limits will be provided (the herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different): ▪ Only manual-clearing of vegetation will be permitted ▪ Basal and foliar application of herbicides will be prohibited. Only direct application treatments (e.g., injection and cut-stump) of target vegetation will be allowed using herbicide approved for aquatic use by the USEPA and in coordination with the appropriate federal land manager. ▪ All instream work, such as culvert replacement or installation, bank recontouring, or placement of bank protection below the high- water line, will be conducted during no-flow or low-flow conditions and in a manner to avoid impacts to water flow, and will be restricted to the minimum area necessary for completion of the work.

PCM-ID	Activity Category	PCM
		▪ All equipment used below the ordinary high-water mark will be free of exterior contamination. ▪ For ground-disturbing activities, a 100-foot buffer zone will be maintained from the edge of the seep, spring, pond, lake, river, stream, marsh, or their associated habitats for protection from siltation and run-off of contaminants by use of erosion-control measures. Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No monofilament plastics will be used for erosion control near vernal pools, seasonal wetlands, and other water bodies. Erosion-control measures will be placed between the outer edge of the buffer and the activity area. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed.
PCM-W002 (cont.)	B and C	▪ Seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed, and will be composed of native species or sterile nonnative species. ▪ WAPA will obtain appropriate 404 discharge and 401 water-quality permits prior to any maintenance activities that must take place within jurisdictional wetlands or other waters of the United States. These will be coordinated with the Corps and State Water Board as needed. ▪ Dewatering work for maintenance operations adjacent to or encroaching on seeps, springs, ponds, lakes, rivers, streams, or marshes will be conducted to prevent muddy water and eroded materials from entering the water or marsh. ▪ All stream crossings will be constructed such that they permit fish to pass and reduce the potential for stream flows to result in increased scour, washout, or disruption of water flow. Wherever possible, stream crossings will be located in stream segments without riparian vegetation, and structure footings will be installed outside of stream banks. Should WAPA need to modify existing access roads or install new access roads, they will be built at right angles to streams and washes to the extent practicable. ▪ Trees providing shade to water bodies will be trimmed only to the extent necessary and will not be removed unless they present a specific safety concern. Trees that must be removed will be felled to avoid damaging riparian habitat. They will be felled out of and away from the stream maintenance zone and riparian habitat, including springs, seeps, bogs, and any other wet or saturated areas. Trees will not be felled into streams in a way that will obstruct or impair the flow of water, unless instructed otherwise by the regulatory agency. Tree removal that could cause stream-bank erosion or result in increased water temperatures will not be conducted in and around streams. Tree removal in riparian or wetland areas will be done only by manual methods.

Table A-4. Cultural Resources PCMs

PCM-ID	Activity Category	Description
Surveyed Areas (Resource Present) – PCMs		
PCM-C001	A	▪ Vehicles or equipment will not be driven over archaeological sites. If infeasible, only vehicles with rubberized tires/treads will be allowed within sites; no skidding or steel tracked equipment. ▪ Vehicles and equipment will be staged outside of cultural resourcesites. ▪ Only the following activities will be allowed in cultural sites: manual clearing of vegetation and chip/broadcast disposal of cutvegetation.
	B and C	▪ Cultural resource sites located within an area where ground-disturbing activity will take place will be flagged for avoidance, and ground-disturbing activities will avoid all cultural resource sites. Sites that cannot be avoided will require further consultation with the SHPO prior to any ground-disturbing activity. ▪ Use of petroleum-based herbicides will be prohibited in cultural sites. ▪ A monitor could be required during ground-disturbing activities.
	A, B, and C	▪ Upon discovery of potential buried cultural materials, including human remains, work within 50 feet of the find will be halted and the discovery reported immediately to the WAPA Natural Resources Department or other designated point of contact. WAPA will comply with provisions in the NHPA (and NAGPRA, in the event of buried human remains) and consult with the SHPO (and tribes, as appropriate) to determine measures to avoid the resource or mitigate during maintenance activities.
Areas Not Surveyed Areas or Not Adequately Surveyed – PCMs		
PCM-C002	A, B, and C	▪ Crews will be instructed to pay particular attention for the presence or discovery of cultural materials in areas where protocol-level surveys could not be conducted. ▪ Upon discovery of potential buried cultural materials, including human remains, work within 50 feet of the find will be halted and the discovery reported immediately to the WAPA Natural Resources Department or other designated point of contact. WAPA will comply with provisions in the NHPA (and NAGPRA, in the event of buried human remains) and consult with the SHPO (and tribes, as appropriate) to determine measures to avoid the resource or mitigate during maintenance activities. ▪ A WAPA-approved archaeologist will be required to monitor such areas during any ground-disturbing maintenance activities. ▪ If cultural resources were discovered during project activities, provisions in PCM-C001 will be followed.

