

Draft Environmental Assessment for Right-of-Way Maintenance in the San Joaquin Valley, California



June 2010

Prepared for:

Western Area Power Administration, Sierra Nevada Region



Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

Dear Interested Party:

Western Area Power Administration (Western) has prepared the Draft Environmental Assessment for Right-of-Way Maintenance in the San Joaquin Valley, California (Draft EA) in order to analyze proposed operation and maintenance (O&M) procedures for its existing electrical transmission line infrastructure, rights-of-way (ROW) and access roads. The project area encompasses approximately 115 miles of transmission lines and associated ROW, 28 miles of access roads, 7 substations, and 1 maintenance facility within the counties of San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne, Santa Clara, and Merced. The proposed O&M activities include, but are not limited to, facility inspection/repair, vegetation management, and equipment upgrades.

Western is very interested in any comments you might have on this proposed project or the Draft EA. The public comment period will close at midnight on July 1, 2010. To ensure consideration, please submit your comments by that time. Comments received after the deadline will be considered to the extent practicable. Comments may be submitted by letter or email at the address below. All comments will be considered equally regardless of the format in which they are submitted.

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Emailed comments should be sent to: SJV_EA@wapa.gov

Fax comment should be sent to: 916-353-4772

Thank you for your continued interest in this proposed project. Your comments will help us focus on issues and concerns that are important to you, identify any inaccuracies or missing information, and prepare a complete and comprehensive Final EA.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen Tuggle".

Stephen Tuggle
Natural Resources Manager

Enclosure

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

The Western Area Power Administration (Western) Sierra Nevada Region is a power marketing administration of the U.S. Department of Energy (DOE). As a Federal entity, Western is responsible for examining the potential environmental consequences of its proposed actions prior to making a decision or commitment to implement an action (see **Section 1.5** for more information). This Environmental Assessment (EA) evaluates environmental impacts of the Proposed Action (San Joaquin Valley Right-of-Way Maintenance Project) and the No Action Alternative.

1.2 Background

Western owns, operates, and/or maintains 17.2-kilovolt (kV), 69-kV, and 230-kV transmission lines, a 17.2-kV distribution line, associated substations, and a maintenance facility in San Joaquin, Contra Costa, Alameda, Calaveras, and Tuolumne counties, and owns and operates additional substations in Santa Clara and Merced counties, California (**Figure 1.2-1**). Western also has legal use of various, improved and unimproved access roads to their transmission lines. Collectively, these transmission line and associated access road rights-of-way (ROWs), substations (including a 50-foot buffer surrounding each substation), and maintenance facility, are referred to within this EA as Western's San Joaquin Valley ROW, and comprise the project area.

Portions of these ROWs, including access roads, pass through areas that require proactive vegetation maintenance. Vegetation maintenance is necessary to keep vegetation from interfering with the operation and maintenance (O&M) of the facilities. Western plans on implementing its Integrated Vegetation Management (IVM) Program, an adaptive management approach to follow environmentally protective vegetation-control principles for unwanted vegetation, including natural control, physical/mechanical control, biological control, and chemical control. **Section 2** provides additional details on these vegetation-control methods.

Pursuant to Section 7 of the Federal *Endangered Species Act* (ESA), Western has a programmatic biological opinion from the U.S. Fish and Wildlife Service (USFWS) for existing O&M activities (USFWS 1998). Pursuant to Section 106 of the *National Historic Preservation Act* (NHPA), Western also has a Programmatic Agreement (PA) with the California State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) for existing routine O&M and emergency activities. This PA was executed in 1997 but was revised in 2010 in consultation with the SHPO and ACHP. The 2010 PA supersedes the 1997 PA and reflects all previous and updated O&M and emergency activities along Western's ROWs, including access roads and substations, as discussed in this EA.

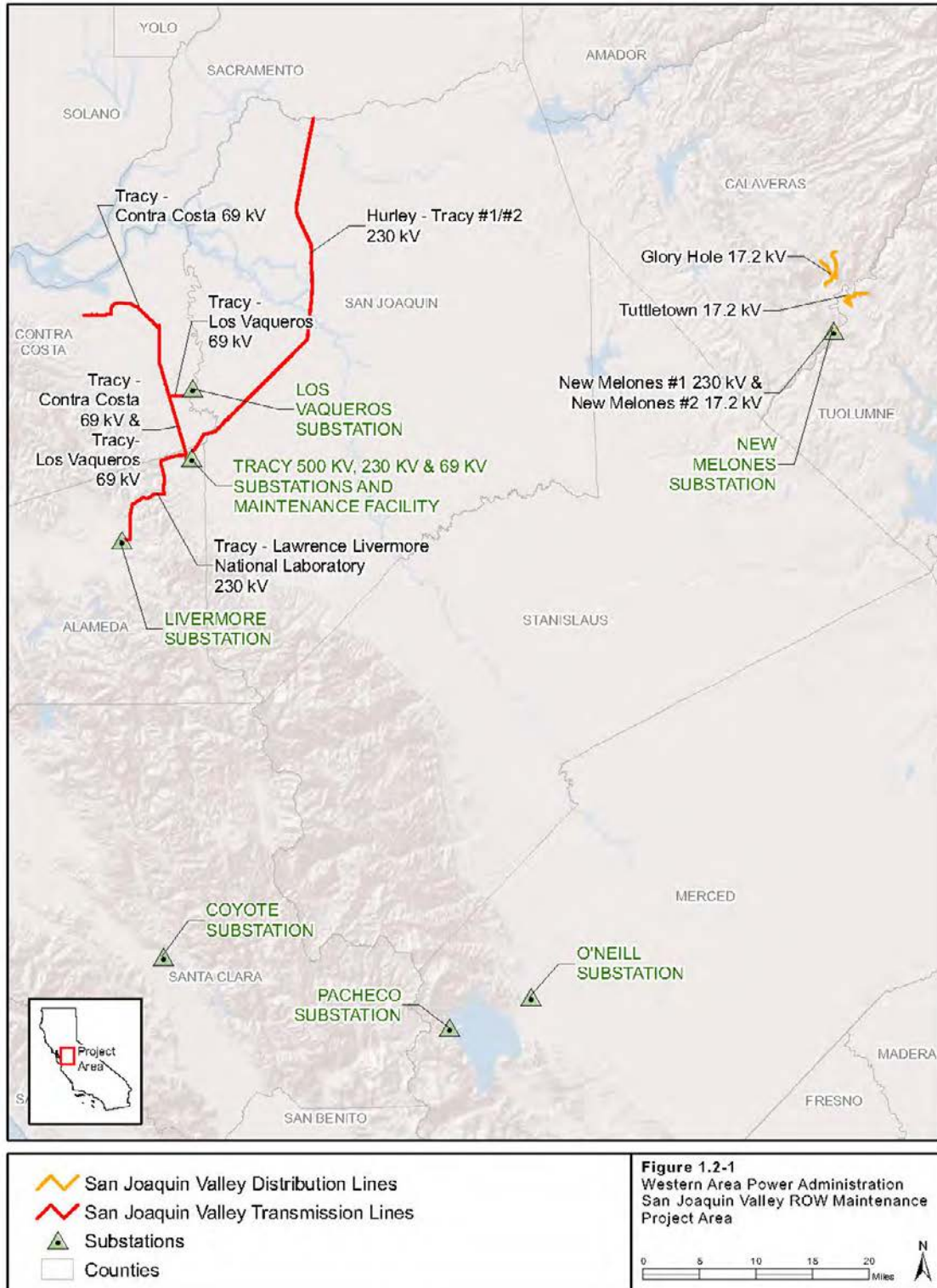


Figure 1.2-1. San Joaquin Valley ROW Maintenance Project Area

Western's San Joaquin Valley ROW Maintenance Program (Project) serves to update the existing O&M Program to include all transmission lines, associated legal access roads, substations, and the maintenance facility into one comprehensive Master O&M Program. The Master O&M Program would include additional maintenance activities that are outside the scope of the existing biological opinion and PA, particularly the use of herbicides in some areas. This EA provides information for further ESA and NHPA consultation processes required for the additional maintenance activities. Furthermore, this EA is intended to streamline other regulatory and permitting requirements, as described in **Section 2.2.4**. Finally, this EA analyzes the potential environmental consequences of the proposed Project, as required under the *National Environmental Policy Act* (NEPA), and other relevant Federal regulations (see **Section 1.5**).

1.3 Purpose and Need for Action

The purpose of the San Joaquin Valley ROW Maintenance Project is to maintain existing transmission line and legal access road ROWs, as well as substations and a maintenance facility, in a manner: (1) consistent with prudent utility practices, including applicable reliability standards, and (2) that protects environmental resources while improving the efficiency and effectiveness of maintenance activities. Western has designed this maintenance program to balance environmental protection with system reliability and compliance with the National Electric Safety Code; Western Electricity Coordinating Council requirements; North American Electric Reliability Corporation reliability standards; Institute of Electrical and Electronics Engineers standards; and Western's Guidelines, Requirements, Inspections and Procedures (GRIPs), Orders, and directives for maintaining system reliability and protection of human safety.

To meet this purpose, Western's objectives are to maintain its ROWs to:

- Protect from operational hazards;
- Provide access for maintenance;
- Protect facilities from fire;
- Control the spread of noxious weeds and protect environmental quality;
- Develop a technically and economically efficient program;
- Protect public and worker safety;
- Maintain sound relationships with land owners and land managers;
- Streamline regulatory permitting activities;
- Protect significant environmental resources, as defined by applicable Federal, state, and local laws; and
- Comply with environmental laws and regulations affecting Federal actions.

The need for the Proposed Action 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 trees falling onto the transmission lines;
- Performing O&M activities in a cost-effective manner that would benefit the public and natural ecosystems; and
- Maintaining the transmission line and legal access road ROWs to ensure that Western's maintenance crews have safe and all-weather access to ROW facilities.

1.4 Location and Project Area Description

The project area includes transmission line and legal access road ROWs, substations, and a maintenance facility within Western's Sierra Nevada Region of central California, which includes portions of San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne, Santa Clara, and Merced counties (see **Figure 1.2-1**). There are approximately 115 miles of transmission line ROW, 28 miles of access roads, seven substations, and one maintenance facility within the project area.

To facilitate evaluation in this EA, the project area has been divided into three geographical regions: Tracy, New Melones, and Morgan Hill/San Luis. **Section 3** describes the affected environment and environmental consequences according to this convention. The following describes the transmission line ROW, substations (including a 50-foot buffer surrounding each substation), and maintenance facility that comprise the project area. Legal access roads, as described above, run close to, but outside of transmission line ROWs.

1.4.1 Tracy

The Tracy region of the project area consists of the ROWs and legal access roads for the following transmission lines:

- Hurley-Tracy #1/#2 230 kV between the Tracy Substation and the San Joaquin County/Sacramento County border;
- Tracy-Contra Costa 69 kV between the Tracy Substation and Contra Costa #4 pumping plant in Antioch;
- Tracy-Los Vaqueros 69 kV between the Tracy-Contra Costa transmission line (near Kellogg Creek Road in Contra Costa County) and the Los Vaqueros Substation; and
- Tracy-Lawrence Livermore National Laboratory 230 kV between the Tracy Substation and Livermore Substation.

The Tracy Substation, Los Vaqueros Substation, and Livermore Substation are all within the Tracy region. The Tracy Maintenance Facility is contained within the same fenced area as the Tracy Substation.

1.4.2 *New Melones*

The New Melones region of the project area consists of the ROWs for the following transmission and distribution lines:

- New Melones #1/#2 230 kV between the New Melones Generation Facility and the New Melones Substation;
- Tuttle town 17.2 kV, east of New Melones Lake; and
- Gloryhole 17.2 kV, north of New Melones Lake.

The New Melones Substation is included within the New Melones region.

1.4.3 *Morgan Hill/San Luis*

The Morgan Hill/San Luis region of the project area consists of three substations:

- Coyote Substation in Morgan Hill;
- Pacheco Substation, west of the San Luis Reservoir; and
- O'Neill Substation, east of the San Luis Reservoir.

1.5 **Study Authority and Purpose of the EA**

As a Federal entity within DOE, Western must comply with NEPA (42 United States Code [U.S.C.] §§ 4321-4370h), the Council on Environmental Quality Regulations Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and DOE NEPA Implementing Procedures (10 CFR Part 1021). Per Appendix C to Subpart D of 10 CFR Part 1021, Western has determined that an EA is the proper level of environmental analysis.

This EA evaluates and presents the potential environmental consequences resulting from implementation of the Proposed Action and No Action Alternative. The methods and management approaches that comprise the Proposed Action and No Action Alternative are described in **Section 2**, as well as those alternatives considered but eliminated from full EA evaluation. **Section 3** presents a detailed description of the affected environment and a comprehensive analysis of environmental consequences for 20 environmental issue areas (e.g., air quality, habitats and vegetation, cultural resources). **Section 4** discusses cumulative effects.

The purpose of this EA is to inform decision-makers and the public of the potential environmental consequences of implementing the Proposed Action and No Action Alternative, prior to Western making a decision on whether to move forward with the Proposed Action. Overall, this EA:

- Documents the NEPA process, and ensures compliance with applicable regulations as described above (including the appropriate level of NEPA documentation);

- Informs decision-makers and the public of the possible environmental consequences of the Proposed Action and its considered alternatives, as well as methods to reduce these impacts (see **Section 1.7**);
- Allows for public input into the decision-making process; and
- Allows for informed decision-making by the Federal government.

Assessment of the affected environment and environmental consequences in this EA relied on a combination of existing data and data collected during biological and cultural resource field surveys performed from December 2008 to August 2009; these surveys were conducted specifically to provide current input into the EA evaluation. Surveys were conducted throughout the project area, including approximately 115 miles of ROW and 28 miles of access roads. The following sections describe the biological and cultural surveys completed.

1.5.1 Biological Resources Survey

Before conducting the biological survey, Western assembled existing information on special-status species distribution and habitats within the project area. This involved gathering information from the USFWS, California Department of Fish and Game (CDFG), California Native Plant Society (CNPS), National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS), and the Bureau of Land Management (BLM).

The biological resource surveys were conducted between December 2008 and August 2009. Two-person survey teams consisted of a wildlife biologist and a botanist who conducted meandering pedestrian surveys of the project area. Habitats were mapped and described according to a classification system based on Holland's (1986) *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Habitats were assessed for their suitability to support special-status species, and any wildlife encountered or special-status species occurrences were noted.

Additionally, target biological resources were recorded with sub-meter accuracy using a global positioning system (GPS) unit, and the location information was accompanied by detailed explanatory comments. Target biological resources included elderberries, vernal pools and swales, and water features (e.g., perennial and intermittent streams, springs, open water). Wetlands were mapped, although formal delineations per U.S. Army Corps of Engineers (USACE) standards were not conducted.

1.5.2 Cultural Resources Survey

Western conducted cultural resource investigations for the purpose of creating a complete inventory and assessment of cultural resources located within the transmission-line ROW, legal access roads, and areas around Western substations. The inventory efforts included: 1) a Class I Survey involving comprehensive literature and archival research to identify previously conducted surveys and previously recorded archaeological and architectural resources, 2) a Class III comprehensive pedestrian

survey and site recording for all new resources identified and an update of previous site recording efforts, and 3) the preparation of an inventory report.

Cultural resource surveys were conducted between May 2009 and August 2009. Teams of two and three archaeologists conducted a comprehensive pedestrian survey of the project area. The survey was conducted systematically, with linear transects not exceeding 20-meters in width. The goals of the cultural resources field survey were to:

- Identify and record all newly identified cultural resources including prehistoric sites, historic and architectural sites 45 years or older, and traditional cultural properties (TCPs);
- Identify areas not surveyable and the reason for not surveying (e.g., density of vegetation, steep slope);
- Re-record previously recorded sites; and
- Assess the significance of sites identified and recorded during the survey.

Cultural resource sites and diagnostic artifacts were recorded with sub-meter accuracy using a GPS unit. In addition, data regarding each site were entered into the geographic information system (GIS) database using the GPS unit, in accordance with Western's standardized data dictionary. This information included site type, quantity and type of artifacts, site condition or integrity, and any explanatory comments.

1.6 Decisions Needed

This EA, which is the responsibility of Western, is a concise public document that serves to:

- Provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI);
- Aid Western's compliance with NEPA when no EIS is necessary; and
- Facilitate preparation of an EIS if one is necessary (40 CFR Part 1508.9).

Based on the findings contained in this EA, weighing how each alternative meets the purpose and need, Western will determine whether the proposed San Joaquin Valley ROW Maintenance Project requires an EIS or if a FONSI can be prepared. Should Western decide to prepare a FONSI, the document will present supporting rationale for that decision.

1.7 Mitigation Opportunities

Through the conduct of current biological and cultural resource surveys within the project area, Western has identified the location and extent of significant resources. Using these data, coupled with consultation with pertinent regulatory agencies, Western

can proactively mitigate potentially significant adverse impacts to environmental resources. As defined by the Council on Environmental Quality, mitigation includes (a) avoiding the impact; (b) minimizing the impacts by limiting the magnitude or degree; (c) rectifying the impact by repairing, rehabilitating, or restoring; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments. The Project Conservation Measures (PCMs) and best management practices (BMPs) identified in this EA serve to proactively mitigate potentially significant environmental effects while streamlining maintenance activities and regulatory review and permitting processes.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Introduction, Background, and Existing O&M Activities

Consistent with prudent utility practice, including applicable reliability standards, Western's existing O&M Program has been developed to improve the safety and reliability of the electric transmission systems, including existing San Joaquin Valley transmission lines and related facilities. The Proposed Action includes continued maintenance of these transmission lines, legal access roads, substations, and maintenance facilities, thereby, among other things, ensuring that Western's maintenance crews have safe and all-weather access in order to maintain the reliable operation of the transmission system.

The Proposed Action also includes implementation of an IVM Program within the Master O&M Program. The IVM Program contains a number of options for vegetation control, including cultural/natural control, physical/mechanical control, biological control, and chemical control. Western's current IVM Program is described in the *Integrated Vegetation Management Guide and Transmission Vegetation Management Program* (Western 2007); this guide is updated periodically to reflect changes to industry-standard maintenance practices and Western's own studies on maintenance effectiveness. The IVM Program was discussed with land managers (e.g., BLM, Bureau of Reclamation [BOR]) and resource agencies to develop a specific O&M Plan for each land manager. In addition, these plans address the concerns of resource management authorities such as the USFWS, NMFS, and the SHPO. The Master O&M Program contains specific O&M Plans for Federal (by agency) and private lands. These specific O&M plans would provide guidance to Western on the preferred maintenance within these lands.

The Proposed Action and the No Action Alternative have been retained for full analysis in this EA. Refer to **Section 2.2** for a detailed description of the Proposed Action. **Section 2.3** describes the vegetation-maintenance activities under the No Action Alternative. **Section 2.4** describes the alternatives considered and eliminated from full evaluation in the EA.

2.2 Proposed Action Description

2.2.1 *Inspection/System Management*

In compliance with Western's GRIP 19 and Transmission Line Inspection Program Reliability Centered Maintenance Study, Western has been conducting aerial, ground, and climbing inspections of its existing transmission infrastructure since initial construction. Western has updated these required inspections under the Proposed Action O&M Program. The following paragraphs describe these inspection requirements.

2.2.1.1 Aerial Inspections

At a minimum, aerial inspections would be conducted every six months by helicopter or small plane over the entire transmission system to check for hazard trees¹ or encroaching vegetation, as well as to locate damaged or malfunctioning transmission equipment. Typically, aerial patrols would be flown between 50 and 300 feet above Western's transmission infrastructure depending on the land use, topography, and infrastructure requirements.

2.2.1.2 Ground Inspections

Annual ground inspections allow for the inspection of hardware that would not be possible by air, and identify redundant or overgrown access roads that should be permanently closed and returned to their natural state. Inspections would check access to the towers/poles, tree clearances, fences, gates, locks, and tower hardware, and ensure that each structure would be readily accessible in the event of an emergency. For lattice structures, ground inspection would detect damage/degradation of steel, insulators and linkage, insulator bells, and signs of soil erosion. Approximately 20 percent of structures would be shake tested annually. Climbing inspections would be performed if problems are identified during the ground inspection. For wood structures, ground inspection would detect damage/degradation of cross arms, bracing, and hardware; overhead ground-wire hardware; insulators and linkages; guy-wire hardware; contamination of insulators; and signs of soil erosion, woodpecker damage, and human/animal contact.

Ground inspections would typically be conducted by driving a pickup truck along the ROW and access roads. Detailed ground inspections would be performed on 20 percent of all lines and structures annually, for 100 percent inspection every five years. They would involve a shake test (i.e., shaking the knee braces of the tower to see if there is anything loose on the structure).

2.2.1.3 Climbing Inspections

Climbing inspections would be performed on all antenna towers, if present, at least once every seven years to identify deterioration in hardware that could not be detected from either ground or aerial patrols. In addition, climbing of transmission line structures would occur if a problem were identified during ground inspections. Typically, such activities would involve the use of a pickup truck or bucket truck.

2.2.2 Maintenance Activities

In general, Western O&M activities within the San Joaquin Valley would include the following:

¹ Trees located within or adjacent to the easement or permit area that present an immediate hazard to the facility or have the potential to encroach within the safe distance to the conductor as a result of bending, growing, swinging, or falling toward the conductor.

- **Vegetation maintenance (transmission line ROW, access road ROW, substation, and maintenance facility).** Vegetation maintenance would ensure that vegetation did not interfere with human safety, transmission line conductors, towers, other hardware, or impede access to the transmission lines or other equipment for maintenance crews. In general, vegetation maintenance could be performed using a variety of methods including manual (hand-controlled, powered, or non-powered tools such as chainsaws and clippers), mechanical (such as heavy-duty mowers), and herbicidal applications (used to control non-native vegetation).
- **Access road maintenance.** Access road maintenance would include activities to ensure that legal access roads were in appropriate condition for all-weather access to transmission lines by maintenance and inspection crews. These activities would include grading, surfacing, erosion control measures, and constructing water diversions such as culverts, ditches, and water bars.
- **Maintenance of transmission line, substation, maintenance facility, and associated structure, hardware, and equipment.** This category of activities would include equipment and system maintenance and upgrades, routine aerial and ground patrols of transmission lines and ROWs, and transmission system repairs.

The methods used to complete maintenance activities would be selected in consultation with the appropriate land manager/owner and in full consideration of site conditions such as topography, geology, water, and other sensitive resources.

2.2.2.1 Vegetation Maintenance

Under the Proposed Action, Western would use vegetation maintenance alternatives ranging from reclaiming the ROW (with greater vegetation clearance) to buffered vegetation management (with less vegetation clearance). Two examples of these vegetation management alternatives are the wire zone/border zone approach and the buffered vegetation management approach, described below. Taking into account sensitivity of resources, reliability and safety issues, and environmental laws, policies, and regulations, Western's vegetation management approach is adaptive to the site conditions and reliability requirements, and uses various techniques to achieve Western's objectives. Western would work with the land managers to follow any additional BLM or BOR requirements.

Western's IVM Program is a practice of managing undesirable vegetation in which action thresholds are considered, all possible control options are evaluated, and ultimately a management program is selected, developed, and implemented. Control options would be based on worker and public safety, environmental impact, effectiveness, site characteristics, and economics. Initially, the ROW would be restored through the removal of undesirable vegetation. The ROW would then be enhanced via various management techniques to protect facilities, reduce the potential for fire, and provide habitat for wildlife and a variety of plant species.

For many areas requiring vegetation management, Western would implement a wire zone/border zone approach, which recognizes the ROW as a valuable economic and

ecological resource. Key to this concept is the management of the ROW from two perspectives, the wire zone and the border zone. The wire zone includes the ROW area immediately under the transmission wire plus 10 feet on both sides. The border zone is the area between the wire zone and the edge of the existing ROW. The goal would be to have a low shrub-forb-grass cover type in the wire zone and a taller shrub-forb-grass cover type in the border zone. This approach would maintain 30 feet of clearance around each transmission structure. **Figure 2.2-1** is an illustration of the desired appearance of a ROW subject to a wire zone/border zone management approach.

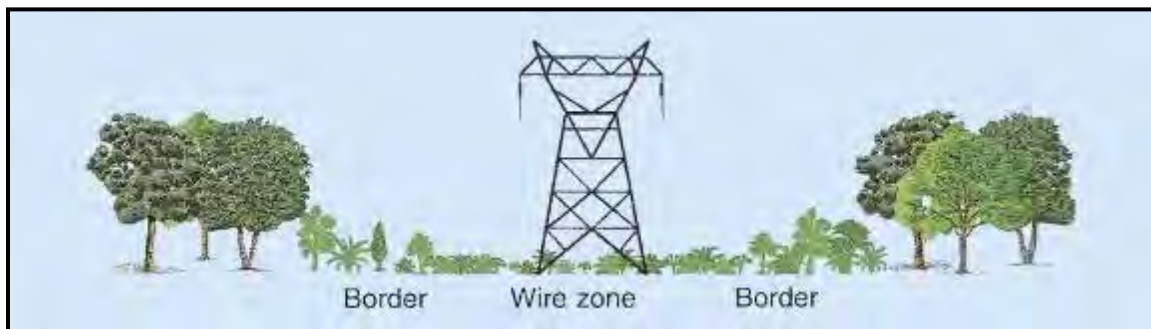


Figure 2.2-1. Wire Zone/Border Zone Approach

In specific areas where conversion of the ROW from naturally occurring tree-dominated native plant communities into a wire zone/border zone ROW would not be appropriate, Western would use a buffered vegetation management approach. Under the buffered vegetation management approach, Western would remove vegetation to achieve 28 feet of clearance between vegetation and any point of the circuit or transmission system for a 230-kV line; this allows for a 10-foot vegetation growth buffer to achieve Western's minimum 18-foot clearance for a 230-kV transmission line. This approach would also maintain 30 feet of clearance around each transmission tower or structure. Benefits of this approach would include the reduction of ground-disturbing activities and the related reduction in the establishment of non-native plant species.

A transmission circuit can move vertically depending on the atmospheric temperature and electrical load on the line. Western would recommend adding 10 feet of buffer to account for the sag in the line during periods of high temperatures and high load. As a result, the buffered vegetation management area would include the 18 feet clearance plus 10 feet of buffer for vegetation growth and sag in the line. See **Figure 2.2-2** for an illustration of the buffered vegetation management approach.

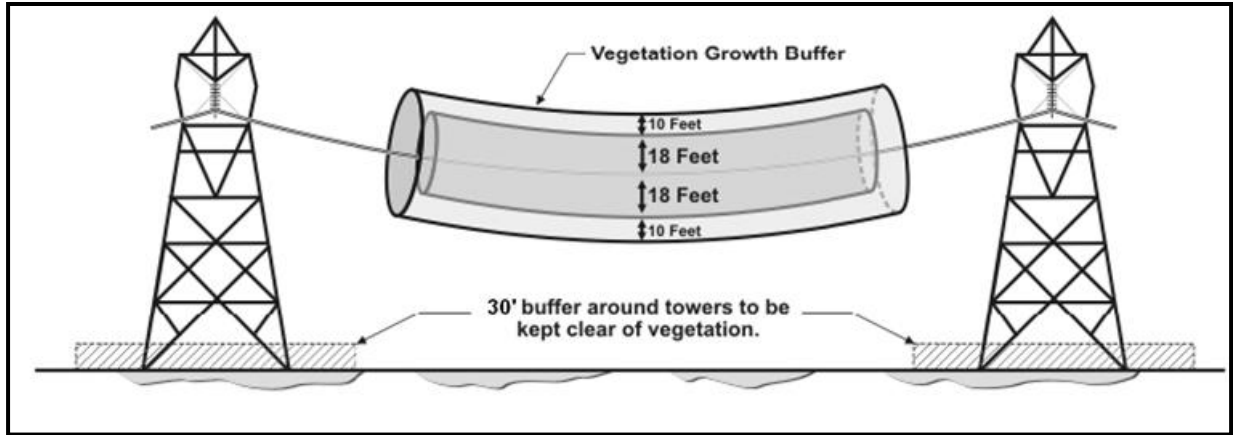


Figure 2.2-2. Buffered Vegetation Management Approach for 230-kV Line

MANUAL VEGETATION CONTROL METHODS

Manual vegetation control is defined as the application of powered and non-powered handheld tools or installation of static barriers (such as weed-control mats²) to manage vegetative growth. The primary benefit of manual methods is selectivity; only unwanted or target vegetation is removed, while other vegetation is not disturbed. The primary disadvantages of manual methods are that they are labor intensive and they are only effective in relatively low-density vegetation. The manual vegetation control techniques currently employed by Western are described below.

Cutting

The most commonly used manual method to control vegetation is cutting target plants with power saws. Other manually operated tools such as axes, machetes, and clippers may also be used. This method is highly effective on species that do not resprout. For species that resprout, including most deciduous trees, sprouts may resurge to original heights within several years and at much greater density than the original stems. This greater density may hinder access for subsequent manual treatments.

Under the buffered vegetation management approach, limbing or directional pruning of the individual branches that encroach into the buffered vegetation area would be the preferred method. For this approach, topping would not be acceptable because it could encourage faster growth toward the transmission lines.

Girdling

Girdling involves manually cutting away bark and cambium tissues around the trunk of target trees. This treatment is rarely practiced by Western, but could be appropriate in some cases (e.g., where large trees cannot be felled by cutting or where dead trees may provide desirable habitat for some species). Conifer species are killed by girdling, but hardwoods frequently will resprout below the girdle unless the cut is treated with

² Fiber weed-control mats are composed of synthetic polyester fibers spun tightly together to prevent noxious weed growth by inhibiting sunlight, yet still allowing water percolation for drainage.

herbicide. Girdling results in standing dead trees or snags, which are left to decompose and fall on their own. Snags are left at the land owner's request and provide habitat for cavity-nesting species and other wildlife (Western 2007). Girdling could pose a fuels-management problem by mixing standing dead fuel with live fuel, which could significantly increase the potential for a crown fire.

Trimming

Trimming or pruning is the removal of selected branches from tree trunks for the same purposes. Directional pruning is practiced by Western, whereby the trees are pruned to direct growth away from the conductors. Western uses these highly labor-intensive techniques in special situations where it is desirable to leave trees in place as visual screens (e.g., along roads, streams, and rivers) or where easement contracts and land/resource plans dictate such tree removal or trimming criteria (e.g., in orchards and along streams) (Western 2007).

Slash Disposal/Fuels Reduction

Manual cutting operations by Western are sometimes followed by slash disposal techniques designed to reduce fire hazards or to improve aesthetic appeal. Slash refers to the debris left within the vegetation treatment area. Depending on land owner preference, access limitations, and fire safety, the slash can be treated by one of the following methods: it can be chipped and left on site; burned in piles; removed from the site; or lopped and scattered. Western acknowledges land manager/owner concerns related to fuels left in the ROW and would reduce fuel load during vegetation management activities, to the extent feasible.

MECHANICAL VEGETATION CONTROL METHODS

Mechanical methods employ machines (e.g., masticators, bulldozers) to remove or control vegetation. These methods are often nonselective in that certain plants cannot be either targeted for removal or avoided. Mechanical methods, however, may be highly effective at controlling brush on gentle topography with few site obstacles. Most pieces of mechanical equipment are not safe to operate on slopes over 30 to 35 percent; mechanical methods are also constrained where soils are susceptible to compaction or erosion. Site obstacles such as rocks, stumps, or logs also reduce efficiency of these methods (Western 2007). Western would use mechanical methods to remove vegetation in portions of the ROW.

HERBICIDE CONTROL METHODS

Under the Proposed Action, Western could expand its use of herbicides for vegetation management over current practices. Expanded herbicide use would allow Western to reduce the frequency of vegetation management operations in some areas, and more effectively control the spread of noxious weeds. Western would coordinate with land managers and local agencies to ensure that its use of herbicides would be consistent with local regulations and guidelines.

An herbicide is a chemical used to control the growth of plants. The current commonly accepted, widely-used classification of herbicides is based upon how they are used for noxious-weed control and how they work. Accordingly, herbicides are classified into two major types:

- **Selective herbicides** are those that control a specific family or genus. An example is an herbicide that would affect broadleaf plants (including brush) but not grasses.
- **Nonselective herbicides** are chemicals that are generally toxic to plants without regard to species.

Plants differ in susceptibility to any specific chemical, and the choice of herbicide and application rate depends on the species to be controlled.

Only Western-approved herbicides would be used. Western's approval process requires that herbicides have been approved for use by the U.S. Environmental Protection Agency (EPA) and other applicable Federal and State regulatory agencies in ROW maintenance based on evaluations of toxicity, solubility, soil adsorption potential, and persistence in water and soil. Further, these herbicides must be registered for use in California by the EPA. **Appendix G** provides detailed information on herbicides and their associated risks. Western would use only employees or contractors with required applicator licenses/certificates.

Western would follow strict safety procedures and BMPs while applying herbicides. These practices are a part of the Master O&M Program and would include:

- Reviewing Federal and applicable California pesticide regulations for restrictions on use of particular herbicides;
- Reviewing interagency agreements for herbicide type or application method restrictions;
- Using herbicides approved by the individual agencies based on herbicide-use proposals that would be submitted by Western annually;
- Observing site conditions to match specific herbicides and application methods to those conditions, including the plants that are to be controlled, seasonal limitations, presence of sensitive environmental areas (such as listed species, habitat, and wetlands), presence/proximity of non-target vegetation, presence/proximity of crops, and vegetation conditions (such as height and amount of tall-growing brush);
- Reviewing Western's environmental protection requirements and the individual risk assessment for each proposed herbicide;
- Following all restrictions and guidance listed on the herbicide label;
- Calibrating equipment to ensure proper mixture and volume of herbicide;
- Selecting the proper nozzle tip to avoid overspray;

- Handling herbicides carefully to avoid accidental spills and ensure worker and public safety;
- Adjusting herbicide application methods based on wind speed and direction, which could include avoiding application on windy days when drift potential is greatest;
- Prohibiting the use of petroleum-based herbicides within cultural sites; and
- Providing the land owner and/or appropriate agency with the following information after completion of a particular activity: herbicide used, amount (including concentration), location of application, and method and date of application.

There are several different ways to apply herbicides, and the method selected depends on the type of control needed, the type of vegetation, and the site situation (i.e., site conditions, location). Application methods Western would use are described below and include stump treatment, basal spray treatment, foliage spray treatment, soils treatment, and under-surfacing materials treatment. See **Appendix G** for additional details.

Foliage Spray Treatment

Foliar spraying is a common method of applying herbicides on brush up to 6 feet tall. In this method, herbicide is applied to the entire plant's foliage and stems. Because it is sprayed into the air, drift can be a problem under certain atmospheric conditions. Also, most foliage sprays cause immediate brownout of vegetation. This method would not be used in areas where drift and brownout are concerns (e.g., adjacent to cropland, residences, susceptible vegetation, or other environmentally sensitive areas) (Western 2007). In these latter cases, stump treatment or basal spray treatment, discussed below, would be used as appropriate.

Stump Treatment

This type of treatment is used when vegetation is cut to the ground line. This method is primarily used after initial clearing and during maintenance clearing when trees have grown too tall to use foliage spray or when drift is an issue (Western 2007).

Basal Spray Treatment

This treatment method involves spraying the lower part of the stem and the exposed roots of the vegetation. Also included is "hack and squirt" or frill treatment, where the bark of a tree is cut and herbicides are injected to kill the tree. Basal spray treatment would be used on resprouting species and non-native and invasive plant species. This method is more selective than a foliage spray and does not cause immediate brownout of vegetation (Western 2007). In general, this treatment is prescribed where:

- Brush is too tall to use foliage spray without causing unacceptable drift;
- The ROW is adjacent to cropland, residences, susceptible vegetation, or other sensitive areas, and drift is a problem;

- The ROW contains a high density of compatible species, and a foliage spray cannot be applied without injuring the compatible cover;
- The ROW is in a visually sensitive area where immediate brownout would be unacceptable, and, due to seasonal limitations, only those foliage sprays that cause immediate brownout can be used.

Documentation and Reporting

Per Federal regulations, Western or its contractors would document and report information pertaining to herbicide application within the ROW and associated facilities. This information could include herbicide type, quantity, and application area. Reporting format and frequency would be decided in coordination with the appropriate land manager.

2.2.2.2 Access Road Maintenance

As part of the Master O&M Program, Western must maintain safe and reliable access roads to the existing infrastructure. Western would notify land managers before work begins and would comply with applicable specifications, as required. Western would also take into account land manager guidelines. In addition, land managers would be notified when work was completed so that they would have an opportunity to inspect the work. The following paragraphs describe Western's general approach to maintaining its existing legal access roads. Western also would remove access roads that are no longer needed, as and where appropriate. In appropriate cases, Western would provide land management agencies with a plan to restore such unneeded roads to natural states.

CLEARING CULVERTS AND DITCHES

Existing culverts and ditches would be kept free of debris and obstructions. Ditches on newly constructed roads could require frequent cleaning and checking after each major storm until revegetation has occurred. Additionally, it would be Western's goal to check each culvert at least once a year after spring rains and before winter rains. During inspection and clearing of culverts and ditches, Western would:

- Leave grass in the ditch unless it had filled with sediment and was no longer functioning;
- Check for undercutting road shoulders and banks;
- Check culverts for blockage by debris;
- Not leave a berm on the side of the road, as berms would channel water down the road.

CULVERT AND DITCH DESIGN

Prior to operations, any equipment would be cleaned and inspected. Roads to be reconstructed would be scarified to a depth of six inches, shaped, and roller compacted

with water. All ditches, existing culverts, and inlet assemblies would be cleaned. Slash and debris could be scattered, but would not be placed near or in stream channels, culvert inlets, or board ditches.

There would be a clearing limit of 4 feet on both sides of the existing roadbed. Trees over 6 inches in diameter within the clearing limit that did not impede blading would be limbed to a height of 14 feet and left standing. Culverts and drainage dip specifications are shown in **Appendix M**.

Culverts

Culverts would be made of corrugated metal or corrugated steel. Western would clear an area of 10 feet upstream and 10 feet downstream of a culvert, with a width 2 feet wider than the diameter of the culvert.

Western understands the potential for adverse environmental effects if a culvert is installed without consideration of existing biological resources. As such, Western would consider the following guidelines when constructing new culverts:

- Whenever possible, low-water crossings would be installed instead of a culvert;
- Applicable permits (including national regulatory permits for wetlands and state water-quality certification) would be obtained as appropriate;
- Projects would be scheduled so that they did not coincide with fish migrations, spawning, and egg-incubation periods;
- The appropriate erosion and sediment controls would be installed on disturbed soils as soon as possible (i.e., before site work was finished).

Culverts would be large enough to pass a 100-year flood at 67 to 75 percent of capacity. They would be designed to accommodate water velocities and flows necessary for fish, frogs, and other aquatic species to swim through the culvert. Culvert diameters would match the width of the stream at an average point. Stream widths would be measured at the top of the banks to best represent the stream size during normal high water or bank-full conditions. The angle or slope of the culvert would be equal to the stream grade to maintain an acceptable water velocity for fish passage. For culvert design specifications, refer to drawings in **Appendix M**.

Water Bars

A water bar is a ridge that directs water off the road. Water bars would be spaced 200 feet apart for roads with a grade under 6 percent, 125 feet apart for grades under 10 percent, and 50 feet apart for grades under 13 percent. For water-bar design specifications, refer to drawings in **Appendix M**.

Rolling Drain Dips

A rolling drain dip allows for cross-drainage. It consists of a shallow dip followed by a hump, along with an earth berm at the edge of one side of the road. For rolling drain dip design specifications, refer to drawings in **Appendix M**.

REMOVING SLIDE DEBRIS

Slide debris can cause increased sediment loads in established roadway drainage systems as well as in established streams. In order to prevent this, Western would not sidecast removed material. Should slide debris occur, the cause would be evaluated to determine if removal of the slide debris could exacerbate slope instability by undercutting the toe of the slope. In some instances, removal of some debris could be required and stabilization of the remaining material could prevent further problems. The appropriate erosion and sediment controls would be installed on disturbed soils as soon as possible (i.e., before site work was finished). Mulching and other forms of erosion control would be used to prevent erosion.

REPAIRING ROAD STRUCTURES

In order to maintain safe access, associated road structures would be routinely inspected and maintained. Road structures in need of repair could include bridges, culverts, cattle guards, and fences. Should a structure need to be modified, maintenance activities would be designed to reduce erosion and sedimentation in streams. Western would employ the following BMPs:

- Be consistent with applicable specifications of the appropriate land manager;
- Protect vegetation and minimize the amount of disturbance of plants and soils by equipment;
- Work quickly to minimize the time disturbed soils are exposed;
- Divert run-off away from exposed soils into vegetated buffers;
- Disperse concentrated stream flows;
- Provide adequate run-off channels;
- Trim slopes to stable configurations and revegetate as soon as possible;
- Comply with land manager design and engineering requirements for new or modified structures;
- Inspect new or modified structures at least once a year after spring rains and before winter rains;
- If repairs are made under emergency situations, mitigate the damage created during emergency road repairs as soon as possible to prevent further damage and erosion.

CONTROLLING EROSION

Western would work with guidance from each land manager to review and annually prioritize roads for repair over a five-year period. This would involve monitoring for erosion, rehabilitating gullies and rills, and ensuring that there are no ruts deeper than three inches.

REPAIRING DAMAGED ACCESS ROADS

For damaged access roads, Western would replace the surface material lost or worn away, then grade and shape the road surface, turnouts, and shoulders to their original or improved condition. Watering could be required to control dust and to retain fine surface rock.

While repairing damaged access roads, it would be Western's goal to adhere to the following BMPs:

- Be consistent with applicable specifications of the appropriate land manager;
- Minimize the amount of disturbance to plants and soils by equipment;
- Work quickly to minimize the time disturbed soils are exposed;
- Divert run-off away from exposed soils and into vegetated areas;
- Disperse concentrated stream flows;
- Provide adequate run-off channels;
- Trim slopes to stable configurations and revegetate as soon as possible;
- Check road quality at least once a year after spring rains and before winter rains;
- Mitigate any damage created by emergency repairs as soon as possible to prevent further damage and erosion.

2.2.2.3 Transmission System Maintenance

The need for repairs and preventative maintenance would be based on the results of inspections or other reports. Repairs and preventative maintenance could include: replacing insulators; tightening, replacing, or repairing towers/poles or hardware; and looking for ROW encroachments. These activities would be performed wherever damage or deterioration of transmission lines or facilities posed a threat to safety or reliability. The type of equipment needed could include a pickup truck, bulldozer, backhoe, bucket truck, and hand tools, and would depend on the required repair or maintenance. For major activities, Western would coordinate with the land manager.

2.2.3 Equipment/System Upgrades

For the transmission system to operate in a safe, reliable, and efficient manner, Western would replace or upgrade system components based on the age, condition, and technology of the equipment. System upgrades or replacements could include new conductors, capacitor banks, transformers and breakers, small solar power arrays, and other electrical equipment.

2.2.4 Coordination with Regulatory and Land Management Agencies

Western has been conducting maintenance activities along the San Joaquin Valley ROWs since the lines were constructed. Maintenance activities have included vegetation removal, access and maintenance road grading and stabilization, and transmission system upgrades. All of these activities have been reviewed by the USFWS and SHPO and are consistent with the May 1998 programmatic biological opinion with the USFWS and the 2010 PA with the SHPO and ACHP.

In the past, Western would identify maintenance activities along the ROWs and coordinate individually with USFWS and the appropriate land management agencies (e.g., BLM, BOR) on actions or mitigation measures needed to complete each maintenance task. Negotiated requirements would usually be documented in a categorical exclusion for each particular maintenance task. This reactionary process was labor intensive for Western, regulatory agencies, and land managers.

Western is proposing to streamline the regulatory process under the Proposed Action, by proactively identifying the sensitive natural and cultural resources that occur in the project area and consulting with the appropriate agencies and land managers on PCMs that would protect the resources. As described previously, Western has conducted detailed biological and cultural resource surveys throughout the project area. Western has incorporated all resource information and PCMs into a user-friendly GIS database, which would be provided to the resource agencies and land managers for reference.

Development of the PCMs was based largely on the survey data collected during 2008 and 2009, including habitat classification and assessment of the habitat suitability for special-status species. To meet Western's objective to maintain system reliability and public safety while protecting natural and cultural resources, PCMs were developed according to activity categories A, B, and C, which are based on an activity's potential to cause adverse effects. These activity categories are described in **Section 2.2.5**. This approach is consistent with the approach used in the 1998 programmatic biological opinion with the USFWS and the 2010 PA with the SHPO and ACHP.

2.2.4.1 Regulatory Coordination

Western would continue to coordinate with resource agencies and land managers on major facility maintenance and vegetation removal activities. The following bullets describe the process and reporting requirements that Western would follow for category A, B, and C maintenance activities (**Section 2.2.5** provides a description of the O&M activity categories).

- **Identification of maintenance activity.** Western is required to conduct aerial and ground inspections of its lines on a periodic basis. During inspections, Western would identify problem areas or equipment. These maintenance projects would be prioritized based on public and worker safety, system reliability, protection of the environment, and funding. **Section 2.2.4.2** describes the frequency of each type of maintenance activity.
- **Coordination with resource agencies and land managers.** Western would coordinate with the appropriate resource agencies and land managers for each major maintenance project, providing a description of the maintenance task and coordinating with them regarding the approved PCMs. The resource agencies and land managers would have access to Western's GIS database, which includes aerial photography, videos, biological and cultural resource data, and resource-based PCMs. This would allow the agencies and land managers to make decisions on applicable PCMs to ensure consistency with prenegotiated requirements (as occurs under the No Action Alternative).
- **Training of Western personnel or contractors.** Western would train its maintenance personnel on Standard Operating Procedures (SOPs) and PCMs on an annual basis. Should a contractor be hired to conduct a particular task, Western would train the contractor prior to project startup. As described in **Section 2.2.4.3**, all SOPs would be incorporated into the contractor's master contract. Western personnel and contractors would be responsible for complying with the SOPs and PCMs.
- **Monitor maintenance activity.** Western's personnel would monitor maintenance activities to make sure that the contractor was complying with the applicable SOPs and PCMs. Western would also conduct follow-up inspections of the ground-disturbance activity sites.

2.2.4.2 Projected O&M Frequency

Under the Proposed Action, Western would continue periodic aerial and ground patrols of the transmission lines and towers. Aerial inspections would be performed on a quarterly to semi-annual basis by flying an aircraft at 50 to 300 feet above the conductors. Ground patrols would be conducted annually using a pickup truck to drive along lines. During either type of patrol, problems could be identified that may require immediate repair or replacement of transmission line hardware or vegetation management. Typically, equipment repair or replacement would be conducted by a four-person crew with two or three trucks, a boom line truck, and an aerial and assist truck.

Western would also monitor vegetation clearance and access roads along the ROWs. Western would prioritize those areas that needed maintenance according to public and worker safety, transmission reliability, environmental protection, and funding. Based on past O&M activities, Western assumes that O&M activities would occur on an annual basis as follows for the San Joaquin Valley ROWs; the estimate is an average per year over the entire project area:

- 100 to 200 acres of vegetation would be managed in ROW and access roads;
- 6 to 12 miles of maintenance and access roads would be stabilized/graded;
- 3 to 5 culverts would be repaired or replaced;
- 4 to 8 towers or poles would be relocated or stabilized (towers would be relocated adjacent to existing tower or poles); and
- Up to 1 communication tower would be installed.

2.2.4.3 Standard Operating Procedures (SOPs)

Table 2.4-1 provides a list of SOPs that Western and its contractors would follow for every O&M activity, regardless of the activity category. SOPs would be followed at all times throughout the project area. All Western O&M personnel would be subject to an annual training that includes SOPs, applicable environmental laws and regulations, and applicable agency requirements.

SOPs would be included as part of the contract with any contractor selected to conduct O&M activities. Prior to conducting the O&M activity, Western's O&M personnel would review the SOPs with the selected contractor to make sure the intent and background of each procedure was clearly understood. In addition, Western's O&M personnel would monitor the contractor during maintenance activities, and conduct follow-up inspections of the job site at periodic intervals after the work had been completed.

2.2.4.4 Project Conservation Measures (PCMs)

Western has developed PCMs to protect natural and cultural resources. PCMs have been integrated into Western's master GIS database and used in project planning to generate activity reports. These activity reports would 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.