Table A-5. Paleontological Resources PCMs

PCM-ID	Activity Category	Description
Surveyed Areas (Resource Present) – PCMs		
PCM-P001	A	▪ Vehicles or equipment should not be driven over known paleontological sites. If infeasible, only vehicles with rubberized tires/treads will be allowed within sites; no skidding or steel tracked equipment. ▪ Only the following activities will be allowed in known paleontological sites: manual clearing of vegetation and chip/broadcast disposal of cut vegetation.
	B and C	▪ Known paleontological resource sites located within an area where ground-disturbing activity will take place will be flagged for avoidance, and ground-disturbing activities will avoid all known paleontological resource sites, to the extent feasible. ▪ A WAPA-approved paleontologist or archaeologist could be required to monitor known paleontological sites during ground-disturbingactivities.
	A, B, and C	▪ Upon discovery of potential buried vertebrate fossils, work within 50 feet of the find will be halted and the discovery reported immediately to the WAPA Natural Resources Department or other designated point of contact. WAPA will determine measures to avoid the resource or mitigate during maintenance activities.
Areas Not Surveyed or Not Adequately Surveyed – PCMs		
PCM-P002	A, B, and C	▪ Crews will be instructed to pay particular attention for the presenceor discovery of paleontological materials in areas where paleontological surveys have not been conducted. ▪ Upon discovery of potential buried vertebrate fossils, work within 50 feet of the find will be halted and the discovery reported immediately to the WAPA Natural Resources Department or other designated point of contact. WAPA will determine measures to avoid the resource or mitigate during maintenance activities. ▪ A WAPA-approved paleontologist or archaeologist may be requiredto monitor areas with suspected vertebrate paleontological resources during any ground-disturbing maintenance activities. ▪ If paleontological resources were discovered during project activities, provisions in PCM-P001 will be followed.

APPENDIX B

Air Quality and Greenhouse Gas Emissions Calculations

Appendix B
Sacramento Valley Air Quality and Greenhouse Gas Emissions Calculations

Assumptions

Annual emissions for the Sacramento Valley Maintenance ROW were calculated for O&M activities (categories A, B, and C) for the Sacramento Valley Air Basin, in which the project is primarily located. A list of vehicles and off-road equipment utilized for all Category A, B, and C O&M activities is presented in Table 1.

Table 1 Compilation of Operations and Maintenance Equipment

Off-Road Equipment	Average Horsepower	Quantity	Total Hours
Aerial lifts	90	6	39
Excavators	33.5	1	63
Forklifts	68	5	85
Skid steer loaders	68	1	27
Tractor/loaders/backhoes	110	1	12
All-terrain Vehicles (ATVs)	124 (Default)	2	1,000
On-Road	**-**	**-**	**Daily VMT**
Medium Duty Vehicles	-	-	118
Light Heavy Duty Vehicles	-	-	40
Medium Heavy Duty Diesel Truck	-	-	121
Heavy Duty Diesel Trucks	-	-	29
Water Trucks	-	-	-
Aerial	**-**	**-**	**Total Hours**
Helicopter	-	1	16

Note: Equipment was assumed to be used 8 hours/day

Annual emissions were calculated for all O&M equipment based on actual use rates for 2017 and 2018 (in hours or miles, as applicable). Except for ATVs, the same type of equipment was assumed to not be used simultaneously. Emissions calculations for on-road vehicles, off-road equipment, and grading were completed using CalEEMod. Helicopter emissions were completed using emissions factors from the Swiss Confederation Guidance on the Determination of Helicopter Emissions. The calculation summary and CalEEMod outputs follow this appendix.

CalEEMod

CalEEMod was used to calculate the off-road, on-road, and grading emissions associated with the Sacramento Valley ROW Maintenance Area. The inputs used in CalEEMod are detailed in Table 2. The CalEEMod output follows this appendix

Table 2 CalEEMod Inputs

Criteria	Input
Location	Sacramento Valley Air Basin
Climate Zone	3
Urbanization Level	Rural
Construction Start Date	6/1/2019
Operation Year	2020
Land Use Type	General Heavy Industry
Project Size (acres)	2,146
Total Acres Graded	3.6
Number of Days Grading	7
Operational Weekday Trip Rate (/1000 sqft/day)	0.00020610
Operational Saturday Trip Rate (/1000 sqft/day)	0.00004122
Operational Sunday Trip Rate (/1000 sqft/day)	0.00004122
Operational Fleetmix	
MDV	0.56
LHD1	0.12
LHD2	0.05
MHD	0.22
HHD	0.05
All other vehicle types	0
Operational Offroad Equipment	See Table 1
Mitigation	
Vehicle Mitigation	Tier 3
Water Trucks	2 times per day
Speed Limit	15 mph

Aerial (Helicopter)

Helicopter emissions were calculated using emission factors from the Swiss Confederation Guidance on the Determination of Helicopter Emissions. Calculations assumed one helicopter would be used for two 8-hour days each year. The helicopter model was assumed to be a Hughes MD500. The following equation was used to calculate annual emissions:

$$AEi = EFi \times FF(hp) \times t$$

where

AEi = annual emissions of chemical i (lb i/yr)
EFi = chemical i emission factor (lb i/ kg fuel)
FF = fuel flow as a function of horsepower (kg fuel/hr)
t = total annual number of hours of operation (hr/yr)

Summary

Emissions from CalEEMod and the helicopter model were combined to determine annual and daily emissions, presented in Table 3 and Table 4, respectively.

Table 3 Average Annual Emissions for Operations and Maintenance

	Annual Emissions (tpy)						(MT/yr)
	ROG	**NO_x**	**CO**	**SO_2**	**$PM_{2.5}$**	**PM_{10}**	**CO_2e**
Mobile	0.01	0.12	0.12	0.00	0.22	2.16	45.55
Offroad	0.02	0.19	0.21	0.00	0.01	0.01	28.44
Grading	0.00	0.01	0.01	0.00	0.00	0.01	2.22
Helicopter	0.01	0.01	0.02	--	0.00	0.00	5.63
Total	**0.04**	**0.33**	**0.36**	**0.00**	**0.23**	**2.18**	**81.85**
Thresholds of Significance							
De minimis Threshold	100	100	--	--	100	--	--
Placer County APCD	--	--	--	--	--	--	1100
Sacramento Metropolitan AQMD	--	--	--	--	15	14.6	1100

Notes:

1. Calculations include mitigation

CO = carbon monoxide
NO_x = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns in diameter
ROG = reactive organic gases (includes volatile organic compounds [VOC])
SO_2 = sulfur dioxide
tpy = tons per year

Table 4 Daily Emissions for Operations and Maintenance

	ROG	NO_x	CO	SO_2	$PM_{2.5}$	PM_{10}
Average Daily Emissions (lb/day)[1]						
Mobile	0.06	0.63	0.64	0.00	1.20	11.83
Offroad	0.10	1.05	1.17	0.00	0.05	0.05
Grading	0.00	0.06	0.07	0.00	0.01	0.08
Helicopter	0.08	0.06	0.10	--	0.00	0.00
Total	**1.30**	**1.80**	**1.98**	**0.00**	**1.26**	**11.97**
Maximum Daily Emissions (lb/day)						
Mobile	0.07	0.84	0.86	0.00	1.57	15.39
Offroad	1.14	11.86	13.67	0.02	0.56	0.61
Grading	0.18	3.15	3.66	0.01	0.61	4.94
Helicopter	14.12	11.37	17.59	--	0.36	0.36
Total	**15.52**	**27.22**	**35.79**	**0.03**	**3.09**	**21.29**
Thresholds of Significance						
Feather River AQMD	25	25	--	--	--	80
Placer County APCD	55	55	--	--	--	82
Sacramento Metropolitan AQMD	65	65	--	--	82	80

Notes:

1. Average daily emissions were calculated from annual emissions presented in Table 3.
2. Calculations include mitigation

CO = carbon monoxide
lb/day = pounds per day
NO_x = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns in diameter
ROG = reactive organic gases (includes volatile organic compounds [VOC])
SO_2 = sulfur dioxide

References

EPA 2018. General Conformity Training Modules: Appendix A Sample Emissions Calculations. Last Updated January 16, 2018. Accessed January 18, 2018 at https://www.epa.gov/general-conformity/general-conformity-training-modules-appendix-sample-emissions-calculations

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Placer County APCD 2019. CEQA Thresholds. Accessed March 13 from https://www.placerair.org/1804/CEQA-Thresholds.

Sacramento Metropolitan AQMD 2015. CEQA Guide: SMAQMD Thresholds of Significance Table. May.