PCMs would apply to species based on their listing status:

- Federal and state-listed species would be protected along all ROWs on all lands;
- Agency-listed species would be protected on the agency's land (e.g., BLM sensitive species would be protected on BLM land).

Table 2.4-2 provides the PCMs for special-status plants and **Table 2.4-3** provides the PCMs for special-status fish and wildlife. Impacts to fish, wildlife, and plant species found in vernal pool, wetland, and aquatic habitats would be further avoided by implementation of water resource/aquatic habitat PCMs, which are provided in **Table 2.4-4**. PCMs for cultural resources are presented in **Table 2.4-5**. PCMs for paleontological resources are presented in **Table 2.4-6**.

2.2.5 Operation and Maintenance Activity Categories

The following is a list of the O&M activities according to their associated activity category. Note that substation and maintenance facility activities are restricted to the confines of the existing fenced substation or facility perimeter.

- Category A – Inspection and Minor Maintenance Activities
- Category B – Routine Maintenance Activities
- Category C – New Infrastructure

2.2.5.1 Category A – Inspection and Minor Maintenance Activities

Maintenance activities in Category A are primarily inspection-type actions, with some minor repairs that would not cause substantial soil disturbance. These maintenance tasks would cause no or nominal effects to sensitive resources as long as SOPs were followed. Typical activities under Category A include but are not limited to:

Substation

- Maintenance and replacement of transformers and breakers
- Servicing and testing of equipment at existing substations, including oil change-outs
- Installation or replacement of brushings
- Cleaning or replacement of capacitor banks
- Maintenance or installation of propane tanks within a substation yard
- Maintenance of switches, voltage regulators, reactors, tap changes, reclosers, and valves
- Replacement of wiring in substations and switchyards
- Replacement of existing substation equipment including regulators, capacitors, switches, wave traps, radiators, and lightning arresters
- Installation of cut-out fuses
- Adjustment and cleaning of disconnect switches
- Placement of temporary transformers
- Maintenance, installation, and removal of solar power arrays and controllers
- Installation of foundation for storage buildings above ground mat within existing substation yard
- New footings
- Ground mat repairs
- Remediation of small spill of oil and hazardous materials (less than 1 gallon)
- Clearing vegetation by hand within the property boundary of a fenced substation
- Application of soil sterilants and herbicides within the property boundary of a fenced substation

Transmission Line

- Ground and aerial patrols
- Ground wire maintenance
- Aircraft warning devices maintenance
- Insulator maintenance
- Bird guard maintenance
- Cross arms maintenance on wood pole structures
- Emergency manual removal and/or pruning of danger trees or vegetation
- Steel members of steel transmission line structures
- Hardware on wood and steel transmission line structures
- Dampener maintenance
- X brace and knee brace maintenance
- Ground spike maintenance on wood pole structures
- Ground rod maintenance
- Armor rod maintenance and clipping-in structures
- Conductor upgrade, replacement, and/or maintenance
- Overhead ground-wire (OHGW) upgrade, replacement, and/or maintenance
- Wood preservative maintenance on wooden pole structures
- Emergency placement of rocks at bases of poles or structures to stabilize small eroded areas
- Remediation of small spill of oil and hazardous materials (less than 1 gallon)
- Antennae maintenance
- Structure mile markers maintenance

Communication System

- Microwave radio tower maintenance
- Communication tower and antennae maintenance
- Light beacon maintenance
- Microwave dish maintenance
- Parabolic dish maintenance
- Periodic antenna tower climbing inspections

Maintenance Facility

- Building maintenance including interior and exterior painting; and roof, ceiling, floor, window, and door maintenance
- Clearing vegetation by hand within the property boundary of fenced maintenance facilities
- Application of soil sterilants and herbicides within the property boundary of fenced maintenance facility

2.2.5.2 Category B – Routine Maintenance Activities

Maintenance activities in Category B include some of the typical repair tasks that would occur along Western's existing ROW. Category B actions may cause minimal effects to sensitive resources. Category B maintenance equipment may include, but would not be limited to, rubber-tired vehicles such as bucket trucks, backhoes, front-end loaders, cranes, auger trucks, bobcats, and pole trucks. In addition to SOPs, Western would implement all PCMs identified for resources in the work area for Category B maintenance activities. Typical activities under Category B include but are not limited to:

Transmission Line

- Maintenance and repair of existing culverts
- Removal of soil deposition around tower legs
- Ground anchors maintenance
- Wood pole maintenance
- Filling of erosional features on access roads
- Remediation of small spill of oil and hazardous materials (between 1 and 10 gallons)
- Grading existing access roads
- Installation of minor rip-rap on creeks and rivers
- Application of herbicides
- Placement of fill or rock(s) around existing culverts
- Placement of fill or rock(s) around existing towers or structures
- Vehicle and equipment staging
- Installation and repair of fences and gates
- Installation or replacement of underground power, communication, fiber optics, ground wire, or ground electrical line (less than 100 feet)
- Installation or replacement of power, communication, fiber optics, OHGW, or electrical line over water features (less than 100 feet)
- Manual removal and/or pruning of danger trees or vegetation
- Mechanical vegetation management by means of masticator or other small mechanical equipment

Communication System

- Foundations or footings maintenance
- Installation of underground power, communication, fiber optics, ground wire, or ground electrical line (less than 100 feet)
- Installation or replacement of power, communication, fiber optics, OHGW, or electrical line over water features (less than 100 feet)
- Maintenance and repair of existing culverts
- Remediation of small spill of oil and hazardous materials (between 1 and 10 gallons)
- Application of soil sterilants and herbicides
- Installation of equipment on existing towers

2.2.5.3 Category C – New Infrastructure

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

Transmission Line and Communication System

- Adding new access roads
- Installation of new culverts
- Installation of new foundation for storage building at existing facilities
- Erosion-control projects at existing facilities
- Reconductoring
- Tower/pole relocation/realignment
- Installation or replacement of underground power, communication, fiber optics, or ground electrical line (greater than 100 feet)
- Installation or replacement of power, communication, fiber optics, or electrical line over water features (greater than 100 feet)
- Remediation of a small spill of oil and hazardous materials (greater than 10 gallons)
- Mechanical vegetation management by means of bulldozers or other large, heavy equipment

2.3 No Action Alternative

Under the No Action Alternative, Western would continue its need-driven management approach using current methods for ROW maintenance. Under a need-driven management approach, Western would trim, mow, clear, remove, and dispose of vegetation along ROW segments as control needs are identified through periodic line patrols. Western would perform vegetation management using the current mix of manual and mechanical methods to control vegetation on transmission line and access road ROWs, including substations. The No Action Alternative also includes the current practice of spot application of herbicides. Access road repairs would be performed as needed. Transmission system maintenance activities would consist of regular aerial and ground patrols to locate problems, repairs to correct problems, and preventative maintenance. These are all consistent with the 1998 programmatic biological opinion with the USFWS and the 2010 PA with the SHPO and ACHP.

The primary differences between the Proposed Action and the No Action Alternative are the potential of broader herbicide use, improved design standards, and the potential installation of fiber optic cable, tower relocation/realignment, and cell tower installation. The Proposed Action also provides a process to streamline the regulatory process for future O&M activities.

2.4 Alternatives Eliminated from Full EA Evaluation

Alternatives were assessed on their ability to reasonably respond to the purpose and need for action. This section provides the rationale for each alternative identified and eliminated from full EA evaluation.

2.4.1 Comprehensive Vegetation Removal Alternative

Under this alternative, currently approved vegetation control methods would be used to remove vegetation throughout the project area. The Comprehensive Vegetation Removal Alternative would not facilitate a gradual conversion to stable, low-growing plant communities. Instead, the vegetation would be removed by Western every two to three years throughout the San Joaquin Valley ROWs.

This alternative would cause significant, adverse impacts to biological resources from continuous habitat disturbance. Additionally, major vegetation removal activities throughout such a large area could cause significant soil erosion and adverse effects to water quality. Because this alternative would result in greater short-term environmental impacts than current practices or other alternatives considered, it was eliminated from further consideration in this EA.

2.4.2 Prohibition of Herbicide Use Alternative

Under this alternative, Western would manage vegetation through manual and mechanical methods only. Herbicide use would not be allowed to retard vegetation growth or to eliminate non-native and invasive species, as compared to the Proposed Action that would allow such site-specific herbicide application.

Under the Prohibition of Herbicide Use Alternative, Western maintenance crews would manually remove vegetation and non-native and invasive species on an annual basis. These annual maintenance trips would increase the amount of ground disturbance, increase overall emissions, increase the potential for soil erosion, increase the potential for hazardous material and petroleum spills, increase long-term intermittent noise levels, and increase the potential for adverse effects to biological and cultural resources as compared to current practices (limited herbicide application) or other alternatives considered. As a result, this alternative was eliminated from analysis in the EA.

Table 2.4-1. Standard Operating Procedures by Environmental Issue Area

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 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.
AIR QUALITY	
AQ-SOP-1	Western will adhere to all applicable 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 applicable emission standards; appropriate emissions-control equipment will be maintained for vehicles and equipment, per EPA and/or Western 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 two 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.
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 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. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance.

Table 2.4-1. Standard Operating Procedures by Environmental Issue Area (continued)

B-SOP-2	Western 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 had completed the training, and understood and agreed to the terms. Further, Western crews will have access to the O&M GIS database in the field to be able to identify sensitive resources and associated PCMs.
B-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 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.
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 land owner.
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 Western 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 Western 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.

Table 2.4-1. Standard Operating Procedures by Environmental Issue Area (continued)

B-SOP-12	<p>To protect nesting birds (birds not specifically protected by PCMs but protected by the Migratory Bird Treaty Act), whose nests could occur within the ROW, Western and its subcontractors will perform Category B and C O&M activities outside the nesting season, which runs from March 1 through August 15. Alternatively, a qualified biologist will conduct nesting-bird surveys prior to Project activities. For special-status birds, see specific PCMs.</p> <ul style="list-style-type: none"> • 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. At such time when Western finalizes an Avian Protection Plan, Western will adhere to the guidance in that document.
B-SOP-13	<p>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. At such time when Western finalizes an Avian Protection Plan, Western will adhere to the guidance in that document.</p>
B-SOP-14	<p>At completion of work and at the request of the land owner/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.</p>
B-SOP-15	<p>Prior to any application of herbicide, Western 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/precint.htm. The measures generated by the PRESCRIBE database will supersede those in the PCMs where they are different.</p>
CULTURAL RESOURCES	
C-SOP-1	<p>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.</p>
C-SOP-2	<p>Western 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, Western crews will have access to the O&M GIS database in the field to be able to identify sensitive resources and associated PCMs.</p>

Table 2.4-1. Standard Operating Procedures by Environmental Issue Area (continued)

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 <i>buried, non-human remains cultural materials</i> , work within 50 feet of the find will be halted and the discovery will be reported immediately to the Western Natural Resources Department or other designated point of contact. Western 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 <i>potential buried human remains</i> , work within 50 feet of the find will be halted and the discovery will be reported immediately to the Western Natural Resources Department or other designated point of contact. Western 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 measures to avoid the resource or mitigate during maintenance activities.
GEOLOGY AND SOILS	
GS-SOP-1	Should Western need to modify or relocate a structure, Western 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 Western's IVM 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 could not be avoided, Western will use wide-track or balloon tire vehicles and equipment or timber mats.
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 applicable Federal, state, and local regulations.
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 was 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, as approved by the Federal land manager, 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 insure soil stabilization and revegetation acceptable to the Federal land manager.
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 away from watercourses/washes to reduce the potential for material to enter the watercourse
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.

Table 2.4-1. Standard Operating Procedures by Environmental Issue Area (continued)

LU-SOP-2	Western will notify affected land owners for vegetation management and encroachment activities, as appropriate. Western 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. Western will clean seeds from ground-disturbing equipment before entering cropland or forestland, or moving between these subject areas.
LU-SOP-4	Western will follow the guidelines established in Section 1, Chapter 3.1, "Protection of Underground Infrastructure," Article 2 of California Government Code 4216 4216.9. Western 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. Western will avoid impacts to marked utility locations, and will coordinate with utility owners, as appropriate, to avoid impacts from project activities.
LU-SOP-5	Western 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 Western'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, Western's Natural Resources Department will be contacted to evaluate local thresholds and all requirements of those agencies having jurisdiction over noise matters.
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.

Table 2.4-1. Standard Operating Procedures by Environmental Issue Area (continued)

<p>PH-SOP-4</p>	<p>With regard to herbicide use:</p> <ul style="list-style-type: none"> • All herbicide applicators will have received training and be licensed in appropriate application categories. • Herbicide-free buffer zones will be maintained per label instructions if using herbicides near crops for consumption. • 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. • Western will ensure that areas treated with herbicides will be posted and re-entry intervals specified and enforced in accordance with label instructions. 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. • There will be no aerial application of herbicides. • All herbicide spill requirements will be followed in the rare case of an herbicide spill, including containment, cleanup, and notification procedures.
<p>PH-SOP-5</p>	<p>With regard to hazardous materials:</p> <ul style="list-style-type: none"> • 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 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 Western's dispatch and Natural Resources Department. • 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.
<p>PH-SOP-6</p>	<p>All contract crews will complete hazardous materials pre-maintenance awareness training to ensure they were aware of SOPs and PCMs, as well as pertinent regulations and the consequences for non-compliance. 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.</p>
<p>PH-SOP-7</p>	<p>Contractors must submit a spill response plan that is approved by Western. Clean-up actions and costs, resulting from contractor misconduct will be the responsibility of the contractor and approved by Western's Natural Resources Department.</p>
<p>PH-SOP-8</p>	<p>Western crews will complete annual awareness training to ensure they were familiar with SOPs and PCMs related to hazardous materials. 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.</p>

Table 2.4-1. Standard Operating Procedures by Environmental Issue Area (concluded)

PH-SOP-9	All flammable vegetation will be removed a minimum of 30 feet from tower center and conductors or as required by Federal requirements, and to ensure access to towers.
PH-SOP-10	Western 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 levels during fire season, and a minimum of a 300-gallon water tank with a minimum of 250 feet of hose.
RECREATION	
REC-SOP-1	Western will direct members of the public to alternate trails or recreation areas if blocked by machinery or for safety purposes. Western will coordinate such re-direction with the appropriate land management agency(ies).
TRANSPORTATION	
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).
WATER RESOURCES	
WR-SOP-1	Non-biodegradable debris will not be deposited in the ROW.
WR-SOP-2	Should Western need to relocate a structure or access road, Western will consult with the USACE, as appropriate. Bridges will be used at new stream crossings wherever possible. Any discharge of material (displaced soils and, in certain circumstances, vegetation debris) within waters of the United States will be subject to USACE regulations under the Clean Water Act, and could require a permit. Western Natural Resources Department will be contacted.
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 Western or the applicable Federal land manager.
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 Western facilities.

Table 2.4-2. Special-status Plant Project Conservation Measures

PCM-ID	Species Name	Status	Activity Category	PCM
Upland Species				
PCM-B002	<i>Amsinckia grandiflora</i> Large-flowered fiddleneck	FE/SE/1B.1	A	Follow SOPs
			B	<p>From April 1 to May 31, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between April 1 and May 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the marked area, 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited.</p> <p>Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities between April 1 and May 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by USFWS.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p> <p>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.</p> <p>A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B009	<i>Cordylanthus palmatus</i> Palmate-bracted bird's beak	FE/SE/1B.1	A	Follow SOPs
			B	<p>From May 1 to October 31, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between May 1 and October 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed between May 1 and October 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by USFWS and after discussions with CDFG.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p> <p>A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B014	<i>Lasthenia conjugens</i> Contra Costa goldfields	FE/CNPS List 1B.1	A	Follow SOPs and PCM-W001 (in appropriate habitat)
			B	<p>From March 1 to June 30, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between March 1 to June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed between March 1 and June 30 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by USFWS.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p> <p>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.</p> <p>A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B100	<i>Allium jepsonii</i> Jepson's onion	CNPS List 1B.2/BLMS	A	Follow SOPs
			B	<p>From April 1 to August 31, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between April 1 and August 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities require a survey by a qualified biologist to mark existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B101	<i>Allium tuolumnense</i> Rawhide Hill onion	CNPS List 1B.2/BLMS	A	Follow SOPs
			B	<p>From March 1 to May 30, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between March 1 and May 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B102	<i>Arctostaphylos nissenana</i> Nissenan manzanita	CNPS List 1B.2/BLMS	A	Follow SOPs
			B	<p>Vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>A qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited.</p> <p>Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM- B104	<i>Calycadenia hooveri</i> Hoover's calycadenia	CNPS List 1B.3/BLMS	A	Follow SOPs
			B	<p>Follow all measures listed for Category A above.</p> <p>From July 1 to September 30, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between July 1 and September 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited.</p> <p>Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed between July 1 and September 30 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B105	<i>Chlorogalum grandiflorum</i> Red Hills soaproot	CNPS List 1B.2/BLMS	A	Follow SOPs
			B	<p>From May 1 to June 30, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between May 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B106	<i>Clarkia biloba</i> ssp. <i>australis</i> Mariposa clarkia	CNPS List 1B.2/BLMS	A	Follow SOPs
			B	<p>From May 1 to July 31, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between May 1 and July 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed between May 1 and July 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B107	<i>Clarkia rostrata</i> beaked clarkia	CNPS List 1B.3/BLMS	A	Follow SOPs
			B	<p>From April 1 to May 31, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between April 1 and May 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed between April 1 and May 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B108	<i>Cryptantha mariposae</i> Mariposa cryptantha	CNPS List 1B.3/BLMS	A	Follow SOPs
			B	<p>From April 1 to June 30, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between April 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed between April 1 and June 30 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B109	<i>Horkelia parryi</i> Parry's horkelia	CNPS List 1B.2/BLMS	A	Follow SOPs
			B	<p>From April 1 to September 30, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between April 1 and September 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B110	<i>Lomatium congdonii</i> Congdon's lomatium	CNPS List 1B.2/BLMS	A	Follow SOPs
			B	<p>From March 1 to June 30, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between March 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B111	<i>Lupinus spectabilis</i> Shaggy-hair lupine	CNPS List 1B.2/BLMS	A	Follow SOPs
			B	<p>From April 1 to May 31, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between April 1 and May 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed between April 1 and May 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B112	<i>Monardella douglasii</i> ssp. <i>venosa</i> veiny monardella	CNPS List 1B.1/BLMS	A	Follow SOPs
			B	<p>From May 1 to July 31, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between May 1 and July 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities proposed between May 1 and July 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B113	<i>Packera layneae</i> Layne's ragwort	FT/SR/CNPS List 1B.2	A	Follow SOPs.
			B	<p>From April 1 to August 31, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between April 1 and August 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by USFWS and after discussions with CDFG.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p> <p>A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B115	<i>Verbena californica</i> Red Hills vervain	FT/ST/CNPS List 1B.1	A	Follow SOPs and PCM-W002 (in appropriate habitat)
			B	<p>Follow measures listed for A.</p> <p>From May 1 to September 30, vehicle access will be permitted only on well established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible.</p> <p>If vegetation management activities are proposed between May 1 and September 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited.</p> <p>Herbicide use will be prohibited at all times with the exception of direct application to target vegetation.</p> <p>Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by USFWS and after discussions with CDFG.</p> <p>All work will be hauled offsite.</p> <p>Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with BMPs adopted by Western to prevent impacts to plants.</p> <p>A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
			C	<p>Follow all measures listed for A and B.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
VERNAL POOLS, VERNAL POOL GRASSLANDS, MEADOWS AND SEASONAL WETLANDS				
PCM-B028	<i>Neostapfia colusana</i> Colusa grass	FT/SE/CNPS List 1B.1	A and B	Follow SOPs and PCM-W001. 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. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
SEEP, SPRING, POND, LAKE, CREEK, MARSH SPECIES				
PCM-B037	<i>Eryngium racemosum</i> delta button celery	SE/CNPS List 1B.1	A	Follow SOPs and PCM-W002.
			B	Follow all measures listed for A. If vegetation management activities are proposed between June 1 and September 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) and the perimeter of the spring or wet meadow prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by Western after discussion with CDFG.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B038	<i>Lilaeopsis masonii</i> Mason's lilaeopsis	SR/CNPS List 1B.1	A	Follow SOPs and PCM-W002.
			B	Follow all measures listed for A. If vegetation management activities are proposed between April 1 and November 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by Western after discussion with CDFG.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

Table 2.4-2. Special-status Plant Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B103	<i>Brodiaea pallida</i> Chinese Camp brodiaea	FT/SE/CNPS List 1B.1	A	Follow SOPs and PCM-W002.
			B	Follow all measures listed for A. If vegetation management activities are proposed between May 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by USFWS and after discussions with CDFG. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

Table 2.4 2. Special-status Plant Project Conservation Measures (concluded)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B114	<i>Packera clevelandii</i> (= <i>Senecio clevelandii</i> var. <i>heterophyllus</i>) Red Hills ragwort	CNPS List 1B.2/BLMS	A	Follow SOPs and PCM-W002.
			B	Follow all measures listed for A. If vegetation management activities are proposed between June 1 and July 3 ¹ , a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by BLM.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

- 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, which corresponds 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 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 2.4-3. Special-status Fish and Wildlife Project Conservation Measures

PCM-ID	Species Name	Status	Activity Category	PCM
INVERTEBRATES				
PCM-B042	<i>Branchinecta conservatio</i> Conservancy fairy shrimp	FE	A, B, and C	<p>Follow SOPs and PCM-W001.</p> <p>If conservancy fairy shrimp habitat cannot be avoided, the following will be implemented. Protocol-level preconstruction surveys will be required or species presence will be assumed. If conservancy fairy shrimp were present or assumed present, Western 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.</p> <p>For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
PCM-B044	<i>Branchinecta longiantenna</i> Longhorn fairy shrimp	FE	A, B, and C	<p>Follow SOPs and PCM-W001.</p> <p>If longhorn fairy shrimp habitat cannot be avoided, the following will be implemented. Protocol-level preconstruction surveys will be required or species presence will be assumed. If longhorn fairy shrimp were present or assumed present, Western 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.</p> <p>For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B045	<i>Desmocerus californicus dimorphus</i> Valley elderberry longhorn beetle	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 ^c will clearly flag or fence each elderberry plant with 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 O&M activities except manual clearing will be prohibited. No insecticides, herbicides, fertilizers, or other chemicals will be used within 100 feet of an elderberry plant, except direct application to target vegetation. Trimming, rather than removal of shrubs, will be used where feasible. Directional felling of trees and manual-cutting 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 were present. 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 Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency, as necessary.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B046	<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	FT	A, B, and C	<p>Follow SOPs and PCM-W001.</p> <p>If vernal pool fairy shrimp habitat cannot be avoided, the following will be implemented. Protocol-level preconstruction surveys will be required or species presence will be assumed. If vernal pool fairy shrimp were present or assumed present, Western 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.</p> <p>For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
PCM-B047	<i>Lepidurus packardii</i> Vernal pool tadpole shrimp	FE	A, B, and C	<p>Follow SOPs and PCM-W001.</p> <p>If vernal pool tadpole shrimp habitat cannot be avoided, the following will be implemented. Protocol-level preconstruction surveys will be required or species presence will be assumed. If vernal pool tadpole shrimp were present or assumed present, Western 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.</p> <p>For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
FISH				
PCM-B050	<i>Oncorhynchus mykiss irideus</i> Steelhead trout Central Valley ESU	FT	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. Instream work will occur only between June 1 and September 1 unless otherwise authorized by NMFS. 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-erodable, 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. To comply with the salmon injunction for herbicide applications, Western 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 for ground application is 20 feet from any salmonid-supporting waters. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B050a			A, B, and C	Critical habitat: There may be additional conditions imposed on O&M activities in proposed critical habitat, resulting from formal (Section 7) consultation with USFWS and NMFS. Follow PCM-B048. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B051	<i>Hypomesus transpacificus</i> Delta smelt	FT/ST	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. Because of potential range overlap with listed salmonids, instream work will occur only within work windows specified for listed salmon and steelhead (June 1 to September 1), unless otherwise authorized by USFWS. 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 USFWS criteria. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B051a			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. 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 Western's Natural Resources Department in support of USFWS reporting requirements.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B052	<i>Acipenser medirostris</i> Green sturgeon	FT	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. Because of potential range overlap with listed salmonids, instream work will occur only within work windows specified for listed salmon and steelhead (June 1 to September 1), unless otherwise authorized by NMFS. 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 USFWS criteria. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
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 Western's Natural Resources Department in support of NMFS reporting requirements.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B120	<i>Spirinchus thaleichthys</i> longfin smelt	ST	A	Follow SOPs and PCM-W002.
			B	<p>Follow PCM-W002.</p> <p>Because of potential range overlap with listed salmonids, instream work will occur only within work windows specified for listed salmon and steelhead (June 1 to September 1), unless otherwise authorized by USFWS.</p> <p>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-erodable, 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 USFWS criteria.</p> <p>A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
			C	<p>Follow all measures listed for A and B above.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
Amphibians				
PCM-B058	<i>Rana draytonii</i> California red-legged frog	FT/SSC	A	Follow SOPs and PCM-W002.
			B and C	<p>Follow all measures for Category A above.</p> <p>A Service-approved biologist^b will identify potential California red-legged frog breeding habitat and O&M activities will be prohibited within 300 feet of this habitat in any season unless and until authorized under the terms and conditions of the biological opinion.</p> <p>If this is not possible, a preconstruction survey will be conducted no more than 24 hours before O&M activities begin. A Service-approved biologist will remain on site during all activities to ensure protection of California red-legged frogs OR an exclusion barrier will be constructed around the work site, following Service-approved methods, 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 Service-approved biologist will remove trapped animals.</p> <p>To comply with the California red-legged frog injunction for herbicide applications, Western will ensure that, in the counties named in the injunction, there will be no ground application of any of the chemicals named in the injunction (http://www.epa.gov/espp/litstatus/redleg-frog/steps-info.htm). Currently, the no-use buffer for ground application is 60 feet from any aquatic feature, aquatic breeding habitat, non-breeding aquatic habitat, and upland habitat.</p> <p>A brief description of the O&M activity, including location and duration, will be sent to Western's Natural Resources Department in support of USFWS reporting requirements.</p>
PCM-B058a			A, B, and C	<p>Critical habitat: There may be additional conditions imposed on O&M activities in critical habitat, resulting from formal (Section 7) consultation with USFWS.</p> <p>Follow PCM B056.</p> <p>For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B059	<i>Ambystoma californiense</i> California tiger salamander	FT/SC/SSC	A	Follow SOPs and PCM-W001 and PCM-W002 (in appropriate habitat)
			B and C	Follow all measures for Category A above. A Service-approved biologist ^b will identify potential California tiger salamander breeding habitat and O&M activities will be prohibited within 1,000 feet of potential habitat in any season unless and until authorized under the terms and conditions of the biological opinion. All ROW activities will be avoided or minimized within potential California tiger salamander habitat from October 1 through March 31. All vehicles will be restricted to access roads within California tiger salamander habitat all year. If this were not feasible, prior approval will be required from the USFWS through the biological opinion and implementation of conditions set forth in the biological opinion. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B061	<i>Rana boylei</i> Foothill yellow-legged frog	FSS/BLMS	A	Follow SOPs.
			B and C	Follow PCM-W002.
PCM-B063	<i>Spea hammondi</i> Western spadefoot toad	SSC/BLMS	A	Follow SOPs.
			B and C	Follow PCM-W001 and PCM-W002 (in appropriate habitat).
REPTILES				
PCM-B064	<i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	FT/ST	A	Follow SOPs. Vehicles will be restricted to existing access roads and limit speed to 15 mph. Equipment and debris will be placed only in cleared areas where snakes will be readily visible. All activities that will take place on the ground will be conducted during daylight hours to increase chances of sighting in areas where whipsnakes were present.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
			B	Follow all measures listed for A above. Shrub removal will be limited in areas of potential habitat; vegetation will be manually cleared. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B065	<i>Phrynosoma blainvillii</i> (= <i>coronatum frontale</i>) Coast horned lizard	SSC/BLMS	A, B, and C	Off-road travel will be minimized. Vehicle speeds will not exceed 15 mph on access and maintenance roads and 10 mph on unimproved access routes.
PCM-B066	<i>Thamnophis gigas</i> Giant garter snake	FT/ST	A	Follow SOPs and PCM-W002 in aquatic giant garter snake habitat.
			B	Follow PCM-W002 in aquatic giant garter snake habitat, which supersedes those below where 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. Giant garter snake aquatic and upland habitats will be flagged as an environmentally sensitive area by a Service-approved biologist within or adjacent to the disturbance footprint. Only manual vegetation removal will be allowed within the flagged area. A Service-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 giant garter snake aquatic habitat. If this were not feasible, O&M activities will be conducted between May 1 and September 30, the giant garter snake active period, and all potentially affected aquatic habitats will be

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
				<p>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 could not be completely dewatered, prey items will be netted or otherwise salvaged if present. If it were not feasible to conduct O&M activities between May 1 and September 30, the Sacramento Fish and Wildlife Office will be contacted, and the following actions will be performed.</p> <p>A Service-approved biologist^b will conduct a preactivity survey no more than 24 hours before O&M activities began and will be on site during all activities in potential giant garter snake aquatic and upland habitats. Preactivity surveys will be repeated whenever a lapse in O&M activity of two weeks or longer occurred.</p> <p>If a giant garter snake were encountered during O&M, all activities will cease and the snake will be allowed to leave on its own or the Service-approved biologist will determine when the snake will not be harmed. Only personnel with a USFWS 10(a)(1)(A) recovery permit will have the authority to capture and/or relocate giant garter snakes encountered in project area. All sightings and incidental take will be reported to the Western Natural Resources Department, who will report to the USFWS.</p> <p>For temporary and permanent impacts to giant garter snake habitat, habitat compensation will be achieved using the standard USFWS compensation formulas as specified in the USFWS guidelines (USFWS 1999, Appendix C) or as arranged in consultation with USFWS.</p> <p>O&M personnel will receive specified Service-approved worker environmental awareness training. This training will instruct workers to recognize giant garter snakes and their habitat. Western crews will receive this training annually and contract crews will receive training prior to O&M activity.</p> <p>Unless habitat compensation were required, any temporary fill and debris, which might provide habitat for giant garter snakes, will be immediately removed and disturbed areas restored to pre-project conditions after completion of O&M activities. 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.</p> <p>A description of the O&M activity, including location and duration, will be kept on file at Western's</p>

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
				Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B068	<i>Emys (=Actinemys) marmorata</i> Western pond turtle	SSC/BLMS	A	Follow SOPs and PCM-W002.
			B and C	From April 15 to July 15, any ground-disturbing activity within 400 feet of a permanent pond, lake, creek, river, or slough that could affect the bed, bank, or water quality of any of these features will be prohibited OR a qualified biologist ^a will inspect the project area. If adult or juvenile pond turtles were present, a qualified biologist will monitor project activities to ensure that no turtles were harmed. If a qualified biologist determined that nests could be adversely affected, potential nesting areas will be avoided between June 1 and October 31. Follow PCM-W002.
PCM-B116	<i>Gambelia (=Crotaphytus) sila</i> Blunt-nosed leopard lizard	FE/SE/SFP	A	Follow SOPs. Vehicles will be restricted to existing access roads and limit speed to 15 mph. Equipment and debris will be placed only in cleared areas where lizards will be readily visible. All activities that will take place on the ground will be conducted during daylight hours to increase chances of sighting in areas where lizards are present.
			B	Follow all measures listed for A above. Shrub removal will be limited in areas of potential habitat; vegetation will be manually cleared. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
BIRDS				
PCM-B069	<i>Falco peregrines</i> American peregrine falcon (nesting)	FD/SE-FP	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 ^a will conduct nesting surveys to verify absence. If a nest were 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	<i>Haliaeetus leucocephalus</i> Bald eagle (nesting and wintering)	FD/SE-FP	A	Follow SOPs.
			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 were known to nest OR a qualified biologist ^a 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	<i>Riparia riparia</i> Bank swallow (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 ^a will conduct nesting surveys prior to O&M activities that involve modifications to such streambanks. If a nesting colony were 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.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B072	<i>Laterallus jamaicensis coturniculus</i> California black rail	ST-FP	A	Follow SOPs and PCM-W002.
			B and C	Because black rails are resident where they occur (i.e., not migratory), herbicide use in potential black rail habitat will be prohibited (with the exception of direct application) all year long unless, under guidance of CDFG, the habitat were determined to be unoccupied. From February 15 to July 31 surface disturbances, including noise, or changes to the hydrological regime will be prohibited in potential black rail habitat (shallowly flooded wetlands or irrigated pasture) OR a qualified biologist ^a will conduct nesting surveys to verify absence. If nesting activity is detected or likely, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities will be prohibited from February 15 to July 31. Follow PCM-W002.
PCM-B076	<i>Grus canadensis tabida</i> Greater sandhill crane (wintering)	ST-FP	A, B and C	Follow SOPs and PCM-W002.
PCM-B080	<i>Buteo swainsoni</i> Swainson's hawk (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 ^a , 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 had 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.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B082	<i>Athene cunicularia</i> Western burrowing owl (burrow sites winter and summer)	BLMS	A	Follow SOPs.
			B and C	From February 1 to August 31 herbicide application (with the exception of direct application) and other O&M activity will be prohibited within 250 feet of potential burrowing owl nesting dens (ground squirrel burrows, culverts, concrete slabs, debris piles that could support nesting burrowing owls). From September 1 through January 31, disturbance will be prohibited within 160 feet of potential burrowing owl dens. OR a qualified biologist ^a will conduct nesting and wintering surveys using methods described in California Burrowing Owl Consortium 1993. If nesting or wintering activity were detected, a qualified biologist will mark and monitor an appropriate non-disturbance buffer in the vicinity of burrows that have been active within the last three years. Within the buffer zone, all O&M activities and herbicide applications will be prohibited from February 1 to August 31.
PCM-B083	<i>Coccyzus americanus occidentalis</i> Western yellow-billed cuckoo (nesting)	FC/SE	A	Follow SOPs and PCM-W002.
			B and C	From March 15 to September 31 herbicide application (with the exception of direct application) or tree/vegetation disturbance will be prohibited in riparian forest OR a qualified biologist ^a will conduct nest surveys. If nesting activity were detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities and herbicide applications will be prohibited from March 15 to September 31. Follow PCM-W002.
PCM-B117	<i>Vireo bellii pusillus</i> Least Bell's vireo	FE/SE	A	Follow SOPs and PCM-W002.
			B and C	From April 1 to July 31 herbicide application (with the exception of direct application) or tree/vegetation disturbance will be prohibited in riparian forest OR a qualified biologist ^a will conduct nest surveys. If nesting activity were detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities and herbicide applications will be prohibited from April 1 to July 31. Follow PCM-W002.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
MAMMALS				
PCM-B087	<i>Eumops perotis californicus</i> Greater western mastiff bat	BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of significant rock outcrops.
PCM-B090	<i>Antrozous pallidus</i> Pallid bat	BLMS	A	Follow SOPs.
			B and C	Loud noises, vibrations, and other 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.
PCM-B092	<i>Vulpes macrotis mutica</i> San Joaquin kit fox	FE/ST	A	Follow SOPs.
			B	<p>O&M activities will be avoided during the kit fox breeding season (February 1 through May 31) in suitable habitat.</p> <p>Prior to O&M activities that involve ground disturbance, a qualified biologist^a will survey the proposed disturbance footprint and all areas within 250 feet of the proposed activity for potential kit fox den sites. Survey methods and protection measures will be consistent with those described in USFWS 1999b and USFWS 1999c or by other more current methods approved by the USFWS. The status of all dens will be determined and mapped; results will be submitted to USFWS within 5 working days after survey completion and before start of ground disturbance.</p> <p>All potential den sites outside the disturbance footprint will be conspicuously marked with stakes and flagging 30 days prior to ground-disturbing activities using materials that do not prevent access by kit foxes. Circular exclusion zones will be established around kit fox dens, and will have a radius measured outward from the entrance or cluster of entrances of 50 feet for potential dens, 100 feet for known dens; the distance for natal or pupping dens will be determined in coordination with USFWS and CDFG. No ground-disturbing activities will be permitted within exclusion zones.</p> <p>If destruction of a potential or known den were unavoidable within the disturbance footprint, the den site will be monitored by a Service-approved biologist for a period of at least three days prior to disturbance.</p>

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (continued)

PCM-ID	Species Name	Status	Activity Category	PCM
				<p>Unoccupied dens could be blocked with a sand bag or hand excavated to prevent occupation until O&M activities were completed. Procedures for monitoring and excavating will be consistent with those described in USFWS 1999.</p> <p>If the den is occupied, it will continue to be monitored for an additional five days (consecutive with the previous three days) while use by kit foxes was discouraged using approved methods. If after five days the den remains occupied, it should be excavated when, in the judgment of a qualified biologist, it is temporarily vacant.</p> <p>Destruction of any known or potential natal/pupping kit fox den is strictly prohibited without take authorization/permit from the USFWS; if a natal or pupping den were found, USFWS will be contacted.</p> <p>O&M activities will take place only between one hour after sunrise and one hour before sunset except when emergencies necessitated night work. If nighttime construction were required, lights will be directed to the minimum area needed to illuminate project work areas.</p> <p>All trash, especially food-related trash, will be deposited into closed containers and removed on a daily basis.</p> <p>Excavations greater than three feet deep will be fenced, covered, or filled at the end of each working day, or will have escape ramps provided to prevent the entrapment of foxes. Pipes will be capped at all times until they were used. Any mortalities or injuries to kit foxes that occurred as a result of project-related or O&M-related actions will be reported to the Western Natural Resources Department, who will report the incident to the USFWS.</p> <p>A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.</p>
			C	<p>Follow all measures listed for A and B above.</p> <p>Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.</p>
PCM-B096	<i>Corynorhinus townsendii</i> Townsend's big-eared bat	BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of caves, mines, and tunnels.

Table 2.4-3. Special-status Fish and Wildlife Project Conservation Measures (concluded)

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B099	<i>Myotis yumanensis</i> Yuma myotis	BLMS	A	Follow SOPs.
			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.
PCM-B118	<i>Sylvilagus bachmani riparius</i> Riparian brush rabbit	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-B119	<i>Neotoma fuscipes riparia</i> Riparian (=San Joaquin Valley) woodrat	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.

^a 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.

^b A Service-approved biologist is one whose resume has been submitted to and who has been formally approved by the USFWS. This biologist's resume reflects a high level of experience with the Federally listed species covered by a particular PCM.

^c Qualified personnel are those who are capable of consistently and accurately identifying the subject resource and have been approved by Western's Natural Resource Department.

Table 2.4-4. Water Resources/Aquatic Habitat Project Conservation Measures

PCM-ID	Activity Category	PCM
VERNAL POOLS, VERNAL POOL GRASSLANDS, AND SEASONAL WETLANDS		
PCM-W001	A	<p>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).</p> <p>For patrolling the ROW 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).</p>
	B and C	<p>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). If vegetation management activities were 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.)</p> <ul style="list-style-type: none"> • Mixing or application of pesticides, herbicides, or other potentially toxic chemicals will be prohibited. • Herbicide application to target vegetation with hand-held applicator (cut-stump treatment) will be prohibited within 25 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 with power sprayers for spot treatment and selective elimination of target species will be prohibited within 100 feet in any season. • Broadcast herbicide application by vehicle with boom for treating large or dense areas of the ROW will be prohibited within 150 feet in any season. • 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).

Table 2.4-4. Water Resources/Aquatic Habitat Project Conservation Measures (continued)

PCM-ID	Activity Category	PCM
		<p>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 were constructed and hazardous-material absorbent pads were available in the event of a spill. Vehicles will be inspected daily for fluid leaks before leaving the staging area.</p> <p>When feasible, all maintenance activities will be routed around wet areas while ensuring that the route did not cross sensitive resource areas. For ground-disturbing activities, a 50-foot (wet season) or 25-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 runoff 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.</p> <p>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. A smaller buffer could be approved after a site assessment by a qualified biologist, but must include silt fencing or other sediment control, to be established no less than 50 feet from the wetland boundary.</p> <p>For ground-disturbing activities that directly or indirectly affect vernal pools and seasonal wetlands, Western will undertake compensatory mitigation as follows: all permanent wetland losses will be compensated at a 3:1 ratio where for every acre lost 2 acres will be preserved and 1 acre will be created or restored. Temporary losses will be compensated at a 0.5:1 ratio. Compensation will occur by means of several mechanisms including placement of conservation easements on existing Western lands, purchase of high-quality natural lands that support target species, purchase of credits from USFWS-approved mitigation banks, and purchase of conservation easements from willing sellers.</p>
PCM-W001a	A, B, and C	<p>Follow PCM-W001</p> <p>In designated vernal pool critical habitat, there could be additional conditions imposed on O&M activities, resulting from formal (Section 7) consultation with USFWS.</p>
SEEPS, SPRINGS, PONDS, LAKES, RIVERS, STREAMS, MARSHES		
PCM-W002	A	<p>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:</p> <ul style="list-style-type: none"> • 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

Table 2.4-4. Water Resources/Aquatic Habitat Project Conservation Measures (continued)

PCM-ID	Activity Category	PCM
		<ul style="list-style-type: none"> • open petroleum products <p>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.</p> <p>When feasible, all maintenance activities will be routed around wet areas while ensuring that the route did not cross sensitive resource areas.</p>
	B and C	<p>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:</p> <ul style="list-style-type: none"> • 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 <p>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.</p> <p>When feasible, all maintenance activities will be routed around wet areas while ensuring that the route did not cross sensitive resource areas.</p> <p>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):</p> <ul style="list-style-type: none"> • Only manual-clearing of vegetation will be permitted • Foliar application of herbicides will be prohibited. Only cut-stump treatments of target vegetation will be allowed using herbicide approved for aquatic use by the EPA and in coordination with the appropriate Federal land manager. <p>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.</p> <p>All equipment used below the ordinary high-water mark will be free of exterior contamination.</p> <p>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 runoff 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 and seasonal wetlands. Erosion-control measures will be</p>

Table 2.4-4. Water Resources/Aquatic Habitat Project Conservation Measures (concluded)

PCM-ID	Activity Category	PCM
		<p>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.</p> <p>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.</p> <p>Western will obtain applicable Section 404 discharge and 401 water-quality permits prior to any maintenance activities that must take place within jurisdictional wetlands or other waters of the US. These will be coordinated with USACE and Regional Water Quality Control Board (RWQCB) as needed.</p> <p>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.</p> <p>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 Western 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 presented a specific safety concern.</p> <p>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. Tree removal that could cause streambank 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.</p>

Table 2.4-5. Cultural Resources Project Conservation Measures

Surveyed Areas (Resource Present) – PCMs		
PCM-ID	Activity Category	Description
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 resource sites.
		Only the following activities will be allowed in cultural sites: manual clearing of vegetation and chip/broadcast disposal of cut vegetation.
	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 Western Natural Resources Department or other designated point of contact. Western 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.
Not Protocol-Surveyed Areas and Not-Surveyed Areas – PCMs		
PCM-ID	Activity Category	Description
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 Western Natural Resources Department or other designated point of contact. Western 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 Western-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 2.4-6. Paleontological Resources Project Conservation Measures

Surveyed Areas (Resource Present) – PCMs		
PCM-ID	Activity Category	Description
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 Western-approved paleontologist or archaeologist could be required to monitor known paleontological sites during ground-disturbing activities.
	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 Western Natural Resources Department or other designated point of contact. Western will determine measures to avoid the resource or mitigate during maintenance activities.
Not Surveyed Areas – PCMs		
PCM-ID	Activity Category	Description
PCM-P002	A, B, and C	Crews will be instructed to pay particular attention for the presence or 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 Western Natural Resources Department or other designated point of contact. Western will determine measures to avoid the resource or mitigate during maintenance activities.
		A Western-approved paleontologist or archaeologist may be required to 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.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction and Methodology

This section provides discussion and full disclosure of the possible adverse effects of the Proposed Action and No Action Alternative. The effects are examined as they relate to the following 20 environmental issue areas:

- 3.2 Habitats and Vegetation
- 3.3 Special-status Plants
- 3.4 Wildlife
- 3.5 Special-status Wildlife
- 3.6 Fisheries
- 3.7 Special-status Fishes
- 3.8 Cultural Resources
- 3.9 Paleontological Resources
- 3.10 Land Use
- 3.11 Recreation
- 3.12 Aesthetics
- 3.13 Water Resources
- 3.14 Geology and Soils
- 3.15 Public Health and Safety
- 3.16 Air Quality
- 3.17 Noise
- 3.18 Transportation
- 3.19 Environmental Justice
- 3.20 Intentional Destructive Acts
- 3.21 Growth Inducement and Related Effects

3.1.1 *Environmental Assessment Methodology*

Within each issue area, a description of the existing environmental setting or affected environment is provided. The description of the affected environment for each section is organized into the following regions of the project area (see **Figure 1.2-1**):

- Tracy
- New Melones
- Morgan Hill/San Luis

Potential adverse effects were assessed based on a comparison of possible changes to the affected environment with pre-determined significance criteria specific to each issue

area. The impact analysis assumed that all SOPs (**Table 2.4-1**) and PCMs (**Tables 2.4-2 through 2.4-6**) would be implemented as committed to by Western under the Proposed Action. The description of the environmental consequences for each section is organized into the following categories, which are described in detail in **Section 2.2.5**:

- Category A – Inspection and Minor Maintenance Activities
- Category B – Routine Maintenance Activities
- Category C – New Infrastructure

3.1.2 Resources Not Evaluated

Some issue areas are not discussed because it is believed that the Proposed Action would have little or no adverse effect to these areas. Issue areas falling into this category include radiation and hazardous chemical environment, waste management, and socioeconomics.

3.2 Habitats and Vegetation (including wetlands)

3.2.1 Affected Environment

A variety of habitat types occur within the project area. Vegetation types were categorized during biological resource surveys of the project area using Western's data dictionary. The habitat types in the data dictionary are based on habitat types described in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *A Manual of California Vegetation* (Sawyer-Keeler Wolf 1995). Habitat types that are not vegetation types (i.e., lakes, rivers, and urban and agricultural areas) are categorized based on *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). The following is a description of habitat types encountered throughout the project area.

Upland Habitats

- Agricultural – cropland, orchard, pasture, vineyard
- Barren – bare ground lacking vegetative cover
- Chaparral – mixed, oak
- Commercial, industrial
- Elderberry – isolates
- Woodland – blue oak, foothill pine-chaparral, live oak
- Grasslands – non-native annual/naturalized
- Scrub – chenopod

- Urban – lawns, ornamental trees, backyards, and ruderal areas near urban environments
- Levee – man-made levee structure

Wetland Habitats

- Meadow – seasonally dry swales with annual grasses and forbs
- Wetlands – seasonal, vernal pool/vernal pool grassland, freshwater marsh, swale, other
- Waters – drainage, irrigation canal, river, perennial creek, intermittent creek, pond, lake, impoundment, seep/spring
- Riparian – Great Valley forest, Great Valley scrub

Upland habitats

- **Agricultural cropland** (Agro, Aggr, Agor, Agvi, Agri) – Agricultural cropland is typically a monoculture of row crops (Agro), grain crops (Aggr), orchards (Agor), or vineyards (Agvi). Most agricultural croplands in the project area occur along the Hurley-Tracy line, although grain crops were also common along the Tracy-Contra Costa and Tracy-Los Vaqueros lines. Corn, tomatoes, wheat, grape vineyards, and walnut orchards are the most common croplands encountered and conversion from one type of crop to another was also observed. A minor portion of the cropland along the Hurley-Tracy line in the Tracy region is used for rice fields (Agri), which are seasonally flooded and provide habitat for wildlife such as waterfowl and giant garter snakes. Croplands in the project area are often bisected by man-made agricultural ditches and irrigation canals, some of which contain wetland vegetation and provide habitat for wildlife.
- **Agricultural pasture (Agps)** – Pasture vegetation is a mix of annual and perennial grasses, forbs, and legumes that normally provide 100 percent ground cover. The mix of grasses and legumes varies according to management practices such as seed mixture, fertilization, soil type, irrigation methods, weed control, and livestock type. Unless they are small in size (on average less than 10 acres), pastures or rangelands were usually classified as natural lands (usually non-native grasslands).
- **Barren (Bar)** – This habitat type is devoid of vegetation and includes rock, pavement, sand, and dirt, including dirt and paved roads.
- **Chaparral, mixed (Cmi)** – Mixed chaparral is typically a structurally homogeneous brush land dominated by drought-tolerant evergreen shrubs with tough leaves. Shrub height and crown cover vary considerably with growing conditions including burn cycle, precipitation regime, aspect, and soil type. Commonly associated shrubs include chamise (*Adenostoma fasciculatum*), common manzanita (*Arctostaphylos manzanita* var. *manzanita*), buckbrush (*Ceanothus cuneatus* var. *cuneatus*), California buckeye (*Aesculus californica*), yerba-santa (*Eriodictyon californicum*),

and poison oak (*Toxicodendron diversilobum*). Mixed chaparral generally occurs below 5,000 feet in mountain ranges throughout California. Mixed chaparral occurs on all slope aspects, but at lower elevations is generally found on north-facing slopes. This habitat type occurs within the New Melones region of the project area.