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Sac Valley Maintenance ROW EA SA

Sacramento Valley Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	93,493.00	1000sqft	2,146.30	93,493,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	65
Climate Zone	3			**Operational Year**	2020
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Sac Valley Maintenance ROW EA SA - Sacramento Valley Air Basin, Annual

Project Characteristics -

Land Use -

Construction Phase - Assume 10% of access roads will be regraded with 10 acres graded per day

Off-road Equipment -

On-road Fugitive Dust - Access Roads are unpaved, assume 10% of trip is on access roads

Grading - Assume 10% of access roads are regraded

Vehicle Trips - Derived from 2017 & 2018 mileage data

Road Dust - Access roads are unpaved

Consumer Products - N/A

Area Coating - N/A

Landscape Equipment - N/A

Energy Use - N/A

Water And Wastewater - N/A

Solid Waste - N/A

Construction Off-road Equipment Mitigation - Per WAPA SOPs

Operational Off-Road Equipment - From WAPA equipment list; Same type of equipment not used similtaneously

Fleet Mix - Derived from WAPA vehicle list

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	46746500	0
tblAreaCoating	Area_Nonresidential_Interior	140239500	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	15,500.00	7.00
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0

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tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	1E-11
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblFleetMix	HHD	0.04	0.05
tblFleetMix	LDA	0.53	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.03	0.12
tblFleetMix	LHD2	6.1670e-003	0.05
tblFleetMix	MCY	6.0010e-003	0.00
tblFleetMix	MDV	0.12	0.56
tblFleetMix	MH	1.1070e-003	0.00
tblFleetMix	MHD	0.02	0.22
tblFleetMix	OBUS	1.6840e-003	0.00
tblFleetMix	SBUS	7.9600e-004	0.00
tblFleetMix	UBUS	1.9140e-003	0.00
tblGrading	AcresOfGrading	3.50	3.60
tblLandscapeEquipment	NumberSummerDays	180	1
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00

tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	5.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	8.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	11.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	63.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	4.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	2.00
tblOperationalOffRoadEquipment	OperHorsePower	63.00	90.00
tblOperationalOffRoadEquipment	OperHorsePower	158.00	34.00
tblOperationalOffRoadEquipment	OperHorsePower	89.00	68.00
tblOperationalOffRoadEquipment	OperHorsePower	65.00	66.00
tblOperationalOffRoadEquipment	OperHorsePower	97.00	110.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	100	90
tblSolidWaste	SolidWasteGenerationRate	115,931.32	0.00
tblVehicleTrips	ST_TR	1.50	4.1220e-005
tblVehicleTrips	SU_TR	1.50	4.1220e-005
tblVehicleTrips	WD_TR	1.50	2.0610e-004
tblWater	IndoorWaterUseRate	21,620,256,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	1.7700e-003	0.0231	6.9400e-003	2.0000e-005	0.0234	7.4000e-004	0.0241	2.3700e-003	6.8000e-004	3.0500e-003	0.0000	2.2055	2.2055	6.6000e-004	0.0000	2.2221
Maximum	**1.7700e-003**	**0.0231**	**6.9400e-003**	**2.0000e-005**	**0.0234**	**7.4000e-004**	**0.0241**	**2.3700e-003**	**6.8000e-004**	**3.0500e-003**	**0.0000**	**2.2055**	**2.2055**	**6.6000e-004**	**0.0000**	**2.2221**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	6.3000e-004	0.0110	0.0128	2.0000e-005	0.0140	4.2000e-004	0.0145	1.4300e-003	4.2000e-004	1.8400e-003	0.0000	2.2055	2.2055	6.6000e-004	0.0000	2.2221
Maximum	**6.3000e-004**	**0.0110**	**0.0128**	**2.0000e-005**	**0.0140**	**4.2000e-004**	**0.0145**	**1.4300e-003**	**4.2000e-004**	**1.8400e-003**	**0.0000**	**2.2055**	**2.2055**	**6.6000e-004**	**0.0000**	**2.2221**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**64.41**	**52.21**	**-84.58**	**0.00**	**39.90**	**43.24**	**40.00**	**39.66**	**38.24**	**39.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Sac Valley Maintenance ROW EA SA - Sacramento Valley Air Basin, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2019	8-31-2019	0.0279	0.0131
		Highest	0.0279	0.0131

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.5000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.2800e-003	9.2800e-003	2.0000e-005	0.0000	9.9000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0104	0.1152	0.1174	4.9000e-004	2.1583	1.1100e-003	2.1594	0.2188	1.0500e-003	0.2198	0.0000	45.5181	45.5181	1.4400e-003	0.0000	45.5541
Offroad	0.0181	0.1912	0.2133	3.2000e-004		9.4100e-003	9.4100e-003		8.6500e-003	8.6500e-003	0.0000	28.2126	28.2126	9.1200e-003	0.0000	28.4407
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0290**	**0.3064**	**0.3355**	**8.1000e-004**	**2.1583**	**0.0105**	**2.1688**	**0.2188**	**9.7200e-003**	**0.2285**	**0.0000**	**73.7400**	**73.7400**	**0.0106**	**0.0000**	**74.0047**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.5000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.2800e-003	9.2800e-003	2.0000e-005	0.0000	9.9000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0104	0.1152	0.1174	4.9000e-004	2.1583	1.1100e-003	2.1594	0.2188	1.0500e-003	0.2198	0.0000	45.5181	45.5181	1.4400e-003	0.0000	45.5541
Offroad	0.0181	0.1912	0.2133	3.2000e-004		9.4100e-003	9.4100e-003		8.6500e-003	8.6500e-003	0.0000	28.2126	28.2126	9.1200e-003	0.0000	28.4407
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0290**	**0.3064**	**0.3355**	**8.1000e-004**	**2.1583**	**0.0105**	**2.1688**	**0.2188**	**9.7200e-003**	**0.2285**	**0.0000**	**73.7400**	**73.7400**	**0.0106**	**0.0000**	**74.0047**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/1/2019	6/11/2019	5	7	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3.6

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	1	3.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.9100e-003	0.0000	1.9100e-003	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7000e-003	0.0230	6.4300e-003	2.0000e-005		7.4000e-004	7.4000e-004		6.8000e-004	6.8000e-004	0.0000	2.0881	2.0881	6.6000e-004	0.0000	2.1046
Total	**1.7000e-003**	**0.0230**	**6.4300e-003**	**2.0000e-005**	**1.9100e-003**	**7.4000e-004**	**2.6500e-003**	**2.1000e-004**	**6.8000e-004**	**8.9000e-004**	**0.0000**	**2.0881**	**2.0881**	**6.6000e-004**	**0.0000**	**2.1046**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	5.0000e-005	5.0000e-004	0.0000	0.0215	0.0000	0.0215	2.1600e-003	0.0000	2.1600e-003	0.0000	0.1174	0.1174	0.0000	0.0000	0.1175
Total	**6.0000e-005**	**5.0000e-005**	**5.0000e-004**	**0.0000**	**0.0215**	**0.0000**	**0.0215**	**2.1600e-003**	**0.0000**	**2.1600e-003**	**0.0000**	**0.1174**	**0.1174**	**0.0000**	**0.0000**	**0.1175**

3.2 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.6000e-004	0.0000	8.6000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7000e-004	0.0110	0.0123	2.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	2.0881	2.0881	6.6000e-004	0.0000	2.1046
Total	**5.7000e-004**	**0.0110**	**0.0123**	**2.0000e-005**	**8.6000e-004**	**4.2000e-004**	**1.2800e-003**	**9.0000e-005**	**4.2000e-004**	**5.1000e-004**	**0.0000**	**2.0881**	**2.0881**	**6.6000e-004**	**0.0000**	**2.1046**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	5.0000e-005	5.0000e-004	0.0000	0.0132	0.0000	0.0132	1.3300e-003	0.0000	1.3300e-003	0.0000	0.1174	0.1174	0.0000	0.0000	0.1175
Total	**6.0000e-005**	**5.0000e-005**	**5.0000e-004**	**0.0000**	**0.0132**	**0.0000**	**0.0132**	**1.3300e-003**	**0.0000**	**1.3300e-003**	**0.0000**	**0.1174**	**0.1174**	**0.0000**	**0.0000**	**0.1175**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0104	0.1152	0.1174	4.9000e-004	2.1583	1.1100e-003	2.1594	0.2188	1.0500e-003	0.2198	0.0000	45.5181	45.5181	1.4400e-003	0.0000	45.5541
Unmitigated	0.0104	0.1152	0.1174	4.9000e-004	2.1583	1.1100e-003	2.1594	0.2188	1.0500e-003	0.2198	0.0000	45.5181	45.5181	1.4400e-003	0.0000	45.5541

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	19.27	3.85	3.85	57,429	57,429
Total	19.27	3.85	3.85	57,429	57,429