- **Chaparral, oak (Coa)** – The oak-chaparral habitat type is characterized as a dense, tall (up to 20 feet) chaparral dominated by interior live oak (*Quercus wislizenii*) with several other chaparral associates in the canopy. This is a fairly mesic chaparral of valleys and foothills and often intergrades with blue oak woodland on adjacent south-facing slopes or on sites with shallower soils or poor drainage. Interior live oak chaparral intergrades at higher elevations with interior live oak or canyon live oak (*Quercus chrysolepis*) forests. Dominant species include interior live oak and blue oak (*Quercus douglasii*), poison oak, common manzanita, buckbrush, and chamise, as well as some foothill pine (*Pinus sabiniana*). This habitat type occurs within the New Melones region of the project area.
- **Commercial, industrial (Com)** – This habitat type is developed land that is used for purposes other than residential or farming.
- **Elderberry, isolates (Ebis)** – Blue elderberries (*Sambucus nigra* ssp. *caerulea* [= *Sambucus mexicana*]) were found in the project area within mixed chaparral, blue oak woodland and foothill pine woodland near New Melones reservoir and New Melones Dam, and in non-native grassland along the banks of the Stanislaus River below the dam. Isolated blue elderberries were also found along the Hurley-Tracy line in croplands (often beneath transmission towers) and along riparian corridors in the Tracy region, as well as around the Coyote Substation.
- **Woodland, blue oak (Wblu)** – The blue oak woodland is common on well-drained soils, usually below 4,000 feet, and is dominated by a variable combination of blue oak, foothill pine, and other oak species. In the project area, blue oak woodland is either a blue oak savannah with blue oak providing approximately 10- to 30-percent cover in a non-native grassland or it is characterized by mixed stands of blue oak and interior live oak, sometimes also including foothill pine, California buckeye, and shrubs such as buckbrush, poison oak, and manzanita. The non-native grassland is comprised of annual grassland species such as wild oat (*Avena fatua*), medusahead (*Taeniatherum caput-medusae*), Italian rye grass (*Lolium multiflorum*), brome grasses (*Bromus* spp.), and rose clover (*Trifolium hirtum*). Often these areas have high infestation rates of noxious weeds such as yellow star-thistle (*Centaurea solstitialis*) and Italian thistle (*Carduus pycnocephalus*). This habitat type occurs in the New Melones region of the project area.
- **Woodland, foothill pine-chaparral (Wfp)** – This woodland is a mixture of foothill pine, live oak and blue oak. Other species encountered in this woodland include California buckeye, blue elderberry, poison oak and western redbud (*Cercis occidentalis*). This habitat type occurs on well-drained sites and is usually found in rocky or exposed sites along ridges or canyons with poor or shallow soils. This habitat occurs near New Melones Dam within the project area.

- **Grassland, non-native (Gnn)** – A dense cover of annual grasses typifies this habitat type, often associated with numerous species of native and non-native forbs. Dominant species include wild oats (*Avena* spp.), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), rye grasses (*Lolium* spp.), rose clover, and lupine (*Lupinus* sp.). Yellow star thistle, a noxious weed, was found throughout this habitat type during field surveys. Non-native grassland is the dominant natural habitat in the Tracy region of the project area and is common around New Melones. In most cases throughout the project area, pastures and rangelands were classified as non-native grassland habitat.
- **Scrub, chenopod (Scc)** – Chenopod scrub consists of low, open to dense shrublands dominated by succulent, halophytic (adapted to living in a saline environment) members of the goosefoot family (*Chenopodiaceae*), especially iodine bush (*Allenrolfea occidentalis*). This habitat type is usually found adjacent to alkali meadow habitats and was observed infrequently within the Tracy region of the project area. Annual grasses are a common component of the understory along with saltbushes (*Atriplex* spp.), saltgrass (*Distichlis spicata*) and alkali heath (*Frankenia salina*).
- **Urban (Urb)** – Urban habitat includes areas such as parking lots, city parks, schools, landscaped areas, and residential developments, lawns and backyards. Vegetation is highly variable in these areas, including a broad array of trees and shrubs planted and maintained as landscaping.

Wetland habitats

- **Meadows (Mot)** – Swales in the valley and foothill grasslands occasionally provide conditions suitable for wet meadow species. These swales are not considered true wet meadows or vernal pools because the sites dry rapidly and thus mostly support annual grasses and forbs. This habitat type occurs in the Tracy region of the project area and is commonly alkaline. Common associates with this habitat in the project area are saltgrass, alkali heath, Mediterranean barley, Italian rye grass (*Lolium multiflorum*), rabbit's foot grass (*Polypogon monspeliensis*), common spikeweed (*Centromadia pungens*), and alkali weed (*Cressa truxillensis*).
- **Wetlands, seasonal (Wse)** – Seasonal wetlands are isolated depressions or swales with seasonal ponding that provide habitat for wetland species such as rye grass (*Lolium* spp.), barley (*Hordeum* spp.), curly dock (*Rumex crispus*), rushes (*Juncus* spp.), and spikerushes (*Eleocharis* spp.). Seasonal wetlands are common in the Tracy region of the project area, both within the San Joaquin Valley and the Delta areas and within valley bottoms in the foothills near Livermore. In the Tracy area, seasonal wetlands are sometimes alkaline and contain saltbushes, saltgrass and alkali heath. In other instances, seasonal wetlands are vegetated primarily with non-natives, such as Himalayan blackberry (*Rubus discolor*), wild radish (*Raphanus sativus*), poison hemlock (*Conium maculatum*), fennel (*Foeniculum vulgare*), and broad-leaved pepper grass (*Lepidium latifolium*).

- **Wetlands, vernal pool and vernal pool grassland (Wvpi, Wvpgnn)** – Two types of vernal pool habitat that may occur in the project area are northern hardpan vernal pool and northern claypan vernal pool. The surveys conducted did not distinguish between these two categories. Field surveys did, however, identify low-density and high-density vernal pool areas. Areas with a high density of vernal pools (at least every 100 feet) were labeled vernal pool/annual grassland (Wvpgnn), while isolated vernal pools (with separation greater than 100 feet) were called (isolated) vernal pools (Wvpi).
- Vernal pools consist of grass- or mud-bottomed swales, earth sumps, or basalt flow depression pools in unplowed grasslands with an impermeable layer. The impermeable layer allows the pools to retain water much longer than the surrounding uplands though the pools are shallow enough to dry up each season. Vernal pools may fill and empty several times during the rainy season. This habitat type is important in the Central Valley because only plants and animals that are adapted to this cycle of wet and dry can survive in vernal pools. A number of rare and endangered plant and animal species rely on vernal pool habitats resulting in special management consideration. Characteristic plant species include downingias (*Downingia* spp.), alkali weed (*Cressa truxillensis*), button celery (*Eryngium aristulatum*), neckweed (*Veronica peregrina*), goldfields (*Lasthenia* spp.), and salt sandspurry (*Spergularia salina*). Federally threatened or endangered vernal pool species with habitat in the project area include Contra Costa goldfields (*Lasthenia conjugens*), Colusa grass (*Neostapfia colusana*), Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardii*).
- **Wetlands, freshwater marsh (Wfm)** – These wetlands are characterized by perennial, emergent hydrophytic vegetation occurring in sites that lack significant current and are permanently or nearly permanently flooded with fresh water. In the project area, freshwater marshes are usually dominated by cattails (*Typha latifolia* or *T. angustifolia*), bulrushes (*Scirpus* spp.), nutsedges (*Cyperus* spp.) and rushes (*Juncus* spp.).
- **Waters, man-made (Waim, Wadr, Waic)** – Man-made water features such as stock ponds (Waim), ditches and agricultural drainages (Wadr), and irrigation (or water supply) canals (Waic) often support wetland vegetation and flowing water that provide habitat for wildlife. Ditches, drainages, and irrigation canals associated with agricultural irrigation operations are the most common waterways throughout the Tracy region of the project area.
- **Waters, rivers and creeks (Warv, Wacp, Waci)** – Riverine habitats such as rivers and streams, have intermittent or continually running water. Within the project area, riverine habitats include rivers and sloughs (Warv); perennial creeks (Wacp), which hold water most of the year; and intermittent streams and ephemeral drainages (Waci), which hold water seasonally.

- **Waters, pond (Wapd) and lake (Walk)** – Lacustrine habitats, including ponds or lakes, are inland depressions or dammed riverine channels containing standing water. They may vary from small ponds of less than two acres to large areas covering several square miles. Depth can vary from a few inches to hundreds of feet. Lacustrine habitats include permanently flooded lakes and reservoirs, intermittent lakes, and ponds.
- **Waters, seeps/springs (Wasp)** – Seeps and springs originate from a groundwater source, and often provide valuable wetlands and water for wildlife and plants.
- **Riparian, Great Valley forest (Rgf)** – This habitat type is a tall, dense, broad-leaved, deciduous riparian forest. Common dominants are Fremont cottonwood (*Populus fremontii*), valley oak (*Quercus lobata*), box elder (*Acer negundo* var. *californicum*), and a mix of willow species including Goodding's willow (*Salix gooddingii*), red willow (*Salix laevigata*), and arroyo willow (*Salix lasiolepis*). The understory is dense with these taxa as well as northern California walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), and California button willow (*Cephalanthus occidentalis*). This habitat type was rarely encountered within the project area; where the project area crosses larger rivers along the Hurley-Tracy line, the vegetation was usually Great Valley riparian scrub.
- **Riparian, Great Valley scrub (Rgs)** – This shrub-dominated habitat type is characterized by an open to dense, broadleaved, deciduous streamside thicket dominated by any of several willow (*Salix* spp.) species. Dominant species include narrow-leaved willow (*Salix exigua*), red willow, arroyo willow, Goodding's willow, California button willow, blue elderberry, verbena species (*Verbena* spp.), and Himalayan blackberry. This habitat is widespread along major rivers, canals, and smaller streams throughout the Great Valley watershed, usually below 1,000 feet. In the Tracy region, this habitat also contained giant cane (*Arundo donax*) along rivers and large canals in the Sacramento-San Joaquin Delta.

General Setting

The transmission line ROWs, substations, maintenance facility, and legal access roads described in **Section 1.4** are found in the San Francisco Bay area, Sacramento-San Joaquin Delta, San Joaquin Valley, Coast Range, and Sierra Nevada Foothills. These large, diverse areas include several subregions which are described below by project area region; these general physiographical descriptions were made from field survey observations and from the geographic subdivisions illustrated in *the Jepson Manual of Higher Plants of California* (Hickman 1993). **Tables 3.2-1** through **3.2-3** show acreages of specific habitats found in each region (from the Western Data Dictionary, as detailed above).

3.2.1.1 Tracy

The Tracy region of the project area is located in the northwestern San Joaquin Valley portion of the Central Valley (**Figure 1.2-1**). The Tracy region is composed of four transmission lines (Tracy-Contra Costa, Tracy-Los Vaqueros, Tracy-Livermore and

Hurley-Tracy), three substations, and a maintenance facility. Most of the Tracy region is also within the Sacramento-San Joaquin Delta. Approximately 75 percent of the Tracy region is agricultural lands and non-native grasslands (**Table 3.2-1**).

The Tracy-Contra Costa line begins near the town of Oakley in northeast Contra Costa County and ends at the Tracy Substation/Maintenance Facility; it traverses mostly pasturelands and agricultural areas (primarily alfalfa) in the Delta region, but also crosses levees, canals, and irrigation drainages, and passes through urban areas, seasonal wetlands, alkaline meadows, non-native grasslands, and chenopod scrub. The vernal pool, alkaline meadow, and wetland habitats are mainly concentrated near Discovery Bay and Clifton Court Forebay.

The Tracy-Los Vaqueros line extends from the Los Vaqueros Substation at Middle River to the Tracy-Contra Costa line near Kellogg Creek. This line mostly crosses pasturelands, grain crops, and irrigation channels. There is some seasonal wetland, chenopod scrub, and alkaline meadow habitat near where this line meets the Tracy-Contra Costa line.

The Tracy-Livermore line begins near the City of Livermore and is mostly comprised of hilly, heavily-grazed, annual grasslands of the Altamont Hills and adjacent seasonal creeks and wetland areas. This line crosses vernal pool grassland habitats near where it meets the Tracy Substations and Maintenance Facility.

Table 3.2-1. Habitat Acreages in the Tracy Region

Upland Habitat Type	Acres	Wetland Habitat Type	Acres
Agricultural (grain crops, row crops, vineyards, orchards)	903.8	Meadows	9.7
Agricultural pasture	68.0	Wetlands, seasonal	47.3
Agricultural (rice fields)	39.4	Wetlands, vernal pool (isolated and high density vernal pool grassland)	8.1
Grassland, non-native	295.8	Wetlands, freshwater marsh	3.6
Scrub, chenopod	17.4	Waters, man-made (irrigation canals, ditches, impoundments)	16.7
Levee	30.9	Waters, seeps/springs	0.5
Urban/barren/commercial	151.8	Waters, rivers and creeks	12.1
		Riparian, Great Valley forest	0.2
		Riparian, Great Valley scrub	10.9
TOTAL ACREAGE			1616.0

The Hurley-Tracy line extends from the Tracy Substations/Maintenance Facility to the San Joaquin/Sacramento County Line and crosses primarily agricultural lands (including row crops, grain crops, orchards and vineyards), but also crosses riparian areas along major Delta rivers and sloughs, seasonal wetlands, non-native grasslands and pasturelands.

3.2.1.2 *New Melones*

The New Melones region of the project area is in the Sierra Nevada Foothills between the Central Valley and the Sierra Nevada. This region is characterized by blue-oak woodlands, non-native grasslands, and chaparral (**Table 3.2-2**). The Tuttle town and Gloryhole distribution lines intersect blue oak woodland and non-native grassland habitats surrounding the New Melones Reservoir with some riparian, chaparral, and foothill pine woodlands. Both lines cross creeks and very small amounts of wetland, and seep/spring habitats. The NML-NML1 line and New Melones Substation are small ROWs located just below New Melones Dam on the Stanislaus River; this area is characterized by non-native grassland, foothill-pine woodland and chaparral.

Table 3.2-2. Habitat Acreages in the New Melones Region

Upland Habitat Type	Acres	Wetland Habitat Type	Acres
Chaparral, mixed	2.0	Wetlands, seasonal	< 0.1
Chaparral, oak	1.3	Wetlands, other	0.1
Woodland, blue oak	13.1	Wetlands, freshwater marsh	< 0.1
Woodland, foothill pine chaparral	0.6	Waters, man-made (ditches)	0.1
Grassland, non-native	18.5	Waters, seeps/springs	0.2
Barren/commercial	8.3	Waters, rivers and creeks	1.1
		Riparian, Great Valley forest	0.2
TOTAL ACREAGE			45.4

3.2.1.3 *Morgan Hill/San Luis*

The Morgan Hill/San Luis region consists of three substations, Coyote, Pacheco and O'Neill, including 50-foot surrounding buffers (**Figure 1.2-1**). The Coyote Substation is located in Morgan Hill in the San Francisco Bay Area and has a buffer consisting of urban (landscaped), barren, and agricultural (both grain crops and orchards) habitats. The Pacheco and O'Neill substations are in the San Joaquin Valley. The Pacheco Substation is in the hills near San Luis Reservoir and is surrounded by oak woodlands and non-native grasslands; the substation is mostly comprised of commercial and barren habitats, with some chaparral, riparian and freshwater marsh. The O'Neill Substation is surrounded by non-native grassland. The buffer includes a portion of the O'Neill Forebay and is primarily in commercial and barren habitats with some non-native grassland.

Table 3.2-3. Habitat Acreages in the Morgan Hill/San Luis Region

Upland Habitat Type	Acres	Wetland Habitat Type	Acres
Agriculture (grain crop and orchard)	2.6	Wetlands, freshwater marsh	< 0.1
Chaparral, mixed	0.4	Waters, man-made (reservoir)	0.2
Grassland, non-native	0.1	Riparian, Great Valley scrub	0.2
Urban/barren/commercial	3.0		
TOTAL ACREAGE			6.6

Note that acreages consist of the 50-foot buffer surrounding each substation but do not include the substations themselves.

3.2.2 Significance Criteria and Approach to Impact Assessment

3.2.2.1 Approach to Impact Assessment

Several types of vegetative and wetland communities occur within the project area as described in the preceding sections. Western must manage the vegetation throughout its system to comply with Federal laws, regulations, and directives including those for maintaining system reliability and public and worker safety. Western currently manages vegetation using a combination of manual and mechanical methods, and the spot application of herbicides. In areas where the vegetation is not already of a low-growing habitat type, Western would implement methods to promote low-growing vegetation within the ROW. Under the Proposed Action, Western would implement its IVM Program, described in **Section 2**. This would include the expanded use of herbicides. The following sections identify potential impacts to vegetation and wetlands resulting from O&M activities, and discuss PCMs and SOPs to prevent adverse impacts.

3.2.2.2 Significance Criteria

A significant impact on vegetation or wetlands would result if any of the following were to occur:

Vegetation

- Loss of rare plants, native plant communities, and other sensitive features identified by a Federal resource agency;
- Loss to any population of plants that would result in a species being listed or proposed for listing as threatened or endangered under Federal or applicable state law (impacts to threatened and endangered species are analyzed in **Sections 3.3, 3.5, and 3.7**);
- Introduction or increase in the spread of noxious weeds; or
- Noxious weed infestations replacing native plant communities that harbor sensitive plants and/or plants protected under applicable state law.

Wetlands/Riparian Areas

- Degradation or loss of any Federal or state protected wetland(s), as defined by Section 404 of the *Clean Water Act* or other applicable regulations; or
- Indirect loss of wetlands or riparian areas, caused by degradation of water quality, diversion of water sources, or erosion and sedimentation resulting from altered drainage patterns.

3.2.3 *Environmental Consequences from the Proposed Action*

The project area has a variety of habitats requiring vegetation maintenance; however most of the project area is already composed of low-growing plant communities, such as grasslands and croplands, and would require little maintenance. The habitats which would require more maintenance are woodland, chaparral, and riparian communities that make up a small portion of the project area. Under the Proposed Action, this type of vegetation in certain areas would be replaced by low-growing plant communities over time, which would require less maintenance. Possible impacts to vegetation and wetlands using manual and mechanical methods and from herbicide use are described below.

3.2.3.1 *Impacts from Manual and Mechanical Methods*

The primary impacts from manual and mechanical methods of vegetation maintenance could include damage to surrounding non-target vegetation, sensitive plant communities such as riparian habitats or wetlands, special-status plants, and trees that should be left standing, and changes to the overall density and composition of native plant communities, whether or not they are formally recognized as sensitive.

Wetland and aquatic habitats are susceptible to erosion and compaction from heavy machinery. Removal of vegetation in uplands can increase surface runoff, causing turbidity and sedimentation into wetlands and waterways. Removal of riparian vegetation can affect water temperatures in surrounding rivers, creeks, or ponds.

Implementation of the SOPs presented in **Table 2.4-1** and PCMs presented in **Tables 2.4-2** (special-status plants) and **2.4-4** (water resources/aquatic habitat) would minimize adverse impacts to general vegetation and wetland habitats.

3.2.3.2 *Impacts from Herbicide Application*

Herbicides control plants by inhibiting or disrupting basic plant processes. Impacts from herbicide treatment to non-target vegetation and wetlands can result from misuse. Herbicides can unintentionally contact vegetation and wetlands by drift, leaching, or spilling. The degree to which a habitat is impacted depends on the selectivity of the herbicide, application treatment, and accidental contact. Refer to **Appendix G** for additional information of the herbicides proposed for use within the project area.

Type of herbicide (selective or non-selective). Impacts to non-target vegetation depend on the selectivity of the herbicide and whether or not the correct herbicide has been

chosen for the vegetation type. Non-selective herbicides are toxic to plants regardless of species and have more potential to adversely affect non-target vegetation.

Application spray treatment (stump, basal, and foliar). Stump treatment is highly selective and causes little effect to non-target vegetation. Basal and foliar treatments are more broadly applied and can come in contact with non-target vegetation or habitats, including cropland, special-status species, and wetlands. Applying a broadcast application of non-selective herbicide can have highly detrimental effects to overall plant diversity, composition, and soil chemistry, and can result in a monoculture of weedy vegetation.

Accidental spills and careless application. Non-target vegetation and other sensitive habitats can be affected by the careless application of herbicides. This would include using the wrong size spray nozzle, the wrong herbicide, not clearly marking and avoiding sensitive areas, and misusing and carelessly applying herbicides. The technician must be familiar with non-target vegetation and sensitive species and habitats that may be affected and must correctly apply the appropriate herbicide to avoid impacts to non-target species. Although unlikely, a large spill may result in the removal of hundreds of cubic yards of soil, along with the loss of many plants.

Implementation of SOPs and PCMs for herbicide use would minimize adverse impacts to non-target vegetation and sensitive habitats.

3.2.3.3 Impacts from the Spread of Noxious Weeds or from Invasive Plant Species

Routine maintenance and operation of the transmission line may contribute to the spread of noxious weeds and invasive plant species. The introduction of low-growing native plants may promote the invasion of non-native forbs and grasses that would compete against native herbaceous and woody species both within and outside of the ROW. Western is required to comply with the Federal *Noxious Weed Act* of 1974, as amended by Section 15, Management of Undesirable Plants on Federal Lands, 1990, which mandates each Federal land management agency to:

- Designate a lead office and person trained in the management of undesirable plant species;
- Establish a noxious weed/invasive plant management program;
- Complete and implement cooperative agreements with state agencies (as applicable); and
- Establish integrated management systems to control undesirable plant species.

The most common weeds encountered in the project area include wild oats, black mustard (*Brassica nigra*), rip-gut brome, soft brome, red brome (*Bromus madritensis* ssp. *rubens*), Italian thistle, yellow starthistle, poison hemlock, Bermuda grass (*Cynodon dactylon*), fennel, Mediterranean barley, Italian ryegrass, rabbit-foot grass, Himalayan blackberry, Russian thistle (*Salsola tragus*), and medusahead.

Other noxious weeds observed in the project area include giant reed (*Arundo donax*), bull thistle (*Cirsium vulgare*), brass buttons (*Cotula coronopifolia*), water hyacinth (*Eichhornia crassipes*), edible fig (*Ficus carica*), prickly lettuce (*Lactuca serriola*), perennial peppergrass, marsh purslane (*Ludwigia peploides*), loosestrife (*Lythrum* spp.), white horehound (*Marrubium vulgare*), bur clover (*Medicago polymorpha*), tree tobacco (*Nicotiana glauca*), bristly ox-tongue (*Picris echioides*), wild radish, sheep sorrel (*Rumex acetosella*), curly dock, milk thistle (*Silybum marianum*), rose clover, hedgeparsley (*Torilis arvensis*), common mullein (*Verbascum thapsus*), and vinca (*Vinca major*).

To prevent impacts from the spread of noxious weeds or from invasive plant species, Western would implement SOPs (see **Table 2.4-1**) and follow the IVM Program as described in **Section 2**. Refer to **Appendix I** for the Noxious Weed Management portion of Western's IVM Program.

3.2.3.4 Category A – Inspection and Minor Maintenance Activities

Category A activities are primarily inspection-type actions, with some minor repairs that would not cause substantial soil or habitat disturbance (see **Section 2.2.5.1** for more detail). Equipment used for Category A activities has the potential to contribute to the introduction of noxious weeds. Western would follow the IVM Program and implement SOPs (see **Table 2.4-1**) and PCMs (see **Tables 2.4-2 and 2.4-4**) to reduce impacts to less than significant.

3.2.3.5 Category B – Routine Maintenance Activities

Category B maintenance activities may result in temporary and permanent loss of habitat. Primary concerns would be the reduction of rare plants or habitats for special-status species, degradation or loss of jurisdictional wetlands, and introduction of noxious weeds. Western would implement SOPs (see **Table 2.4-1**) and PCMs (see **Tables 2.4-2 and 2.4-4**) to minimize impacts to less than significant.

Removal of hazard trees within the ROW and access roads may alter plant diversity and composition. However, these removals are anticipated to be minimal and with implementation of PCMs would be a less than significant impact.

Impacts to a variety of sensitive natural communities, such as riparian areas or freshwater emergent wetlands, may occur during removal of woody vegetation from the water's edge within forests and riparian areas. Temporary disturbances to sensitive communities may result in the loss of individual rare plants and special-status species described in **Section 3.3**. Soil erosion could result from loss of vegetative cover, and could adversely affect water quality in adjacent aquatic features. Long-term impacts could include increases in the water temperatures of adjacent aquatic habitats associated with loss of riparian vegetation.

Vegetation clearing and herbicide use would typically be a short-term impact since vegetation would grow back; however, this may contribute to the introduction of noxious weeds. Vegetation type conversion from tall, woody species to low-growing forbs and grasses may promote the invasion of non-native grasses that would compete with native

species. Western would follow the IVM Program and implement PCMs and SOPs to minimize impacts to less than significant.

Possible impacts from replacement of culverts and structure footings, or installation of non-recontouring rip-rap may result in temporary and permanent loss of habitat. The primary concern would be the reduction of rare or native plant communities and degradation or loss of jurisdictional wetlands. Western would avoid removal of Federally listed plants. In the event a wetland would be disturbed, Western would consult with the USACE to obtain applicable permits, which could require compensation mitigation. Implementation of SOPs and PCMs and any certification/permit requirements would result in less than significant impacts.

3.2.3.6 Category C – New Infrastructure

Category C activities are generally those maintenance activities that would disturb large areas and would rely on the use of heavy equipment. Primary concerns would be the reduction of rare plants or habitats for special-status species, degradation or loss of jurisdictional wetlands, and introduction of noxious weeds. Western would implement SOPs (see **Table 2.4-1**), PCMs (see **Tables 2.4-2 and 2.4-4**), and follow the IVM Program to minimize possible adverse impacts.

The impacts from Category B activities are possible for Category C activities as well. Additionally, the installation of new culverts and recontouring of creeks or river banks may result in temporary or permanent loss of habitat. Impacts may include erosion, sedimentation, degradation of water quality, and alteration of drainage patterns. If jurisdictional wetlands are disturbed, Western would consult with the USACE and obtain 404 individual or nationwide permits, as applicable (see **Section 5.3** for additional information). Compensation or mitigation may be required, resulting in a less than significant impact. Implementation of PCMs and any certification/permit requirements would result in less than significant impacts for Category C activities.

3.2.4 Environmental Consequences from the No Action Alternative

Under the No Action Alternative, Western would continue to inspect and identify areas that need to be repaired or upgraded. These regular aerial and ground patrols would continue to implement established BMPs to avoid disturbances to biological resources. About 100 to 200 acres annually would be affected under the No Action Alternative. Impacts to vegetation and wetlands would be similar to those described for the Proposed Action. Routine use of herbicides would not be implemented, resulting in the possible increase of noxious weed populations following manual/mechanical disturbances. The Proposed Action provides more rigorous protection measures than were previously established for this Project. Therefore, habitats and vegetation, including wetlands, would be more likely to be adversely affected by the No Action Alternative than by the Proposed Action.

3.3 Special-status Plants and Plant Communities

Special-status plant species possibly affected were identified from several sources. Prior to project field surveys, a California Natural Diversity Database (CNDDDB) search was performed for the project area to determine species, location information, habitats, floristic description, and flowering period. Additional species lists were provided by the USFWS, BLM, and CNPS. These lists were again requested and researched in August 2009 to check for updates. Field surveys of the transmission line ROWs and access roads were conducted between December 2008 and August 2009.

Plants considered in this document are collectively referred to as special-status species. Special-status species are defined in this document by the following criteria:

- Species listed as threatened or endangered or those proposed for listing under the Federal ESA and State of California Endangered Species Act (CESA);
- Species that are California state species of special concern;
- Species that are listed on the CNPS's Inventory of Rare and Endangered Plants;
- Species that are listed as sensitive by the BLM.

SPECIAL-STATUS SPECIES ELIMINATED FROM CONSIDERATION

A number of special-status plants that may occur in the project area have been dropped from further consideration in this document, either because their essential habitats do not occur in the project area or because the project area is outside of their range. These species are: Sharsmith's onion (*Allium sharsmithiae*), slender silver moss (*Anomobryum julaceum*), Mt. Diablo manzanita (*Arctostaphylos auriculata*), Contra Costa manzanita (*Arctostaphylos manzanita* ssp. *laevigata*), lone manzanita (*Arctostaphylos myrtifolia*), Lost Hills crownscale (*Atriplex vallicola*), Mt. Diablo fairy-lantern (*Calochortus pulchellus*), chaparral harebell (*Campanula exigua*), succulent owl's-clover (*Castilleja campestris* ssp. *succulenta*), Mt. Hamilton fountain thistle (*Cirsium fontinale* var. *campylon*), soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*), Hoover's cryptantha (*Cryptantha hooveri*), Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*), Mt. Diablo buckwheat (*Eriogonum truncatum*), spiny-sepaled button-celery (*Eryngium spinosepalum*), Contra Costa wallflower (*Erysimum capitatum* ssp. *angustatum*), talus fritillary (*Fritillaria falcata*), Brewer's western flax (*Hesperolinon breweri*), Napa western flax (*Hesperolinon serpentinum*), Tuolumne iris (*Iris hartwegii* ssp. *columbiana*), Panoche pepper-grass (*Lepidium jaredii* ssp. *album*), Oregon meconella (*Meconella oregana*), yellow-lip pansy monkeyflower (*Mimulus pulchellus*), Whipple's monkeyflower (*Mimulus whipplei*), Lime Ridge navarretia (*Navarretia gowenii*), shining navarretia (*Navarretia nigelliformis* ssp. *radians*), Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*), Tuolumne fawn lily (*Erythronium tuolumnense*), Hartweg's golden sunburst (*Pseudobahia bahiifolia*), Keck's checkerbloom (*Sidalcea keckii*), two-fork clover (*Trifolium amoenum*), and oval-leaved viburnum (*Viburnum ellipticum*). An additional 26 species which occur in the vicinity of the Coyote Substation were dropped because the substation and buffer are mostly developed and do not include appropriate natural communities to support these species.

SPECIAL-STATUS SPECIES RETAINED FOR CONSIDERATION

Table 3.3-1 lists the special-status plants that may occur within the project area and includes habitat information for each species including designated critical habitat, general location in the project area, and PCMs developed for species and their associated habitat communities. As a Federal agency, Western affords protection to Federally listed species throughout the project area. In addition, state-listed species are afforded protection and species with agency-specific status are afforded protection on agency-specific lands. The only agency-listed species are BLM sensitive species and the only BLM land is near New Melones. Special-status species outside of these parameters (e.g., CNPS-listed species) are discussed in the EA and listed in **Table 3.3-1**, but PCMs were not developed for these species. However, **Table 3.3-1** does indicate the PCMs developed for sensitive habitats (PCM-W001 and PCM-W002 from **Table 2.4-4**) that would provide protection to those species for which species-specific PCMs were not developed.

Table 3.3-1. Special-status Plants

Species Name	Status ^a	Habitat Type ^b	Blooming Period	Area of Possible Occurrence ^c	PCM-ID
<i>Agrostis hendersonii</i> Henderson's bent grass	CNPS List 3.2	Gnn (mesic), Gnp, Wvpqnn, Wvpi	April – May	New Melones	PCM-W001
<i>Allium jepsonii</i> Jepson's onion	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp, lower montane coniferous forest/serpentinite or volcanic	April – August	New Melones	PCM-B100
<i>Allium tuolumnense</i> Rawhide Hill onion	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp (serpentinite)	March – May	New Melones	PCM-B101
<i>Amsinckia grandiflora</i> large-flowered fiddleneck	FE/SE/1B.1	Wblu, Wbla, Wlo, Gnn, Gnp	April – May	Tracy	PCM-B002
<i>Amsinckia lunaris</i> bent-flowered fiddleneck	CNPS List 1B.2/BLMS	Wblu, Wbla, Wlo, Gnn, Gnp	March – June	Tracy	N/A
<i>Arctostaphylos nissenana</i> Nissenan manzanita	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wfp, closed-cone coniferous forest/rocky	February – March	New Melones	PCM-B102
<i>Astragalus tener</i> var. <i>tener</i> alkali milkvetch	CNPS List 1B.2	Wvpi, Wvpqnn, Mot (alkaline), Gnn, Gnp (adobe clay)	March – June	Tracy	PCM-W001
<i>Atriplex cordulata</i> heartscale	CNPS 1B.2/BLMS	Sc, Mot, Wasp, Wse, Gnn/Gnp (sandy)/saline or alkaline	April – October	Tracy	PCM-W001
<i>Atriplex depressa</i> brittlescale	CNPS List 1B.2	Gnn, Gnp, Mot, Sc, Wasp, Wse, Wvpi, Wvpqnn/alkaline	May – October	Tracy	PCM-W001
<i>Atriplex joaquiniana</i> San Joaquin spearscale	CNPS List 1B.2	Sc, Mot, Wasp, Wse, Gnn/Gnp (sandy)/ alkaline	April – October	Tracy	PCM-W001
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Gnn, Gnp/sometimes serpentine	March – June	Tracy	N/A
<i>Blepharizonia plumose</i> big tarplant	CNPS List 1B.1	Gnn, Gnp/clay soils	July – October	Tracy	N/A

Table 3.3-1. Special-status Plants (continued)

Species Name	Status ^a	Habitat Type ^b	Blooming Period	Area of Possible Occurrence ^c	PCM-ID
<i>Brodiaea pallida</i> Chinese Camp brodiaea	FT/SE/CNPS List 1B.1	Wblu, Wlo, Wfp, Gnn, Gnp/vernal streambeds, often serpentinite	May – June	New Melones	PCM-B103 PCM-W002
<i>California macrophylla</i> round-leaved filaree	CNPS List 1B.1	Wbla, Wblu, Wlo, Gnn, Gnp/clay soils	March – May	Tracy Morgan Hill/San Luis	N/A
<i>Calycadenia hooveri</i> Hoover's calycadenia	CNPS List 1B.3/BLMS	Wbla, Wblu, Wlo, Wfp, Gnn, Gnp/rocky	July – September	New Melones	PCM-B104
<i>Carex comosa</i> bristly sedge	CNPS List 2.1	Wfm, Walk, Gnn, Gnp	May – September	Tracy	PCM-W002
<i>Carex vulpinoidea</i> brown fox sedge	CNPS List 2.2	Rgf, Rgs, Wfm	May – June	Tracy	PCM-W002
<i>Caulanthus coulteri</i> var. <i>lemmonii</i> Lemmon's jewelflower	CNPS List 1B.2/BLMS	Gnn, Gnp, Wpj	March – May	Morgan Hill/San Luis	N/A
<i>Centromadia parryi</i> ssp. <i>congdonii</i> Congdon's tarplant	CNPS List 1B.2/BLMS	Gnn, Gnp (alkaline)	May – October (Nov)	Tracy	N/A
<i>Chlorogalum grandiflorum</i> Red Hills soaproot	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp, Fmc/serpentinite, gabbroic and other soils	May – June	New Melones	PCM-B105
<i>Cicuta maculata</i> var. <i>bolanderi</i> Bolander's water-hemlock	CNPS List 2.1	Wfm	July – September	Tracy	PCM-W002
<i>Cirsium crassicaule</i> slough thistle	CNPS List 1B.1/BLMS	Scs, Wfm, Rgs	May – August	Tracy	PCM-W002
<i>Clarkia biloba</i> ssp. <i>australis</i> Mariposa clarkia	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp/serpentinite	May – July	New Melones	PCM-B106
<i>Clarkia rostrata</i> beaked clarkia	CNPS List 1B.3/BLMS	Wbla, Wblu, Wlo, Wfp, Gnn	April – May	New Melones	PCM-B106
<i>Cordylanthus mollis</i> ssp. <i>hispidus</i> hispid bird's-beak	CNPS List 1B.1/BLMS	Mot, playas, Wse, Gnn, Gnp/alkaline	June – September	Tracy	PCM-W001
<i>Cordylanthus palmatus</i> palmate-bracted bird's beak	FE/SE/CNPS List 1B.1	Gnn, Gnp, Scs/alkaline	May – October	Tracy	PCM-B009
<i>Cryptantha mariposae</i> Mariposa cryptantha	CNPS List 1B.3/BLMS	Cmi, Coa, Cmo, (serpentinite, rocky)	April – June	New Melones	PCM-B108
<i>Deinandra bacigalupi</i> Livermore tarplant	CNPS List 1B.2	Mot, Wasp/alkaline	June – October	Tracy	PCM-W002
<i>Delphinium recurvatum</i> recurved larkspur	CNPS List 1B.2/BLMS	Scs, Wbla, Wblu, Wlo, Gnn, gnp/alkaline	March – June	Tracy	N/A
<i>Downingia pusilla</i> dwarf downingia	CNPS List 2.2	Wvpi, Wvpgnn, Gnn, Gnp (mesic)	March – May	Tracy	PCM-W001
<i>Eryngium pinnatisectum</i> Tuolumne button-celery	CNPS List 1B.2	Wbla, Wblu, Wlo, Wfp, Fmc, Wvpgnn, Wvpi/mesic	May – August	New Melones	PCM-W001

Table 3.3-1. Special-status Plants (continued)

Species Name	Status ^a	Habitat Type ^b	Blooming Period	Area of Possible Occurrence ^c	PCM-ID
<i>Eryngium racemosum</i> delta button celery	SE/CNPS List 1B.1	Rgs, floodplains of Warv, Wacp, edges of Waim (vernally mesic clay depressions)	June – September	Tracy	PCM-B037 PCM-W002
<i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	CNPS List 1B.1/BLMS	Gnn, Gnp/alkaline, clay	March – April	Tracy	N/A
<i>Fritillaria liliacea</i> fragrant fritillary	CNPS List 1B.2	Wbla, Wblu, Wlo, Gnn, Gnp/often serpentine	February – April	Tracy	N/A
<i>Helianthella castanea</i> Diablo helianthella	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Rgf, Gnn, Gnp	March – June	Tracy	PCM-W002
<i>Helianthemum suffrutescens</i> Bisbee Peak rush-rose	CNPS List 3.2	Cmi, Coa, Cmo (often serpentinite, gabbroic, or ione soil)	April – June	New Melones	N/A
<i>Hibiscus lasiocarpus</i> woolly rose-mallow	CNPS List 2.2	Wfm, Waic, Warv, sloughs	June – September	Tracy	PCM-W002
<i>Horkelia parryi</i> Parry's horkelia	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp/ione formation and other soils	April – September	New Melones	PCM-B109
<i>Isocoma arguta</i> Carquinez goldenbush	CNPS List 1B.1	Gnn, Gnp/alkaline	August – December	Tracy	N/A
<i>Juglans hindsii</i> Northern California black walnut	CNPS List 1B.1	Rgf	April – May	Tracy	PCM-W002
<i>Lasthenia conjugens</i> Contra Costa goldfields	FE/CNPS List 1B.1	Wvpgnn, Wvpi, playas, Wsw, Gnn, Gnp, Wblu, Wbla, Wlo/mesic	March – June	Tracy	PCM-B014 PCM-W001
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i> delta tule pea	CNPS List 1B.2	Wfm, brackish marsh	May – July	Tracy	PCM-W002
<i>Layia munzii</i> Munz's tidy-tips	CNPS List 1B.2/BLMS	Scc, Gnn, Gnp (alkaline clay)	March – April	Tracy	N/A
<i>Legenere limosa</i> legenere	CNPS List 1B.1/BLMS	Wvpgnn, Wvpi	April – June	Tracy	PCM-W001
<i>Lilaeopsis masonii</i> Mason's lilaeopsis	SR/CNPS List 1B.1	Wfm, Rgs	April – November	Tracy	PCM-B038 PCM-W002
<i>Limosella subulata</i> Delta mudwort	CNPS List 2.1	Wfm, Rgs	May – August	Tracy	PCM-W002
<i>Lomatium congdonii</i> Congdon's lomatium	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp/serpentinite	March – June	New Melones	PCM-B110
<i>Lupinus spectabilis</i> shaggy-hair lupine	CNPS List 1B.2/BLMS	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp/serpentinite	April – May	New Melones	PCM-B111
<i>Madia radiata</i> showy golden madia	CNPS List 1B.1/BLMS	Wbla, Wblu, Wlo, Gnn, Gnp	March – May	Tracy	N/A
<i>Malacothamnus arcuatus</i> arcuate bush-mallow	CNPS List 1B.2	Cmi, Coa, Cmo, Wbla, Wblu, Wlo	April – September	Morgan Hill/San Luis	N/A
<i>Malacothamnus hallii</i> Hall's bush-mallow	CNPS List 1B.2	Cmi, Coa, Cmo, coastal scrub	May – September	Morgan Hill/San Luis	N/A
<i>Micropus amphibolus</i> Mt. Diablo cottonweed	CNPS List 3.2	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Gnn, Gnp/rocky	March – May	Tracy	N/A

Table 3.3-1. Special-status Plants (concluded)

Species Name	Status ^a	Habitat Type ^b	Blooming Period	Area of Possible Occurrence ^c	PCM-ID
<i>Monardella douglasii</i> ssp. <i>venosa</i> veiny monardella	CNPS List 1B.1/BLMS	Wbla, Wblu, Wlo, Wfp, Gnn, Gnp/heavy clay	May – July	New Melones	PCM-B112
<i>Neostapfia colusana</i> Colusa grass	FT/SE/CNPS List 1B.1	Wvpi, Wvpgnn, Wacp, Waci, Waim, Wapd	May – August	Tracy	PCM-B028 PCM-W001 PCM-W002
<i>Packera clevelandii</i> (= <i>Senecio clevelandii</i> var. <i>heterophyllus</i>) Red Hills ragwort	CNPS List 1B.2/BLMS	Wbla, Wblu, Wlo, Wfp (serpentine seeps)	June – July	New Melones	PCM-B114 PMC-W002
<i>Packera layneae</i> Layne's ragwort	FT/SR/CNPS List 1B.2	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp, Waci, Wacp/serpentine or gabbroic, rocky	April – August	New Melones	PCM-B113 PCM-W002
<i>Plagiobothrys glaber</i> hairless popcorn-flower	CNPS List 1A	Mot and Wasp (alkaline), coastal salt marsh	March – May	Tracy	PCM-W002
<i>Plagiobothrys hystriculus</i> bearded popcorn-flower	CNPS List 1B.1	Gnn/Gnp (mesic), Wvpgnn, Wvpi, Wsw	April – May	Tracy	PCM-W001
<i>Potamogeton filiformis</i> slender-leaved pondweed	CNPS List 2.2	Wfm, Walk, Wapd, Wacp, Waci, Wadr	May – July	Tracy	PCM-W002
<i>Potamogeton zosteriformis</i> eel-grass pondweed	CNPS List 2.2	Wfm, Walk, Wapd, Wacp, Waci	June – July	Tracy	PCM-W002
<i>Sagittaria sanfordii</i> Sanford's arrowhead	CNPS List 1B.2/BLMS	Wfm, Wapd, Wadr, Waic	May – October	Tracy	PCM-W002
<i>Scopelophila cataractae</i> tongue-leaf copper-moss	CNPS List 1B.2	Wbla, Wblu, Wlo, Wfp (metamorphic soil)	moss	New Melones	N/A
<i>Scutellaria galericulata</i> marsh skullcap	CNPS List 2.2	Mot, Wasp, Wfm	June – September	Tracy	PCM-W002
<i>Scutellaria lateriflora</i> side-flowering skullcap	CNPS List 2.2	Mot, Wasp, Wfm	June – September	Tracy	PCM-W002
<i>Senecio aphanactis</i> chaparral ragwort	CNPS List 2.2	Cmi, Coa, Cmo, Wbla, Wblu, Wlo, Wfp, coastal scrub, Scc, Mot/sometimes alkaline	January – April	Tracy	N/A
<i>Symphotrichum lentum</i> Suisun Marsh aster	CNPS List 1B.2	Wfm, Waic, Wadr, Warv, brackish marsh	May – November	Tracy	PCM-W002
<i>Trichocoronis wrightii</i> var. <i>wrightii</i> Wright's trichocoronis	CNPS List 2.1	Mot, Wasp, Wse, Wfm, Rgf, Wvpgnn, Wvpi/alkaline	May – September	Tracy	PCM-W001 PCM-W002
<i>Trifolium depauperatum</i> var. <i>hydrophilum</i> saline clover	CNPS List 1B.2	Wfm, Gnn, Gnp, Wvpgnn, Wvpi (mesic, alkaline)	April – June	Tracy	PCM-W001 PCM-W002
<i>Tropidocarpum capparideum</i> caper-fruited tropidocarpum	CNPS List 1B.1	Gnn, Gnp (alkaline hills)	March – April	Tracy	N/A
<i>Verbena californica</i> Red Hills vervain	FT/ST/CNPS List 1B.1	Wbla, Wblu, Wlo, Wfp, Gnn, Gnp/mesic, usually serpentine seeps or creeks	May – September	New Melones	PCM-B115 PCM-W002

Notes to Table 3.3-1:

Scientific nomenclature based on Hickman (1993) and Jepson Online Interchange (2009).

^a Status codes:

BLMS: BLM Sensitive	SE : State Endangered
FE: Federally Endangered	ST : State Threatened
FT: Federally Threatened	SC : State Candidate
FC: Federal Candidate	SFP : State Fully Protected
FD: Federally Delisted	SSC : State Species of Concern

CNPS Listing: List 1B = Plants rare, threatened, or endangered in California and elsewhere; List 2 = Plants rare, threatened, or endangered in California but more common elsewhere; List 3 = Plants about which we need more information; Extensions: .3 = Not very endangered in California, .2 = Fairly endangered in California, .1 = Seriously endangered in California

^b Habitat type codes are from Western's data dictionary and are defined below. These codes consist of habitat types encountered throughout Western's Sierra Nevada Region, some of which are not present in the San Joaquin Valley project area. Habitats without codes are those that have not been encountered in Western's San Joaquin Valley, Sacramento Valley, or North Area ROWs.

Agri: Agriculture, rice fields	Fdf: Forest, Douglas fir	Rms: Riparian, montane scrub	Warv: Waters, river
Agor: Agriculture, orchards	Fmc: Forest, mixed conifer	Rmw: Riparian, montane white alder	Wasp: Waters, seep/spring
Agps: Agriculture, pasture	Fpp: Forest, ponderosa pine	Scs: Scrub, chenopod	Wfm: Wetland, freshwater marsh
Aggr: Agriculture, grain crop	Fwf: Forest, white fir	Ssb: Scrub, sagebrush, bitterbrush	Wot: Wetland, other
Agvn: Agriculture, vineyard	Gnn: Grassland, non-native annual	Waci: Waters, creek, intermittent	Wse: Wetland, seasonal
Agrc: Agriculture, row crop	Gnp: Grassland, native perennial	Wacp: Waters, creek, perennial	Wsw: Wetland, swale
Bar: Barren	Lev: Levee	Wadr: Waters, drainage	Wvpi: Wetland, vernal pool isolated
Cmi: Chaparral, mixed	Mot: Meadow	Waic: Waters, irrigation canal	Wypgpn: Wetland, vernal pool grassland complex
Cmo: Chaparral, montane	Mwm: Meadow, wet montane	Waim: Waters, impoundment	Wbla: Woodland, black oak
Coa: Chaparral, oak	Rgf: Riparian, Great Valley forest	Walk: Waters, lake	Wblu: Woodland, blue oak
Ebis: Elderberry, isolated	Rgs: Riparian, Great Valley scrub	Waat: Waters, other	Wfp: Woodland, foothill pine-chaparral
Ebsv: Elderberry, savannah	Rma: Riparian, montane aspen	Wapd: Waters, pond	Wlo: Woodland, live oak

^c Area of Possible Occurrence reflects two factors: 1) the natural geographic range of a species and 2) the presence of suitable habitat within the project area. A species may occur in a particular region, but that region will not be listed for the species if the project area does not intersect suitable habitat.