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.000000	0.000000	0.560000	0.120000	0.050000	0.220000	0.050000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.5000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.2800e-003	9.2800e-003	2.0000e-005	0.0000	9.9000e-003
Unmitigated	4.5000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.2800e-003	9.2800e-003	2.0000e-005	0.0000	9.9000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.2800e-003	9.2800e-003	2.0000e-005	0.0000	9.9000e-003
Total	**4.5000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.2800e-003**	**9.2800e-003**	**2.0000e-005**	**0.0000**	**9.9000e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.2800e-003	9.2800e-003	2.0000e-005	0.0000	9.9000e-003
Total	**4.5000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.2800e-003**	**9.2800e-003**	**2.0000e-005**	**0.0000**	**9.9000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Aerial Lifts	1	8.00	5	90	0.31	Diesel
Excavators	1	8.00	8	34	0.38	Diesel
Forklifts	1	8.00	11	68	0.20	Diesel
Off-Highway Tractors	2	8.00	63	124	0.44	Diesel
Skid Steer Loaders	1	8.00	4	66	0.37	Diesel
Tractors/Loaders/Backhoes	1	8.00	2	110	0.37	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Aerial Lifts	1.4000e-004	2.3000e-003	3.9100e-003	1.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.5269	0.5269	1.7000e-004	0.0000	0.5311
Excavators	5.4000e-004	3.6700e-003	4.1000e-003	0.0000		2.0000e-004	2.0000e-004		1.9000e-004	1.9000e-004	0.0000	0.4344	0.4344	1.4000e-004	0.0000	0.4379
Forklifts	6.1000e-004	5.4500e-003	4.9600e-003	1.0000e-005		4.1000e-004	4.1000e-004		3.7000e-004	3.7000e-004	0.0000	0.5643	0.5643	1.8000e-004	0.0000	0.5689
Off-Highway Tractors	0.0164	0.1752	0.1949	3.0000e-004		8.5000e-003	8.5000e-003		7.8200e-003	7.8200e-003	0.0000	26.0088	26.0088	8.4100e-003	0.0000	26.2191
Skid Steer Loaders	1.6000e-004	2.1600e-003	2.8200e-003	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	0.3688	0.3688	1.2000e-004	0.0000	0.3718
Tractors/Loaders/Backhoes	2.4000e-004	2.3900e-003	2.5900e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.3094	0.3094	1.0000e-004	0.0000	0.3119
Total	**0.0181**	**0.1912**	**0.2133**	**3.2000e-004**		**9.4000e-003**	**9.4000e-003**		**8.6600e-003**	**8.6600e-003**	**0.0000**	**28.2126**	**28.2126**	**9.1200e-003**	**0.0000**	**28.4407**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Sac Valley Maintenance ROW EA SA

Sacramento Valley Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	93,493.00	1000sqft	2,146.30	93,493,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	65
Climate Zone	3			**Operational Year**	2020
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Sac Valley Maintenance ROW EA SA - Sacramento Valley Air Basin, Winter

Project Characteristics -

Land Use -

Construction Phase - Assume 10% of access roads will be regraded with 10 acres graded per day

Off-road Equipment -

On-road Fugitive Dust - Access Roads are unpaved, assume 10% of trip is on access roads

Grading - Assume 10% of access roads are regraded

Vehicle Trips - Derived from 2017 & 2018 mileage data

Road Dust - Access roads are unpaved

Consumer Products - N/A

Area Coating - N/A

Landscape Equipment - N/A

Energy Use - N/A

Water And Wastewater - N/A

Solid Waste - N/A

Construction Off-road Equipment Mitigation - Per WAPA SOPs

Operational Off-Road Equipment - From WAPA equipment list; Same type of equipment not used similtaneously

Fleet Mix - Derived from WAPA vehicle list

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	46746500	0
tblAreaCoating	Area_Nonresidential_Interior	140239500	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	15,500.00	7.00
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0

Sac Valley Maintenance ROW EA SA - Sacramento Valley Air Basin, Winter

tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	1E-11
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblFleetMix	HHD	0.04	0.05
tblFleetMix	LDA	0.53	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.03	0.12
tblFleetMix	LHD2	6.1670e-003	0.05
tblFleetMix	MCY	6.0010e-003	0.00
tblFleetMix	MDV	0.12	0.56
tblFleetMix	MH	1.1070e-003	0.00
tblFleetMix	MHD	0.02	0.22
tblFleetMix	OBUS	1.6840e-003	0.00
tblFleetMix	SBUS	7.9600e-004	0.00
tblFleetMix	UBUS	1.9140e-003	0.00
tblGrading	AcresOfGrading	3.50	3.60
tblLandscapeEquipment	NumberSummerDays	180	1
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00

tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	5.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	8.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	11.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	63.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	4.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	2.00
tblOperationalOffRoadEquipment	OperHorsePower	63.00	90.00
tblOperationalOffRoadEquipment	OperHorsePower	158.00	34.00
tblOperationalOffRoadEquipment	OperHorsePower	89.00	68.00
tblOperationalOffRoadEquipment	OperHorsePower	65.00	66.00
tblOperationalOffRoadEquipment	OperHorsePower	97.00	110.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	100	90
tblSolidWaste	SolidWasteGenerationRate	115,931.32	0.00
tblVehicleTrips	ST_TR	1.50	4.1220e-005
tblVehicleTrips	SU_TR	1.50	4.1220e-005
tblVehicleTrips	WD_TR	1.50	2.0610e-004
tblWater	IndoorWaterUseRate	21,620,256,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.5065	6.5957	1.9815	7.0000e-003	7.9977	0.2114	8.2091	0.8084	0.1945	1.0029	0.0000	693.5446	693.5446	0.2092	0.0000	698.7752
Maximum	**0.5065**	**6.5957**	**1.9815**	**7.0000e-003**	**7.9977**	**0.2114**	**8.2091**	**0.8084**	**0.1945**	**1.0029**	**0.0000**	**693.5446**	**693.5446**	**0.2092**	**0.0000**	**698.7752**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.1820	3.1533	3.6592	7.0000e-003	4.8216	0.1193	4.9409	0.4884	0.1192	0.6076	0.0000	693.5446	693.5446	0.2092	0.0000	698.7752
Maximum	**0.1820**	**3.1533**	**3.6592**	**7.0000e-003**	**4.8216**	**0.1193**	**4.9409**	**0.4884**	**0.1192**	**0.6076**	**0.0000**	**693.5446**	**693.5446**	**0.2092**	**0.0000**	**698.7752**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**64.06**	**52.19**	**-84.67**	**0.00**	**39.71**	**43.59**	**39.81**	**39.58**	**38.70**	**39.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9038	0.0887	9.6068	7.1000e-004		0.0345	0.0345		0.0345	0.0345		20.4612	20.4612	0.0549		21.8329
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0735	0.8394	0.8624	3.4500e-003	15.3778	7.9100e-003	15.3857	1.5596	7.5500e-003	1.5671		353.0270	353.0270	0.0115		353.3138
Offroad	1.1420	11.8580	13.6748	0.0198		0.6125	0.6125		0.5635	0.5635		1,919.6087	1,919.6087	0.6208		1,935.1297
Total	**2.1192**	**12.7861**	**24.1439**	**0.0240**	**15.3778**	**0.6548**	**16.0326**	**1.5596**	**0.6055**	**2.1650**		**2,293.0968**	**2,293.0968**	**0.6872**	**0.0000**	**2,310.2764**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9038	0.0887	9.6068	7.1000e-004		0.0345	0.0345		0.0345	0.0345		20.4612	20.4612	0.0549		21.8329
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0735	0.8394	0.8624	3.4500e-003	15.3778	7.9100e-003	15.3857	1.5596	7.5500e-003	1.5671		353.0270	353.0270	0.0115		353.3138
Offroad	1.1420	11.8580	13.6748	0.0198		0.6125	0.6125		0.5635	0.5635		1,919.6087	1,919.6087	0.6208		1,935.1297
Total	**2.1192**	**12.7861**	**24.1439**	**0.0240**	**15.3778**	**0.6548**	**16.0326**	**1.5596**	**0.6055**	**2.1650**		**2,293.0968**	**2,293.0968**	**0.6872**	**0.0000**	**2,310.2764**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/1/2019	6/11/2019	5	7	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3.6

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	1	3.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5454	0.0000	0.5454	0.0589	0.0000	0.0589			0.0000			0.0000
Off-Road	0.4867	6.5796	1.8380	6.6400e-003		0.2112	0.2112		0.1943	0.1943		657.6271	657.6271	0.2081		662.8288
Total	**0.4867**	**6.5796**	**1.8380**	**6.6400e-003**	**0.5454**	**0.2112**	**0.7566**	**0.0589**	**0.1943**	**0.2532**		**657.6271**	**657.6271**	**0.2081**		**662.8288**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0198	0.0162	0.1434	3.6000e-004	7.4523	2.6000e-004	7.4525	0.7495	2.4000e-004	0.7497		35.9174	35.9174	1.1600e-003		35.9464
Total	**0.0198**	**0.0162**	**0.1434**	**3.6000e-004**	**7.4523**	**2.6000e-004**	**7.4525**	**0.7495**	**2.4000e-004**	**0.7497**		**35.9174**	**35.9174**	**1.1600e-003**		**35.9464**