3.3.1 Affected Environment

3.3.1.1 Tracy

Virtually all native habitats within the Central Valley have been altered by development and agriculture. Once-extensive riparian corridors and vernal pool grasslands have been severely fragmented producing isolated pockets of sensitive habitats and special-status species. Habitats requiring special protection in the Tracy region include vernal pools, freshwater wetlands, and Great Valley riparian forests. In 2005, USFWS designated critical habitat for 22 vernal pool ecosystem units in California and Oregon (USFWS 2005). Vernal pool critical habitat is present near the Tracy region of the project area, as illustrated in **Figure 3.3-1**. Critical habitat, described more fully in **Section 3.3.2.3**, is a formal designation under the Federal ESA where specific areas are designated as essential to the conservation and recovery of a Federally listed species. These areas may require special management consideration or protection.

The project area in the Tracy region includes eight acres of vernal pools including isolated vernal pools and high-density vernal pool annual grassland. While several vernal pool species require protection, PCMs aim to both protect the species (see **Table 2.4-2**) and to preserve the habitat as a whole (see **Table 2.4-4**). Federally listed vernal pool species that could occur in the project area include Colusa grass (*Neostapfia colusana*) and Contra Costa goldfields (*Lasthenia conjugens*). Other

special-status plants that could occur in vernal pool habitats in the project area are alkali milkvetch (*Astragalus tener* ssp. *tener*), brittlescale (*Atriplex depressa*), dwarf downingia (*Downingia pusilla*), legenere (*Legenere limosa*), bearded popcorn-flower (*Plagiobothrys hystriculus*), Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*), and saline clover (*Trifolium depauperatum* var. *hydrophilum*).

Critical habitat for Contra Costa goldfields exists near the Tracy region of the project area, but does not overlap the project area (**Figure 3.3-2**).

Wetlands and waters habitats (90 acres) that may support special-status species in the Tracy region include springs and swales, seasonal wetlands, freshwater marshes, meadows, creeks, rivers, sloughs, irrigation drainages and canals, and ponds and lakes. Transmission lines traverse very small, isolated pockets of riparian forest. The project area in the Tracy region crosses 11 acres of Great Valley riparian forest and scrub including willow scrub, cottonwood riparian, mixed riparian forest, and oak riparian forest. Special-status plants that may occur in these wetlands and waters and riparian habitats include alkali milkvetch, heartscale (*Atriplex cordulata*), brittlescale, San Joaquin spearscale (*Atriplex joaquiniana*), bristly sedge (*Carex comosa*), brown fox sedge (*Carex vulpinoidea*), Bolander's water-hemlock (*Cicuta maculata* var. *bolanderi*), slough thistle (*Cirsium crassicaule*), hispid bird's-beak (*Cordylanthus mollis* ssp. *hispidus*), Livermore tarplant (*Deinandra bacigalupi*), delta button celery (*Eryngium racemosum*), woolly rose-mallow (*Hibiscus lasiocarpus*), Northern California black walnut (*Juglans hindsii*), Contra Costa goldfields, delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), Mason's lilaeopsis (*Lilaeopsis masonii*), delta mudwort (*Limosella subulata*), Colusa grass, hairless popcorn-flower (*Plagiobothrys glaber*), slender-leaved pondweed (*Potamogeton filiformis*), eel-grass pondweed (*Potamogeton zosteriformis*), Sanford's arrowhead (*Sagittaria sanfordii*), marsh skullcap (*Scutellaria galericulata*), side-flowering skullcap (*Scutellaria lateriflora*), chaparral ragwort (*Senecio aphanactis*), Suisun Marsh aster (*Symphotrichum lentum*), Wright's trichocoronis, and saline clover.

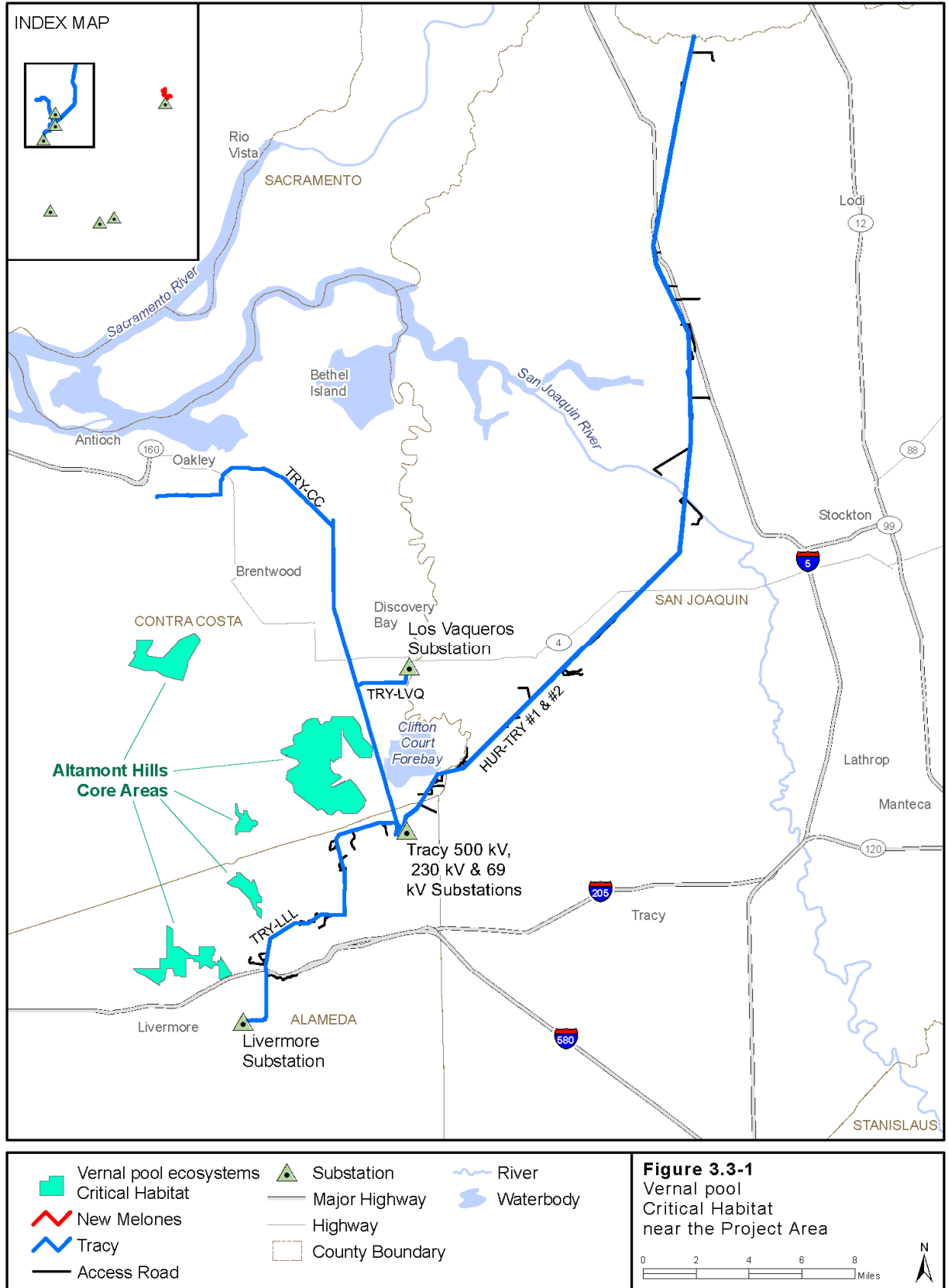


Figure 3.3-1. Vernal Pool Critical Habitat near the Project Area

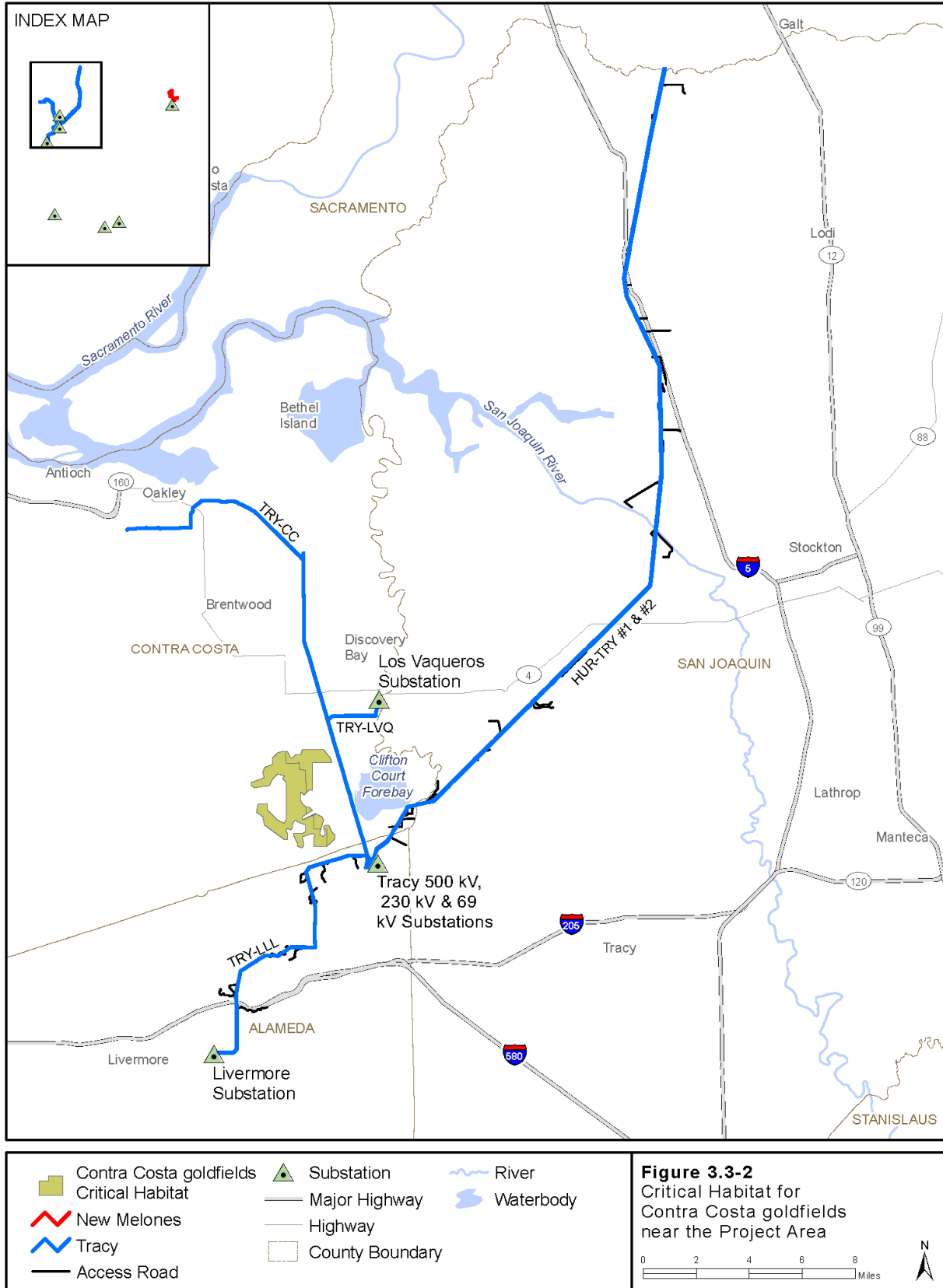


Figure 3.3-2. Critical Habitat for Contra Costa Goldfields near the Project Area

The Tracy region of the project area crosses 296 acres of non-native grassland, the most extensive habitat supporting special-status species. Some of this grassland habitat is alkaline and there are also 17 acres of chenopod scrub habitat in the project area. Three Federally protected species may occur in these habitat types within the Tracy region; these species include large-flowered fiddleneck (*Amsinckia grandiflora*), Contra Costa goldfields, and palmate-bracted bird's-beak. Critical habitat for large-flowered fiddleneck occurs near the Tracy region, but does not overlap (**Figure 3.3-3**). Other special-status species that could occur in these habitats within the project area include bent-flowered fiddleneck (*Amsinckia lunaris*), alkali milkvetch, heartscale, brittlescale, San Joaquin spearscale, big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*), big tarplant (*Blepharizonia plumose*), round-leaved filaree (*California macrophylla*), bristly sedge, Lemmon's jewelflower (*Caulanthus coulteri* var. *lemmonii*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), slough thistle, hispid bird's-beak, recurved larkspur (*Delphinium recurvatum*), Mt. Diablo buckwheat (*Eriogonum truncatum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), fragrant fritillary (*Fritillaria liliacea*), Diablo helianthella (*Helianthella castanea*), Carquinez goldenbush (*Isocoma arguta*), Munz's tidy-tips (*Layia munzii*), showy golden madia (*Madia radiata*), bearded popcorn-flower, chaparral ragwort, saline clover, and caper-fruited tropidocarpum (*Tropidocarpum capparideum*).

3.3.1.2 New Melones

The New Melones region is in the Sierra Nevada Foothills between the Central Valley and the Sierra Nevada. This region is characterized by blue-oak woodlands, non-native grasslands and chaparral habitats with some riparian and foothill pine woodland. Very small amounts of creek, wetland, seep and spring habitats occur and the majority of the wetlands/waters in the region are riverine habitat from where the ROW crosses the Stanislaus River.

Many of the special-status species that may occur in the New Melones region of the project area require or prefer serpentine soils. No maps of the geology or soils of the area were found from either the U.S. Geological Survey or the Natural Resources Conservation Service to determine whether serpentine soils exist in the ROW; however some soils along the Tuttletown Line were noted as appearing to have serpentine influence during field surveys.

The region contains less than two acres of wetlands and waters including rivers and creeks, ditches, seeps and springs, freshwater marsh, and seasonal wetlands, and less than a half acre of riparian forest. Two Federally listed species, Chinese Camp brodiaea (*Brodiaea pallida*) and Red Hills vervain (*Verbena californica*), may occur in the New Melones region; these species occur in vernal seeps, creeks, and streambeds, often in serpentine soils. Other special-status species that occur in mesic (wet) habitats and may occur in the project area are Henderson's bent grass (*Agrostis hendersonii*), Tuolumne button-celery (*Eryngium pinnatisectum*), and Red Hills ragwort (*Packera clevelandii*).

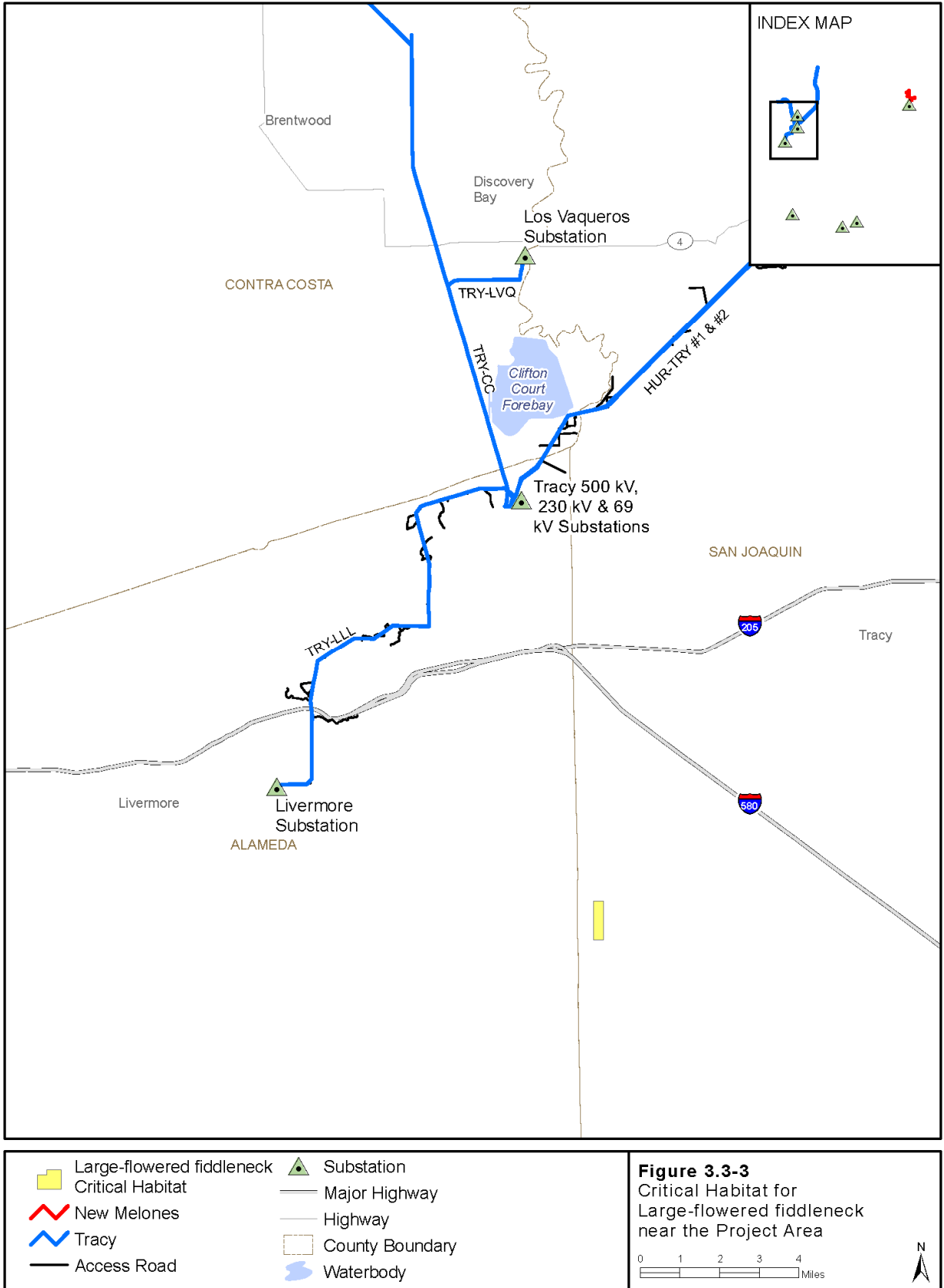


Figure 3.3-3. Critical Habitat for Large-flowered Fiddleneck near the Project Area

There are 17 acres of woodland and chaparral habitat in the New Melones region that may provide suitable habitat for one Federally listed species, Layne's ragwort (*Packera layneae*). This species occurs in serpentine and rocky areas in woodland and chaparral habitats. Other special-status species that occur in woodland and/or chaparral habitats and could occur in the New Melones region of the project area are: tongue-leaf copper-moss (*Scopelophila cataractae*), veiny monardella (*Monardella douglasii* ssp. *venosa*), shaggyhair lupine (*Lupinus spectabilis*), Congdon's lomatium (*Lomatium congdonii*), Parry's horkelia (*Horkelia parryi*), Bisbee Peak rush-rose (*Helianthemum suffrutescens*), Mariposa cryptantha (*Cryptantha mariposae*), Mariposa clarkia (*Clarkia biloba* ssp. *australis*), beaked clarkia (*Clarkia rostrata*), Red Hills soaproot (*Chlorogalum grandiflorum*), Hoover's calycadenia (*Calycadenia hooveri*), Nissenan manzanita (*Arctostaphylos nissenana*), Jepson's onion (*Allium jepsonii*), and Rawhide Hill onion (*Allium tuolumnense*).

Three of the species listed above, Hoover's calycadenia, beaked clarkia, and veiny monardella, also occur in non-native grassland habitats. There are 19 acres of non-native grassland in the New Melones region of the project area.

3.3.1.3 Morgan Hill/San Luis

The Morgan Hill/San Luis region consists of three substations, Coyote, Pacheco and O'Neill, including 50-foot surrounding buffers. The Coyote Substation is located in the City of Morgan Hill in Santa Clara County and the buffer only contains urban (landscaped) and cropland habitats. The Pacheco and O'Neill substations are in the San Joaquin Valley. The Pacheco Substation is in the hills west of San Luis Reservoir and is surrounded by oak woodlands and non-native grasslands; the substation buffer is mostly comprised of commercial and barren habitats, with some chaparral, riparian and freshwater marsh. The O'Neill Substation is located east of the San Luis Reservoir and is surrounded by non-native grassland; the substation buffer includes a portion of the O'Neill Forebay and is primarily in commercial and barren habitats with some non-native grassland.

Of the four special-status species that may occur in this region of the project area, none is Federally listed. There is limited suitable habitat (0.4 acre) for three of these species, round-leaved filaree (*California macrophylla*), arcuate bush-mallow (*Malacothamnus arcuatus*), and Hall's bush-mallow (*Malacothamnus hallii*), in chaparral habitat at the Pacheco Substation. The fourth species, Lemmon's jewelflower (*Caulanthus coulteri* var. *lemmonii*), could occur in non-native grassland at the Pacheco Substation.

3.3.2 Significance Criteria and Approach to Impact Assessment

3.3.2.1 Approach to Impact Assessment

The project area supports suitable habitat for a number of special-status species. The following sections identify possible impacts to special-status plants and habitats of concern resulting from Project activities, and identify PCMs and SOPs to avoid or minimize adverse impacts.

3.3.2.2 Significance Criteria

A significant impact on special-status plant species or critical habitat would result if any of the following were to occur:

- The continued existence of a Federally or state-listed species was jeopardized;
- Loss of individuals or a population of species would result in a change in species status;
- Violation of any Federal or other applicable statutes and regulations pertaining to special-status species.

3.3.2.3 Critical Habitat

Critical habitat is a formal term under the Federal ESA. When a species is listed as threatened or endangered, the USFWS must, in most cases, officially designate specific areas for habitat protection. Critical habitat is defined as specific areas that are essential to the conservation of a Federally listed species, and that may require special management consideration or protection. Critical habitat is determined using the best available scientific information about the physical and biological needs of the species. These needs, or “primary constituent elements,” include: space for individual and population growth and for normal behavior; food, water, light, air, minerals, or other nutritional or physiological needs; cover or shelter; sites for breeding, reproduction, and rearing of offspring; and habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

Designated critical habitat areas have all the essential elements required for survival of listed species. As such, if Project-related actions that take place within critical habitats adversely affect primary constituent elements for listed species, compensation or mitigation may be required at a higher level than what would be required in areas outside of critical habitat. Specific requirements are defined in the formal (Section 7) consultation process with USFWS and NMFS.

3.3.3 Environmental Consequences from the Proposed Action

Under the Proposed Action, the removal of vegetation and alteration of habitats could affect special-status plant species regardless of the method employed. In areas requiring more intensive vegetation management, a low-growing plant community would be established over time, and fewer acres of habitat would be disturbed. Effects to vegetation and wetlands are discussed in **Section 3.2**, and can also be applied to special-status species and their habitats. Following SOPs (**Table 2.4-1**) and PCMs (**Tables 2.4-2 and 2.4-4**) developed for individual species and habitats would reduce possible impacts to less than significant levels. Impacts to special-status plants associated with various habitats are discussed below.

IMPACTS TO VERNAL POOL AND SEASONAL WETLAND SPECIES

Vernal pools and seasonal wetlands are often associated with grassland habitat, which requires minimal vegetation maintenance within the ROW; therefore, impacts to vernal pools and wetlands would not be significant provided they are not damaged by off-road travel. Implementing SOPs and PCMs for this habitat type, especially PCM-W001 and PCM-W001a (see **Table 2.4-4**), would minimize adverse impacts to these sensitive habitats and the plant species therein. Impacts from vegetation maintenance would be similar for all wetland and vernal pool plant species. Herbicide use could affect vernal pool and wetland habitats through misuse or from drift, leaching, or spilling, potentially affecting non-target vegetation including special-status plant species. Mechanical removal of vegetation could increase surface runoff, causing turbidity and sedimentation to wetlands, waterways, and vernal pools, and could result in compaction and/or destruction of the hardpan bottom.

Implementation of the SOPs presented in **Table 2.4-1** and PCMs presented in **Tables 2.4-2** (special-status plants) and **2.4-4** (water resources/aquatic habitat) would reduce adverse impacts to general vegetation and wetland habitats.

IMPACTS TO CHAPARRAL, OAK WOODLAND, AND RIPARIAN FOREST SPECIES

Chaparral, oak woodlands, and riparian forests would initially require significant vegetation maintenance to facilitate the transition to low-growing plant communities within the ROW, using the IVM Program described in **Section 2**. Special-status plants within these communities typically occur in the understory. Vegetation clearing could destroy special-status plants unless PCMs are implemented. Additionally, changes in the vegetative structure of wooded areas would change local microclimates, resulting in increased exposure from wind or sun that could affect survival of special-status plants that had not been removed. Implementing SOPs and PCMs, presented in **Tables 2.4-2 and 2.4-4**, would minimize adverse impacts to special-status plants in these habitats.

IMPACTS TO STREAMS, RIVERS, AND PERENNIAL WETLANDS

Streams, rivers, and perennial wetlands could be adversely affected by vegetation clearing, herbicide use, and streambed recontouring. Wetlands and riverine habitats are susceptible to erosion and compaction from heavy machinery. Removal of vegetation can increase surface runoff causing turbidity and sedimentation to wetlands and waterways. Recontouring riverbanks and constructing culverts could result in removal or degradation of sensitive habitats and impacts to special-status plants. Implementation of SOPs and PCMs, specifically PCM-W002, would minimize impacts to streams, rivers, and perennial wetlands.

3.3.3.1 Category A – Inspection and Minor Maintenance Activities

Category A activities are minor and of short duration, and possible adverse activities are restricted to existing fenced facilities where sensitive habitats and sensitive species are less likely to occur. Western would use the results of the biological survey performed for this EA to determine locations of special-status plants and sensitive habitats and would

follow SOPs in **Table 2.4-1** and PCMs in **Tables 2.4-2 and 2.4-4** to minimize impacts to sensitive habitat and special-status species.

3.3.3.2 Category B – Routine Maintenance Activities

Category B activities may result in temporary and permanent loss of habitat, including impacts to special-status plants. Vehicles accessing the ROW for maintenance activities could damage vernal pools and destroy plant species or alter the vernal pool topography. Routine maintenance and such activities as replacing culverts could introduce non-native and invasive plant species, which would jeopardize the survival of existing special-status plant populations. Western would use the results of the biological survey to determine locations of special-status plants and sensitive habitats and would follow SOPs in **Table 2.4-1** and PCMs listed in **Tables 2.4-2 and 2.4-4** to minimize impacts associated with introduction of non-native, invasive plants and impacts to sensitive habitat and special-status species.

The use of a backhoe to replace a culvert or place rip-rap on river banks could alter vegetation and create erosion on the banks. Temporary disturbances to sensitive communities may result in the loss of individual rare and special-status plants. Removal of hazard trees within the ROW and access roads could result in the loss of individual special-status species. Implementation of SOPs and PCMs would minimize impacts.

3.3.3.3 Category C – New Infrastructure

Category C activities are generally those that would disturb large areas and would rely on the use of heavy equipment. Category C activities could impact more habitats than Category A or B activities and have the greatest potential to cause the introduction of non-native and invasive plant species. Primary concerns would be the reduction of rare plants or special-status species, loss of sensitive species that would result in a change in the species' status, sensitive habitat modification, and violation of any applicable statutes and regulations pertaining to special-status species.

The use of a backhoe to install a new culvert or recontour river banks could remove riparian vegetation and create erosion along the banks. Temporary disturbances to sensitive communities may result in the loss of individual rare and special-status plants. Changing water flow patterns could alter habitat conditions downstream, creating unfavorable conditions for special-status species. Western would use the results of the biological survey to determine locations of special-status plants and sensitive habitats and follow SOPs in **Table 2.4-1** and PCMs listed in **Tables 2.4-2 and 2.4-4** to minimize impacts.

3.3.4 Environmental Consequences from the No Action Alternative

Under the No Action Alternative, Western would continue to inspect and identify areas that need to be repaired or upgraded. These regular aerial and ground patrols would continue to implement established BMPs to avoid impacts to special-status plants and critical habitat. About 100 to 200 acres annually would be affected under the No Action Alternative. Impacts to vegetation and wetlands would be similar to those described for

the Proposed Action. Routine use of herbicides would not be implemented, resulting in the increase in noxious weed populations following manual/mechanical disturbances. The Proposed Action provides more rigorous protection measures than were previously established for this Project. Therefore, habitats and vegetation, including wetlands, would be more likely to be adversely affected by the No Action Alternative than by the Proposed Action.

3.4 Wildlife

The project area encompasses portions of the San Francisco Bay area, Sacramento-San Joaquin Delta, San Joaquin Valley, Coast Range, and Sierra Nevada Foothills, including a variety of habitat types and therefore a variety of wildlife species. This section presents a description of general wildlife resources within the project area and an assessment of the possible impacts to wildlife that could occur from implementation of the Proposed Action and No Action Alternative. Within this section, general wildlife refers to all mammal, bird, invertebrate, reptile, and amphibian species that are not protected under applicable state or Federal laws or regulations. **Section 3.5** presents information and analyses for special-status wildlife.

In order to gather information on the effects of the Proposed Action to general wildlife, Western conducted an extensive survey of the entire project area, which included habitat mapping and a wildlife inventory, as described in **Section 1.5.1**. Additionally, data were gathered through literature review and previous visits to the project area. The following section describes the environmental baseline conditions throughout the project area, including identification of general wildlife species known to occur.

3.4.1 Affected Environment

The project area is divided into three distinct regions: the Tracy region, the New Melones region, and the Morgan Hill/San Luis region (**Figure 1.2-1**). Certain wildlife species would be likely to occur only in one region, whereas others could be expected in two or all three.

3.4.1.1 Tracy

The survey documented approximately 28 habitat types or plant communities (including urban, commercial, and other unnatural and nonnative habitats) in the Tracy region; eleven of these types were dominant from a total acreage standpoint, comprising roughly 95 percent of the total habitat area (see **Section 3.2.1**). They include, from largest (422 acres) to smallest (31 acres): row crop, grain crop, non-native grassland, vineyard, barren, seasonal wetland, rice field, urban, orchard, and levee. Each type comprises more than 30 total acres and, when considered from the perspective of total acreage (1,616 acres), these dominant habitat types provide an indication of the general habitat composition of the Tracy region.

General wildlife species that occur in the Tracy region include:

- Non-native red fox (*Vulpes vulpes*), black-tailed hare (*Lepus californicus*), coyote (*Canis latrans*), and California ground squirrels (*Spermophilus beecheyi*);
- Many species of waterfowl including mallards (*Anas platyrhynchos*) and northern pintails (*Anas acuta*);
- A variety of ground- and tree-nesting birds including western meadowlarks (*Sturnella neglecta*), song sparrows (*Melospiza melodia*), and western kingbirds (*Tyrannus verticalis*);
- Wetland birds including great and snowy egrets (*Ardea alba*, *Egretta thula*) and great blue herons (*Ardea herodias*);
- Birds of prey such as red-tailed hawks (*Buteo jamaicensis*) and great-horned owls (*Bubo virginianus*); and
- Many common reptiles and amphibians including western fence lizards (*Sceloporus occidentalis*), terrestrial and common garter snakes (*Thamnophis* spp.), and Pacific treefrogs (*Hyla regilla*).

3.4.1.2 New Melones

The New Melones region includes 16 habitat types or plant communities (including commercial, barren, and otherwise non-natural), of which three comprise approximately 86 percent of the total acreage (45.4 acres). The three types, from largest (18.5 acres) to smallest (7.6 acres), are nonnative grassland, blue oak woodland, and barren. When considered from the perspective of total acreage, these dominant habitat types provide an indication of the general habitat composition of the New Melones region.

The following wildlife species are typical of the New Melones area:

- Mammals such as mule deer (*Odocoileus hemionus*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), and a variety of bats;
- Woodland birds such as California quail (*Callipepla californica*), acorn woodpecker (*Melanerpes formicivorus*), western bluebird (*Sialia mexicana*), and oak titmouse (*Baeolophus inornatus*);
- Waterfowl such as common merganser (*Mergus merganser*);
- Birds of prey such osprey (*Pandion haliaetus*); and
- Common amphibians and reptiles such as California toad (*Bufo boreas halophilus*) and western skink (*Eumeces skiltonianus*).

3.4.1.3 Morgan Hill/San Luis

Only 10 habitat types or plant classifications are found in the limited substation buffers that comprise the Morgan Hill/San Luis region, three habitat types are greater than one acre and make up 75 percent of the total project area (6.5 acres). They are barren,

orchard and grain crop and along with less than one acre each of urban, chaparral, riparian, lacustrine, and grassland habitat, and less than 0.1 acre commercial and freshwater marsh, they comprise the Morgan Hill/San Luis region.

General wildlife typical of the habitats and geographic range of this area include:

- Mammals such as gray fox and mule deer;
- Woodland, grassland and marsh birds such as oak titmouse, western meadowlark, and red-winged blackbird (*Agelaius phoeniceus*);
- Waterfowl such as American coot (*Fulica americana*), mallard, and common merganser;
- Birds of prey such osprey and great-horned owl; and
- Common amphibians and reptiles.

3.4.2 Significance Criteria and Approach to Impact Assessment

3.4.2.1 Approach to Impact Assessment

A variety of laws and regulations protect general wildlife. Impacts were assessed by evaluating the potential of the Proposed Action or No Action Alternative to violate any of these applicable statutes. The Federal ESA protects certain wildlife species that have been formally listed as threatened or endangered; these species are discussed in **Sections 3.5 and 3.7**. The following Federal laws were incorporated into the impact assessment for general wildlife:

- *The National Environmental Policy Act* (42 U.S.C. §§ 4321-4370h), the provisions of which require consideration of impacts of Federal actions on a variety of resources;
- *The Federal Migratory Bird Treaty Act* (16 U.S.C. §§ 703-712), which protects all migratory birds against take; and
- *The Federal Bald and Golden Eagle Protection Act* (16 U.S.C. §§ 668-668d), which protects not only bald eagles, but also golden eagles.

3.4.2.2 Significance Criteria

Impacts to wildlife could occur when habitats or individuals are disturbed or lost during Project activities. The significance of the impact depends, in part, on the sensitivity of the population. A significant impact on wildlife would result if any of the following were to occur from implementation of the Proposed Action:

- Loss of individuals of a population of wildlife that would result in the species being listed or proposed for listing as threatened or endangered;
- Violation of any Federal statutes and regulations pertaining to wildlife;

- Introduction of constituents in any water body in concentrations that cause adverse effects on wildlife;
- Substantial interference with the movement of any native, resident, or migratory wildlife species;
- Substantial local loss of wildlife habitat (as compared to total available resources within the area) or habitat productivity;
- Nest or reproductive failure (e.g., nest destruction or abandonment, or death of chicks or adults) in any migratory bird species; or
- Range reduction for any wildlife species.

3.4.3 Environmental Consequences from the Proposed Action

Managing vegetation along the ROWs in the project area may 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 runoff 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.

To minimize impacts, SOPs and PCMs have been developed. SOPs and PCMs would be implemented as appropriate and would be included, along with applicable environmental laws and regulations and applicable agency requirements, in an annual training program for Western O&M personnel. **Section 2.2.4** describes coordination with regulatory and land management agencies, which would ensure that specific actions have the lowest potential for adverse effect. **Section 2.2.2.1** describes the measures that would be taken to minimize adverse effects associated with herbicide use.

The sections below describe the types of general adverse impacts that are possible due to implementation of the Proposed Action. SOPs and PCMs, especially when considered in light of existing degraded or modified conditions along the ROWs, would minimize possible adverse impacts.

3.4.3.1 General Disturbance Considerations

HABITAT LOSS AND DEGRADATION

Most of the project area is already low-vegetation grasslands or highly modified agricultural lands. Nearly all of the woodland, chaparral and riparian habitats of the project area are in the New Melones region, where the ROWs are narrow (25 feet wide) and nearly always parallel existing roads. In cleared areas, trees and shrubs may regenerate and encroach upon the ROW and need to be cut or trimmed, or treated for permanent removal. However, any habitat conversion would not be from a natural, pristine condition to a new low-growing community, but from an already heavily

managed condition to a new condition that would be designed to require less management over time.

Relative to the size and limits of the ROW, a significant amount of habitat has already been lost or altered over the years through agricultural conversion, development and various land use practices. Relative to the amount and type of habitats available, future habitat loss is unlikely to be significant, given Western's current commitment to regulatory compliance.

Wildlife in the immediate vicinity of the project area is currently adapted to modified habitat conditions and associated human activities. Animals that are highly sensitive to human disturbance have undoubtedly permanently moved farther away from existing ROWs. For some species, especially in areas where past management activities and other human disturbances have been minimal, the Proposed Action could have negative impacts.

The Proposed Action is designed to create permanent changes in habitat conditions through conversion of existing conditions to stable, low-growing vegetation communities. This requires short-term disturbances to create long-term reductions in the need for vegetation management and therefore long-term reductions in disturbance to local wildlife. **Section 2.2.4.2** provides a projection of the amount of disturbance that would take place in an average year through implementation of the Proposed Action.

HABITAT FRAGMENTATION

Habitat modification and fragmentation is not considered one of the significant adverse effects of the Proposed Action because there is no woodland, chaparral, or riparian habitat in the ROW that would be affected that has not already been fragmented.

Most of project area is already low-vegetation grasslands or highly modified agricultural lands. In addition, most of woodland, chaparral and riparian habitats exist in the New Melones region, where the ROWs are narrow (25-feet wide) and nearly always parallel to existing roads. Habitat within the project area has been previously disturbed and degraded to varying degrees through past management practices. As such, the Proposed Action is not likely to exacerbate the impacts of habitat fragmentation that have already occurred. Removal of small amounts of additional vegetation is not likely to significantly increase these particular impacts.

HERBICIDE USE AND CELL TOWER INSTALLATION

The primary differences between the Proposed Action and the No Action Alternative are the broader application of herbicide use, the installation of fiber optic cable, tower relocation/realignment, and cell tower installation. From a wildlife impact standpoint, only two of these differences are significantly different from existing operations and maintenance, and have the greatest chance for significant adverse effect: the broader application of herbicide use and the installation of cell towers.

Herbicide Use: Wildlife could be exposed to and adversely affected by herbicides through being directly sprayed, inhaling spray mist or vapors, drinking herbicide-

contaminated water or eating herbicide-contaminated seeds or vegetation, or consuming animals, such as mice or grasshoppers, that have themselves consumed contaminated vegetation. The latter effect could result in bioaccumulation of contaminants moving up the food chain, with impacts being much greater to top predators than to animals lower on the food chain.

The potential for wildlife to be affected depends on the length of exposure, the exposure amount, and the toxicity of the herbicide to the animal species. The EPA has standards for formula registration and application methods intended to reduce risks in the environment to an acceptable level.

Most herbicides approved for use by Western are low in toxicity to wildlife. The amount of chemical to which an animal is exposed is largely a function of its feeding habits. Raptors (such as hawks and owls), small herbivorous mammals, medium-sized omnivorous mammals, and birds that feed on insects would be more susceptible to herbicide exposure. These animals either feed directly on vegetation that might have been treated or they feed on animals that feed on the vegetation.

The end effect of herbicide use with the Proposed Action is the ability to promote a stable, low-growth vegetation community, which results in a long-term reduction in required vegetation maintenance. Because of the low toxicity of herbicides Western proposes for use and the implementation of SOPs and PCMs established to protect sensitive plant communities and aquatic resources, the potential for adverse effects to wildlife is reduced.

Cell Tower Installation: Two additional indirect effects generally associated with installation of cellular equipment on towers are collision mortality and the misorienting or disorienting effects of lights on birds. Collisions occur most frequently in overcast and inclement conditions during migrations when birds are unable to detect obstacles; collisions can occur at towers or at their guy wires. Misorientation is caused when birds are pulled off course by lights; disorientation is caused when birds are confused by lights (Longcore and Rich 2004).

The risk for cell towers to cause adverse impacts is minimized in the project area for the following reasons. First, the cellular equipment would be erected at existing transmission towers. This would eliminate the need for guy wires and the hazard posed by an isolated tower reducing the risk for bird collisions. Second, the towers would not be lighted; this would reduce the potential for misorientation or disorientation. Project cell towers would be taller than existing transmission towers, which could increase the risk for collision, but their presence on top of existing towers would make them less hazardous to birds than an isolated tower.

3.4.3.2 Category A – Inspection and Minor Maintenance Activities

Category A activities are primarily inspection-type actions, with some minor repairs that would not cause substantial soil, habitat, or noise disturbance (**see Section 2.2.5.1** for more detail). They could result in short-term noise and minor disturbance impacts but would not be likely to significantly adversely affect general wildlife. Implementation of SOPs and PCMs would reduce the potential for adverse impacts to general wildlife to less than significant levels.

3.4.3.3 Category B – Routine Maintenance Activities

Category B activities have greater potential to adversely affect wildlife because they may occur in areas where ambient conditions do not include regular human disturbance, and because they may disturb more ground. Implementation of SOPs and PCMs developed for special-status species (**see Section 3.5**) would minimize possible adverse impacts to general wildlife.

3.4.3.4 Category C – New Infrastructure

Category C activities may cause adverse effects to wildlife if SOPs and PCMs are not implemented. They are generally those maintenance activities that would disturb large areas and would rely on the use of heavy equipment (see **Section 2.2.5.3** for more detail). Equipment used may include the use of steel-tracked and/or rubber-tired bulldozers, masticators, graders, backhoes, and front-end loaders.

For Category C activities, implementation of SOPs and PCMs would minimize adverse impacts to general wildlife.

3.4.4 Environmental Consequences from the No Action Alternative

The No Action Alternative eliminates the potential adverse effects of expanding the use of herbicides; however, the No Action Alternative could result in a higher level of repeated disturbance associated with an as-needed vegetation management approach that has not achieved the goal of long-term changes in actual vegetative cover to low-maintenance, low-growing plant communities.

The Proposed Action proposes long-term changes to habitats with the possible benefit of reduced interference with habitats along Western ROWs. Altering the plant composition of habitats may adversely affect local wildlife species; however, the long-term goal of reducing human disturbance in the ROW, coupled with implementation of the rigorous SOPs and PCMs proposed in this document, could constitute a net benefit to wildlife species when compared to the No Action Alternative. The Proposed Action provides more rigorous protection measures than were previously established for this Project. Therefore, wildlife could be more likely to be adversely affected by the No Action Alternative than by the Proposed Action.

3.5 Special-status Wildlife

This section presents a description of special-status wildlife resources that could occur within the project area and an assessment of the possible impacts to special-status wildlife that could occur from implementation of the Proposed Action and No Action Alternative. Information presented in this section is based on a field survey of the entire project area, which included an assessment of habitat suitability for special-status species and identification of any special-status species occurrences using a GPS unit with sub-meter accuracy, as described in **Section 1.5.1**. Additionally, data were gathered through literature review and consultation with local species experts.

For purposes of this document, special-status wildlife species are defined as those animals (invertebrates, amphibians, reptiles, birds, and mammals) whose geographic range and native habitats overlap with the project area and that are:

- Species listed as threatened or endangered or those proposed for listing under the Federal ESA and CESA;
- Species that are fully protected by the State of California or are considered state species of special concern;
- Species that are listed as sensitive by the BLM.

SPECIAL-STATUS SPECIES ELIMINATED FROM CONSIDERATION

A number of special-status species that were originally considered to occur in the project area have been dropped from further consideration in this document, either because they were determined to occur outside the project area or to occur in habitats not affected by the Project. **Table 3.5-1** lists these species and the reasons for their elimination.

SPECIAL-STATUS SPECIES RETAINED FOR CONSIDERATION

Table 3.5-2 lists the special-status wildlife that may occur within the project area and includes habitat information for each species including designated critical habitat, general location in the project area, and PCMs developed for species and their associated habitats. As a Federal agency, Western affords protection to Federally listed species throughout the project area. In addition, species with agency-specific status are afforded protection on agency-specific lands; the only agency-listed species are BLM sensitive species and the only BLM land is near New Melones. Special-status species outside of these parameters (e.g., California species of special concern) are discussed in the EA and listed in **Table 3.5-2**, but PCMs were not developed for these species. However, **Table 3.5-2** does indicate the PCMs developed for sensitive habitats (PCM-W001 and PCM-W002 from **Table 2.4-4**) that would provide protection to those species for which species-specific PCMs were not developed.

Note that, for most bird species, the CDFG has determined whether just nesting habitat is of greatest concern or whether both nesting and wintering habitats need to be monitored and/or protected. **Table 3.5-2** provides this information for each species. If this distinction is not provided for a particular bird, the entire California range and life history requirements of that bird are of concern. This distinction applies only to birds.

Table 3.5-1. Special-status Wildlife Eliminated from Consideration

Species Name	Status	Reason for Elimination from Consideration
INVERTEBRATES		
Delta green ground beetle <i>Elaphrus viridis</i>	FT	This species is only known to occur in the greater Jepson Prairie Preserve area in Solano County. For this reason, the delta green ground beetle is not expected to occur in the project area.
San Joaquin dune beetle <i>Coelus gracilis</i>	BLMS	This beetle is only known from fossil sand dunes along the western edge of the San Joaquin Valley; the nearest historical population to the project area, in the Antioch Dunes area, is considered extirpated. This species is not expected to occur because there is no sand dune habitat within the project area.
Lange's metalmark butterfly <i>Apodemia mormo langei</i>	FE	This butterfly is endemic to sand dune habitats of Antioch Dunes, located approximately 2.5 miles from the project area, and is not expected to occur because there is no sand dune habitat within the project area.
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT	This species' essential habitat is serpentine outcrops in native grasslands. The Coyote Substation is within its range, but field surveys determined that there is no suitable habitat for the species within the project area.
BIRDS		
California clapper rail <i>Rallus longirostris obsoletus</i>	FE/SE-FP	The easternmost occurrences of this species are in the San Francisco Bay west of the confluence of the Sacramento and San Joaquin rivers, which is well west of the project area. No salt or brackish marshes were encountered in this region during surveys of the project area.
California least tern <i>Sternula antillarum</i> (= <i>Sterna</i> , = <i>albifrons</i>) <i>browni</i>	FE/SE	This tern nests along the coast from San Francisco Bay south to northern Baja California, the project area is well east of the easternmost extent of this species' range.
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT/SE	This seabird nests in old-growth redwood-dominated forests, up to six miles inland; the project area is located well east of the nearest known nesting occurrences of marbled murrelets (in the Big Basin area of the San Mateo coast); no suitable nesting habitat exists in the project area for this species.
San Francisco common yellowthroat <i>Geothlypis trichas sinuosa</i>	SSC	This subspecies of common yellowthroat occurs in woody swamps and brackish and freshwater marshes in coastal Marin and San Mateo counties and around the San Francisco Bay and does not occur within or nearby the project area.
Suisun song sparrow <i>Melospiza melodia maxillaries</i>	SSC	This subspecies of song sparrow is restricted to tidal marshes in the Suisun Marsh between the Carquinez Straight and the confluence of the Sacramento and San Joaquin rivers near Antioch. Although the project area is near this location, it does not cross the Suisun Marsh and therefore this species would not be expected to occur.
MAMMALS		
Giant kangaroo rat <i>Dipodomys ingens</i>	FE/SE	This species' range is south of the project area and it is not expected to occur. It is known from southern Merced (possibly extirpated), Fresno, Kings, Kern, San Benito, San Luis Obispo and Santa Barbara counties.
Fresno kangaroo rat <i>Dipodomys nitratooides exilis</i>	FE/SE	This species' range is south of the project area and it is not expected to occur. It is known from Fresno, Madera, and Kings counties.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	SSC	This subspecies of dusky-footed woodrat occurs around the San Francisco Bay and adjacent coast ranges. Although the Coyote Substation is near the known range of this species, it lacks suitable habitat.
Salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE/SE-FP	The easternmost occurrences for this species are located west of the project area and no salt marshes were encountered in this region during surveys of the project area.

Status codes:

BLMS: BLM Sensitive
 FE: Federally Endangered
 FT: Federally Threatened
 FC: Federal Candidate
 FD: Federally Delisted

SE : State Endangered
 ST : State Threatened
 SC : State Candidate
 SFP : State Fully Protected
 SSC : State Species of Concern

Table 3.5-2. Special-status Wildlife Considered

Species Name	Status ^a	Habitat Types ^b	Area of Possible Occurrence ^c	PCM-ID
INVERTEBRATES				
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE	Wvpi, Wvpgnn	Tracy	PCM-B042 PCM-W001
Longhorn fairy shrimp <i>Branchinecta longiantenna</i>	FE	Wvpi, Wvpgnn	Tracy	PCM-B044 PCM-W001
		Wvpi, Wvpgnn		
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT	Wvpi, Wvpgnn	Tracy	PCM-B046 PCM-W001
		Wvpi, Wvpgnn		
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE	Wvpi, Wvpgnn	Tracy	PCM-B047 PCM-W001
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT	Ebis, Ebsv	Tracy New Melones Morgan Hill/San Luis	PCM-B045
AMPHIBIANS				
California tiger salamander <i>Ambystoma californiense</i>	FT/SC/SSC	Wapd, Waim, Wvpi, Wvpgnn, Gnn, Gnp, Wblu, Wlo	Tracy	PCM-B059 PCM-W001 PCM-W002
Western spadefoot <i>Spea hammondi</i>	SSC/BLMS	Gnn, Gnp, Wblu, Wbla, Wlo, Wfp, Wse, Wot (seasonal ponds, pools), Wvpi, Wvpgnn, Agoc, Agvn, Agps	Tracy New Melones	PCM-B063 PCM-W001 PCM-W002
Foothill yellow-legged frog <i>Rana boylei</i>	SSC/BLMS	Waci, Wacp, Warv	Tracy New Melones Morgan Hill/San Luis	PCM-B061 PCM-W002
California red-legged frog <i>Rana draytonii</i>	FT/SSC	Waci, Wacp, Wapd, Walk, Warv, Wasp, Waim, Wadr, Wot, Waot, Wfm, Wse	Tracy New Melones Morgan Hill/San Luis	PCM-B058 PCM-W002
		Waci, Wacp, Wapd, Walk, Warv, Wasp, Waim, Wadr, Wot, Waot, Wfm, Wse	Critical Habitat: Morgan Hill/San Luis Proposed Critical Habitat: Tracy and Morgan Hill/San Luis	PCM-B058a PCM-W002
REPTILES				
Western pond turtle <i>Emys (=Actinemys) marmorata</i>	SSC/BLMS	Waci, Wacp, Wapd, Walk, Warv, Waim, Wadr, Waic, Wfm	Tracy New Melones Morgan Hill/San Luis	PCM-B068
Blunt-nosed leopard lizard <i>Gambelia (=Crotaphytus) sila</i>	FE/SE/SFP	Gnn, Gnp, Ssb, Scc, Wvpgnn	Morgan Hill/San Luis	PCM-B116
Coast horned lizard <i>Phrynosoma blainvillii (=coronatum frontale)</i>	SSC/BLMS	Bar, Cmi, Coa, Fdf, Fmc, Fpp, Fwf, Gnn, Gnp, Gully, Rfg, Rgs, Rmw, Ssb, Scc, Wbla, Wblu, Wfp, Wlo/Special features: open areas, sandy washes, scattered shrubs, gravelly areas, xeric conditions	Tracy New Melones Morgan Hill/San Luis	PCM-B065

Table 3.5-2. Special-status Wildlife Considered (continued)

Species Name	Status ^a	Habitat Types ^b	Area of Possible Occurrence ^c	PCM-ID
Silvery legless lizard <i>Anniella pulchra pulchra</i>	SSC	Cmi, Coa, Fmc, Fwf, Wbla, Wblu, Wfp, Wlo, Wju, Gnn, Gnp, Ssb, Mot, Mwm, Rgs, Rms, Rma	Tracy	N/A
San Joaquin whipsnake <i>Masticophis flagellum ruddocki</i>	SSC	Agps, Aggr, Bar, Cmi, Coa, Gnn, Gnp, Wvpgnn, Ssb, Scc	Tracy Morgan Hill/San Luis	N/A
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT/ST	Cmi, Coa, Wbla, Wblo, Wlo, Gnn, Gnp, Mot, Scc	Tracy	PCM-B064
Giant garter snake <i>Thamnophis gigas</i>	FT/ST	Wadr, Waic, Wacp, Wot, Wasp, Wapd, Walk, Warv, Waim, Wfm, Wse, Waot, Rgf, Rgs, Agri, Agps, Aggr, Gnn, Gnp, Wvpgnn	Tracy	PCM-B066 PCM-W002
BIRDS				
Golden eagle <i>Aquila chrysaetos</i> (nesting and wintering)	SFP	Gnn, Gnp, Ssb, Agps, Scc, Wblu, Wlo, Wbla, Wvpgnn	Tracy New Melones Morgan Hill/San Luis	N/A
Swainson's hawk <i>Buteo swainsoni</i> (nesting)	ST	Agps, Aggr, Agro, Agri, Agoc, Gnn, Gnp, Wvpgnn, Ssb, Rgf, Rgs, Wblu, Wbla, Wlo	Tracy Morgan Hill/San Luis	PCM-B080
Northern harrier <i>Circus cyaneus</i> (nesting)	SSC	Agps, Aggr, Agrc, Wfm, Wot, Wse, Mot, Gnn, Gnp, Ssb, Scc, weedy borders of Warv, Wacp, Wadr, Waic, Walk, Waim, Waot, Wvpgnn	Tracy Morgan Hill/San Luis	N/A
White-tailed kite <i>Elanus leucurus</i> (nesting)	SFP	Agps, Aggr, Agri, Agro, Gnn, Gnp, Wvpgnn, Rgs, Rgf, Wblu, Wfp, Wlo, Mot	Tracy New Melones Morgan Hill/San Luis	N/A
Bald eagle <i>Haliaeetus leucocephalus</i> (nesting and wintering)	FD/SE/SFP	Walk, Rgf, Rgs, Rms, Rma, Wfm, Wapd, Warv	Tracy New Melones Morgan Hill/San Luis	PCM-B070
American peregrine falcon <i>Falco peregrinus</i> (nesting)	FD/SE/SFP	Cliffs, coastal or inland	Tracy New Melones	PCM-B069
California black rail <i>Laterallus jamaicensis coturniculus</i>	ST/SFP	Wasp, Wfm, Wadr, Waot, Wapd, Mot	Tracy	PCM-B072 PCM-W002
Greater sandhill crane <i>Grus canadensis tabida</i> (nesting and wintering)	ST/SFP	Aggr, Agps, Agrc, Agri, Gnn, Gnp, Mot, Wse, Wsw, Wot, Wvpgnn	Tracy (wintering)	PCM-B076 PCM-W002
Lesser sandhill crane <i>Grus canadensis canadensis</i> (wintering)	SSC	Agps, Agrc, Aggr, Agri, Gnn, Gnp, Mot, Wse, Wsw, Wvpgnn, Wot	Tracy (wintering)	N/A
Mountain plover <i>Charadrius montanus</i> (wintering)	SCC	Agps, Agrc, Aggr, Agri, Gnn, Gnp Alkaline Meadow, Scc, Wvpgnn	Tracy (wintering)	N/A

Table 3.5-2. Special-status Wildlife Considered (continued)

Species Name	Status ^a	Habitat Types ^b	Area of Possible Occurrence ^c	PCM-ID
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i> (nesting)	FC/SE	Rgf	Tracy	PCM-B083
Short-eared owl <i>Asio flammeus</i> (nesting)	SSC	Aggr, Agps, Mot, Wfm, Wse, Gnn, Gnp, Wvpgnn	Tracy Morgan Hill/San Luis	N/A
Long-eared owl <i>Asio otus</i> (nesting)	SSC	Rgf, Rgs, Wblu, Wbla, Wlo, Mot, Wse, Gnn, Gnp, Wvpgnn, Ssb, Scc	Tracy New Melones Morgan Hill/San Luis	N/A
Western burrowing owl <i>Athene cunicularia</i> (burrow sites and some wintering sites)	SSC/BLMS	Gnn, Gnp, Wvpgnn, Ssb, Scc, Agps, Bar, Lev	Tracy New Melones (winter) Morgan Hill/San Luis	PCM-B082
California spotted owl <i>Strix occidentalis occidentalis</i>	SCC	Rfg, Wblu, Wfp	New Melones (winter only)	N/A
Loggerhead shrike <i>Lanius ludovicianus</i> (nesting)	SSC	Gnn, Gnp, Wvpgnn, Agps, Cmi, Coa, Mot, Rgf, Rfs, Ssb, Scc, Wblu, Wbla, Wlo, Wvpgnn	Tracy New Melones Morgan Hill/San Luis	N/A
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE/SE	Rgf, Rgs	Tracy	PCM-B117
Bank swallow <i>Riparia riparia</i> (nesting)	ST	Waci, Wacp, Warv, Wfm, Walk, Wapd, Waic, Wadr, Waim, Wse, Rgs, Rgf, Gnn, Gnp (Always near water)	Tracy	PCM-B071 PCM-W002
Yellow warbler <i>Dendroica petechia brewsteri</i> (nesting)	SSC	Cmo, Fmc, Fpp, Rgf, Rgs, Mot, Rms, Rmw, Wbla, Wblu, Wfp, Wlo	Tracy New Melones Morgan Hill/San Luis	N/A
Yellow-breasted chat <i>Icteria virens</i> (nesting)	SSC	Rgf, Rgs	Tracy New Melones Morgan Hill/San Luis	N/A
Oregon vesper sparrow <i>Poocetes gramineus affinis</i> (wintering)	SSC	Gnn, Gnp, Agps, Mot, Bar, Wvpgnn	Tracy New Melones Morgan Hill/San Luis	N/A
Grasshopper sparrow <i>Ammodramus savannarum</i> (nesting)	SSC	Gnn, Gnp, Mot, Scc, Agps, Aggr, Scb, Wvpgnn	Tracy New Melones Morgan Hill/San Luis	N/A
Song sparrow <i>Melospiza melodia</i> "Modesto population"	SSC	Wse, Wfm, Wadr, Waic, Rfg, Rfs	Tracy	N/A
Tricolored blackbird <i>Agelaius tricolor</i> (nesting colony)	SSC/BLMS	Mot, Wapd, Wfm, Wadr, Waim, Waic, Wasp, Wot, Rgf, Rgs, Walk, Warv, Wacp, Waci, Agps, Aggr	Tracy Morgan Hill/San Luis	N/A

Table 3.5-2. Special-status Wildlife Considered (concluded)

Species Name	Status ^a	Habitat Types ^b	Area of Possible Occurrence ^c	PCM-ID
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i> (nesting)	SSC	Wapd, Wfm, Wadr, Waim, Waic, Walk	Tracy	N/A
MAMMALS				
Pallid bat <i>Antrozous pallidus</i>	SSC/ BLMS	Cmi, Cmo, Coa, Fmc, Fpp, Fwf, Gnn, Gnp, Wvpgnn, Mot, Mwm, Rgf, Rgs, Rma, Rms, Scc, Scb, Waci, Wacp, Wbla, Wblu, Wfp, Wlo/Roosts in trees, caves, crevices, buildings, bridges	Tracy New Melones Morgan Hill/San Luis	PCM-B090
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SSC/BLMS	Cmi, Cmo, Coa, Fmc, Fpp, Fwf, Gnn, Gnp, Wvpgnn, Mot, Mwm, Rgf, Rgs, Rma, Rms, Scc, Scb, Waci, Wacp, Wbla, Wblu, Wfp, Wlo/Roosts in caves, mines, tunnels, buildings	Tracy New Melones Morgan Hill/San Luis	PCM-B096
Western red bat <i>Lasiurus blossevillii</i>	SSC	Cmi, Cmo, Coa, Fmc, Fpp, Fwf, Gnn, Gnp, Wvpgnn, Mot, Mwm, Rgf, Rgs, Rma, Rms, Scc, Scb, Waci, Wacp, Wbla, Wblu, Wfp, Wlo/Roosts in trees and shrubs	Tracy New Melones Morgan Hill/San Luis	N/A
Yuma myotis <i>Myotis yumanensis</i>	BLMS	Wblu, Wfp, Wlo, Rgf, Rgs, Rma, Fmc, Fpp, Cmi, Coa/Roosts near water in buildings, mines, caves, bridges, trees	Tracy New Melones Morgan Hill/San Luis	PCM-B099
Greater western mastiff bat <i>Eumops perotis californicus</i>	SSC/BLMS	Cmi, Cmo, Coa, Fmc, Fpp, Fwf, Gnn, Gnp, Wvpgnn, Mot, Mwm, Rgf, Rgs, Rma, Rms, Scc, Scb, Waci, Wacp, Wbla, Wblu, Wfp, Wlo/Roosts in crevices in significant rock features	Tracy New Melones Morgan Hill/San Luis	PCM-B087
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	FE/SE	Rfg, Rgs	Tracy	PCM-B118
San Joaquin pocket mouse <i>Perognathus inornatus inornatus</i>	BLMS	Gnn, Gnp, Wvpgnn, Scc, Cmi, Wblu	Tracy Morgan Hill/San Luis	N/A
Riparian (=San Joaquin Valley) woodrat <i>Neotoma fuscipes riparia</i>	FE	Rgf, Rgs	Tracy	PCM-B119
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	FE/ST	Agor, Agps, Aggr, Agrc, Agvn, Bar, Gnn, Gnp, Wvpgnn, Lev, Scc, Wbla, Wblu, Wlo	Tracy Morgan Hill/San Luis s	PCM-B092
American badger <i>Taxidea taxus</i>	SSC	Agpa, Cmi, Cmo, Coa, Fdf, Fkm, Fmc, Fpp, Fwf, Gnn, Gnp, Wvpgnn, Gully, Levee, Mot, Ssb, Scc, Wbla, Wblu, Wfp, Wlo	Tracy New Melones Morgan Hill/San Luis	N/A

Notes to Table 3.5-2:^a Status codes:

BLMS: BLM Sensitive	SE : State Endangered
FE: Federally Endangered	ST : State Threatened
FT: Federally Threatened	SC : State Candidate
FC: Federal Candidate	SFP : State Fully Protected
FD: Federally Delisted	SSC : State Species of Concern

^b Habitat type codes are from Western's data dictionary and are defined below. These codes consist of habitat types encountered throughout Western's Sierra Nevada Region, some of which are not present in the San Joaquin Valley project area. Habitats without codes are those that have not been encountered in Western's San Joaquin Valley, Sacramento Valley, or North Area ROWs.

Agri: Agriculture, rice fields	Fdf: Forest, Douglas fir	Rms: Riparian, montane scrub	Warv: Waters, river
Agor: Agriculture, orchards	Fmc: Forest, mixed conifer	Rmw: Riparian, montane white alder	Wasp: Waters, seep/spring
Agps: Agriculture, pasture	Fpp: Forest, ponderosa pine	Scs: Scrub, chenopod	Wfm: Wetland, freshwater marsh
Aggr: Agriculture, grain crop	Fwf: Forest, white fir	Ssb: Scrub, sagebrush, bitterbrush	Wot: Wetland, other
Agvn: Agriculture, vineyard	Gnn: Grassland, non-native annual	Waci: Waters, creek, intermittent	Wse: Wetland, seasonal
Agrc: Agriculture, row crop	Gnp: Grassland, native perennial	Wacp: Waters, creek, perennial	Wsw: Wetland, swale
Bar: Barren	Lev: Levee	Wadr: Waters, drainage	Wvpi: Wetland, vernal pool isolated
Cmi: Chaparral, mixed	Mot: Meadow	Waic: Waters, irrigation canal	Wvpgnn: Wetland, vernal pool grassland complex
Cmo: Chaparral, montane	Mwm: Meadow, wet montane	Waim: Waters, impoundment	Wbla: Woodland, black oak
Coa: Chaparral, oak	Rgf: Riparian, Great Valley forest	Walk: Waters, lake	Wblu: Woodland, blue oak
Ebis: Elderberry, isolated	Rgs: Riparian, Great Valley scrub	Wao: Waters, other	Wfp: Woodland, foothill pine-chaparral
Ebsv: Elderberry, savannah	Rma: Riparian, montane aspen	Wapd: Waters, pond	Wlo: Woodland, live oak

^c Area of Possible Occurrence reflects two factors: 1) the natural geographic range of a species and 2) the presence of suitable habitat within the project area. A species may occur in a particular region, but that region will not be listed for the species if the project area does not intersect suitable habitat.

3.5.1 Affected Environment

Certain special-status wildlife species are highly localized and dependent on only a specific habitat and may be found only in a small portion of the project area, whereas others are widely distributed and may occur throughout the project area in a variety of habitats. Additionally, some species are year-round residents while others are found in some areas only during certain seasons (i.e., some migratory birds). **Table 3.5-2** identifies the project region(s) (i.e., Tracy, New Melones, Morgan Hill/San Luis) in which a given species may occur. These are project regions only and are not intended to correspond with any particular geographic or physiographic region.

3.5.1.1 Tracy

The Tracy region is located in the northwestern San Joaquin Valley from Altamont Pass to the San Joaquin/Sacramento County line with a significant portion of the ROW crossing through the Sacramento-San Joaquin Delta. Seventy-five percent of the habitats in this region are agricultural lands and non-native grasslands. But the ROW also traverses pasturelands, levees, canals and irrigation drainages, urban areas, seasonal wetlands, alkaline meadows, riparian forest and scrub habitats, rivers, creeks, and sloughs, vernal pool grassland complexes, and chenopod scrub.

The majority of the project area (97 percent) is within the Tracy region and most special-status species that may occur are found in this region. The Tracy region contains proposed critical habitat for California red-legged frog and is located near designated

critical habitat for longhorn fairy shrimp, vernal pool fairy shrimp, California tiger salamander, and Alameda whipsnake. **Figures 3.5-1 through 3.5-5** show the locations where critical habitat overlaps with, or occurs near to, the project area for these five species. Critical habitat, described more fully in **Section 3.5.2.3**, is a formal designation under the Federal ESA where specific areas are designated as essential to the conservation and recovery of a Federally listed species. These areas may require special management consideration or protection.

INVERTEBRATES

Four special-status crustaceans and one special-status beetle may occur in the Tracy region: conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Valley elderberry longhorn beetle. Suitable habitat for these invertebrates is found in a number of locations throughout the Tracy region of the project area.

The four crustaceans are all associated with vernal pools. Vernal pools are shallow (usually), natural depressions in level ground, with no permanent above-ground outlet, that hold water for variable periods of time during the winter, and are typically dry all summer and fall. Fairy and tadpole shrimp live their entire lives in vernal pools, overwintering as cysts. Vernal pool habitats were found near Discovery Bay and Clifton Court Forebay. Critical habitat for two of these species, longhorn fairy shrimp and vernal pool fairy shrimp, occurs near the Tracy region (**Figure 3.5-1 and 3.5-2**).

The valley elderberry longhorn beetle is completely dependent on its host plant, elderberry (*Sambucus* spp.). This beetle lays its eggs in the crevices of elderberry shrubs. Larvae tunnel through and feed on the stems, trunks, and roots, emerging in one to two years. Elderberry plants are found in the remaining riparian forests and adjacent uplands of the Central Valley and were identified in the ROW during field surveys along the Hurley-Tracy line in the Tracy region.

AMPHIBIANS

Four special-status amphibians may occur in habitats within the Tracy region of the project area: California tiger salamander, western spadefoot toad, foothill yellow-legged frog, and California red-legged frog.

California tiger salamanders and western spadefoot toads are dependent on vernal pools and other seasonal ponds for breeding. Tiger salamanders may also breed in permanent water bodies such as slow-moving creeks or stock ponds. Both species lay their eggs in water in winter or early spring, and spend most of their lives in the nonbreeding season in underground burrows. California tiger salamanders can be found in uplands as far as 1.2 miles from breeding pools. Less is known about western spadefoot toad dispersal, but they may disperse as far as 1,200 feet from breeding pools. Critical habitat for California tiger salamander exists near the Tracy region, but does not overlap with the project area (**Figure 3.5-3**).

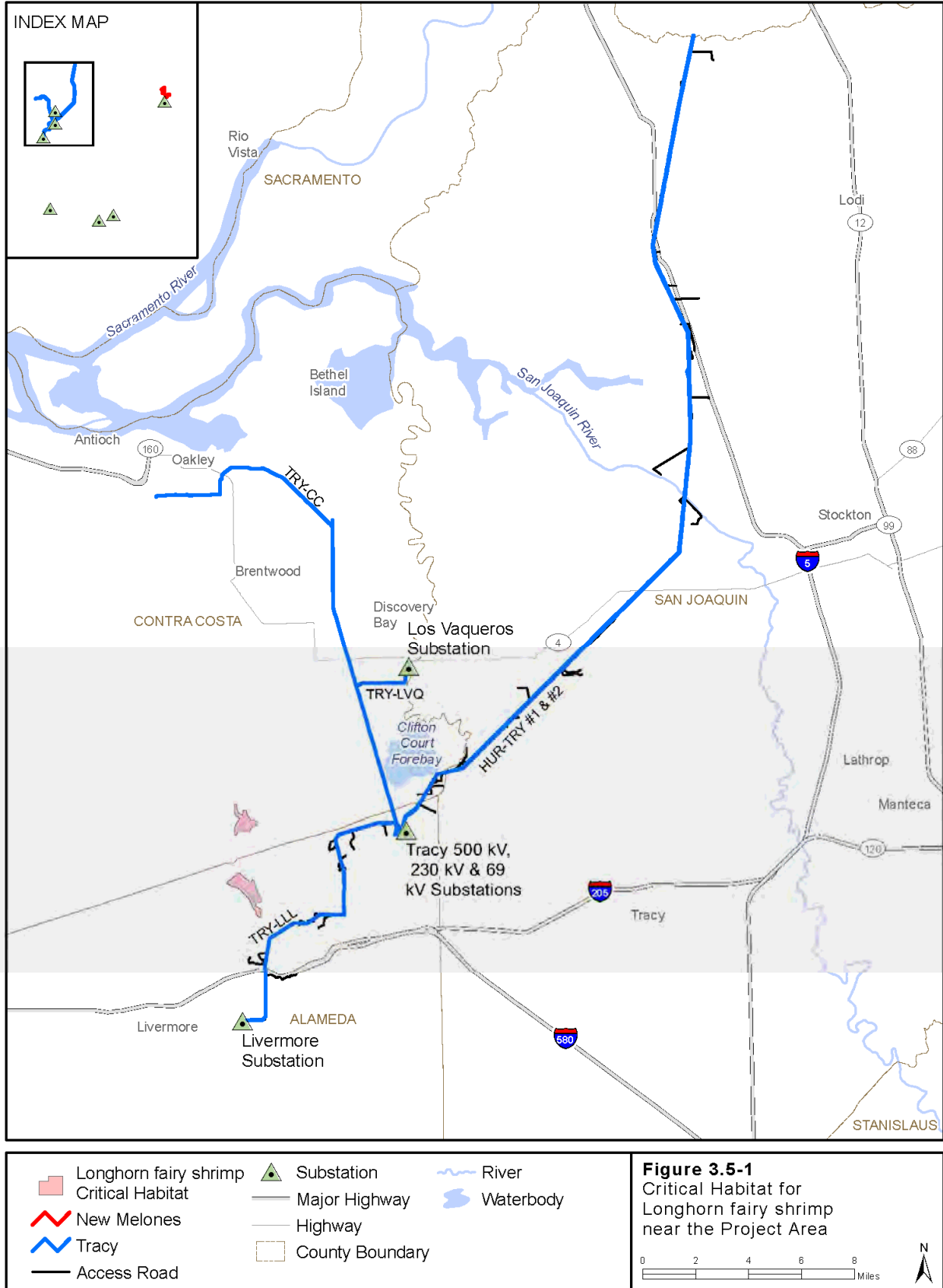


Figure 3.5-1. Critical Habitat for Longhorn Fairy Shrimp near the Project Area

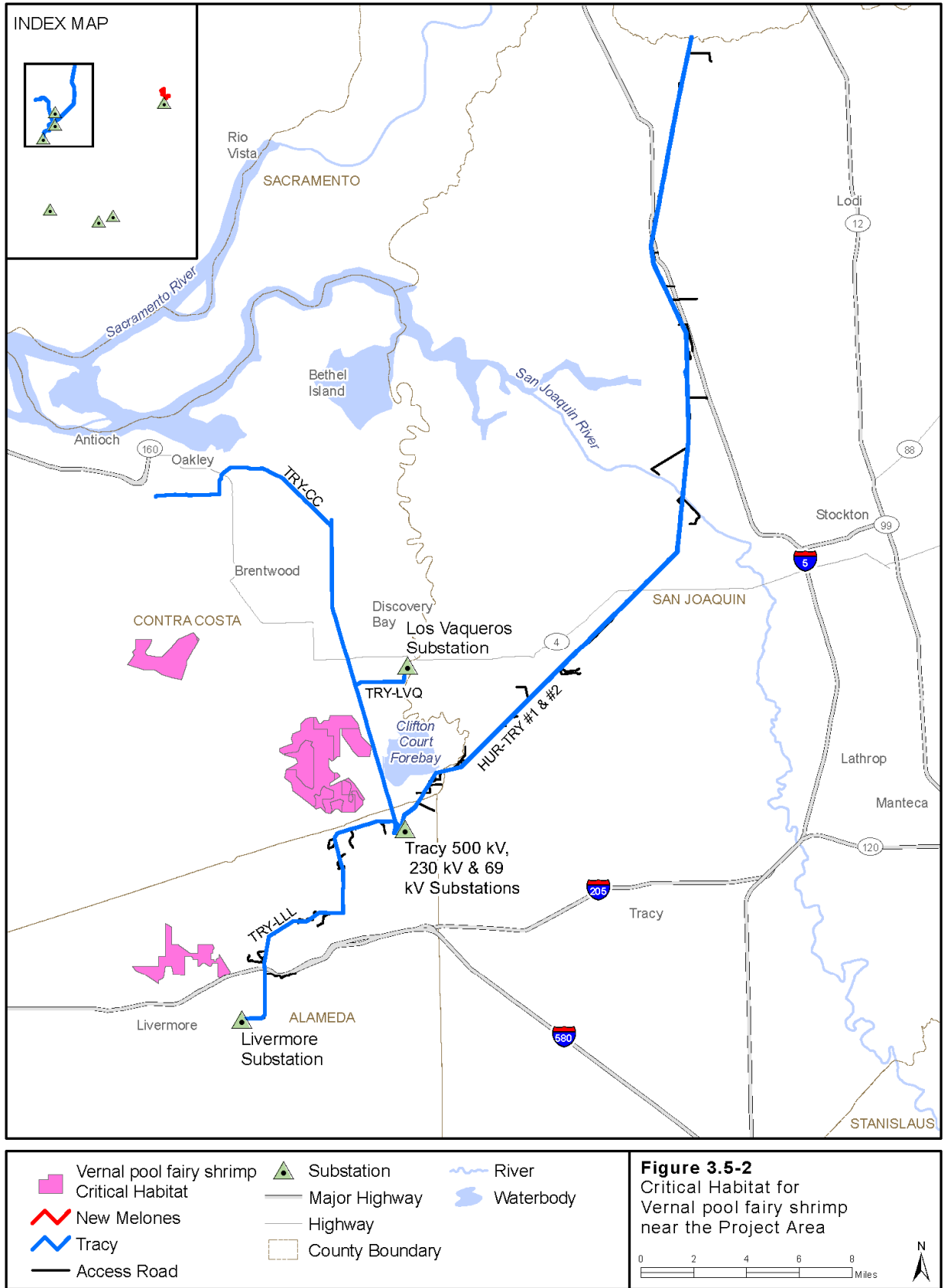


Figure 3.5-2. Critical Habitat for Vernal Pool Fairy Shrimp near the Project Area

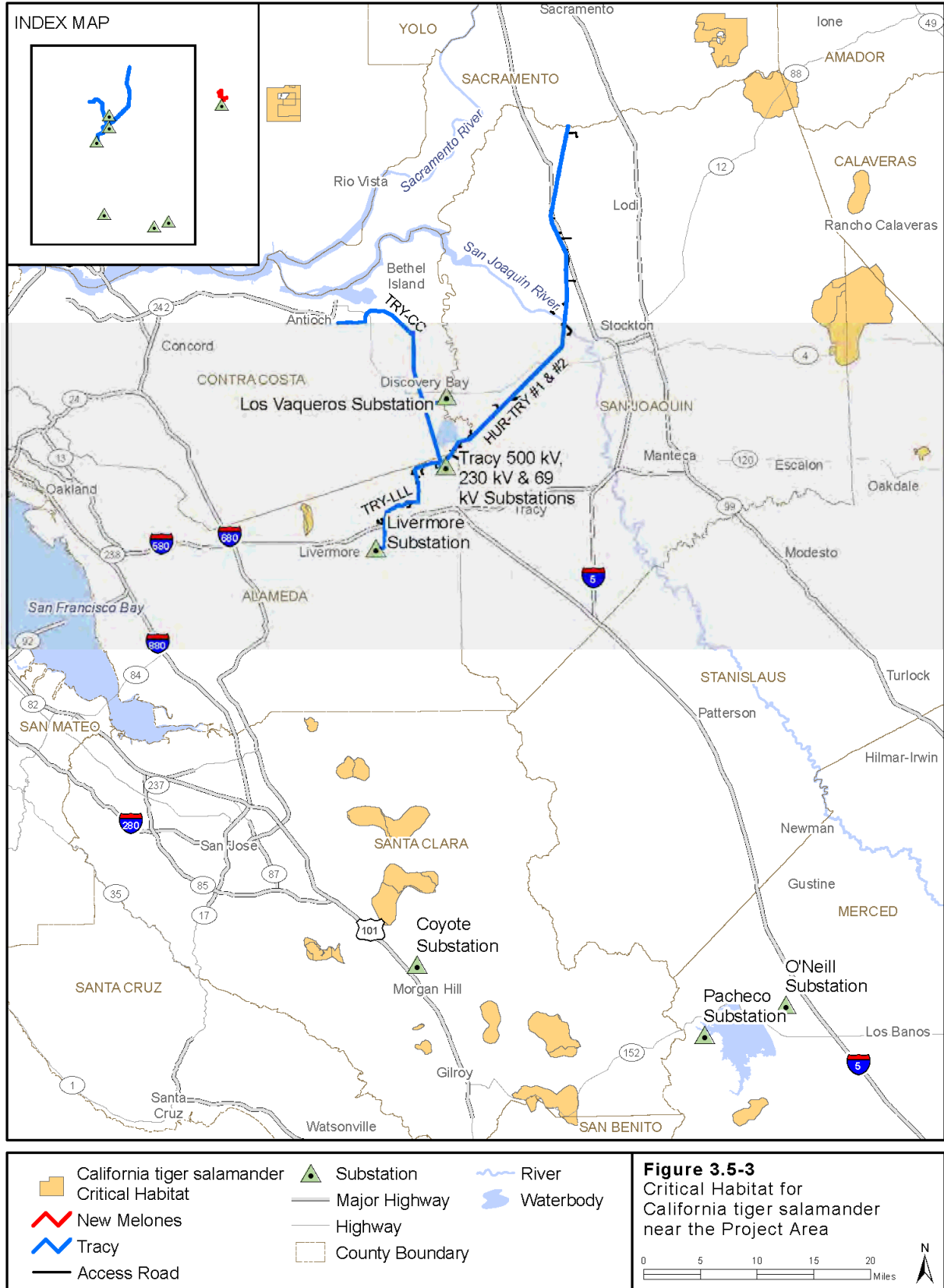


Figure 3.5-3. Critical Habitat for California Tiger Salamander near the Project Area

Foothill yellow-legged frogs are highly aquatic and inhabit rocky streams and rivers in a variety of habitats. This species is unlikely to occur on the valley floor, but there is a record of this species from the Mokelumne River about 10 miles east of the Tracy region.

California red-legged frogs occur in the Tracy region and were observed in a creek adjacent to a legal access road during field surveys. California red-legged frogs require dense, emergent or shoreline riparian vegetation closely associated with deeper, still or slow-moving water for breeding, and upland habitats for cover during the nonbreeding season. In the nonbreeding season, they may also be found in seeps, springs, creeks, and other moist places. Adults and sub-adults can aestivate in small mammal burrows and moist leaf litter generally found within 300 feet of aquatic habitat. However, during wet periods the California red-legged frog can move long distances between aquatic features, traversing up to one mile from ponds and ephemeral drainages. Suitable habitat for this species exists in the Tracy region, primarily along the Tracy-Contra Costa and Tracy-Livermore lines. Proposed critical habitat for California red-legged frog overlaps with the Tracy region (**Figure 3.5-4**).

REPTILES

Six special-status reptiles occur in the Tracy region: western pond turtle, coast horned lizard, silvery legless lizard, San Joaquin whipsnake, Alameda whipsnake, and giant garter snake.

The western pond turtle is found in many different aquatic habitats, from ponds to sloughs and ditches, creeks and rivers, and lakes and reservoirs. They are active year round and can travel overland at least 1,000 feet away from water to lay their eggs in open areas on dry slopes. Western pond turtles were observed in sloughs and impoundments in the Tracy region during field surveys.

The coast horned lizard is generally absent from the valley floor but may be found in the Altamont Hills region of the project area. It occurs in a variety of habitats where it is mostly found in xeric sites in open country, especially sandy areas, washes, and floodplains with loose sandy or gravelly soils.

Silvery legless lizards require loose, moist soils for burrowing in areas with sparse vegetation and can occur in the Coast Ranges and in parts of the San Joaquin Valley. Suitable habitat for this species in the Tracy region occurs in grasslands and scrublands with loose soils along the Tracy-Contra Costa line and portions of the Tracy-Livermore line.

The San Joaquin whipsnake (or coachwhip) occurs in open, xeric habitats including grassland, savanna and chenopod scrub in the Sacramento Valley, a portion of the San Joaquin Valley, and the inner South Coast Ranges. Suitable habitat for San Joaquin whipsnake in the Tracy region exists along portions of the Tracy-Contra Costa and Tracy-Livermore lines.

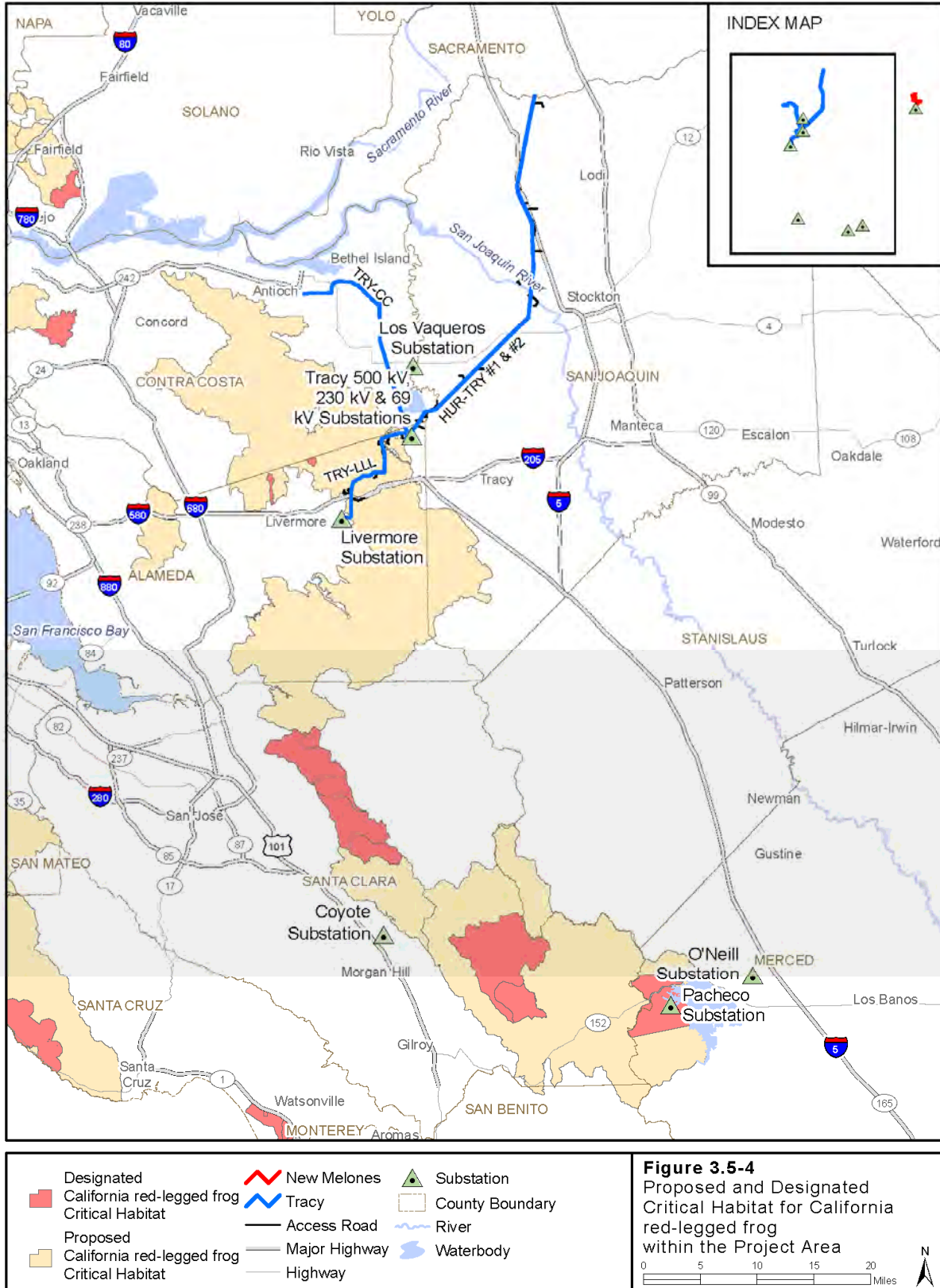


Figure 3.5-4. Proposed and Designated Critical Habitat for California Red-legged Frog within the Project Area

Alameda whipsnakes inhabit chaparral and scrub habitats and are currently known from only five separated populations in the inner coastal ranges of Alameda and Contra Costa counties. Records of Alameda whipsnakes in the vicinity of the Tracy region are all from chaparral habitats in the foothills of the Coast Ranges, well to the south and west of the project area. There is no chaparral habitat in the Tracy region and Alameda whipsnakes are considered unlikely to occur in the project area. Critical habitat for the Alameda whipsnake does not overlap with the project area (Figure 3.5-5).

The giant garter snake is a highly aquatic snake found exclusively in the Central Valley, primarily in marshes and sloughs, but also in rice fields, drainage and irrigation ditches, and occasionally in slow-moving creeks. It prefers open, marshy areas where it can bask. Giant garter snakes are found in rivers, sloughs, creeks, canals, ditches, and marshes in the delta near the Tracy region. Suitable habitat for this species was found within the project area along the Hurley-Tracy line.

BIRDS

Twenty-four special-status birds could occur in the Tracy region of the project area, as listed in **Table 3.5-2**. Many of them could also occur in other parts of the project area if suitable habitat exists. These 24 species are discussed briefly below, primarily in terms of their general habitat preferences.

There is no preferred nesting habitat for peregrine falcons and bald eagles in the Tracy region, but both could hunt for their preferred prey in the area, peregrines for waterbirds and shorebirds and bald eagles for fish. Golden eagles could nest in large trees or on the ground in the Tracy region and were observed in the hilly areas along the Tracy-Livermore line during field surveys. Swainson's hawks were commonly observed along the Hurley-Tracy line, feeding on rodents in recently mowed agricultural fields; they nest in trees, often in riparian areas, and sometimes orchards and may nest in these habitats in the project area.

Western yellow-billed cuckoos, bank swallows, least Bell's vireos, yellow warblers, and yellow-breasted chats require riparian habitat for nesting. Of these species, only yellow warblers and yellow-breasted chats are likely to occur in the project area. Long-eared owls may nest in a variety of woodland habitats adjacent to open areas, including riparian woodlands.

California black rails, song sparrows, tricolored blackbirds, and yellow-headed blackbirds all require wetlands for breeding. There is limited suitable nesting habitat for most of these species in the project area, though all could occur. Song sparrows are known to occur in the project area and are expected to nest in riparian scrub, wetlands, marshes and drainages.

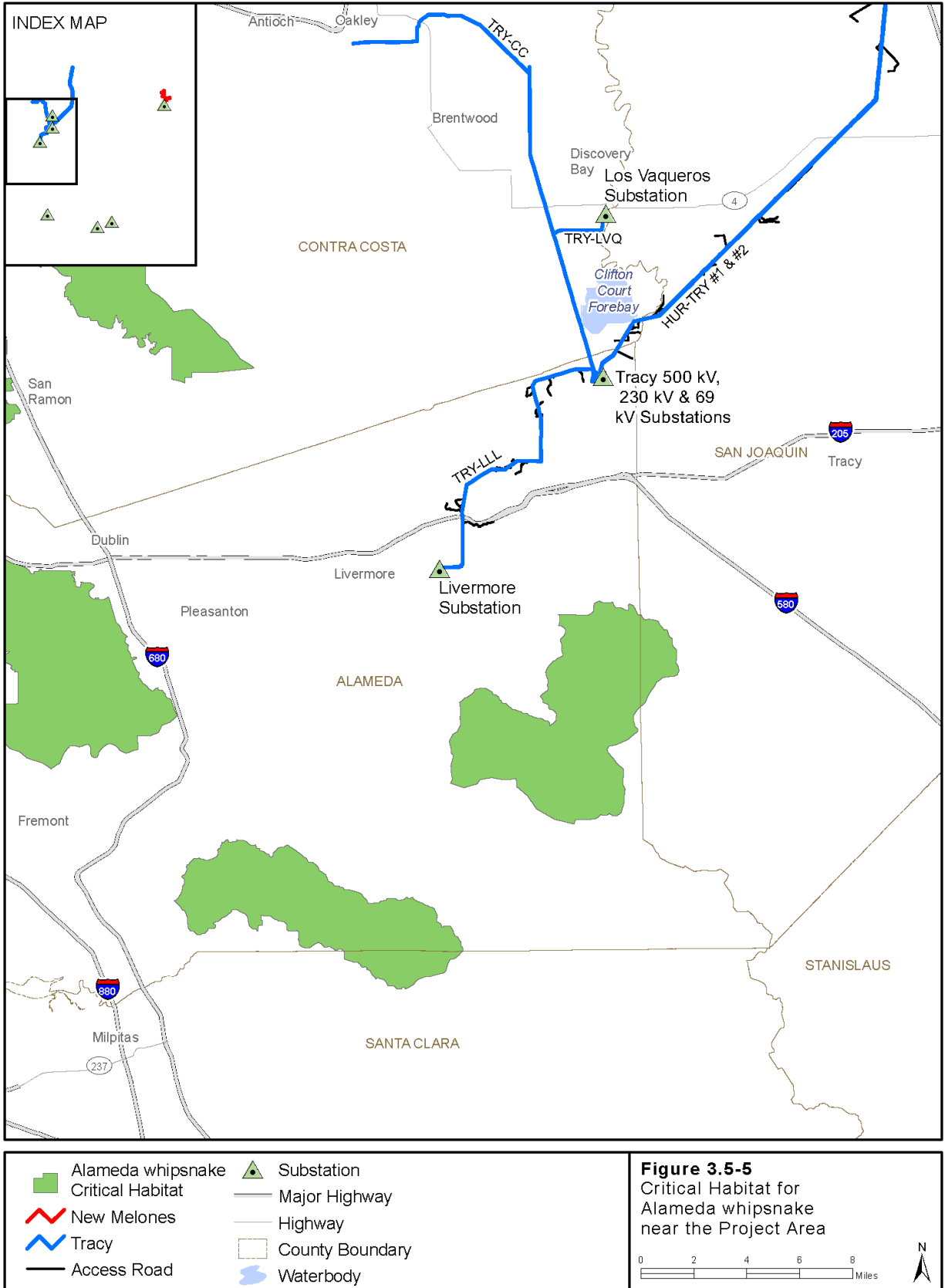


Figure 3.5-5. Critical Habitat for Alameda Whipsnake near the Project Area

White-tailed kites, northern harriers, burrowing owls, short-eared owls, and loggerhead shrikes are open-country hunters that could nest in the project area. White-tailed kites and loggerhead shrikes nest in trees or brush, northern harriers and short-eared owls on the ground in meadows, grasslands, wetlands, shrublands and fields, and burrowing owls in underground burrows in grasslands. Grasshopper sparrows may nest in the project area in grasslands, meadows and fields. Both burrowing owls and loggerhead shrikes were observed nesting in the project area during field surveys.

There are four species that would only be expected to occur in the project area during winter. Greater and lesser sandhill cranes, mountain plovers, and Oregon vesper sparrows may winter in pastures, fields, grasslands, meadows and wetlands in the project area.

MAMMALS

Ten special-status mammals could occur in the Tracy region of the project area: pallid bat, Townsend's big-eared bat, western red bat, Yuma myotis, greater western mastiff bat, riparian brush rabbit, San Joaquin pocket mouse, riparian woodrat, San Joaquin kit fox, and American badger.

All five bat species may roost in the project area in some or all of the following places: mines, caves, or tunnels, under bridges, in crevices in large rocky outcrops or cliffs, in large trees with exfoliating bark, occasionally in large leaves, or in abandoned buildings. These bats will generally forage over a variety of habitats, but the Yuma myotis is associated with water bodies. The Townsend's big-eared bat is extremely sensitive to human disturbance and will quickly and permanently abandon even a substantial colonial roost from minimal disturbance.

The riparian brush rabbit occupies riparian forest habitat in natural floodplains and is currently known from only a few locations along the lower Stanislaus River and in the south Delta area of the San Joaquin River. The riparian woodrat occurs in riparian areas along the San Joaquin, Stanislaus and Tuolumne Rivers. Suitable habitat for both species was found on or adjacent to the project area where the Hurley-Tracy line crosses the San Joaquin River and Bear Creek, but they are unlikely to occur in the project area because of their limited distribution and rarity.

San Joaquin pocket mice occur in dry, open grasslands or scrub areas on fine-textured soils and may occur in suitable habitats throughout the Tracy region.

San Joaquin kit foxes occur in annual grasslands or open areas with scattered shrubby vegetation on the San Joaquin Valley floor and surrounding foothills. Within the project area, they would be most likely to occur in the southernmost portions of the Hurley-Tracy and Tracy-Contra Costa lines, and along the Tracy-Livermore line.

American badgers occur in many habitats throughout the state including woodlands, but are primarily associated with grasslands, shrublands, and open arid areas.

3.5.1.2 New Melones

The New Melones region is in the Sierra Nevada Foothills between the Central Valley and the Sierra Nevada. This region is characterized by blue oak woodland, non-native grassland, and mixed chaparral. The Tuttle town and Gloryhole lines intersect blue oak woodland and non-native grassland habitats surrounding the New Melones Reservoir with some riparian, chaparral and foothill pine woodland. Both lines cross creeks and very small amounts of wetland, seep, and spring habitats. The NML-NML1 line and New Melones Substation are small ROWs located just below New Melones Dam on the Stanislaus River; this area is characterized by non-native grassland, foothill pine woodland, and chaparral.

The New Melones region does not contain any critical habitat for wildlife and most of the species that may occur in this region are aquatic.

INVERTEBRATES

One special-status invertebrate, the valley elderberry longhorn beetle, could occur in the New Melones region. The valley elderberry longhorn beetle is described above for the Tracy region. Elderberry plants were identified in the ROW during field surveys throughout the New Melones region.

AMPHIBIANS

Three special-status amphibians could occur along within the New Melones region of the project area. They are western spadefoot toad, foothill yellow-legged frog, and California red-legged frog and all three are also described in the Tracy region. Although the New Melones region is within the range of the western spadefoot toad, no suitable habitat for this species was found during field surveys and it is unlikely to occur in this region. The creeks and rivers in the New Melones region contain suitable habitat for foothill yellow-legged frogs and marginally suitable habitat for California red-legged frogs.

REPTILES

The western pond turtle and coast horned lizard are the only special-status reptiles that may be present in the New Melones region. Both are described above in the Tracy region and could occur in suitable habitat anywhere in the New Melones region.

BIRDS

Suitable habitat was found in the New Melones region for the following 12 special-status birds, which are all described above in the Tracy region except for California spotted owl: golden eagle, bald eagle, white-tailed kite, peregrine falcon, long-eared owl, burrowing owl, California spotted owl, loggerhead shrike, yellow warbler, yellow-breasted chat, Oregon vesper sparrow and grasshopper sparrow.

Bald eagles nest primarily in large trees in forested habitats close to large lakes or rivers where they hunt for fish and may nest near the New Melones region. Golden eagles were observed nesting above the New Melones Generation Facility during field surveys. The cliffs above the New Melones Generation Facility may be suitable nesting habitat

for peregrine falcons. There are suitable nesting habitats in the region for woodland-nesting species, such as white-tailed kites, long-eared owls, yellow warblers and yellow-breasted chats, and for grassland and shrubland nesters, like loggerhead shrikes and grasshopper sparrows. Burrowing owls may winter in burrows in grasslands and California spotted owls in riparian and oak woodlands in the region, but are not expected to nest in the project area. Oregon vesper sparrows also may occur in suitable habitats during winter months.

MAMMALS

Six special-status mammals could occur in the project area within the New Melones region, all of which are described above for the Tracy region. The five bats, pallid bat, Townsend's big-eared bat, western red bat, Yuma myotis, and greater western mastiff bat, are all known to occur within the vicinity of the New Melones region, mostly along the Stanislaus River. There is also suitable habitat in this region for American badgers.

3.5.1.3 Morgan Hill/San Luis

The Morgan Hill/San Luis region consists of three substations, Coyote, Pacheco, and O'Neill, including 50-foot surrounding buffers. The Coyote Substation is located in the City of Morgan Hill in the Santa Clara County and the buffer only contains urban (landscaped) and cropland habitats. The Pacheco and O'Neill substations are in the San Joaquin Valley. The Pacheco Substation is in the hills west of San Luis Reservoir and is surrounded by oak woodlands and non-native grasslands; the substation buffer is mostly comprised of commercial and barren habitats, with some chaparral, riparian and freshwater marsh. The O'Neill Substation is located east of the San Luis Reservoir and is surrounded by non-native grassland; the buffer includes a portion of the O'Neill Forebay and is primarily in commercial and barren habitats with some non-native grassland. The Pacheco Substation overlaps with designated critical habitat for California red-legged frog (see **Figure 3.5-4** above).

INVERTEBRATES

One special-status invertebrate, the valley elderberry longhorn beetle, could occur in the Morgan Hill/San Luis region. The valley elderberry longhorn beetle is described above for the Tracy region. Elderberry plants were identified in the Coyote Substation buffer during field surveys.

AMPHIBIANS

Two special-status amphibians, the foothill yellow-legged frog and the California red-legged frog, could occur in project area within the Morgan Hill/San Luis region. Both are described above in the Tracy region. Both species could occur in a perennial creek adjacent to the Pacheco Substation, but are unlikely to occur because of the very limited amount of suitable habitat.

REPTILES

Four special-status reptiles could occur in the project area within the Morgan Hill/San Luis region. The western pond turtle, coast horned lizard, and San Joaquin whipsnake are described above in the Tracy region and are unlikely to occur in the region because of the very limited amount of suitable habitat. The blunt-nosed leopard lizard occupies sparsely vegetated areas on the San Joaquin Valley floor and in the surrounding foothills and could occur within the O'Neill Substation buffer, but is unlikely to because there is very little suitable habitat.

BIRDS

There are 12 special-status birds which could occur in suitable habitats in the Morgan Hill/San Luis region, all of which are described above in the Tracy region. Special-status bird species that could nest in the vicinity of the substations include golden eagles, northern harriers, white-tailed kites, long-eared owls, western burrowing owls, loggerhead shrikes, yellow warblers, yellow-breasted chats, grasshopper sparrows, and tricolored blackbirds. Bald eagles, peregrine falcons, and Oregon vesper sparrows could also occur in the area, but are not expected to nest. Due to the limited sizes of the substations and buffers, and because they are mostly developed land, there is only a low likelihood for any of these species to nest in the project area.

MAMMALS

Eight special-status mammals could occur in the project area within the Morgan Hill/San Luis region. All eight species are discussed in the Tracy region and include the five bat species, San Joaquin pocket mouse, San Joaquin kit fox and American badger. Due to the very limited sizes of the substations and buffers, and because they are mostly developed land, there is only a low likelihood for any of these species to inhabit the project area. There is no potential for San Joaquin pocket mouse, San Joaquin kit fox or American badger to occur at the Coyote Substation; however all three could occur in the vicinity of the Pacheco and O'Neill substations.

3.5.2 Significance Criteria and Approach to Impact Assessment

3.5.2.1 Approach to Impact Assessment

Possible adverse impacts to special-status wildlife have been considered within the context of the Federal ESA (16 U.S.C. §§ 1531-1544). In addition there has been a review of the CESA (Fish and Game Code §§ 2050, *et seq.*).

Adverse impacts may be direct or indirect, temporary, or permanent. These are defined as follows:

Direct: Alteration, disturbance, or removal of biological resources that would result directly from project-related activities on the landscape is considered a direct impact. Examples of direct impacts include the removal of habitat for a new road or building, loss of shading along a river through removal of riparian vegetation, lowered water

quality in a creek from erosion, and noise or vibration that affect wildlife behavior at the time of construction.

Indirect: Unintentional consequences of project-related activities are called indirect effects. Indirect effects are the result of a project but generally occur later in time. Examples of indirect effects include wildlife mortality along a new road, increased nest parasitism through habitat fragmentation, or the introduction of nonnative plants from seed found in the hay bales used for erosion control.

Permanent: Impacts that result in the irreversible removal of or change in biological resources are considered permanent. Examples include the loss of vegetation and wildlife habitat due to development. Permanent impacts would be limited to the footprints of the developed area. Building construction would be a permanent effect.

Temporary: Impacts considered to have reversible effects on biological resources can be viewed as temporary. A temporary impact would be the use of an equipment storage area that would recover to natural habitat after completion of the project.

Additionally, direct effects may be permanent (loss of habitat) or temporary (construction noise), and indirect effects may be permanent (wildlife mortality along a new road) or temporary (downwind herbicide vapors that dissipate over time and distance).

For the purposes of this EA, Western affords protection to state and Federally listed species throughout the project area. In addition, species with agency-specific status (e.g., BLM Sensitive) are afforded protection on agency-specific lands. Special-status species outside of these parameters (e.g., state species of concern) are discussed in the EA and listed in **Table 3.5-2**; however, PCMs were not designated for these species.

3.5.2.2 Significance Criteria

The Proposed Action would result in significant biological impacts if project-related actions directly or indirectly resulted in:

- The take of species (the term 'take,' as defined in the Federal ESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct);
- The temporary or permanent loss of substantial habitat for species that are listed, proposed for listing, or candidates for listing under the Federal ESA or CESA;
- The permanent or temporary loss of critical habitat identified by the USFWS for species listed under the Federal ESA; or
- The reduction or change in natural vegetation communities or wildlife habitat such that populations of state and locally recognized sensitive species would be reduced to such an extent that they would become listed or candidates for listing under the Federal ESA.

3.5.2.3 Critical Habitat

Critical habitat is defined in **Section 3.3.2.3** above.

3.5.3 Environmental Consequences from the Proposed Action

The Proposed Action, including expanded use of herbicides, vegetation removal, and installation of cell towers, has a greater potential to affect special-status wildlife than to affect general wildlife. As a result of their own biological requirements as well as the effects of reduced and degraded habitats, isolation of metapopulations, and low population numbers, special-status species are characteristically less tolerant of environmental changes such as those stemming from the Proposed Action. **Section 3.4.3** provides a discussion of the general effects of habitat loss and degradation, habitat fragmentation, herbicide use, cell tower installation, and ground disturbance.

Special-status species are especially vulnerable to habitat loss, modification, and fragmentation; human presence, disturbance, and noise; changes to the prey base; and introduction of environmental pollutants. Adverse impacts to special-status species are of greater concern because these species are imperiled. Applicable state and Federal laws and regulations require that adverse impacts be avoided, minimized, or compensated for.

To minimize impacts, SOPs have been developed for this Project (see **Table 2.4-1**). Additionally, PCMs have been developed for special-status wildlife (**Table 2.4-3**) and aquatic resources (**Table 2.4-4**). SOPs and PCMs would be implemented as appropriate and would be included, along with environmental laws and regulations and applicable agency requirements, in an annual training program for Western O&M personnel. **Section 2.2.4** describes coordination with regulatory and land management agencies, which would ensure that specific actions have the least possible adverse effect. **Section 2.2.2.1**, Vegetation Maintenance, describes the measures that would be taken to minimize adverse effects associated with herbicide use.

These measures, especially when considered in light of the existing degraded or modified habitat conditions within the project area, are considered adequate to reduce possible adverse impacts to less than significant levels. Informal (Section 7) consultation with USFWS and NMFS is being conducted for this Project. Western is requesting an amendment to the concurrence letters for their North Area ROW Maintenance Project to include the San Joaquin Valley ROW and any new species.

3.5.3.1 Category A – Inspection and Minor Maintenance Activities

Category A activities could result in short-term noise and minor disturbance impacts but would not be likely to significantly adversely affect special-status wildlife. Implementation of SOPs and PCMs would minimize possible adverse impacts to special-status species.

3.5.3.2 Category B – Routine Maintenance Activities

Category B activities could have greater adverse impacts to special-status wildlife because they may occur in areas where ambient conditions do not include regular human disturbance, because they may disturb more ground, or because they may require more time to complete than Category A activities. Implementation of SOPs and PCMs would minimize possible adverse effects to special status-species.

3.5.3.3 Category C – New Infrastructure

For Category C activities, PCMs have been developed that would minimize adverse effects to special-status species. They include such measures as complete avoidance of sensitive habitats during certain seasons or unless specifically authorized by the USFWS, or the requirement for protocol surveys by an approved biologist prior to beginning the activity, or assurance that breeding animals have completed breeding and moved out of the area, or the presence of a qualified biological monitor during completion of the activity.

3.5.4 Environmental Consequences from the No Action Alternative

The No Action Alternative would eliminate the possible adverse effects of expanding the use of herbicides. The No Action Alternative could, however, result in a higher level of repeated disturbance associated with an as-needed vegetation management approach that has not achieved the goal of long-term changes in actual vegetative cover.

The Proposed Action would facilitate long-term changes to habitats with the ultimate benefit of reduced interference with habitats along Western ROWs. Altering the plant composition of habitats may adversely affect local special-status species; however, the long-term goal of reducing human disturbance in the ROW, coupled with implementation of the rigorous SOPs and PCMs proposed in this document, could constitute a net benefit to special-status species when compared to the No Action Alternative. The Proposed Action provides more rigorous protection measures than were previously established for this Project. Therefore, the special-status wildlife would be more likely to be adversely affected by the No Action Alternative than by the Proposed Action.

3.6 Fish

This section presents a description of fish species within the project area and an assessment of the possible impacts to fish that could occur from implementation of the Proposed Action and No Action Alternative. Within this section, general fish species refer to all fish species that are not protected by Federal regulations. **Section 3.7** presents information and analysis regarding special-status fish.

In order to gather information on the effects of the Proposed Action to general fish species, Western conducted an extensive survey of the entire project area, which included habitat mapping and a wildlife inventory, as described in **Section 1.5.1**. Additionally, data were gathered through literature review. The following section

describes the environmental baseline conditions throughout the project area, including identification of general fish species known to occur.

3.6.1 Affected Environment

The affected environment is divided into three sections or regions: Tracy, New Melones, and Morgan Hill/San Luis. As with wildlife species, some fish species are likely to occur only in one of these regions while others could occur in two or three.

3.6.1.1 Tracy

The majority of the fish species in the Tracy region are associated with the Sacramento-San Joaquin Delta, which is a transitional habitat between the tidally influenced estuary of San Francisco Bay and the Sacramento and San Joaquin rivers. The Delta supports a wide variety of fish species, both native and introduced, and is also a key migratory corridor for many anadromous species that spawn upstream in the Valley rivers and their tributaries. Common native fish include Pacific lamprey (*Lampetra tridentata*), white sturgeon (*Acipenser transmontanus*), Sacramento blackfish (*Orthodon microlepidotus*), Sacramento sucker (*Catostomus occidentalis*), and tule perch (*Hysteroecarpus traskii*). Common introduced fish include American shad (*Alosa sapidissima*), threadfin shad (*Dorosoma petenense*), common carp (*Cyprinus carpio*), fathead minnow (*Pimephales promelas*), white catfish (*Ameiurus catus*), channel catfish (*Ictalurus punctatus*), striped bass (*Morone saxatilis*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), and largemouth bass (*Micropterus salmoides*).

3.6.1.2 New Melones

Most common fish in the New Melones region would be found in New Melones Reservoir and in the Stanislaus River. The New Melones Reservoir supports a mix of the deep-bodied fish assemblage common to the Valley floor and the pikeminnow-hardhead-sucker assemblage of the Sierra Nevada foothills. Both of these areas have been heavily invaded by introduced species. Common native fish include California roach (*Hesperoleucus symmetricus*), hitch (*Lavinia exilicauda*), hardhead (*Mylopharodon conocephalus*), Sacramento pikeminnow (*Pytchocheilus grandis*), speckled dace (*Rhinichthys osculus*), Sacramento sucker, rainbow trout, including steelhead, (*Oncorhynchus mykiss*), prickly sculpin (*Cottus asper*), and tule perch. Common introduced fish include threadfin shad, common carp, kokanee (*Oncorhynchus nerka*), white catfish, brown bullhead (*Ameiurus nebulosus*), channel catfish, green sunfish, smallmouth bass (*Micropterus dolomieu*), spotted bass (*Micropterus punctulatus*), largemouth bass, and western mosquitofish (*Gambusia affinis*).

3.6.1.3 Morgan Hill/San Luis

The fish habitat in the Morgan Hill/San Luis region is in the San Luis Reservoir and the O'Neill Forebay, which were created as part of the water regulatory system of the State Water Project. Water is pumped from the Delta to O'Neill Forebay and then into San Luis Reservoir before being carried south via the California Aqueduct. As such, the fish

assemblage is a wide mix of native and introduced species from the Delta and San Joaquin River (deep-bodied fish assemblage). Common native fish include Sacramento blackfish, California roach, and Sacramento sucker. Common introduced fish include threadfin shad, common carp, wagasaki (*Hypomesus nipponensis*), white catfish, channel catfish, striped bass, bluegill, largemouth bass, and white crappie (*Pomoxis annularis*).

3.6.2 Significance Criteria and Approach to Impact Assessment

3.6.2.1 Approach to Impact Assessment

Fish have evolved to thrive in a variety of aquatic habitats and conditions that range from small creeks to large lakes, cold water to warm, slow and muddy water to fast and clear, deep water to shallow, fresh water to saline to alkaline, interior to coastal, and heavily shaded to wide open. They are, however, highly sensitive to changes to the environmental conditions to which they are adapted. Impacts have been assessed according to the significance criteria presented in the following section. SOPs (including measures for avoiding and minimizing impacts to water resources) and PCMs pertinent to fish species and aquatic habitats have been developed to ensure that existing conditions are not substantially altered by the Proposed Action, thereby reducing possible adverse impacts to less than significant levels.

3.6.2.2 Significance Criteria

Impacts to fish would occur when habitats or individuals are disturbed or lost as a result of the Proposed Action. The significance of the impact depends in part on the sensitivity of the population. A significant impact to fish would result if any of the following were to occur as a result of the Proposed Action:

- Loss of individuals of a population that would result in the species being listed or proposed for listing as threatened or endangered;
- Violation of any applicable statutes and regulations pertaining to fish;
- Water withdrawal in excess of state-permitted levels, as applicable;
- Water intake resulting in additional impingement/entrainment impacts on fish that would adversely affect the stability of fish populations;
- Substantial interference with the movement of any native fish species for more than two reproductive seasons; or
- Range reduction for any native fish species.

3.6.3 Environmental Consequences from the Proposed Action

Possible adverse effects to fish are closely related to water quality and may result from a change in existing environmental conditions. Specifically, changes in turbidity, sedimentation, loss of large organic debris, loss of shading (and associated temperature

increases), and exposure to hazardous substances adversely affect fish. Vegetation removal within or near waterways could cause loss of shade and some erosion, regardless of the method used. Erosion could originate from access roads not maintained to specifications, and could also be caused by road maintenance activities. Erosion could increase turbidity and sedimentation and affect availability of oxygen, which may reduce fish feeding success or interfere with breeding and/or spawning habitats. In severe cases, sedimentation could keep fish eggs from hatching or fill in or reduce the deeper pools preferred by some fish. If large trees are removed within riparian zones, stream shading would be lost, as would a source of large woody debris that could later fall into streams and provide shelter for some fish or fish life stages.

Shading or lack of shading at ROW crossings tends to have little effect on stream temperatures (Peterson 1993). In the project area, between 100 and 250 feet of any stream would typically be affected. Loss of shading would become important only if it were to occur where other activities are also causing losses in riparian shading at a watershed level. Unless a portion of a ROW were to parallel a creek or river for some distance, the length of ROW where maintenance activities could affect the water body is a small fraction of the water body length. Altering the plant composition of streamside habitats may adversely affect local fish species on a short-term basis through changes in water quality, and may create long-term adverse changes in vegetative cover along the banks of rivers, creeks, and lakes in short sections.

To minimize impacts, SOPs have been developed for this Project (see **Table 2.4-1**). Additionally, PCMs have been developed for special-status fish and wildlife (**Table 2.4-3**) and aquatic resources (**Table 2.4-4**). SOPs and PCMs would be implemented, as appropriate, and would be included, along with applicable environmental laws and regulations and applicable agency requirements, in an annual training program for Western O&M personnel. **Section 2.2.4** describes coordination with regulatory and land management agencies, which would ensure that specific actions have the lowest potential for adverse effects. **Section 2.2.2.1** describes the measures that would be taken to minimize adverse effects associated with herbicide use.

These considerations, especially when taken in light of the existing degraded or modified habitat conditions within the project area, are expected to reduce possible adverse impacts to less than significant levels.

3.6.3.1 Category A – Inspection and Minor Maintenance Activities

Category A activities could result in short-term noise and minor disturbance impacts but would not be likely to significantly adversely affect general fish resources. Implementation of SOPs and PCMs (**Tables 2.4-1 through 2.4-4**) would minimize possible adverse effects to general fish resources.

3.6.3.2 Category B – Routine Maintenance Activities

Category B activities could adversely impact fish because they may be conducted in areas where ambient conditions do not include regular human disturbance, because they may disturb more ground, or because they may require more time to complete than

Category A activities. Implementation of SOPs and PCMs (**Tables 2.4-1 through 2.4-4**) developed for special-status species and aquatic resources would minimize possible adverse effects to general fish resources.

3.6.3.3 Category C – New Infrastructure

For Category C activities, PCMs have been developed for water resources and special-status fishes that, coupled with SOPs, would minimize possible adverse effects to general fish resources.

3.6.4 Environmental Consequences from the No Action Alternative

The No Action Alternative would result in impacts largely identical to the Proposal Action. The No Action Alternative eliminates the potential adverse effects of expanding the use of herbicides; however, the No Action Alternative could result in a higher level of repeated disturbance associated with an as-needed vegetation management approach.

3.7 Special-status Fish

This section presents a description of special-status fish that could occur within the project area and an assessment of the possible impacts to fish that could occur from implementation of the Proposed Action and No Action Alternative. Information in this section is based on a field survey of the entire project area, which included an assessment of habitat suitability for special-status species and identification of special-status species occurrences using a GPS unit with sub-meter accuracy, as described in **Section 1.5.1**. Additionally, data were gathered through literature review and consultation with local species experts.

For purposes of this document, special-status fish are defined as those fish species whose geographic range and native habitats overlap with the project area and that are:

- Species listed as threatened or endangered or those proposed for listing under the Federal ESA and CESA;
- Species that are fully protected by the State of California or are considered state species of special concern;
- Species that are listed as sensitive by the BLM.

SPECIAL-STATUS SPECIES ELIMINATED FROM CONSIDERATION

Four special-status fish species that may occur in the project area have been dropped from further consideration in this document, either because they were determined to occur outside the project area or to occur in habitats not affected by the Project. **Table 3.7-1** lists these species and the reasons for their elimination.

Table 3.7-1. Special-status Fish Eliminated from Consideration

Species Name	Status ^a	Reason for Elimination from Consideration
Steelhead trout <i>Oncorhynchus mykiss irideus</i> Central California Coast ESU	FT	The Coyote Substation is the only portion of the project area within the range of the Central California coast steelhead ESU and there is no suitable habitat for steelhead within or around the ROW of the substation.
Tidewater goby <i>Eucyclogobius newberryi</i>	FE	The tidewater goby is only known only from lagoons, estuaries and river mouths on the coast of California and historically occurred in the San Francisco Bay. It would not be expected to occur outside these areas or anywhere within the project area.
Chinook salmon <i>Oncorhynchus tshawytscha</i> Central Valley spring-run	FT	This species utilizes the western portions of the Sacramento-San Joaquin Delta during migration to the Sacramento River watershed, but the project area is outside of the range of this species and it is not expected to occur.
Chinook salmon <i>Oncorhynchus tshawytscha</i> Sacramento River winter-run	FE/SE	This species utilizes the western portions of the Sacramento-San Joaquin Delta during migration to the Sacramento River watershed, but the project area is outside of the range of this species and it is not expected to occur.

^a Status codes:

BLMS: BLM Sensitive

FE: Federally Endangered

FT: Federally Threatened

FC: Federal Candidate

FD: Federally Delisted

SE : State Endangered

ST : State Threatened

SC : State Candidate

SFP : State Fully Protected

SSC : State Species of Concern

SPECIAL-STATUS SPECIES RETAINED FOR CONSIDERATION

Table 3.7-2 lists the special-status fish that may occur within the project area and includes habitat information for each species including designated critical habitat, general location in the project area, and PCMs developed for species and their associated habitat communities. As a Federal agency, Western affords protection to Federally listed species throughout the project area. In addition, species with agency-specific status are afforded protection on agency-specific lands; the only agency-listed species are BLM sensitive species and the only BLM land is near New Melones. Special-status species outside of these parameters (e.g., California species of special concern) are discussed in the EA and listed in **Table 3.7-2**, but PCMs were not developed for these species. However, **Table 3.7-2** does indicate the PCMs developed for sensitive habitats (PCM-W001 and PCM-W002 from **Table 2.4-4**) that would provide protection to those species for which species-specific PCMs were not developed.

Table 3.7-2. Special-status Fish Considered

Species Name	Status ^a	Habitat Types ^b	Area of Possible Occurrence ^c	PCM-ID
Green sturgeon <i>Acipenser medirostris</i> Southern DPS	FT	Wacp, Warv, estuaries	Tracy	PCM-B052 PCM-W002
		Wacp, Warv, estuaries	Critical Habitat: Tracy	PCM-B052a PCM-W002
Steelhead trout <i>Oncorhynchus mykiss irideus</i> Central Valley ESU	FT	Waci, Wacp, Warv	Tracy	PCM-B050 PCM-W002
		Waci, Wacp, Warv, Walk	Critical Habitat: Tracy	PCM-B050a PCM-W002
Delta smelt <i>Hypomesus transpacificus</i>	FT/SE	Wacp, Warv, sloughs, estuaries	Tracy	PCM-B051 PCM-W002
		Wacp, Warv, estuaries	Critical Habitat: Tracy	PCM-B051a PCM-W002
Longfin smelt <i>Spirinchus thaleichthys</i>	ST	Waic, Warv, sloughs, estuaries	Tracy	PCM-B120 PCM-W002
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	SSC	Wacp, Warv, Walk, estuaries	Tracy Morgan Hill/San Luis	PCM-W002
Sacramento perch <i>Archoplites interruptus</i>	SSC	Waci, Wacp, Warv, Walk	Tracy Morgan Hill/San Luis	PCM-W002

^a Status codes:
 BLMS: BLM Sensitive
 FE: Federally Endangered
 FT: Federally Threatened
 FC: Federal Candidate
 FD: Federally Delisted
 SE: State Endangered
 ST: State Threatened
 SC: State Candidate
 SFP: State Fully Protected
 SSC: State Species of Concern

^b Habitat type codes are from Western's data dictionary and are defined below. Habitats without codes are those that have not been encountered in Western's San Joaquin Valley, Sacramento Valley, or North Area ROWs.

Waci: Waters, creek, intermittent Walk: Waters, lake
 Wacp: Waters, creek, perennial Waot: Waters, other
 Wadr: Waters, drainage Wapd: Waters, pond
 Waic: Waters, irrigation canal Warv: Waters, river
 Waim: Waters, impoundment Wasp: Waters, seep/spring

^c Area of Possible Occurrence reflects two factors: 1) the natural geographic range of a species and 2) the presence of suitable habitat within the project area. A species may occur in a particular region, but that region will not be listed for the species if the project area does not intersect suitable habitat.

3.7.1 Affected Environment

Certain special-status fishes, like the delta smelt, are local in occurrence while others, such as Sacramento perch, are more widely distributed in the region, and still others, like the longfin smelt, may be widely distributed in general but not in the project area.

Table 3.7-2 identifies the project region (Tracy, New Melones, or Morgan Hill/San Luis) in which a given species may occur. These are project regions and are not intended to correspond with any particular geographic or physiographic region.

3.7.1.1 Tracy

The Tracy region is located in the northwestern San Joaquin Valley from Altamont Pass to the San Joaquin/Sacramento County line with a significant portion of the ROW crossing through the San Joaquin Delta. Aquatic habitats in the region include canals and irrigation drainages, rivers, creeks, and sloughs, and manmade impoundments.

All six of the special-status fish that could occur in the project area may occur in the Tracy region; these include green sturgeon, steelhead trout, delta smelt, longfin smelt, Sacramento splittail, and Sacramento perch. The Tracy region contains critical habitat for green sturgeon, steelhead trout, and delta smelt. **Figures 3.7-1** through **3.7-3** show the locations where critical habitat overlaps with the project area for these three species. The definition and purpose of critical habitat are discussed in more detail in **Section 3.7.2.3**.

Two of the special-status fish that may occur in the Tracy region, green sturgeon and steelhead trout, are anadromous fish. Anadromous fish are born in freshwater, mature at sea, and return to their natal streams to spawn. Steelhead trout, like salmon, have more than one “run,” which refers to the season the fish normally migrates upstream from the ocean to spawn in fresh water. The individuals of a particular species that all run at the same time in the same geographic area are referred to as an “evolutionarily significant unit” or ESU. An ESU is equivalent to a “distinct population segment (DPS),” which is the language used in the Federal ESA. Under the Federal ESA, ESUs and DPSs can be formally listed as threatened or endangered even if the species as a whole is not, and even if a different ESU or DPS is not. The Central Valley ESU of steelhead trout and the southern DPS of green sturgeon could occur in the Tracy region.

The Southern DPS of green sturgeon is currently only known to spawn in the Sacramento River, but utilizes the Sacramento-San Joaquin Delta as rearing, feeding and migratory habitat (NMFS 2009). The project area in the Tracy region crosses three waterways, Old River (below Clifton Court Forebay), Middle River, and San Joaquin River, that are designated critical habitat for green sturgeon, which may be present there in all months of the year (NMFS 2009). **Figure 3.7-1** shows where green sturgeon critical habitat overlaps with the project area.

Central Valley ESU steelhead trout occur in the Sacramento and San Joaquin rivers and their tributaries. The project area in the Tracy region crosses five waterways that are designated critical habitat for steelhead trout (**Figure 3.7-2**). These five waterways are Old River (below Clifton Court Forebay), Middle River, San Joaquin River, Mosher Slough, and Mokelumne River. Within the project area, none of these waterways contains suitable spawning habitat for steelhead, but all are suitable for adult migration and juvenile rearing and migration (CalFish 2009).

Delta smelt are found mostly in Suisun Bay and the Sacramento-San Joaquin Delta and typically spawn in shallow, fresh or slightly brackish sloughs and edgewater. There is suitable habitat for this species in sloughs, rivers and large creeks in the Tracy region where the project area overlaps with the Sacramento-San Joaquin Delta and critical habitat for delta smelt overlaps with much of the project area in this region (**Figure 3.7-3**).

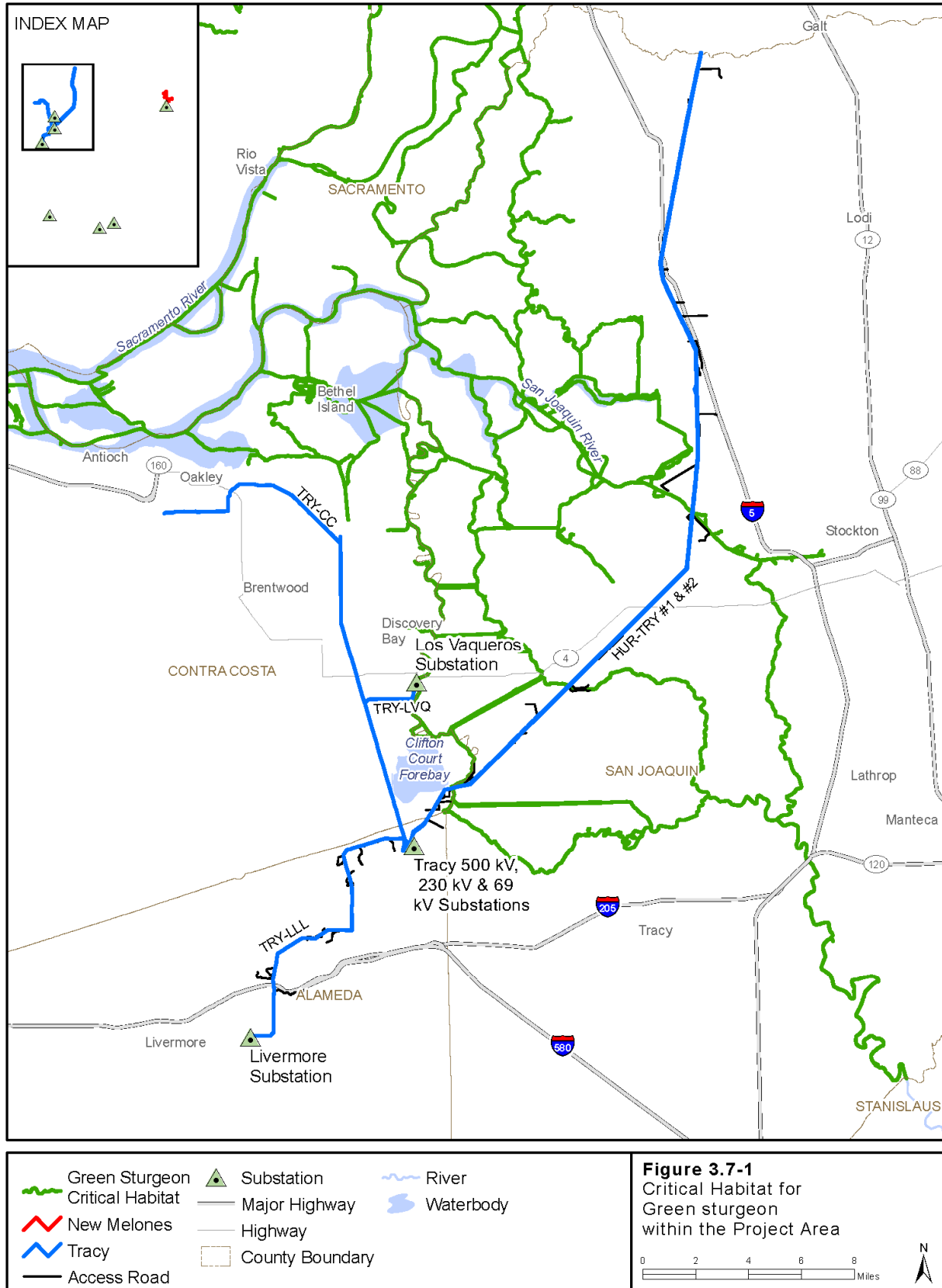


Figure 3.7-1. Critical Habitat for Green Sturgeon within the Project Area

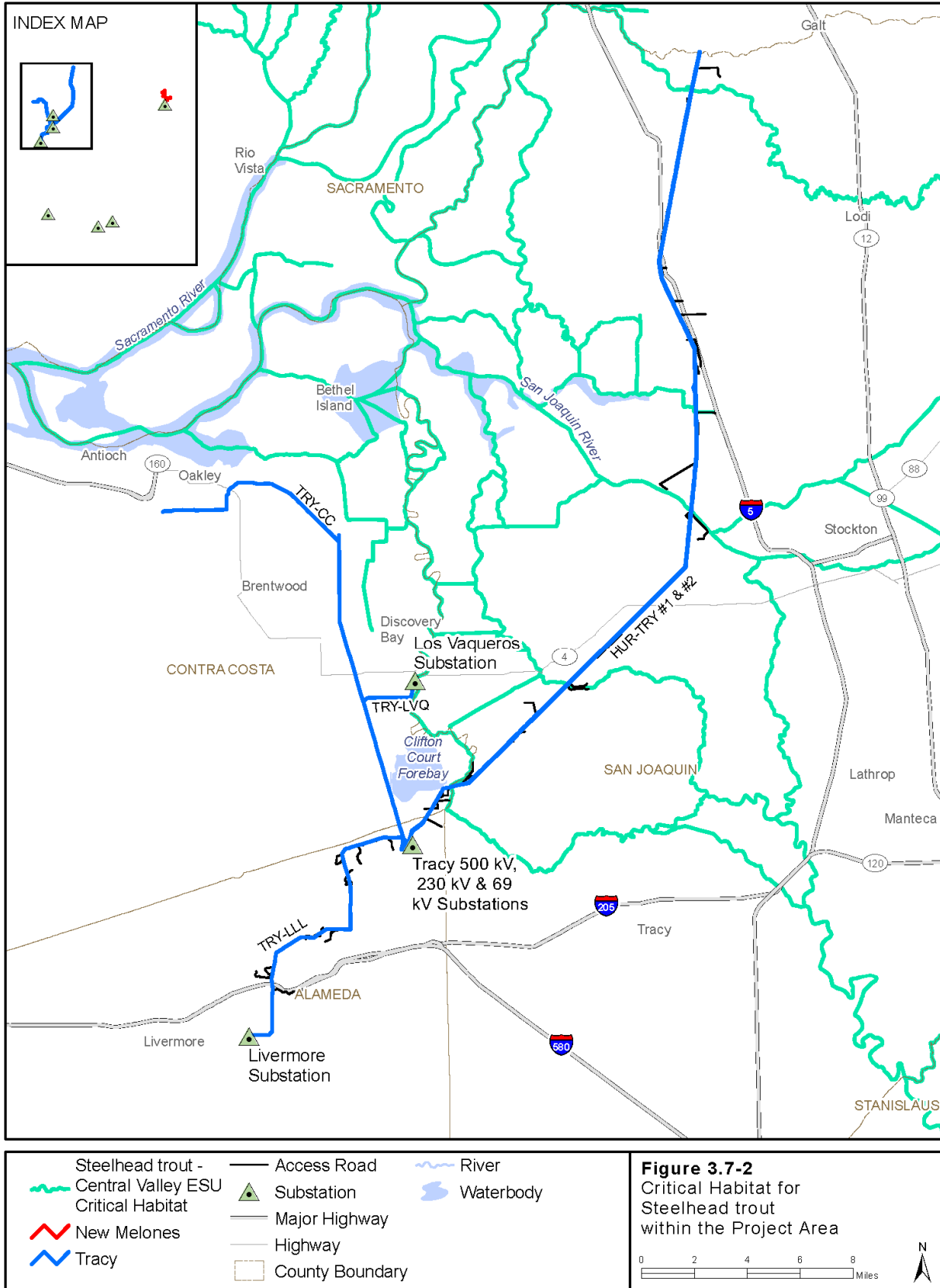


Figure 3.7-2. Critical Habitat for Steelhead Trout within the Project Area

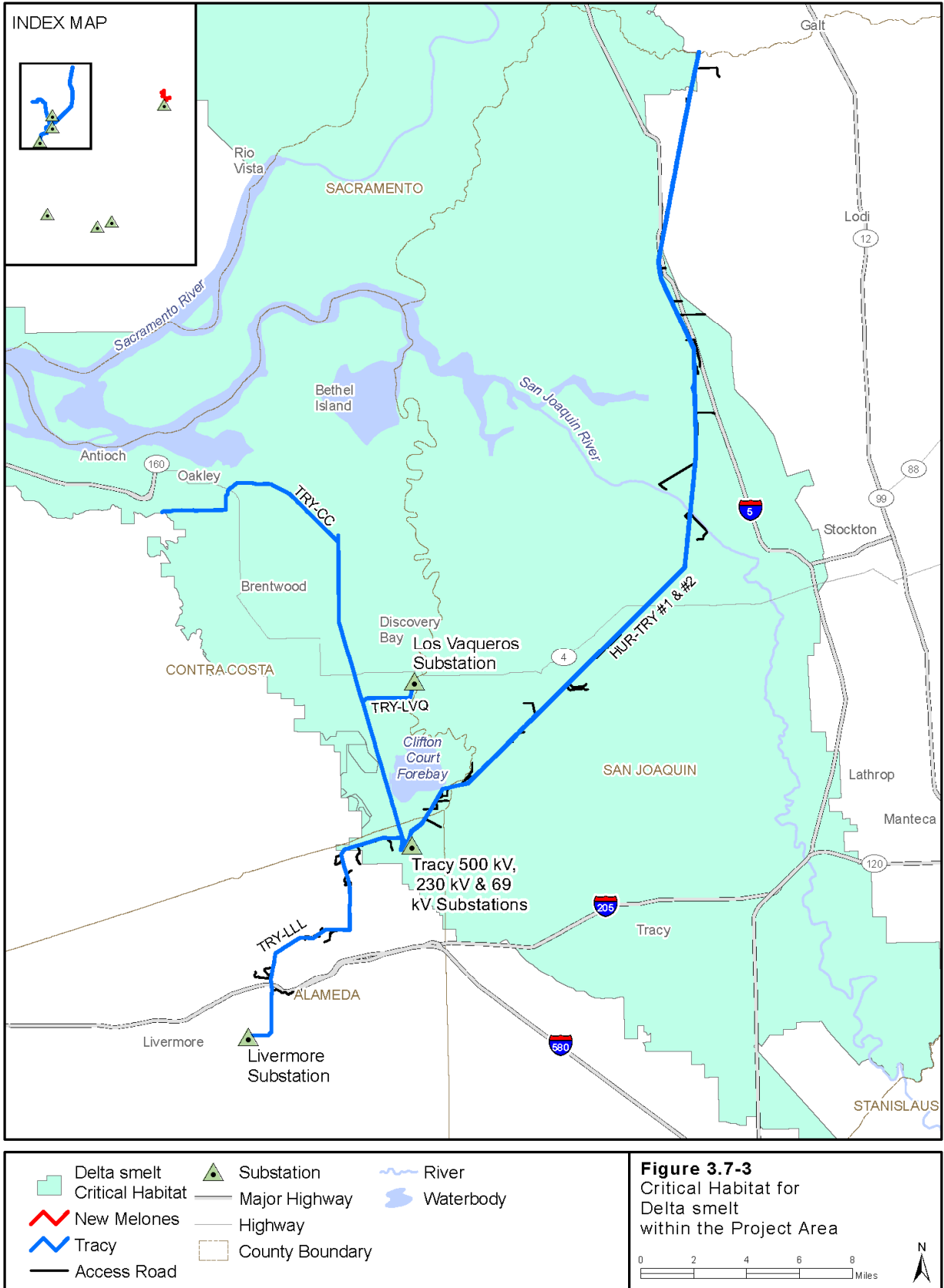


Figure 3.7-3. Critical Habitat for Delta Smelt within the Project Area

The longfin smelt was recently listed as threatened by the State of California. This smelt occurs in salt and freshwater bays and estuaries from Monterey Bay to Alaska. In the San Francisco Bay, longfin smelt migrate to brackish or freshwater estuaries in Suisun Bay, Montezuma Slough, and the lower reaches of the Sacramento and San Joaquin rivers to spawn in freshwater estuaries over sandy or gravel substrates (USFWS 1995). Suitable habitat for this species exists in sloughs, large canals and creeks near Discovery Bay and Clifton Court Forebay along the Tracy-Contra Costa and the Hurley-Tracy lines in the Tracy region.

Sacramento splittail were historically found in lakes and rivers throughout the Central Valley, but are now confined to the Sacramento-San Joaquin Delta, Suisun Bay and associated marshes and lower river reaches. Sacramento splittail prefer slow moving river sections and dead-end sloughs and require areas with emergent aquatic vegetation for spawning and foraging for young.

Sacramento perch are the only naturally occurring centrarchids in the western U.S. and were historically found in sloughs, slow-moving rivers, and lakes of the Central Valley. This species is considered possibly extirpated from the delta and is now known from introduced populations in lakes, reservoirs, farm ponds and the Russian River (USFWS 1995). This bottom-dwelling perch prefers warm water and requires emergent aquatic vegetation for rearing of young.

3.7.1.2 New Melones

None of the special-status fish species is likely to occur in the New Melones region.

3.7.1.3 Morgan Hill/San Luis

The special-status fishes that could occur in the Morgan Hill/San Luis region include the Sacramento splittail and Sacramento perch. Both of these species are discussed above in the Tracy region. Both species are known to occur in the O'Neill Forebay and San Luis Reservoir adjacent to the O'Neill Substation. The San Luis Reservoir stores water pumped from the Delta so that is the likely source of origin of these fish (Moyle et al. 1995).

3.7.2 Significance Criteria and Approach to Impact Assessment

3.7.2.1 Approach to Impact Assessment

Possible adverse impacts to special-status fish have been considered within the context of the Federal ESA (16 U.S.C. §§ 1531-1544). In addition, there has been a review of the CESA (Fish and Game Code §§ 2050, *et seq.*).

Adverse impacts may be direct or indirect, temporary, or permanent. These are defined as follows:

Direct: Alteration, disturbance, or removal of biological resources that would result directly from project-related activities on the landscape is considered a direct impact. Examples of direct impacts include the removal of habitat for a new bridge or culvert, loss

of shading along a river through removal of riparian vegetation, and degraded water quality from erosion into a river.

Indirect: Unintentional consequences of project-related activities are called indirect effects. Indirect effects are the result of a project but generally occur later in time. Examples of indirect effects include river bank erosion resulting from a poorly constructed culvert and increased water temperatures through removal of bank vegetation.

Permanent: Impacts that result in the irreversible removal or change in biological resources are considered permanent. Examples include the loss of streamside vegetation to a permanent structure or construction of a bridge.

Temporary: Impacts considered having reversible effects on biological resources can be viewed as temporary. A temporary impact would be water-quality degradation from erosion that ends when the project is complete.

Additionally, direct effects may be permanent (loss of habitat) or temporary (construction-related erosion), and indirect effects may be permanent (erosion downstream of a poorly constructed culvert) or temporary (increased water temperatures associated with vegetation removed that would grow back).

For the purposes of this EA, Western affords protection to state and Federally listed species throughout the project area. In addition, species with agency-specific status (e.g., BLM sensitive) are afforded protection on agency-specific lands. Special-status species outside of these parameters (e.g., state species of special concern) are discussed in the EA and listed in **Table 3.7-2**; however, PCMs were not designated for these species.

3.7.2.2 Significance Criteria

The Proposed Action would result in significant biological impacts if project-related actions directly or indirectly resulted in the following:

- The unauthorized take of species (the term 'take,' as defined in the Federal ESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct);
- The temporary or permanent loss of substantial habitat for species that are listed, proposed for listing, or candidates for listing under the Federal ESA or CESA;
- The permanent or temporary loss of critical habitat identified by the USFWS and/or NMFS for species listed under the FESA;
- The loss of, or change in, substantial areas of natural vegetation or aquatic habitats such that the populations of fish species in the project area would be threatened; or
- The reduction or change in natural vegetation communities or aquatic habitat such that populations of state and locally recognized sensitive species would be reduced to such an extent that they would become listed or candidates for listing under the Federal ESA or CESA.

3.7.2.3 Critical Habitat

Critical habitat is defined in **Section 3.3.2.3**, above.

As described in **Section 3.7.1**, the project area traverses critical habitat for three Federally listed fish, green sturgeon (southern DPS), steelhead (Central Valley ESU), and delta smelt (**Figures 3.7-1 to 3.7-3**). For all activity categories proposed within special-status fish habitat, including critical habitat, the work window (the period in which project activities may take place) would typically be June 1 through September 1, although this could vary by species and geographic location. This avoids instream work during the period when steelhead and sturgeon are migrating upstream to spawn. For reasons of erosion control, project activities are typically not allowed during the rainy season (after September 15). Construction prior to June 1 and after September 1 may be allowed on a case-by-case basis depending on which anadromous fish may be present.

3.7.3 Environmental Consequences from the Proposed Action

The Proposed Action may adversely impact fish due to changes in water quality or substantial alteration of existing conditions. Specifically, fish may be adversely affected by unnaturally low or high levels of turbidity, sedimentation, loss of large organic debris, loss of shading and associated temperature increases, and exposure to hazardous substances. Wetland and aquatic habitats are susceptible to erosion and compaction from heavy machinery. Removal of vegetation in uplands and access road maintenance activities can increase surface runoff, causing turbidity and sedimentation into wetlands and waterways.

To minimize impacts, SOPs have been developed for this Project (see **Table 2.4-1**). Additionally, PCMs have been developed for special-status fish and wildlife (**Table 2.4-3**) and aquatic resources (**Table 2.4-4**). SOPs and PCMs would be implemented as appropriate and would be included, along with environmental laws and regulations and applicable agency requirements, in an annual training program for Western O&M personnel. **Section 2.2.4** describes coordination with regulatory and land management agencies, which would ensure that specific actions have the least risk for adverse effect. **Section 2.2.2.1** describes the measures that would be taken to minimize adverse effects associated with herbicide use.

These measures, especially when considered in light of the existing degraded or modified conditions along the ROWs, are expected to be adequate to reduce possible adverse impacts to less than significant levels. Informal (Section 7) consultation with USFWS and NMFS is being conducted for this Project. Western is requesting an amendment to the concurrence letters for their North Area ROW Maintenance Project to include the San Joaquin Valley ROW and any new species.

3.7.3.1 Category A – Inspection and Minor Maintenance Activities

Category A activities could result in short-term noise and minor disturbance impacts but would not be likely to adversely affect special-status fish. Implementation of SOPs and

PCMs (**Tables 2.4-1 through 2.4-4**) would minimize possible adverse effects to special-status fish.

3.7.3.2 Category B – Routine Maintenance Activities

Category B activities have greater potential to adversely affect special-status fish because they may occur in areas where ambient conditions do not include regular human disturbance, because they may disturb more ground or may take place in or near aquatic habitats, or because they may require more time to complete than Category A activities. Implementation of SOPs and PCMs (**Tables 2.4-1 through 2.4-4**), especially those designed to protect aquatic habitats, would minimize possible adverse effects to special-status fish.

3.7.3.3 Category C – New Infrastructure

Category C activities may cause adverse effects to sensitive resources if PCMs are not implemented. Category C activities would disturb large areas and/or would rely on the use of heavy equipment. Implementation of SOPs and PCMs (**Tables 2.4-1 through 2.4-4**), especially those designed to protect aquatic habitats, would minimize possible adverse effects to special-status fish.

3.7.4 Environmental Consequences from the No Action Alternative

The No Action Alternative would eliminate the possible adverse effects of expanding the use of herbicides. The No Action Alternative could, however, result in a higher level of repeated disturbance associated with an as-needed vegetation management approach that has not achieved the goal of long-term changes in actual vegetative cover.

The Proposed Action would facilitate long-term changes to habitats with the ultimate benefit of reduced interference with habitats along Western ROWs. Altering the plant composition of habitats may adversely affect local special-status fish on a short-term basis through changes in water quality and temperature, and may create long-term adverse changes in vegetative cover along the banks of rivers, creeks, and lakes. However, the long-term goal of reducing human disturbance in the ROW, coupled with implementation of the rigorous SOPs and PCMs proposed in this document, would neutralize possible adverse effects.

3.8 Cultural Resources

Cultural resources include aspects of the environment, both physical and intangible, that relate to human culture and society that hold communities together and link them to their surroundings. Examples of cultural resources types include, but are not limited to; buildings, structures, objects, districts, prehistoric and historic-era sites, and landscapes. Cultural resources have an important role in connecting contemporary societies to their heritage and traditions, and providing structure and perspective for contemporary life. Once damaged or destroyed, these resources are nonrenewable, though the physical evidence of the past may be restored or reconstructed to some degree.

In accordance with Section 106 of the NHPA and its implementing regulations in 36 CFR Part 800, Federal agencies are required to consider the effects of their actions on historic properties and to identify properties that may be eligible for listing or are listed in the NRHP. As per 36 CFR Part 800.16, an “historic property” refers to any prehistoric or historic district, site, building, structure, or object included in or eligible for the NRHP. Properties eligible for inclusion in the NRHP include those formally determined eligible in accordance with the Secretary of the Interior’s regulations and all other properties that meet the NRHP’s Criteria for Evaluation (36 CFR Part 60.4) The NRHP’s Criteria for Evaluation state:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings(s), structures, and objects of state and local importance:

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important to history or prehistory.

In addition, for a property to be eligible for listing to the NRHP, it must retain sufficient integrity. The seven elements of integrity include location, design, setting, materials, workmanship, feeling, and association. A property must meet one or more of the Criteria for Evaluation before a determination can be made about its integrity (National Register Bulletin 15).

If a cultural resource is found to be eligible for listing in the NRHP, and the SHPO concurs with the agency’s determinations, the agency must take into account the effects of the proposed action on historic properties. Indian tribes, state and local agencies, the public, and the ACHP are given opportunities to consult during the project planning and to advise ways to avoid, minimize or mitigate any potential effects on historic properties. Project-related impacts to an eligible historic property that would adversely affect the values of the resource that make it eligible for listing in the NRHP would be considered significant. Resources within California that are eligible for the NRHP are also eligible for the California Register of Historical Resources (CRHR).

Various research, consultation, and survey methods are used to identify the presence of cultural resources and to evaluate a resource’s eligibility for listing in the NRHP. Archival research of previously documented written records (i.e., site records and maps) helps identify cultural resources and Traditional Cultural Properties (TCPs). TCPs are

resources associated with cultural practices or beliefs of a living community (National Register Bulletin 38), and are also included in or eligible for inclusion in the NRHP. Native American tribes and/or other cultural groups are consulted to identify TCPs and sacred or religious sites within the Area of Potential Effect (APE). Consultation often includes meetings with traditional religious practitioners, interviews with knowledgeable individuals, and site visits to particular areas of sensitivity for cultural resources. For this Project, consultations relevant to TCP identification are described in **Section 3.8.1.2**.

Archaeological pedestrian surveys (i.e., inventory surveys) are also used to locate prehistoric and historic resources. Often excavations or in-depth architectural recordings are conducted to evaluate if a cultural resource in the APE is eligible for listing in the NRHP.

The following sections identify cultural resources (i.e., resources that are eligible, ineligible, or whose eligibility has yet to be determined) for the NRHP within the proposed Project's APE and assess the potential effects of the Proposed Action and No Action Alternative on these resources.

3.8.1 Affected Environment

All activities to be conducted as part of the proposed Project are considered within the APE. The APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties” (36 CFR Part 800.16[d]). For this Project the APE is the ROW of the existing transmission lines and associated access roads, and a 50-foot radius around the substations and maintenance facility.

3.8.1.1 Prehistoric, Historic, and Ethnographic Background

The San Joaquin Valley project area lies within several physiographic provinces and major ecological zones. The terrain and natural environment have played an important role in shaping the human use of the environment and have influenced historical trends and events. The natural setting of the Project and the prehistoric, historic, and ethnographic background are important in understanding the context of cultural resources that Western manages in the project area. **Appendix J** provides details on cultural resources in the San Joaquin Valley.

3.8.1.2 Native American Consultation

Western consulted with the California Native American Heritage Commission (NAHC) to obtain a current list of appropriate Native American contacts for the project area. Western also contacted the individuals and organizations listed by the NAHC to inform them of the Project and to ask their assistance in identifying sacred lands or TCPs that might be affected by project O&M activities or any other concerns or comments they may have regarding the Project. Consultation with Native American individuals/organizations regarding the Project will be on-going. Western received two responses via phone calls regarding the Project, one from a member of the Ohlone Tribe and one from a member of the Buena Vista Miwok Tribe, both of whom requested

to be kept informed of Project activities. Although no TCPs, sacred, or religious sites have yet to be identified within the APE, the tribal members discussed areas that could be sensitive for buried pre-historic resources within the APE.

3.8.1.3 Literature Review and Field Survey

A cultural resources literature review of documented archaeological and historic resources literature was conducted for entire project area. The goal of the literature review was to: 1) determine whether known cultural resources had been recorded within or adjacent to the ROW; 2) to assess the likelihood of discovering unrecorded cultural resources based on historical references and the distribution of environmental settings of nearby sites; and 3) to develop a context for identification and preliminary evaluation of identified resources.

Key sources for the records search were the Northwest Information Center and Central California Information Center of the California Historical Resources Information System, and previous records search documents on file with Western. In addition historic research was conducted at numerous libraries and historical repositories.

As part of the record search, records of sites located within one mile of the transmission line were photocopied and inventory boundaries adjacent to or crossing the ROW were hand-drawn on a clean set of U.S. Geological Survey topographic maps. All cultural resources located within 200 meters of the ROW or Western associated access roads were also drawn on the maps at the information centers. Also obtained was a list of sites evaluated or otherwise assigned a NRHP status (eligible for listing, ineligible for listing, may become eligible, eligibility cannot be determined, not evaluated, etc.).

The field survey was conducted by trained and experienced cultural resources specialists meeting the qualifications criteria from the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation, Professional Qualifications Standards (48 CFR Part 44716). Before beginning the inventory survey, the survey team obtained maps that included all of Western's transmission line ROW, transmission tower locations, substation locations, and associated access road locations. Western also provided high-resolution aerial photographic coverage for portions of the transmission ROW; covering approximately one-half mile on either side of the centerline of a given transmission line and some associated access road. Portions of the ROW and access roads not covered by these aerial photographs were mapped using imagery from the National Agriculture Imagery Program.

The cultural resources specialists conducted an intensive pedestrian survey, using systematic transects no wider than 20 meters apart within Western's ROW and associated access roads to inventory cultural resources (e.g., historic archaeological sites, prehistoric sites, historic buildings and structures, and other cultural properties). Possible indicators of the presence of prehistoric sites include stone tools and lithic debitage; house pit depressions, foundations, or other structural features; and anthropogenic midden soils. For historic sites, the identification of buildings and structures, debris scatters, privy pits, ditches, or walls are often indicators of the presence of historic resources. Areas that could not be surveyed because of dense vegetation or

steep terrain were marked on the aerial photographs and were recorded digitally in the GIS system.

When a previously recorded or new cultural resource was located, the survey crew recorded the boundary using a GPS device and entered information about the resource in accordance with a GPS data dictionary that was prepared by Western specifically for the project. For sites having prehistoric components, this information included quantities of lithics (<10, 10 to 100, >100), and presence or absence of other cultural constituents commonly found in prehistoric sites (midden, heat-affected rock, stone tools, groundstone). For sites having historic components, this information included quantities of artifacts, types of refuse (metal, ceramic, glass), and presence of features of various types (ditch, structure, structure pad, road, railroad). For both site types, the field crew used the GPS to record the site condition (good, fair, poor) and to provide general comments. The GPS automatically recorded the date of inventory. Digital photographs were also taken for each cultural resource and included on the Department of Park and Recreation site forms.

3.8.1.4 Inventory Results

The field survey covered 83 miles of transmission-line ROW and a total of 28 miles of associated access roads that serve these lines.

The survey resulted in the rerecording (i.e., update) of 16 previously identified resources, the relocation (i.e., no update) of 27 previously identified resources, and the identification of 61 new resources, for a total of 104 cultural resources. Out of the 104 cultural resources, 14 have been determined eligible for listing in the NRHP and 10 resources have been determined ineligible. These eligibility determinations are based on previous resource evaluations or by the Keeper of the NRHP. In addition, one historic property, an archaeological district, is currently listed on the NRHP. Furthermore; 5 of the 104 cultural resources appear eligible and 45 appear ineligible for inclusion in the NRHP.

There are 82 resources in the Tracy region, 18 resources in the New Melones region, and 4 in the Morgan Hill/San Luis region. **Table 3.8-1** shows the distribution, by resource type, of the 7 prehistoric and 94 historic resources, and 3 multi-component sites (i.e., a site with a prehistoric and a historic component).

**Table 3.8-1. Cultural Resource Types, San Joaquin Valley ROW
and Associated Access Road Surveys**

Resource Type	Number	Comment
Prehistoric era single-component		
Isolate (>3 surface artifacts)	3	Lithics
Bedrock Mortar (BRM)	1	>3 BRM features with no artifacts
Habitation/Occupation	3	None
Subtotal	7	
Prehistoric and historic era components		
Habitation	1	Midden, BRM, and glass fragments
Archaeological District	2	San Luis Gonzaga Archaeological District and New Melones Archaeological (Historical) District
Subtotal	3	
Historic era single-component		
Isolate (>3 surface artifacts)	17	Predominantly glass and ceramic fragments
Mining	11	Mining-related features
Ranching	3	Ranching-related features/complex
Historic Landscape District	1	San Luis Gonzaga Archaeological District
Habitation	1	Glass fragments/historic period house
Refuse Scatter	24	Predominantly glass fragments
Road	1	Reynolds Ferry Road
Bridge	1	None
Railroad	7	Railroad segments
Rock Pile	1	Two aggregations of local fieldstone
Aqueduct	1	Mokelumne Aqueduct
Culvert	2	Constructed of concrete
Canal	3	None
Ditch	2	Ditch segments
Structure	3	O'Neill Substation, O'Neill Pumping Plant, and 1 steel tower
Water Conveyance	3	None
Levee	4	Stockton Deep Water Channel, Atlas Tract, Shima Tract, and Italian Slough
Highway/Trail	1	None
Wall	2	Constructed of dry-laid stacked fieldstone
Utility Pole	1	Utility pole and associated foundation pad
Public Utility	2	Tracy Switching Yard and Tracy Pumping Plant
Transmission Line/Towers	3	Segments of Hurley-Tracy and Shasta-Tracy transmission line and towers
Subtotal	94	
Total	104	

TRACY REGION

The present natural setting of the Tracy region of the project area is shaped by a variety of landscapes. These include agricultural lands on the San Joaquin Valley floor, the dry rolling hills and portions of the Coastal Mountain Range, and small riparian corridors near major and minor watercourses. The Tracy region encompasses an area of high sensitivity for the presence of prehistoric and historic archaeological sites. Known and presumed archaeological site density is relatively high in areas around naturally occurring water sources. Native American populations used these areas for their subsistence due to the year-round water sources (i.e., lakes, streams, rivers) and for the

abundance of natural resources (i.e., plants and animals). Conversely, in densely populated urban areas of the region, archaeological inventories have resulted in the recording of engineering structures such as canals, aqueducts, transmission towers, bridges, and railroad segments. The Tracy Region is also associated with a large number of agricultural resources including farming and ranching complexes, transportation features, and buildings and structures. **Table 3.8-2** classifies the Tracy region sites by type.

Table 3.8-2. Cultural Resource Types, Tracy Region

Resource Type	Number	Comment
Prehistoric era single-component		
Isolate (>3 surface artifacts)	3	Lithics
Habitation	3	None
Subtotal	6	
Historic era single-component		
Isolate (>3 surface artifacts)	17	Predominantly glass and ceramic fragments
Ranching	2	Ranching-related features/complex
Habitation	1	Glass fragments/historic period house
Bridge	1	None
Refuse Scatter	24	Predominantly glass fragments
Railroad	7	Railroad segments
Rock Pile	1	Two aggregations of local fieldstone
Road	1	Reynolds Ferry Road
Aqueduct	1	Mokelumne Aqueduct
Culvert	2	Constructed of concrete: both in-use
Canal	2	None
Ditch	2	Ditch segments
Structure	1	1 steel tower
Water Conveyance	3	None
Levee	4	Stockton Deep Water Channel, Italian Slough, Atlas Tract, and Shima Tract
Highway/Trail	1	
Utility Pole	1	Abandoned electrical distribution line and associated foundation pad
Public Utility	2	Tracy Switching Yard and Tracy Pumping Plant
Transmission Line/Towers	3	Segments of Hurley-Tracy and Shasta-Tracy Transmission Line and Towers
Subtotal	76	
Total Tracy Region	82	

NEW MELONES REGION

The present natural setting of the New Melones region of the project area encompasses the scrub oak dotted foothills west of the Sierra Nevada, and small riparian corridors near major and minor watercourses. The New Melones region contains numerous historic archaeological resources and features associated with the mining industry that was prevalent during the Gold Rush period. Historic sites in this area are often associated with water resources as part of the hydraulic mining industry. The New Melones Archaeological (Historical) District, determined eligible for listing on the NRHP and listed on the CRHR (CA-OHP 2008c), is situated in this area and encompasses more than 627 historic and prehistoric sites; however, only 14 previously recorded

resources and three newly identified resources are within the project area. Site types include ranching complexes, bedrock milling stations, mining prospect pits, and tailing piles. **Table 3.8-3** classifies the New Melones region sites by type.

Table 3.8-3. Cultural Resource Types, New Melones Region

Resource Type	Number	Comment
Prehistoric era single-component		
Bedrock Mortar (BRM)	1	>3 BRM features with no artifacts
Subtotal	1	
Prehistoric and historic era components		
Habitation	1	Midden, BRM, and glass fragments
Archaeological District	1	New Melones Archaeological (Historical) District
Subtotal	2	
Historic era single-component		
Mining	11	Mining-related features
Wall	2	Constructed of dry-laid stacked fieldstone
Ranching	1	Ranching-related features
Road	1	Reynolds Ferry Road
Subtotal	15	
Total New Melones	18	

MORGAN HILL/SAN LUIS REGION

The Morgan Hill/San Luis region of the project area includes portions of the Coastal Mountain Range and the Central Valley. The density of cultural resources in this region is extremely variable, partly because of the lack of archaeological inventories. However, given the proximity to the San Luis Reservoir and Coyote Creek areas, known and presumed archaeological site density is likely to be moderate to high within these portions of the region. In addition there is a long history of ranching, mining, and transportation in the Morgan Hill/San Luis Region, which includes the San Luis Gonzaga Archaeological District; the Coyote, Pacheco, and O'Neill substations; and the O'Neill Pumping Plant. **Table 3.8-4** classifies the Morgan Hill/San Luis region sites by type.

Table 3.8-4. Cultural Resource Types, Morgan Hill/San Luis Region

Resource Type	Number	Comment
Historic era single-component		
Structure	2	O'Neill Substation and O'Neill Pumping Plant
Archaeological District	2	San Luis Gonzaga Archaeological District and San Luis Gonzaga Rancho-Landscape District
Subtotal	4	
Total Morgan Hill/St. Luis	4	

3.8.2 Significance Criteria and Approach to Impact Assessment

3.8.2.1 Approach to Impact Assessment

This EA evaluates the potential impact of project activities on cultural resources, including damage, loss, degradation, or other disturbance.

3.8.2.2 Significance Criteria

A significant impact on cultural resources would result if any of the following were to occur from project activities:

- Damage to or loss of a site of archaeological, tribal, or historical value that is listed, or eligible for listing, on the NRHP;
- Loss or degradation of a TCP or sacred site, or if the property or site is made inaccessible for future use;
- Adversely affect the qualities of a resource that renders it eligible, as a historic property, for listing in the NRHP; or
- Disturbance to any human remains, including those interred outside of formal cemeteries.

3.8.3 Environmental Consequences from the Proposed Action

Approximately 14 cultural resources identified in the San Joaquin Valley APE have been formally evaluated and determined as eligible historic properties for listing on the NRHP, in most cases these properties are related to prehistoric sites or historic mining complexes. Western has begun a phased program of NRHP evaluation for the cultural resources sites under its management. Western has initiated consultation with the SHPO to determine which sites can be clearly documented as ineligible for NRHP listing on a categorical basis (e.g., mine tailing sites without associated artifact deposits or other features), which would require minimal subsurface testing to determine the presence or absence of a subsurface component (i.e., small and sparse lithic scatters), and which would require more extensive subsurface testing to determine their depth, contents, and research potential (e.g., prehistoric sites with midden or extensive artifact deposits). Until this program is implemented, Western would avoid impacts to all known resources that have not previously been determined ineligible for NRHP listing and would implement specific SOPs and PCMs to protect resources.

By implementing the PCMs, Western would ensure that impacts to significant cultural resources are avoided to the greatest extent possible. The cultural resources inventory that Western has conducted of previously uninventoried areas and the high-accuracy recording of cultural resources boundaries and their entry into the GIS would help to ensure that the PCMs can be implemented effectively. Although it is possible that undiscovered resources remain in the APE (i.e., particularly within difficult-to-survey areas, such as on steep slopes and within dense vegetation), implementing the PCMs would also help to ensure that adverse impacts to such resources are avoided or minimized. This would be accomplished by instructing vegetation clearance crews in the identification of cultural resources and by monitoring vegetation clearance in archaeological and historic architectural sensitive zones. SOPs and PCMs applicable to cultural resources are listed in **Tables 2.4-1 and 2.4-5**.

3.8.3.1 Category A – Inspection and Minor Maintenance Activities

Operations and maintenance activities designated as Category A would have very low potential to cause adverse impacts to cultural resources. Most of these activities do not involve the kind of ground disturbance that could impact archaeological sites or historic buildings and structures. Routine ground patrols would use existing access roads, for example. Although some access roads cross known archaeological sites in some places, routine patrols would not involve increased impacts to these sites because the patrols would be restricted to the existing roadways using rubber-tired vehicles. Similarly, although some towers are located within archaeological site boundaries, the cultural resource SOPs and PCMs would prevent work on existing towers for maintenance and replacement of hardware from causing significant impacts to archaeological sites. These measures call for avoidance of sites by vehicles and education of maintenance personnel regarding the protection of cultural resources, among other things.

3.8.3.2 Category B – Routine Maintenance Activities

Operations and maintenance activities designated as Category B would have the potential, through excavation, to cause minimal ground disturbance and would, therefore, also have the potential to cause adverse impacts to cultural resources such as archaeological sites if conservation measures were not in place. For example, use of backhoes and front-end loaders for excavation and road grading could damage archaeological deposits. These impacts would be prevented by avoidance of significant archaeological sites in accordance with PCMs and by implementation of the PCMs designed for areas for which protocol surveys have not been possible due to terrain or vegetation.

3.8.3.3 Category C – New Infrastructure

Operations and maintenance activities designated as Category C would have the potential, through excavation, to cause ground disturbance through the use of heavy equipment such as bulldozers, graders, backhoes, front end loaders, and other specialized equipment and would, therefore, also have the potential to cause adverse impacts to cultural resources such as archaeological sites, if conservation measures were not in place. For example, use of backhoes and front-end loaders for excavation and road grading could damage archaeological deposits. These impacts would be prevented, however, by avoidance of significant archaeological sites, in accordance with PCMs and by implementation of the PCMs designed for areas for which protocol surveys have not been possible due to terrain or vegetation.

3.8.4 Environmental Consequences from the No Action Alternative

Potential effects on cultural resources under the No Action Alternative would not differ significantly from those that would occur under the Proposed Action. The literature search and pedestrian surveys conducted for this EA and the implementation of a GIS-based cultural resources management system have made it easier for Western to accurately determine which operations and maintenance activities have the potential to affect known cultural resources and to plan and implement the avoidance of adverse effects.

This system would be in place whether the Proposed Action or No Action Alternative is chosen. Western currently plays an active role in managing cultural resources within its ROW and access road areas and in avoiding or mitigating impacts to them during operations and maintenance activities.

3.9 Paleontological Resources

Paleontological resources include fossil plants and animals, and other evidence of past life such as preserved animal tracks and burrows. Because of the long length of the project area and its geological diversity, no comprehensive survey of paleontological resources was performed for this EA; however, fossils observed during the cultural resources survey prompted a paleontological investigation of a site and a paleontological resource survey along a 13-mile section of the Tracy-Lawrence Livermore National Laboratory transmission line ROW.

3.9.1 Affected Environment

Within the predominantly low and flat-lying portions of the project area in the San Joaquin Valley, Quaternary alluvium of variable age can be found. This Quaternary alluvium is generally expected to overlie the bedrock of the Diablo Range. Quaternary deposits include those of the following ages: Historic (approximately the past 200 years), Holocene (200 to 11,000 years ago), Pleistocene (11,000 to 3 million years ago), and Pliocene (3 to 7 million years ago). Adjacent to the Quaternary units lie the topographically higher Neroly and Cierbo formations. These units are late Miocene in age (11 to 5 million years ago) (GANDA 2010).

The area along the Tracy-Lawrence Livermore National Laboratory transmission line ROW is located within the complex boundary margin between the North American and Pacific Plates. Under the current tectonic regime, the Pacific Plate moves northwestward relative to the North American Plate at a rate of about 5 centimeters per year causing strike-slip motion along a number of major faults, including the San Gregorio, San Andreas, Hayward, Calaveras, and Greenville. In addition to these, countless other faults within the larger vicinity of the project area accommodate relative motion between major faults and relieve compressional stresses that also act along the plate boundary (GANDA 2010).

3.9.1.1 Field Survey

A paleontologist examined geologic units exposed within and adjacent to the Tracy-Lawrence Livermore National Laboratory transmission line ROW during a pedestrian field survey on November 24 and December 3, 4, and 6, 2009.

3.9.1.2 Survey Results

Several fossils of the genus *Ostrea* and one fossil of the class Anthozoa (sea anemone) were found in the Cierbo Formation. Also, several *Ostrea* fossils were found within the Pleistocene alluvium. However, further analysis revealed that they had either been recently washed in from higher lying units or were brought to the surface by ground-

burrowing animal activities. The Quaternary units within the survey area revealed sedimentary input from both the Cierbo as well as the Neroly formation thus making a fossil assemblage from both geological units likely.

The Tassajara or Green Valley Formation, which lies stratigraphically below the Cierbo and Neroly Formations, is known to contain fossil plants, skulls, long bones, teeth, tusks, ribs, and foot bones of a great variety of animals, such as mammals, reptiles and fish. The fossils identified during the survey were indicative of the Neroly or Cierbo formation and do not present any relationship to the Tassajara or Green Valley Formation. All construction activities above 250 feet elevation are not likely to encounter this formation.

3.9.2 Significance Criteria and Approach to Impact Assessment

3.9.2.1 Approach to Impact Assessment

The Society of Vertebrate Paleontology identifies vertebrate fossils, their taphonomic and associated environmental data, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant.

Project-related ground-disturbing activities can damage paleontologically sensitive geologic units and resources. This occurs when vehicles or other work equipment impacts fossil-bearing sediments beyond previous ground disturbance either by excavating, grading, or crushing bedrock either exposed in or underlying a project.

3.9.2.2 Significance Criteria

A paleontological resource can be considered significant if it meets any of the following criteria (GANDA 2010):

- The paleontological resource provides data on the evolutionary relationships and developmental trends among organisms, both living and extinct;
- The paleontological resource provides data useful in determining the age(s) of the geologic unit or stratigraphy, as well as timing of associated geological events;
- The paleontological resource provides data on a community level;
- The paleontological resource demonstrates unusual or spectacular circumstances in the history of life; and / or
- The paleontological resource is not abundant or found in other geographic locations and may be in danger of being depleted or destroyed by the elements or vandalism.

3.9.3 Environmental Consequences from the Proposed Action

Paleontological resources are known to occur in surveyed portions of the project area, and have the potential to occur elsewhere within the project area. By implementing

paleontological resource PCMs (**Table 2.4-6**), Western would ensure that impacts to significant paleontological resources are avoided to the extent practicable.

3.9.3.1 Category A – Inspection and Minor Maintenance Activities

Operations and maintenance activities designated as Category A would have very low potential to cause adverse impacts to paleontological resources. Most of these activities do not involve the kind of ground disturbance that could impact fossil-bearing sediments. Routine ground patrols would use existing access roads, for example. Paleontological resource PCMs would prevent work on existing towers for maintenance and replacement of hardware from causing significant impacts to paleontological sites.

3.9.3.2 Category B – Routine Maintenance Activities

Operations and maintenance activities designated as Category B would have the potential, through excavation, to cause minimal ground disturbance and would, therefore, also have the potential to cause adverse impacts to paleontological resources if conservation measures were not in place. For example, use of backhoes and front-end loaders for excavation and road grading could damage fossil deposits. These impacts would be prevented by avoidance of known paleontological sites in accordance with PCMs and by implementation of the PCMs designed for areas for which paleontological surveys have not been conducted.

3.9.3.3 Category C – New Infrastructure

Operations and maintenance activities designated as Category C would have the potential, through excavation, to cause ground disturbance through the use of heavy equipment such as bulldozers, graders, backhoes, front end loaders, and other specialized equipment and would, therefore, also have the potential to cause adverse impacts to paleontological resources, if conservation measures were not in place. For example, use of backhoes and front-end loaders for excavation and road grading could damage fossil deposits. These impacts would be prevented, however, by avoidance of known paleontological sites, in accordance with PCMs and by implementation of the PCMs designed for areas for which paleontological surveys have not been conducted.

3.9.4 Environmental Consequences from the No Action Alternative

Potential effects on paleontological resources under the No Action Alternative would not differ significantly from those that would occur under the Proposed Action. The paleontological surveys conducted for this EA have made it easier for Western to accurately determine which operations and maintenance activities have the potential to affect known paleontological resources and to plan and implement the avoidance of adverse effects. This system would be in place whether the Proposed Action or No Action Alternative is chosen.

3.10 Land Use

Land use refers to the use of land for various human-related activities, including commercial, industrial, recreational, agricultural, and residential uses. Local land use

policies and development regulations control the type of land use and the intensity of development or activities permitted. Changes in land use patterns that result from development can affect the character of an area and result in physical impacts to the environment.

This section discusses, in general terms, the existing land uses throughout the project area, and applicable land use plans and policies intended to regulate land use in the area. This section also addresses the types of land use impacts that could occur under the Proposed Action and No Action Alternative.

3.10.1 Affected Environment

Table 3.10-1 lists general categories of land uses in the project area and provides examples of specific land uses within each category.

Table 3.10-1. Land Use Classifications

Classification or Land Use Type	Examples of Land Uses
Agricultural	Grain crops, row crops, orchards, pastures, rice fields, vineyards
Commercial/industrial	Manufacturing, assembling, storage and distribution, non-residential buildings
Native/non-native vegetation	Native vegetation, native/non-native grassland, riparian vegetation, woodlands
Water/wetlands	Water surfaces (open water features), seeps and springs, wetlands, vernal pools
Residential/urban	Single-family residences, multi-family residences, trailer courts
Other	Barren, levees

Much of the project area is rural agricultural or open space, but the project area also overlaps the cities of Antioch, Discovery Bay, Knightsen, Oakley, Stockton, and Morgan Hill. The project area encompasses land owned by the BOR, BLM, CDFG, and the California Department of Water Resources (DWR). **Table 3.10-2** presents Federal and state land ownership within the project area, as well as the major types of land use in each region.

3.10.1.1 Existing Land Use

TRACY

The predominant land use in the Tracy region of the project area is agricultural, with grasslands extending along much of the Tracy-Livermore transmission line ROW through the Altamont Pass area. Barren areas are prevalent along the Contra Costa Canal through Oakley and Antioch. Overall, agricultural land, grasslands, and barren land account for approximately 88 percent of the project area in the Tracy region. Residential areas border the project area in Stockton, Discovery Bay, and Oakley.

Table 3.10-2. Land Use Type by Project Area Region

Tracy		
Federal and State	County	City
U.S. Bureau of Reclamation California Department of Fish and Game California Department of Water Resources California Department of Parks and Recreation	Alameda County Contra Costa County San Joaquin County	Antioch Discovery Bay Knightsen Oakley Stockton
Land Use Types	Percent of Land Area	Acreage of Land Area
Agricultural	62.6	1011
Native/non-native vegetation	19.4	313.2
Wetland habitats/water	6.8	109.1
Urban/barren/commercial	9.4	151.8
Other	1.9	30.9
Total	—	1616^a
New Melones		
Federal	County	City
U.S. Bureau of Land Management U.S. Bureau of Reclamation	Calaveras County Tuolumne County	None
Land Use Types	Percent of Land Area	Acreage of Land Area
Agricultural	0	0
Native/non-native vegetation	78.0	35.5
Wetland habitats/water	3.7	1.7
Urban/barren/commercial	18.2	8.3
Other	0	0
Total	—	45.4^a
Morgan Hill/San Luis ^b		
Federal and State	County	City
California Department of Parks and Recreation	Merced County Santa Clara County	Morgan Hill
Land Use Types	Percent of Land Area	Acreage of Land Area
Agricultural	40.0	2.6
Native/non-native vegetation	7.7	0.5
Wetland habitats/water	6.2	0.4
Urban/barren/commercial	46.2	3.0
Other	0	0
Total	—	6.6^a

^a Totals may not equal sum of individual acreages due to rounding.

^b The Morgan Hill/San Luis region consists of three Western-owned substations. Acreages include a 50-foot buffer encompassing each substation, but not the substations themselves.

NEW MELONES

Land in the New Melones region of the project area is dominated by native/non-native vegetation, primarily grassland and blue-oak woodland. These two vegetation categories, plus barren land, comprise approximately 86 percent of the project area in this region. This region is sparsely populated, but is part of the Tuttle town and Glory Hole Recreation Areas, owned and operated by the BOR, and described in **Section 3.11**.

MORGAN HILL/SAN LUIS

The project area in the Morgan Hill/San Luis region consists of three substations, and a 50-foot buffer surrounding each. The Coyote Substation lies within a mixed residential/agricultural area of Morgan Hill. The Pacheco and O'Neill Substations lie in a rural area of Merced County and are surrounded by grassland and barren land. The Pacheco Substation is located in Pacheco State Park. The O'Neill Substation is located within the San Luis Reservoir State Recreation Area. Both recreation areas are operated by the California Department of Parks and Recreation.

3.10.1.2 Applicable Plans and Policies

Specific locations of proposed activities conducted under the alternatives have not yet been identified; thus, the applicability of plans and policies cannot be precisely determined. Moreover, current (and applicable) land use plans and policies along the ROWs and access roads could be revised during the course of proposed activities.

FEDERAL

As described above, the Tracy region includes lands owned by the BOR and BLM. Consequently, activities in these areas would analyze the plans and policies of these Federal agencies.

STATE

As described above, the Tracy and Morgan Hill/San Luis regions include lands owned by the CDFG and CDWR. Consequently, activities in these areas would analyze the plans and policies of these state agencies.

LOCAL

The project area encompasses approximately 13 local agency jurisdictions (i.e., cities and counties), presented in **Table 3.10-2**. While Western would attempt to follow these plans and policies to the greatest extent feasible, no local discretionary permits (e.g., conditional use permits) or local plan consistency evaluations are required because Western has preemptive jurisdiction for the O&M of its existing transmission facilities.

3.10.2 Significance Criteria and Approach to Impact Assessment

3.10.2.1 Approach to Impact Assessment

Maintenance activities can be considered incompatible with existing land uses if they create noise, visual impacts, or other environmental impacts that disturb or preclude existing land uses, conflict with existing utility ROWs, conflict with a special-use area, or result in a substantial loss of important farmland. Applicable Federal, state, and local land use plans are intended to, among other things, prevent such incompatibilities. This section evaluates the consistency of the alternatives with applicable land use plans and considers the impact that proposed maintenance activities may have on existing and proposed land uses.

3.10.2.2 Significance Criteria

A significant impact on land use (and agricultural practices) would result if any of the following were to occur:

- Conflict with applicable land use plans, policies, goals, or regulations;
- Conflict with existing utility ROWs;
- Conflict with applicable state or Federal established, designated, or reasonably foreseeable planned special-use areas (e.g., recreation, wildlife management areas, game management areas, waterfowl production areas, scientific and natural areas, wilderness areas, etc.);
- Nuisance impacts attributable to incompatible land uses;
- Substantial loss of prime or unique farmlands.

3.10.3 Environmental Consequences from the Proposed Action

This impact analysis discusses the potential adverse effects of implementing the Proposed Action, and identifies proposed SOPs to avoid significant adverse effects. The analysis also discusses the general types of site-specific impacts that could occur, and identifies SOPs that could be used to reduce or avoid these impacts.

3.10.3.1 Category A – Inspection and Minor Maintenance Activities

Category A activities would be consistent with the applicable land use plans and ordinances of the jurisdictions listed in **Table 3.10-2**. Western has proposed SOPs in this document that would ensure the consistency of the Proposed Action with applicable Federal, state, and local plans and policies (e.g., see LU-SOP-5). Additionally, as described in **Section 2.2.4**, Western would continue to coordinate with resource and land management agencies on specific maintenance activities, particularly regarding which PCMs would be applicable to each activity. With the implementation of the SOPs described in **Section 2.2.4.3**, Category A activities would not conflict with any established, designated, or planned special-use areas.

Some Category A activities, such as the manual removal of danger trees, could conflict with overhead utilities. Utilizing the IVM methods described in **Section 2.2.2** and working in coordination with local land managers, Western would limit the potential for tree removal to conflict with overhead utilities. Consequently, Category A activities would not conflict with any below- or above-ground existing utility ROWs.

No new facilities would be constructed that would have the potential to be incompatible with existing land uses. Activities would be temporary in nature and would be of a short duration. None of the activities associated with Category A activities would result in substantial nuisance impacts that could significantly adversely affect land use. Implementation of LU-SOP-2 would reduce any nuisance impacts associated with maintenance activities that might arise to acceptable levels.

Category A activities could potentially disrupt agricultural uses for a short duration; however, because no new structures or facilities would be constructed, impacts would be temporary. No conversion of farmland (including prime or unique farmland) to non-agricultural use would be anticipated as a result of Category A activities. Implementation of LU-SOP-1 through LU-SOP-3 would reduce any adverse impacts to agricultural lands to acceptable levels.

3.10.3.2 Category B – Routine Maintenance Activities

Due to the limited nature of the maintenance activities proposed under Category B, activities would largely be consistent with the applicable land use plans and ordinances of the jurisdictions listed in **Table 3.10-2**. Where activities would conflict with land use plans and ordinances, Western has proposed SOPs to ensure consistency of the Proposed Action with these plans and policies. With the implementation of the SOPs described in **Section 2.2.4.3** and the implementation of PCMs as needed, Category B activities would not conflict with any established, designated, or planned special-use areas.

Certain activities associated with Category B, such as the maintenance of underground utilities, have the potential to conflict with co-located utilities. Implementation of LU-SOP-4, under which existing utilities potentially affected would be marked and avoided, would reduce the potential of adverse impacts to an acceptable level. Notification of nearby land owners under LU-SOP-2 would also reduce the adverse effects of any utility conflicts.

Category B activities could include the regrading of roads and installation of rip-rap along creek or riverbanks; these modifications would not alter the land use of these areas. Although Category B activities could include the permanent modification of minor areas, these activities would not change any existing land uses and would not include the construction of any new facilities or structures. It is unlikely that any of the Category B activities would have the potential to be substantially incompatible with existing land uses. Implementation of LU-SOP-2 would reduce nuisance impacts associated with maintenance activities to acceptable levels.

Category B activities could potentially disrupt agricultural uses for a short duration, but any permanent modifications would be made to existing facilities or infrastructure and would not result in the conversion of farmland (including prime and unique farmland). Impacts to farmland would be temporary and farmland would be allowed to return to its original use following completion of the activity. Implementation of LU-SOP-1 through LU-SOP-3 would reduce any adverse impacts to agricultural lands to acceptable levels.

3.10.3.3 Category C – New Infrastructure

Category C activities could include the alteration of existing infrastructure, but would not change the use of this infrastructure and so would not be inconsistent with the applicable land use plans and ordinances of the jurisdictions listed in **Table 3.10-2**. The PCMs and SOPs for land use have been designed and proposed to ensure consistency of the Proposed Action's activities with these plans and policies. Additionally, as described in **Section 2.2.4**, Western would continue to coordinate with resource and land management agencies on specific proposed maintenance activities, particularly regarding which PCMs would be applicable to the activities. Consequently, Category C activities would be consistent with applicable plans and policies. With the implementation of the SOPs described in **Section 2.2.4.3**, Category C activities would not conflict with any established, designated, or planned special-use areas.

As described above for Category B, implementation of LU-SOP-4, under which existing utilities potentially affected would be marked and avoided, would reduce the potential of adverse impacts to an acceptable level. Notification of nearby land owners under LU-SOP-2 would also reduce the adverse effects of any utility conflicts.

Permanent modifications made to existing facilities under Category C would include upgrading access roads, installing culverts, clearing of vegetation, and installing rip-rap and recontouring creek or river banks. While these modifications would be more extensive than the modifications made as a part of Category B activities, these activities would not change any existing land uses and would not include the construction of any new facilities or structures. It is unlikely that any of the Category C activities would have the potential to be substantially incompatible with existing land uses. Implementation of LU-SOP-2 would reduce nuisance impacts associated with maintenance activities to acceptable levels.

Similar to Category B activities, Category C activities could potentially disrupt agricultural uses; however, any permanent modifications would be made to existing facilities or infrastructure and would not result in the conversion of any farmland (including prime and unique farmland). Any impacts to farmland would be temporary and farmland would be allowed to return to its original use following completion of the activity. Implementation of LU-SOP-1 through LU-SOP-3 would serve to reduce any adverse effects to agricultural lands associated with Category C activities to acceptable levels.

3.10.4 Environmental Consequences from the No Action Alternative

Under the No Action Alternative, Western would continue to conduct routine maintenance activities along the San Joaquin Valley ROWs, requiring negotiations documented in a categorical exclusion for each particular maintenance task. Consequently, the land use impacts under the No Action Alternative would be largely similar to the impacts described above under the Proposed Action in the jurisdictions listed in **Table 3.10-2**.

Installation of fiber optic cable and cell towers, and tower relocation/realignment would not be conducted under the No Action Alternative. Consequently, any land use–related impacts associated with these activities would not occur.

3.11 Recreation

This section discusses, in general terms, the existing recreation areas and resources within, or in the immediate vicinity of, the project area. This section also examines the potential adverse effects to recreational resources associated with the Proposed Action and the No Action Alternative.

3.11.1 Affected Environment

Several Federal, state, and local designated recreational areas exist within the project area. This section describes those areas and recreational resources available. Other locations within the project area may also serve as recreational locations for hiking, bicycling, fishing, and boating. These areas are not identified below, but potential adverse effects to these recreational resources would be similar to those described in **Section 3.11.3**.

3.11.1.1 Tracy

Within the Tracy region, the project area intersects the western edge of the Bethany Reservoir State Recreation Area, operated by the California Department of Parks and Recreation. This recreation area, located along the Tracy-Livermore transmission line approximately 2.6 miles west southwest of the Tracy Substation, features water-oriented recreation, including fishing and windsurfing. This area also features a bike trail that is part of the California Aqueduct Bikeway (California State Parks 2009a).

The Hurley-Tracy transmission line ROW runs through Faklis Community Park, located at the intersection of Cosumnes Drive and Mokelumne Circle in the northwestern corner of Stockton. This park features an off-leash dog area and open grassy areas suitable for various sports activities.

3.11.1.2 New Melones

Within the New Melones region, the Tuttle town and Gloryhole distribution line ROWs pass through the Tuttle town Recreation Area and Glory Hole Recreation Area, respectively. Both recreation areas are operated by the BOR and lie on New Melones Lake. Facilities at the Tuttle town Recreation Area include a playground, a hiking and

biking trail, campgrounds, day-use areas, a boat launch ramp, and a fish cleaning station. Facilities at the Glory Hole Recreation Area include a full-service marina, an amphitheater, a playground, horseshoe pits, 25 miles of hiking and biking trails, campgrounds, day-use areas, a boat launch ramp, and a fish cleaning station (BOR 2009).

3.11.1.3 Morgan Hill/San Luis

The Pacheco Substation lies within Pacheco State Park in western Merced County. The park features 28 miles of trails for horseback riding, hiking, and mountain biking (California State Parks 2009b). The O'Neill Substation lies near the eastern edge of the O'Neill Forebay within the San Luis Reservoir State Recreation Area. Major activities in this recreational area are boating, sailboarding, camping, fishing, and picnicking (California State Parks 2009c).

3.11.2 Significance Criteria and Approach to Impact Assessment

3.11.2.1 Approach to Impact Assessment

Maintenance activities conducted under the Proposed Action could be considered to adversely affect recreation resources if they create noise, visual impacts, or other environmental impacts that conflict with recreational uses or deteriorate or create a need for new or additional recreation facilities. This section considers the adverse effects the Proposed Action may have on existing recreation resources.

3.11.2.2 Significance Criteria

Adverse effects on recreation resources would result if any of the following were to occur from the Proposed Action:

- Increased demand for recreation activities;
- Conflicts with established recreational areas;
- Substantial loss of recreational uses.

3.11.3 Environmental Consequences from the Proposed Action

3.11.3.1 Category A – Inspection and Minor Maintenance Activities

Category A activities would not result in any increase in the number of people using recreation areas along the ROWs that would cause a need for new recreation areas. In addition, such activities would not result in a substantial loss of recreational uses. Any work done in established recreation areas would be temporary in nature and any disruption to recreational activities, such as restricting access to trails or other facilities, would occur for only a short period. Additionally, Western has proposed SOPs to ensure that the Proposed Action would be consistent with the plans and policies of recreation areas. In places such as the Tuttletown and Glory Hole Recreation Areas, implementation of REC-SOP-1, along with SOPs for aesthetics, air quality, noise, and

public health, would ensure that conflicts with established recreational areas would be minimized to acceptable levels (see **Table 2.4-1**).

3.11.3.2 Category B – Routine Maintenance Activities

Category B activities would not result in any increase in the number of people using recreation areas along the ROWs that would cause a need for new recreation areas. In addition, such activities would not result in a substantial loss of recreational uses. While the proposed maintenance activities associated with Category B could result in permanent changes to existing infrastructure, the work activities would be temporary in nature. Any disruption to recreational activities, such as restricting access to trails or other facilities, would occur for only a short period. Additionally, Western has proposed SOPs to ensure that the Proposed Action would be consistent with the plans and policies of recreation areas. In places such as the Tuttle town and Glory Hole Recreation Areas, implementation of REC-SOP-1, along with SOPs for aesthetics, air quality, noise, and public health, would ensure that conflicts with established recreational areas would be minimized to acceptable levels (see **Table 2.4-1**).

3.11.3.3 Category C – New Infrastructure

Category C activities would not result in any increase in the number of people using recreation areas along the ROWs that would cause a need for new recreation areas. In addition, such activities would not result in a substantial loss of recreational uses.

Category C activities would not substantially alter the existing infrastructure along San Joaquin Valley ROWs. Implementation of the aesthetics SOPs would also ensure that Category C maintenance activities would preserve the natural surrounding and natural landscape.

The proposed maintenance activities could disrupt recreational activities for short periods. These disruptions could degrade the experience of recreation facility users. Implementation of REC-SOP-1, along with SOPs for aesthetics, air quality, noise, and public health, would ensure that conflicts with established recreational areas would be minimized to acceptable levels.

3.11.4 Environmental Consequences from the No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented as described in **Section 2**. In the absence of the Proposed Action, Western would continue to conduct routine maintenance activities along the San Joaquin Valley ROWs, requiring negotiations documented in a categorical exclusion for each particular maintenance task. Consequently, the recreation impacts of the No Action Alternative would be largely similar to the impacts described above under the Proposed Action.

Installation of fiber optic cable and cell towers, and tower relocation/realignment would not be conducted under the No Action Alternative. Consequently, any recreation-related impacts associated with these activities would not occur.

3.12 Aesthetics

Visual quality is a term that expresses the degree of harmony, contrast, and variety within a landscape. Landscapes of high visual quality may contain distinctive landforms, vegetation patterns, and/or water forms. Visual sensitivity is a term that expresses the concern by viewers toward changes to visual quality. Visual sensitivity is generally higher in natural or unmodified landscapes.

This section identifies and describes visual resources, including visual quality and sensitivity that could be affected by the project. The purpose of this analysis is to identify potential obstructions to, or modifications of, present views in the landscape. The visual resources of the project area consist of viewsheds where project activities would be seen from sensitive viewing locations such as travel routes, residences, and recreation areas.

3.12.1 *Affected Environment*

The following sections describe the affected environment with regard to aesthetics for each of the three regions identified in **Figure 1.2-1** and described in **Section 1.4**. Overall, the project area is located in regions with prior modified viewsheds, and includes the existing Western infrastructure.

3.12.1.1 *Tracy*

The northeastern portion of the project area within the Tracy region extends through agricultural landscapes modified by rural residential/agricultural uses. To the northwest, agricultural land transitions to suburban residential use. The overall visual quality within these portions of the project area is moderate due to flat landscapes, common vegetation patterns, historic landscape modifications, and numerous transmission lines.

In the western portion of the Tracy region, the project area extends through grassy hills near the Altamont Pass, stopping just short of residential areas of the Livermore Valley at its westernmost point. This area has some elements of high visual quality due to panoramic views of the Central and Livermore Valleys, and large areas of natural vegetation; however, the viewshed is highly modified due to numerous wind turbines throughout the area. The project area intersects the western edge of the Bethany Reservoir State Recreation Area, as described in **Section 3.11.1.1**.

3.12.1.2 *New Melones*

The viewshed in the majority of the New Melones region of the project area is characterized by pine forest, interspersed grasslands, and New Melones Lake. The project area passes through the Tuttleton Recreation Area and Glory Hole Recreation Area, which have viewsheds modified by boat ramps, a marina, and other recreational amenities, as described in **Section 3.11.1.2**. Overall, the visual quality of the area is moderate.

3.12.1.3 Morgan Hill/San Luis

The Coyote Substation lies within a mixed suburban and agricultural area of Morgan Hill. The viewshed in this area is of low visual quality, heavily modified by development and human activities.

The Pacheco and O'Neill substations are situated in a state park and a state recreational area, respectively, as described in **Section 3.11.1.3**. The viewshed around the Pacheco Substation is dominated by grasslands, rolling hills, and the San Luis Reservoir. Human modifications to the viewshed include wind turbines and State Highway 152. The O'Neill Substation viewshed includes agricultural areas of the San Joaquin Valley as well as Interstate 5. The overall visual quality of these areas is moderate.

3.12.2 Significance Criteria and Approach to Impact Assessment

3.12.2.1 Approach to Impact Assessment

Maintenance activities conducted under the Proposed Action could cause impacts to visual resources if there is: 1) visual interruption that would dominate a rare, unique, scenic, or sensitive viewshed; or 2) conflict with, or violation of, a formal visual resources plan or policy applicable to the project area and approved or adopted by the Federal, state, or local agency having jurisdiction, as applicable. This section evaluates the potential impacts to visual resources resulting from the Proposed Action.

3.12.2.2 Significance Criteria

A significant impact on visual resources would result if any of the following would occur as a result of the Proposed Action:

- Substantial degradation of the foreground character or scenic quality of a visually important landscape;
- Substantial dominant visual changes in the landscape that are seen by highly sensitive viewer locations such as community enhancement areas (community gateways, roadside parks, viewpoints, and historic markers) or locations with special scenic, historic, recreational, cultural, archaeological, and/or natural qualities that have been recognized as such through legislation or some other official declaration;
- Predicted air pollutant emissions causing a significant change in visibility;
- Conflict with visual standards identified by a Federal land management agency (e.g., BOR); or
- Visual interruption that would dominate a unique viewshed or scenic view.

3.12.3 Environmental Consequences from the Proposed Action

The existing transmission lines within the project area have been in place for years and are an existing component of the viewshed. Project activities could potentially affect scenic quality resulting from the visual intrusion of construction vehicles, equipment, small airplanes or helicopters, storage materials, workers, vegetation clearing by mastication, and prescribed burns during proposed activities.

Vantage points are available within one-half mile of the existing transmission lines along most of the project area; these points afford viewing opportunities from the foreground and middle ground. The middle ground is defined as that portion of the landscape from one-half mile to four miles away from the viewer. Some project features would be visible in the background (four miles to horizon), but all background landscapes would also be seen in greater detail from closer distances and from other vantage points. Therefore, this visual analysis is limited to foreground and middle ground viewing distances from travel routes and use areas named above.

3.12.3.1 Category A – Inspection and Minor Maintenance Activities

Proposed Category A activities would have little to no effect on existing vegetation and landscape, and would result in no substantial degradation of aesthetics. There would be no substantial dominant visual change seen by sensitive viewer locations, no substantial change in visibility caused by predicted air pollutant emissions, no conflict with visual standards identified by a Federal land management agency, and no long-term dominant visual interruption of unique viewsheds. In addition, implementation of AES-SOP-1 through AES-SOP-4 would reduce any damage to the visual landscape that might conflict with any special use areas. Therefore, significant impacts to aesthetics would not be anticipated.

3.12.3.2 Category B – Routine Maintenance Activities

Western's transmission lines have been in place for years and are a part of the viewshed. Unless Western would substantially modify the height or location of a transmission line, no long-term impacts would occur to visual resources from implementation of proposed Category B activities. Such modification or re-location is not proposed. Tree clearing could occur in localized areas, but would not significantly alter the visual quality. Installation of non-recontouring rip-rap on creek and river banks could degrade the scenic quality and visually change the landscape of the natural water system in rural, scenic, and recreational areas. Due to the relatively small impacted area of the landscape and the limited visual accessibility, this impact to visual quality would be less than significant. In addition, these same impacts in urban areas would minimally impact the visual quality. Implementation of AES-SOP-1 through AES-SOP-4 would reduce any damage to the visual landscape that might conflict with special use areas.

Proposed Category B activities would not substantially degrade the scenic quality of a visually important landscape or cause substantial dominant visual changes in the landscape seen by highly sensitive viewer locations or cause a visual interruption that

would dominate a unique viewshed or scenic view. Consequently, significant adverse impacts to aesthetics would not be anticipated.

3.12.3.3 Category C – New Infrastructure

Proposed Category C activities could degrade the scenic quality of a visually important landscape if not conducted in a manner sensitive to this resource area. In accordance with AES-SOP-1 through AES-SOP-4, Western would consult with the appropriate land management agency and implement necessary measures to minimize such impacts. The clearing of vegetation and establishment of low-growing plants may highlight the existing transmission lines within the viewshed. However, this area would be relatively small, and would not cause substantial dominant visual changes in the overall landscape as seen by highly sensitive viewer locations or cause a visual interruption that would dominate a unique viewshed or scenic view. Consequently, significant impacts to aesthetics would not be anticipated.

3.12.4 Environmental Consequences from the No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented as described in **Section 2**. In the absence of the Proposed Action, Western would continue to complete routine vegetation maintenance using mechanical and manual methods. Herbicides would be used on a limited basis and low-growing native plants would not be established within the project area ROWs. Viewsheds would remain the same, with maintenance activities primarily occurring near densely populated areas. As such, no significant impacts to aesthetics would be anticipated under the No Action Alternative.

3.13 Water Resources

This section examines existing conditions associated with, and potential impacts to, water resources, including both groundwater and surface water. Potential water resource impacts under both the Proposed Action and the No Action Alternative are analyzed.

3.13.1 Affected Environment

The following sections describe the affected environment with regard to water resources for each of the three regions identified in **Figure 1.2-1** and described in **Section 1.4**.

3.13.1.1 Groundwater

TRACY

The Tracy region of the project area lies within the San Joaquin River and San Francisco Bay hydrologic regions (HRs). Within the San Joaquin River HR, groundwater is a substantial water supply source, contributing 33 percent of water for urban and agricultural uses (DWR 2005). In the San Francisco Bay HR, groundwater accounts for only 5 percent of the total water supply, but is a critically important local supply that helps offset dependence on imported water (DWR 2005).

NEW MELONES

The New Melones portion of the project area lies entirely within the San Joaquin River HR, but is also contained within a subarea designated as the Mountain Counties Area. Within the Mountain Counties Area, groundwater accounts for less than 10 percent of the water supply, and is generally used as a supply for single-family homes via domestic wells. Groundwater availability is often limited to fractured rock and small alluvial deposits immediately adjacent to streams (DWR 2005).

MORGAN HILL/SAN LUIS

The Coyote Substation straddles the boundary between the San Francisco Bay and Central Coast HRs. Within the Central Coast HR, groundwater is the primary water supply source, accounting for roughly 75 percent of the annual supply (DWR 2005). The Pacheco and O'Neill substations lie within the San Joaquin River HR, described above.

3.13.1.2 Surface Water

The project area lies primarily within the San Joaquin River Basin. The San Joaquin River is roughly 300 miles long and has an average unimpaired runoff of about 1.8 million acre-feet per year. The San Joaquin River's eight major tributaries drain about 32,000 square miles of watershed lands. The river runs down the western slope of the Sierra Nevada, and then flows northwest to the Delta where it meets the Sacramento River. The two rivers converge in the 1,153-square-mile Sacramento-San Joaquin Delta—a maze of channels and islands—which also receives freshwater inflow from the Cosumnes, Mokelumne, and Calaveras Rivers, and other smaller streams. Historically, more than 40 percent of the California's annual run-off flowed to the Delta via the Sacramento, San Joaquin and Mokelumne Rivers (DWR 2005).

TRACY

The Tracy region of the project area includes numerous water courses including intermittent creeks, perennial creeks, agricultural drainage ditches, irrigation canals, lakes, ponds, and rivers. Major water courses within the Tracy region are the Mokelumne River, San Joaquin River, Middle River, Old River, and Bethany Reservoir.

NEW MELONES

The New Melones region of the project area does not include any perennial water courses; however, New Melones Lake is a nearby water body.

MORGAN HILL/SAN LUIS

The substations in the Morgan Hill/San Luis region do not include water courses; however, the San Luis Reservoir and O'Neill Forebay are nearby water bodies.

3.13.2 Significance Criteria and Approach to Impact Assessment

3.13.2.1 Approach to Impact Assessment

Potential adverse effects were evaluated by considering the Proposed Action and the resultant likelihood of effects to surface and groundwater resources.

3.13.2.2 Significance Criteria

A significant effect to water resources would occur under any of the following conditions:

- Contamination of a surface water body from erosion or storm water runoff that would result in a violation of applicable Federal, state, and/or local water quality standards or permits;
- Contamination of groundwater resources due to leaching or subsurface migration;
- Depletion of groundwater resources or interference with groundwater recharge; or
- Increased, long-term susceptibility to onsite or offsite flooding, erosion, or siltation due to altered surface hydrology.

3.13.3 Environmental Consequences from the Proposed Action

3.13.3.1 Category A – Inspection and Minor Maintenance Activities

Careless removal of riparian vegetation could result in adverse effects to water resources; these effects could include an increase in stream bank erosion, a reduction of shading and the introduction of plant debris in surface water resources. Any vegetation removal within 100 feet of any surface water resource would only be done by hand. With implementation of the proposed SOPs and PCMs, these nominal adverse effects would be avoided. Water PCM-W001 and PCM-W002 require that all maintenance activities be conducted to minimize disturbance to vegetation and drainage channels, and maintain the natural flow of the drainage. Additionally, PCMs require that trees providing shade to water bodies be trimmed only to the extent necessary and not be removed unless they present a specific safety concern. Trees that must be removed would be felled to avoid damaging riparian habitat. Also, tree removal that could cause stream bank erosion or result in increased water temperatures would not be conducted in or around streams.

Western would obtain any applicable permits required for proposed Category A activities. **Section 5** summarizes the typical permits that may be required.

3.13.3.2 Category B – Routine Maintenance Activities

The proposed application of soil sterilants and herbicides is the Category B activity that, if done improperly, has the greatest potential to produce adverse effects on water resources. Although sterilants and herbicides would be chosen for their lack of persistence in water and their low potential for migration through soil, these chemicals could enter either groundwater or surface water if the application is not done in

accordance with applicable Federal, state and local requirements. Adverse impacts, however, can be avoided by adhering to all application requirements and by implementing the proposed SOPs and PCMs, especially water PCM-W001 and PCM-W002. For further information on the selection and application requirements for proposed herbicide use, see **Appendix G**.

Additional Category B activities that could produce minimal adverse water resources effects include the proposed installation of minor rip-rap on creeks and rivers and the addition of fill material to eroded portions of access roads. Although the purpose of these activities would be to reduce the potential for long-term runoff and erosion, implementation of these measures would include the potential to produce short-term increases in turbidity and/or sedimentation in water bodies within the project area. Also, these activities would have the potential to disturb riparian habitat and fauna. These potential adverse impacts would be avoided through implementation of proposed SOPs and PCMs, especially PCM-W001 and PCM-W002.

Improper culvert maintenance could adversely impact hydrology in the project area, increasing the potential for flooding and overland flow. This potential adverse impact would be avoided through implementation of water PCM-W002, which requires that if culverts need to be modified or installed, all maintenance and operation activities would be conducted in a manner to avoid impacts to water flow.

Western would obtain any applicable permits required for proposed Category B activities. **Section 5** summarizes the typical permits that may be required.

3.13.3.3 Category C – New Infrastructure

Proposed Category C activities have the potential to cause adverse water resources effects. The use of heavy equipment, such as bulldozers, and the disturbance of large areas, such as with the installation of a new access road, have the potential to adversely affect both the hydrology and water quality within the project area. Potential impacts include increased turbidity and/or sedimentation in waters within the project area, increased overland flow and/or flooding, and/or contamination of water bodies through accidental spills and/or leaks of fuel or oil. The potential for such adverse impacts would be minimized through implementation of the proposed SOPs and PCMs, especially PCM-W001 and PCM-W002.

Western would obtain any applicable permits required for proposed Category C activities. **Section 5** summarizes the typical permits that may be required.

3.13.4 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, Western would continue to conduct routine maintenance activities along the San Joaquin Valley ROWs, requiring negotiations documented in a categorical exclusion for each particular maintenance task. The activities conducted under the No Action Alternative would likely be similar to those conducted under the Proposed Action; however, these actions would be undertaken as

necessary to address problems encountered within the ROW, as they occur (i.e., rather than proactively as under the Proposed Action).

Due to the lack of a comprehensive maintenance plan under the No Action Alternative, PCMs would need to be developed and implemented on an action-by-action basis. It is likely that adverse impacts to hydrology and water quality under the No Action Alternative would be similar to impacts under the Proposed Action. Over the long-term, however, impacts from the No Action Alternative could be greater; not having a comprehensive vegetation management program would require more frequent periodic disturbances within the project area, resulting in the potential for greater water resources impacts. Under the Proposed Action, once the vegetation type has been converted within the ROW, the frequency of maintenance activities would likely be reduced.

Under the No Action Alternative, herbicides would be used for vegetative control on a spot-application basis. The Proposed Action would broaden the use of herbicides throughout the ROW. It is possible that the impacts from herbicide use under the No Action Alternative would be less than the impacts from the broader use of herbicides under the Proposed Action; however, with the implementation of proposed SOPs and PCMs associated with the Proposed Action, adverse effects associated with herbicide use would be minimized. The likelihood of accidental herbicide pollution of water bodies would be equal under the No Action Alternative and the Proposed Action.

Installation of fiber optic cable and cell towers and tower relocation/realignment would not be conducted under the No Action Alternative. Consequently, the potential of water quality-related impacts from those activities would be eliminated.

3.14 Geology and Soils

This section examines existing conditions associated with, and potential impacts to, geological and soils resources; an analysis of seismic conditions is also presented. Potential geology and soil impacts under both the Proposed Action and the No Action Alternative are analyzed.

3.14.1 Affected Environment

California is divided into eleven distinct geomorphic provinces. These provinces are defined by natural topographic, geologic, and climatic features. The California Department of Conservation provides information on each of these provinces in its California Geological Survey. In addition to providing information on the relevant geomorphic provinces, this section examines the general soil types found within the project area.

3.14.1.1 Tracy

GEOLOGY

The Tracy region of the project area lies primarily within the Great Valley Geomorphic Province. This province is an alluvial plain approximately 50 miles wide and 400 miles

long that runs north to south within the central portion of California, starting near Redding and ending north of Los Angeles. The northern part is the Sacramento Valley, which is drained by the Sacramento River. The southern part is the San Joaquin Valley, which is drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic period (about 206 to 144 million years ago) (California Geological Survey 2002).

SEISMICITY

Within the project area, the majority of the Tracy region does not contain large, active faults, and would not, for the most part, be significantly affected by ground shaking. The section of the project area that is located nearest to the San Francisco Bay area, however, could be impacted by a large earthquake along any of the several active faults, including the San Andreas, Hayward, and Calaveras fault lines.

SOILS

The soils in the Tracy region are derived primarily from Cenozoic (mostly Quaternary), non-marine (continental) sedimentary and alluvial deposits. The deposits were transported over time from the Sierra Nevada (California Department of Conservation 2003). These deposits can include gravel, sand, silt, and clay, though clay and clay loams are the dominant soil type.

3.14.1.2 New Melones

GEOLOGY

The New Melones region of the project area lies within the Sierra Nevada Geomorphic Province. The Sierra is a tilted fault block nearly 400 miles long. The Sierra east face is a high, rugged multiple scarp, contrasting with the gentle western slope (about 2°) that disappears under sediments of the Great Valley. Deep river canyons are cut into the western slope. The metamorphic bedrock contains gold-bearing veins in the northwest-trending Mother Lode. The northern Sierra boundary is marked where bedrock disappears under the Cenozoic volcanic cover of the Cascade Range (California Geological Survey 2002).

SEISMICITY

Although faults exist within the New Melones region of the project area, the project area lies outside of the zone that has historically experienced major damage from earthquakes. This portion of the project area could experience ground shaking from a large earthquake along one of the major coastal faults, such as the San Andreas, but the severity of that shaking would likely be minor.

SOILS

A literature search did not reveal information on soil types within the New Melones region of the project area. Basement rock in the area, from which the soil is likely derived, is mostly pre-Tertiary metavolcanic and metasedimentary rocks, and serpentinite (Bartow et al. 1981).

3.14.1.3 Morgan Hill/San Luis

GEOLOGY

The Morgan Hill/San Luis region of the project area lies within the Coast Ranges Geomorphic Province. This province is characterized by northwest-trending mountain ranges and valleys. To the east, strata dip beneath alluvium of the Great Valley. To the west, the province is bounded by the Pacific Ocean. The eastern border of this province is characterized by strike-ridges and valleys in Upper Mesozoic strata. In several areas, Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma, and Clear Lake volcanic fields (California Geological Survey 2002).

SEISMICITY

The Coyote Substation lies near the Calaveras Fault (California Geological Survey 1997). The Morgan Hill area experienced an earthquake in April 1984 that caused widespread structural damage (Topozada 1984). Future severe earthquakes in this area are possible.

The Pacheco and O'Neill substations lie within an area less prone to major seismic events. This portion of the project area could experience ground shaking from a large earthquake along one of the major coastal faults, such as the San Andreas, but the severity of that shaking would likely be minor.

SOILS

Soils in the Morgan Hill/San Luis region of the project area are derived from Mesozoic volcanic and sedimentary source rocks. Soils in the area of the Coyote Substation are primarily alluvial deposits consisting of silt and clay. Soils in the areas of the Pacheco and O'Neill substations are primarily poorly drained clayey silts.

3.14.2 Significance Criteria and Approach to Impact Assessment

3.14.2.1 Approach to Impact Assessment

Existing geologic and soil conditions, including potential geologic hazards, were evaluated from review of available published literature such as geologic reports and geologic maps, soil survey data and maps, and review of seismic hazard maps that include the project area.

3.14.2.2 Significance Criteria

A significant impact on geology and soils would occur if any of the following resulted from the Proposed Action:

- Increases in the probability or magnitude of mass geological movement (e.g., slope failures, slumps, and rockfalls);
- Adverse effects to state-identified rock outcroppings of significance;

- Soil loss or accelerated erosion due to disturbance that results in the formation of rills and/or gullies, or that results in sediment deposition in down-gradient lands or water bodies to the extent that existing uses cannot be maintained; or
- Structure failure or creation of hazards to adjacent property due to slope instability, effects of earthquake, or adverse soil conditions (such as compressible, expansive, or corrosive soils).

3.14.3 Environmental Consequences from the Proposed Action

The potential for increased erosion is one of the main concerns of transmission line maintenance. To address these concerns, Western would implement the appropriate geology and soil SOPs (see **Table 2.4-1**) and the appropriate water resource SOPs and PCMs (see **Tables 2.4-2 through 2.4-6**; see also **Section 3.13** concerning potential sedimentation associated with erosion).

Erosion is a natural, ongoing process; however, erosion rates can increase when vegetation is cleared, regardless of the clearing method used. Erosion generally involves the removal of soils, via wind or water, from one area followed by deposition of those materials in another area, and is a normal and inevitable geologic process. Erosion can be concentrated, such as when land surfaces are gullied and stream banks are undercut, or it can be widespread, such as erosion by sheetwash and slope denudation. Excessive erosion will cause sedimentation and can damage or destroy waterways and riparian habitat, and clog drainage structures, lakes, and reservoirs. Human activities, such as grading or excavation, frequently accelerate erosion and sedimentation.

Erosion potential is higher in soils containing parent materials of decomposed granite. Once disturbed, decomposed granite soils are difficult to re-stabilize and re-vegetate, due to low soil nutrients. Special development and erosion-control practices are needed whenever soil-disturbing activities are proposed in such areas.

Erosion potential is generally more severe on steep, sparsely vegetated slopes, fine sandy or silty soils, and in loose sandy soils where strong winds occur. Erosion potential is also elevated in recently burned areas if they remain largely unvegetated, especially in areas with previously existing high erosion potential. Overall, implementation of Western's proposed geology and soils SOPs and the appropriate water PCMs would ensure that soil erosion impacts would be minimal.

Some soils have the potential to swell when they absorb water and shrink when they dry. These expansive soils generally contain clays that expand when moisture is absorbed into the crystal structure. This characteristic, known as shrink-swell potential, is identifiable through standard soil tests. Such soils can impact structure foundations through seasonal movement via expansion and contraction. This impact on structures can be avoided through proper engineering design and standard corrective measures.

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, incorporated into the existing infrastructure, would also address the potential impacts of strong ground shaking. The potential exists for seismic damage to substation equipment, with possible release of oil or other hazardous materials due to such an event; however, substation equipment used by Western is generally designed to withstand major seismic activity without release of hazardous materials or other environmental consequences.

3.14.3.1 Category A – Inspection and Minor Maintenance Activities

Proposed Category A activities would not likely have an adverse impact on geology or soils. Although these activities could cause limited soil compaction at proposed activity locations, they would not occur often enough to cause long-term or significant adverse effects. Implementation of the appropriate geology and soils SOPs and the appropriate water resource PCMs would ensure that both short- and long-term adverse soil and geologic impacts would be avoided.

3.14.3.2 Category B – Routine Maintenance Activities

Proposed Category B activities could cause minimal adverse impacts to soils and geology resources. Adverse effects related to these proposed activities would either be avoided or kept to a minimal level with the implementation of proposed and applicable SOPs designed to minimize resource disturbance. Under these procedures, grading would be minimized to the extent possible. When required, grading would be conducted away from surface waters to reduce the potential for material to enter the water body. In addition, all construction would be conducted in conformance with the IVM Program described in **Section 2**. Western would reseed or plant seedlings on slopes with erosion problems and/or implement other erosion-control measures as necessary. Due to these resource-sensitive measures and practices, significant adverse impacts to soils and geology would be avoided.

3.14.3.3 Category C – New Infrastructure

Proposed Category C activities could cause adverse effects to soils and geology resources if SOPs were not followed. These proposed activities generally would disturb relatively large areas and would utilize heavy equipment. Although these activities have the potential to cause adverse effects on geology and soils, these effects would be avoided or minimized with implementation of proposed SOPs and PCMs described in **Section 2**.

These proposed procedures require that all soil excavated for structure foundations be backfilled and tamped around the foundations, and used to provide positive drainage around the structure foundations. Should Western need to modify or relocate a structure, Western would have a California-registered professional geotechnical engineer evaluate the potential for geotechnical hazards and unstable conditions on slopes with over 15 percent grade. Western would implement the site-specific recommendations developed by the engineer. Additionally, all other appropriate SOPs

would be implemented so that effects to geology and soils would be avoided or minimized for proposed Category C activities.

3.14.4 Environmental Consequences from the No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented as described in **Section 2**. In the absence of the Proposed Action, Western would continue to conduct routine maintenance activities along the San Joaquin Valley ROWs, requiring negotiations documented in a categorical exclusion for each particular maintenance task. Consequently, the impacts to geology and soil resources resulting from the No Action Alternative would be largely similar to the impacts resulting from the Proposed Action described above.

Due to the lack of a comprehensive maintenance plan under the No Action Alternative, PCMs would need to be developed and implemented on an action-by-action basis. Over the long-term, impacts from the No Action Alternative could be greater; not having a comprehensive vegetation management program would require more frequent periodic disturbances within the project area, resulting in the potential for greater erosion impacts. Under the Proposed Action, once the vegetation type has been converted within the ROW, the frequency of maintenance activities would likely be reduced.

Installation of fiber optic cable and cell towers and tower relocation/realignment would not be conducted under the No Action Alternative. Consequently, any geology- and soil-related impacts associated with these activities would be avoided.

3.15 Public Health and Safety

This section examines existing conditions associated with, and potential impacts to, public health and safety. Potential public health and safety impacts under both the Proposed Action and the No Action Alternative are analyzed.

3.15.1 Affected Environment

The general baseline conditions for assessing potential impacts to public health and safety are related to hazardous materials, physical hazards, fire hazards, and electric and magnetic fields (EMF). These are discussed below.

3.15.1.1 Hazardous Materials

Federal and state hazardous materials and waste regulations were written to protect human health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous substances are defined in the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) (U.S.C. 42 §§ 9601, *et seq.*). The California Code of Regulations (CCR) defines hazardous wastes as those that meet the following minimum criteria: (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when it is

improperly treated, stored, transported, disposed of or otherwise managed (CCR Title 22, Division 4.5, Chapter 11, Article 2, Section 66261.10).

For this analysis, soil that is excavated from a site containing either Non-Resource Conservation and Recovery Act (Non-RCRA/California only) or RCRA hazardous materials would be considered to be a hazardous waste if it exceeded specific CCR Title 22 criteria, or if it exceeded criteria defined in CERCLA or other relevant Federal regulations. Remediation (i.e., cleanup and safe removal/disposal to defined regulatory threshold levels) of hazardous wastes found at a site is required if appropriate analytical data show contamination of the soil to be at or above state and/or Federal thresholds; remediation may also be required if certain other activities are proposed. Cleanup requirements are determined on a case-by-case basis by the agency taking lead jurisdiction under applicable regulations. Please refer to **Section 5** for further details on hazardous material and waste requirements.

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary state agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than Federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

Herbicides currently used in the project area could become hazardous wastes if they were improperly prepared, stored, or disposed. An accidental spill of the herbicide could be considered a hazardous waste spill. Specific and detailed information on the risk of herbicide exposure can be found on the EPA's Integrated Risk Information System (IRIS) website. The use of herbicides near water bodies is regulated under both the *Clean Water Act* and the *Safe Drinking Water Act*.

Under current practices in the project area, herbicides are used in limited quantities to spot-treat vegetation that threatens to disrupt transmission lines. The risk of exposure under current conditions is present but minimal. The most likely pathway of exposure under current conditions is improper preparation or handling of the herbicides. Western handles all herbicides in accordance with applicable state and Federal regulations, and uses trained and appropriately licensed herbicide professionals in all applications.

In addition to herbicides, both maintenance workers and the general public could be exposed to other hazardous materials such as engine oil, gasoline, brake and transmission fluid, and chain lubricant. The risk to public health from either routine or accidental exposure to these types of materials is minimal. Standard safety measures eliminate the risk of exposure to these materials for the general public.

3.15.1.2 Physical Hazards

Ongoing maintenance activities present a physical hazard to maintenance workers and, to a much lesser degree, the general public. Potential physical hazards include injury from falling trees, injury from improper use of vegetation clearing tools, construction site

dangers, and electrocution. Unplanned or planned tree falls could injure maintenance workers or the general public through blunt force trauma or flying debris. Tree-falls on steep slopes could cause a person to lose footing and fall. Improper use of tools, such as machetes or chainsaws, could result in physical injury ranging from minor lacerations to loss of limbs and death. Potential for physical injury is low as Western follows standard safety measures during all onsite activities.

3.15.1.3 Fire Hazards

Maintenance workers and the general public could be exposed to risk from fire hazards. A fire could originate from either routine maintenance or the lack of adequate ROW maintenance. Routine maintenance could start a fire by igniting nearby fuel sources, such as dry underbrush. This could be caused by sparks from a maintenance vehicle or tool, or a discarded burning cigarette. The lack of adequate maintenance could lead to a fire if a tree is too close to a transmission line, which causes an arc. A fire could start away from the ROW for various reasons and later move into the ROW, endangering maintenance workers.

3.15.1.4 Electric and Magnetic Fields

There is a great deal of public interest and concern regarding the potential health effects from exposure to EMF from power lines. While there is considerable uncertainty about the health effects of EMF, the following findings have been established from available information and have been used to establish Western's policies associated with its existing transmission infrastructure:

- Any exposure-related health risk to the exposed individual would likely be small;
- The most biologically significant types of risks from exposures have not been established;
- Most health concerns are related to the magnetic field; and
- The measures employed for magnetic field reduction can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

No Federal regulations have established environmental limits on the strengths of fields from power lines.

3.15.2 Significance Criteria and Approach to Impact Assessment

3.15.2.1 Approach to Impact Assessment

Potential impacts to public health and safety were evaluated based on a review of existing regulations, safety standards, Western's SOPs, and available literature. Industry practices are required to be protective of worker and public safety and health. Impacts associated with maintenance activities were assessed by comparing the Proposed Action with baseline conditions and existing safety standards and regulations.

3.15.2.2 Significance Criteria

A significant impact on public health would result if any of the following were to occur:

- Interference with emergency response capabilities or resources;
- Creation of worker health hazards beyond limits set by health and safety regulatory agencies or that endanger human life and/or property;
- Serious injuries to workers, visitors to the area, or area land users;
- Changes in traffic patterns that result in hazardous situations for motorists or pedestrians;
- Spills or releases of hazardous materials, hazardous substances, or petroleum products at or above reportable quantities within the project area that would pose a threat to public health and/or the environment in the project vicinity;
- Impaired implementation of, or physical interference with, an adopted emergency hazardous materials spill response plan or emergency evacuation plan; or
- Creation of EMF near an existing or proposed sensitive land use, such as schools or hospitals, that would pose a plausible risk to human health.

3.15.3 Environmental Consequences from the Proposed Action

3.15.3.1 Category A – Inspection and Minor Maintenance Activities

Category A activities are primarily inspection-type actions, as well as some minor repair activities. These activities would have no significant adverse effects on public health and safety. Some examples of Category A activities with potential public health risks include cleaning or replacement of capacitor banks, remediation of small spills of oil and hazardous materials (i.e., less than 1 gallon), application of soil sterilants and herbicides within the property boundary of fenced substations, climbing inspection and tightening hardware on wood and steel transmission line structures, maintaining insulators and cross arms, and emergency manual removal and/or pruning of danger trees or vegetation. These activities have the potential to expose maintenance workers to the baseline hazards and risks described in **Section 3.15.1**. None of these activities would increase the health or safety risk to either maintenance workers or the general public over current conditions. Any potential for adverse effects would be minimized through the implementation of Western's existing health and safety SOPs.

Through compliance with DOE Orders and Western's manuals and procedures, it is anticipated that there would be no significant adverse health and safety impacts to workers or the general public under the Proposed Action for Category A activities. Please see **Section 5** for details for further information on Orders, manuals, and procedures.

3.15.3.2 Category B – Routine Maintenance Activities

The Proposed Action would involve the wider application of herbicides as compared to current conditions. It is possible that both ROW maintenance workers and the general public could become exposed to herbicides, either during their normal use or during an accidental spill. There are several direct and indirect exposure pathways by which exposure could occur. Humans could come in contact with the herbicide through either touching or consuming plants (such as berries) that had been treated with the herbicide. Animals could consume herbicide-treated plants and those animals could later be consumed by humans. Drinking water (either surface water or ground water) could become contaminated either through misuse or accidental spill of an herbicide. Humans could come in contact with the herbicide through airborne exposure caused by wind-borne drift. Proposed public health SOPs and hydrology and water SOPs and PCMs would minimize or eliminate potential adverse exposure impacts. **Appendix G** summarizes the risks associated with each herbicide proposed for use.

Many of the public health SOPs directly address the use of herbicides. Some examples include: the requirement to use only herbicides that are safe for animals in heavy public-use areas; the requirement to ensure that all herbicide applicators have received training and are licensed in appropriate application categories; compliance with herbicide-free buffer zones; and the requirement to clean-up or remediate any release, threat of release, or discharge of hazardous materials that occurs within the project area in connection with project activities, whether or not those activities are authorized. For further information on herbicide selection and application procedures, please see **Appendix G**.

Through compliance with DOE Orders and Western's manuals and procedures, it is anticipated that there would be no significant adverse health and safety impacts to workers or the general public under the Proposed Action for Category B activities. Please see **Section 5** for details for further information on Orders, manuals, and procedures.

3.15.3.3 Category C – New Infrastructure

Category C activities could produce the physical hazards typically encountered at a construction site, as described above in the baseline conditions. Additionally, more involved maintenance activities throughout the ROW could increase the risk of fire, as described above. Finally, the clean-up of a hazardous material spill of greater than 10 gallons could expose maintenance workers to hazardous materials if they do not implement the appropriate SOPs and PCMs.

Implementation of public health SOPs and PCMs would minimize worker and public health and safety risks associated with Category C activities to less-than-significant levels. Relevant SOPs include the requirements to: 1) equip all construction vehicles operating along the ROW with spark arresters as required; 2) equip all construction vehicles working along the ROW with appropriate fire-fighting equipment; 3) post signs and/or flags in areas of public access to indicate maintenance activities are taking

place; and 4) ensure maintenance workers wear orange vests and hardhats so that they are conspicuous.

Through compliance with Department of Energy Orders and Western's manuals and procedures, it is anticipated that there would be no significant adverse health and safety impacts to workers or the general public under the Proposed Action for Category C activities. Please see **Section 5** for details for further information on Orders, manuals, and procedures.

3.15.4 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented as described in **Section 2**. In the absence of the Proposed Action, Western would continue to conduct routine maintenance activities within the project area as needed, requiring negotiations documented in a Categorical Exclusion for each particular maintenance task. These maintenance activities cause risks to public health and safety, which are described as the baseline conditions above.

The lesser use of herbicides under the No Action Alternative would cause less risk of exposure to hazardous materials than the expanded use of herbicides under the Proposed Action; however, implementation of appropriate SOPs and PCMs for the Proposed Action would either eliminate or minimize any exposure to hazardous materials, including herbicides. Further, the No Action Alternative could result in greater long-term risk to public health and safety because it would require ongoing maintenance activities into the foreseeable future, whereas the Proposed Action would result in a change of vegetation type and would eventually lead to a reduced frequency of maintenance.

Installation of fiber optic cable and cell towers and tower relocation/realignment would not be conducted under the No Action Alternative. Consequently, any public health and safety-related impacts associated with these Category C activities would also be eliminated. However, as described above, such proposed activities would not produce a significant adverse health and safety impact.

3.16 Air Quality

This section examines existing conditions associated with, and potential impacts to, air quality. Potential air quality impacts under both the Proposed Action and the No Action Alternative are analyzed.

3.16.1 Affected Environment

The following sections describe the affected environment with regard to air quality for each of the three regions identified in **Figure 1.2-1** and described in **Section 1.4**.

3.16.1.1 Climate and Meteorology

In general, the project area is dominated by the strength and position of the semi-permanent Pacific High over the eastern Pacific Ocean. In summer, when the high-

pressure cell is strongest and farthest north, temperatures are high and humidity is low, although the occasional incursion of the sea breeze into the Central Valley helps moderate the summer heat. In winter, when the high-pressure cell is weakest and farthest south, conditions are characterized by occasional rainstorms.

TRACY

The Tracy area experiences hot summers, mild winters, infrequent rainfall, moderate breezes, and low humidity. Average monthly high temperatures range from 55.6 degrees in December and January to 92.5 degrees in July. Rainfall, which occurs almost exclusively from October through May, averages 12.5 inches per year.

Winds from March to November typically blow from the west near Tracy. During winter months, winds are more common and are caused by colder air from surrounding mountains flowing down into the valley floor and then westward toward the Sacramento/San Joaquin River Delta (City of Tracy 2006).

NEW MELONES

The climate in the New Melones region is generally characterized by hot, dry summers and cool, moderately wet winters. Within the New Melones region, there are large variations of rainfall and temperature. However, most of the precipitation occurs during the winter with more than half of the average 30.7 inches of annual precipitation falling during the months of December through February. Snowfall is rare. Average monthly high temperatures range from 56.3 degrees in January to 96.6 degrees in July. Daily temperature variation is relatively large.

Prevailing winds in the summer are generally light from the southwest, west, and northwest. Prevailing winter winds are southwesterly. Winds from the north and east occasionally blow over the lower western slopes of the Sierra Nevada. In winter, these winds bring cold, dry weather. In spring and summer, however, these winds are warm and dry.

MORGAN HILL/SAN LUIS

The Morgan Hill/San Luis region experiences hot summers, mild winters, infrequent rainfall, and low humidity. Average monthly high temperatures range from 54.1 degrees in January to 91.2 degrees in July. The climate is relatively dry, with an average annual rainfall of 10.5 inches; more than half of the precipitation falls during the months of January through March.

In general, winds are light, with prevailing summer winds from the north-northwest and winter winds from the southeast.

3.16.1.2 Air Quality Conditions

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 (AAQS), 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 AAQS and region-wide pollution reduction plans. Criteria air pollutants are ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM), and lead. Toxic air contaminants (TACs) 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 ozone formation. Certain ROGs may also qualify as TACs. Two subsets of particulate matter are: inhalable particulate matter less than 10 microns in diameter (PM₁₀) and fine particulate matter less than 2.5 microns in diameter (PM_{2.5}). To determine the air quality of an area (or air basin), the degree of air quality degradation by these pollutants, as measured at air quality monitoring locations, is compared to AAQS, such as the CAAQS and NAAQS. Areas are designated as “attainment”, “non-attainment”, “maintenance”, or “unclassified” with respect to the AAQS. Regions in compliance with the standards are designated as “attainment” areas. In areas where the applicable AAQS are not being met, a “non-attainment” status is designated. Areas that have been classified as “non-attainment” but are now in compliance can be redesignated “maintenance” status if the state completes an air quality planning process for the area. Areas for which no monitoring data are available are designated as “unclassified”, and are by default considered to be in attainment of the AAQS.

The project area traverses three air basins in central California. **Table 3.16-1** lists the location of each air basin in relation to project area counties.

Table 3.16-1. Air Basins and Counties within the Project Area

Air Basin	Counties
Mountain Counties	Calaveras, Tuolumne
San Francisco Bay Area	Alameda, Contra Costa, Santa Clara
San Joaquin Valley	Merced, San Joaquin

Following is a brief examination of the attainment status of each region. Attainment is reported here in terms of the relevant affected air basins. It should be noted that non-attainment days do not add across regions.

TRACY

The Tracy region includes the San Francisco Bay Area and San Joaquin Valley air basins. Within the Tracy region, all counties (Alameda, Contra Costa, and San Joaquin) are currently designated as nonattainment for ozone (1-hour and 8-hour) and PM₁₀. These counties are designated as in attainment or unclassified for CO, NO₂, SO₂, and lead. **Table 3.16-2** provides information on days above, or exceeding, air quality standards for the Tracy region.

NEW MELONES

The New Melones region lies entirely within the Mountain Counties Air Basin. Within the New Melones region, both counties (Calaveras and Tuolumne) are currently designated as nonattainment for ozone (1-hour and 8-hour). Calaveras County is designated as nonattainment for PM₁₀. These counties are designated as attainment or unclassified for CO, NO₂, SO₂, and lead. **Table 3.16-2** provides information on days above air quality standards for the New Melones region.

Table 3.16-2. Number of Days Above Air Quality Standards in 2008

Pollutant Standard	Mountain Counties Air Basin (New Melones Region)	San Francisco Bay Area (Tracy and Morgan Hill/San Luis Region)	San Joaquin Valley (Tracy and Morgan Hill/San Luis Region)
State 1-Hour Ozone	34	9	95
National 1-Hour Ozone	4	2	19
State 8-Hour Ozone	84	20	150
National 8-Hour Ozone	59	12	127
State 24-Hour PM ₁₀	2	3	33
National 24-Hour PM ₁₀	0	0	3
State 8-Hour CO	0 (2007)	0	0
National 8-Hour CO	0 (2007)	0	0

MORGAN HILL/SAN LUIS

The Morgan Hill/San Luis region includes the San Francisco Bay Area and San Joaquin Valley air basins. Within the Morgan Hill/San Luis region, both counties (Santa Clara and Merced) are currently designated as nonattainment for ozone (1-hour and 8-hour) and PM₁₀. These counties are designated as attainment or unclassified for CO, NO₂, SO₂, and lead. **Table 3.16-2** provides information on days above air quality standards for the Morgan Hill/San Luis region.

3.16.2 Significance Criteria and Approach to Impact Assessment**3.16.2.1 Approach to Impact Assessment**

Based on the existing air quality environment as described above, this analysis examines the potential for adverse air quality impacts associated with the Proposed Action and the No Action Alternative. As described above, most counties included in the project area are in non-attainment for ozone and PM₁₀. As related to the Proposed Action's potential air quality emissions, ozone results from vehicle exhaust emissions and PM₁₀ is largely produced from activities that generate fugitive dust, such as construction activities. The No Action Alternative (i.e., continuation of existing maintenance practices) is used to establish the baseline activities (and their associated air quality impacts) from which the Proposed Action would deviate.

3.16.2.2 Significance Criteria

A significant impact on air quality would result if any of the following were to occur:

- Predicted concentrations of criteria air pollutants exceed Federal and/or state AAQS;
- Predicted concentrations exceed the maximum allowable Prevention of Significant Deterioration (PSD) increments for PM₁₀, NO₂, or SO₂;
- Project emissions result in a declaration of nonattainment in a specific area for one or more criteria pollutants, or cumulatively contribute to a net increase in any criteria pollution that would result in non-attainment of the area;
- Project emissions result in a significant increase (as defined in 40 CFR Part 51.165) of any criteria pollutant for which the project region is in non-attainment under an applicable Federal, state, or local AAQS;
- Predicted air pollutant emissions result in a change in visibility that would exceed Class I standards;
- Project emissions exceed Class I or Class II increment values established by the PSD regulations;
- Air emissions cause sensitive receptors to be exposed to pollution concentrations that exceed applicable state and Federal standards;
- Predicted emissions conflict with or obstruct implementation of an applicable air quality plan (general conformity);
- Predicted mercury emissions result in a violation of the Clean Air Mercury Rule;
- Air contaminants exceed the level of significant cancer risk, if any;
- Cumulative air quality effects lead to violation of air quality standards, even if the individual effect of the project/activity is relatively minor compared with other sources;
- Predicted ambient air concentrations create damage to existing crops or vegetation;
or
- Predicted deposition of sulfates and nitrates exceed depositional guidelines established by the National Park Service in areas deemed sensitive to acidification.

3.16.3 Environmental Consequences from the Proposed Action

Under the Proposed Action, Western would 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. In general, air quality impacts from the Proposed Action would be minimal. Project activities would be temporary, intermittent,

of short duration, and generally widely dispersed along a narrow, long strip of land. The Proposed Action would not involve the installation of any significant stationary source of air pollution. Any air quality impacts that would be caused by mobile sources of emissions, such as construction vehicles, used to conduct project activities would be minimal and local, and would not cause basin-wide changes to air quality. Vehicles used to conduct project activities would be substantially similar to those used under the No Action Alternative.

Assembly Bill 32 (AB 32) requires that California's greenhouse gas (GHG) emissions be reduced to 1990 levels by 2020. GHG is defined as any gas that absorbs infrared radiation in the atmosphere. GHGs include water vapor, carbon dioxide, methane, and nitrous oxide. While Western is not subject to AB32, GHG emissions from the project would be very minor during operations, consisting 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. Emissions would be mainly from equipment used for maintenance, as well as workers' vehicles and trucks transporting equipment, parts, and materials. The project would not generate quantities of GHG to cause a substantial impact related to global climate change or disrupt the California Air Resources Board progress on achieving the goals of the California Global Warming Solutions Act of 2006 (AB 32). Further, the Proposed Action is consistent with the California Air Resources Board Climate Change Scoping Plan (California Air Resources Board 2008), which is based on continuing the reliable delivery of electricity to customers in California.

3.16.3.1 Category A – Inspection and Minor Maintenance Activities

Some examples of Category A activities that could affect air quality include: ground and aerial patrols; emergency manual removal and/or pruning of danger trees or vegetation; and maintenance and inspection of towers, conductors, and insulators. The primary cause of air quality impacts associated with these activities would be the exhaust from vehicles. The emergency manual removal of vegetation could also lead to the emission of fugitive dust particles through the exposure of bare ground. These potential impacts would be avoided or minimized to less-than-significant levels through implementation of the appropriate air quality SOPs (see **Table 2.4-1**).

SOP recommended measures include: 1) the requirement that all equipment be kept in good operating condition to reduce exhaust emissions from all machinery and vehicles (such as chainsaws, trucks, and graders); 2) the prohibition against idling equipment that is not in active use; and 3) the requirement that vehicles and equipment maintain appropriate emissions-control equipment and be appropriately permitted. Implementation of these SOPs would ensure that Category A air quality impacts are maintained at less-than-significant levels.

3.16.3.2 Category B – Routine Maintenance Activities

The Category B activity that would be most likely to cause adverse air quality effects is the proposed grading of existing access roads. Without implementation of appropriate SOPs, such activity could lead to fugitive dust emissions. Similarly, repairing eroded

portions of access roads, removing soil around tower legs, and mechanical vegetation management by means of bulldozers, masticators, or other equipment could also cause fugitive dust.

Potential fugitive dust (i.e., PM₁₀ and PM_{2.5}) emissions by the above activities would be avoided or minimized to less-than-significant levels through implementation of the following SOPs: 1) the requirement for road construction to include dust-control measures such as water or chemical suppressants; 2) the re-seeding of ground surfaces that have been significantly disturbed to prevent wind dispersion of soil; 3) the regular watering of exposed soils and unpaved access roads during maintenance activities; and 4) the requirement that grading activities cease during periods of high wind. Implementation of these SOPs would ensure that Category B air quality impacts are maintained at less-than-significant levels.

3.16.3.3 Category C – New Infrastructure

The Category C activity that would have the largest potential to cause adverse effects to air quality is the addition of new access roads. Similar to grading an existing access road, new road construction could cause fugitive dust emissions (possibly of an even greater magnitude than simple grading) if proper SOPs are not implemented. In addition, the installation of a new access road would require the use of heavy machinery. This machinery would produce exhaust emissions that could adversely affect air quality. The relocation/realignment of towers or poles under Category C could also produce similar air quality impacts, both through fugitive dust emissions and vehicle exhaust emissions.

To avoid or minimize the potential adverse effects of the activities under Category C, all applicable air quality SOPs would be implemented. Western would use reasonably practicable methods and devices to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants. To further reduce local impacts of project activities, Western would avoid major operations on days when the local air quality index would be expected to exceed 150 (the air quality index indicates how clean or unhealthy the air is, with values above 150 corresponding to a level of health concern on “unhealthy”).

3.16.4 Environmental Consequences from No Action Alternative

Under the No Action Alternative, Western would continue to conduct routine maintenance activities within the project area, requiring negotiations documented in a categorical exclusion for each particular maintenance task. The activities conducted under the No Action Alternative would likely be similar to those conducted under the Proposed Action; however, these actions would be undertaken as necessary to address problems encountered within the ROW. It is likely that adverse impacts to air quality under the No Action Alternative would be similar to impacts under the Proposed Action.

Over the long term, adverse air quality impacts from the No Action Alternative could be greater than under the Proposed Action; not having a comprehensive vegetation management program would require more frequent periodic disturbances. Under the

Proposed Action, once the vegetation type had been converted within the ROW, the frequency of maintenance activities would likely be reduced. However, under the No Action Alternative, these long-term adverse air quality impacts are not expected to be significant.

3.17 Noise

This section examines existing conditions associated with, and potential impacts to, the local noise environment. Potential noise impacts under both the Proposed Action and the No Action Alternative are analyzed. **Section 3.17.1** provides a description of the environmental setting, and applicable noise ordinances and limitations. An analysis of the noise effects associated with O&M activities in each portion of the project area is provided thereafter.

To describe environmental noise and to assess project impacts on areas that are sensitive to noise, a measurement scale that simulates human perception is customarily used. The A-weighted scale of frequency sensitivity accounts for the sensitivity of the human ear, which is less sensitive to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Noise is measured in decibels, which are logarithmic units that conveniently compare wide ranges of sound intensities. **Table 3.16-1** illustrates ranges of noise levels generated by Western's typical construction equipment.

**Table 3.17-1.
Noise Emission Characteristics
of Construction Equipment**

Type of Equipment	Typical Noise Level, dBA at 50 feet
Backhoe	80
Compactor	82
Crane, Mobile	83
Excavator/Shovel	82
Loader	85
Paver	89
Truck	88

Source: Federal Transit Administration 2006

Community noise levels are usually closely related to the intensity of nearby human activity. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the L_{dn} noise levels (i.e., an average level occurring over a 24-hour day/night period) can be below 35 dBA. In small towns or wooded and lightly used residential areas, the L_{dn} is more likely to be around the 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports. Although people often accept higher levels associated with very noisy urban residential and residential-commercial zones, high noise levels are nevertheless considered to be adverse to public health.

Surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation and residency are often considered incompatible with substantial nighttime noise because of the likelihood of

disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference (EPA 1974).

3.17.1 Affected Environment

Noise levels in the project area are highest near major transportation facilities, especially highway and freeway crossings, and near other localized noise sources such as airports.

Another noise source along existing ROWs is audible transmission-line noise generated from “corona discharge”, which is usually experienced as a random crackling or hissing sound. Corona noise is primarily audible during wet weather such as fog and rain. The corona noise for a 230 kV transmission line is less than 40 dBA (San Diego Gas and Electric 2008).

The following sections describe the affected noise environment for each of the three regions identified in **Figure 1.2-1** and described in **Section 1.4**.

3.17.1.1 Tracy

The major noise sources in the Tracy region are transportation routes, agricultural operations, and the Byron Airport in southeast Contra Costa County. Major highways in this portion of the project area are Interstates 5 and 580, as well as state highways and county roads. In addition, Union Pacific Railroad has several ROWs that cross the San Joaquin Valley ROWs in the Tracy region. Railroad ROWs produce intermittent high noise from trains and warning whistles.

As described in **Section 3.10**, this portion of the project area has a range of land uses, ranging from open space and agricultural to industrial uses.

The major sensitive noise receptors within this region are residential communities in Stockton, Tracy, Discovery Bay, Knightsen, Oakley, Antioch, and Livermore. Transient recreational populations may exist at the Bethany Reservoir State Recreation Area. Schools also exist in the vicinity of the project area, especially in the Stockton, Discovery Bay, and Oakley areas. Potentially sensitive wildlife habitats (e.g., suitable nesting areas) have also been identified in the Tracy region.

3.17.1.2 New Melones

The New Melones region is composed of rural and relatively quiet open space. The primary noise sources in the New Melones region are relatively light traffic on State Highway 49 and motorized boats on the New Melones Reservoir. There are no railroad ROWs in the project area and no substantial industrial development.

Few sensitive human noise receptors exist in the area. The most significant of these are transient recreational populations using facilities at the Tuttle town and Glory Hole Recreation Areas. Potentially sensitive wildlife habitats (e.g., suitable nesting areas) have been identified in the New Melones region.

3.17.1.3 Morgan Hill/San Luis

The major noise sources in the Morgan Hill/San Luis region are transportation routes and agricultural operations. Major highways in this portion of the project area are U.S. 101 and state highways.

The major sensitive noise receptors within this region are residential communities in Morgan Hill. In addition, St. Louise Hospital, Live Oak High School, and