3.2 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2454	0.0000	0.2454	0.0265	0.0000	0.0265			0.0000			0.0000
Off-Road	0.1623	3.1372	3.5158	6.6400e-003		0.1190	0.1190		0.1190	0.1190	0.0000	657.6271	657.6271	0.2081		662.8288
Total	**0.1623**	**3.1372**	**3.5158**	**6.6400e-003**	**0.2454**	**0.1190**	**0.3644**	**0.0265**	**0.1190**	**0.1455**	**0.0000**	**657.6271**	**657.6271**	**0.2081**		**662.8288**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0198	0.0162	0.1434	3.6000e-004	4.5762	2.6000e-004	4.5765	0.4619	2.4000e-004	0.4621		35.9174	35.9174	1.1600e-003		35.9464
Total	**0.0198**	**0.0162**	**0.1434**	**3.6000e-004**	**4.5762**	**2.6000e-004**	**4.5765**	**0.4619**	**2.4000e-004**	**0.4621**		**35.9174**	**35.9174**	**1.1600e-003**		**35.9464**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0735	0.8394	0.8624	3.4500e-003	15.3778	7.9100e-003	15.3857	1.5596	7.5500e-003	1.5671		353.0270	353.0270	0.0115		353.3138
Unmitigated	0.0735	0.8394	0.8624	3.4500e-003	15.3778	7.9100e-003	15.3857	1.5596	7.5500e-003	1.5671		353.0270	353.0270	0.0115		353.3138

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	19.27	3.85	3.85	57,429	57,429
Total	19.27	3.85	3.85	57,429	57,429

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.000000	0.000000	0.560000	0.120000	0.050000	0.220000	0.050000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9038	0.0887	9.6068	7.1000e-004		0.0345	0.0345		0.0345	0.0345		20.4612	20.4612	0.0549		21.8329
Unmitigated	0.9038	0.0887	9.6068	7.1000e-004		0.0345	0.0345		0.0345	0.0345		20.4612	20.4612	0.0549		21.8329

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.9038	0.0887	9.6068	7.1000e-004		0.0345	0.0345		0.0345	0.0345		20.4612	20.4612	0.0549		21.8329
Total	**0.9038**	**0.0887**	**9.6068**	**7.1000e-004**		**0.0345**	**0.0345**		**0.0345**	**0.0345**		**20.4612**	**20.4612**	**0.0549**		**21.8329**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.9038	0.0887	9.6068	7.1000e-004		0.0345	0.0345		0.0345	0.0345		20.4612	20.4612	0.0549		21.8329
Total	**0.9038**	**0.0887**	**9.6068**	**7.1000e-004**		**0.0345**	**0.0345**		**0.0345**	**0.0345**		**20.4612**	**20.4612**	**0.0549**		**21.8329**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Aerial Lifts	1	8.00	5	90	0.31	Diesel
Excavators	1	8.00	8	34	0.38	Diesel
Forklifts	1	8.00	11	68	0.20	Diesel
Off-Highway Tractors	2	8.00	63	124	0.44	Diesel
Skid Steer Loaders	1	8.00	4	66	0.37	Diesel
Tractors/Loaders/Backhoes	1	8.00	2	110	0.37	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Aerial Lifts	0.0566	0.9195	1.5632	2.4000e-003		0.0205	0.0205		0.0188	0.0188		232.3141	232.3141	0.0751		234.1925
Excavators	0.1352	0.9186	1.0255	1.2300e-003		0.0506	0.0506		0.0466	0.0466		119.7154	119.7154	0.0387		120.6833
Forklifts	0.1100	0.9914	0.9018	1.1700e-003		0.0739	0.0739		0.0680	0.0680		113.1022	113.1022	0.0366		114.0167
Off-Highway Tractors	0.5215	5.5626	6.1876	9.4000e-003		0.2699	0.2699		0.2483	0.2483		910.1511	910.1511	0.2944		917.5101
Skid Steer Loaders	0.0811	1.0787	1.4114	2.1000e-003		0.0467	0.0467		0.0430	0.0430		203.2483	203.2483	0.0657		204.8916
Tractors/Loaders/Backhoes	0.2376	2.3873	2.5852	3.5200e-003		0.1510	0.1510		0.1389	0.1389		341.0777	341.0777	0.1103		343.8355
Total	**1.1420**	**11.8580**	**13.6748**	**0.0198**		**0.6125**	**0.6125**		**0.5635**	**0.5635**		**1,919.6087**	**1,919.6087**	**0.6208**		**1,935.1297**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation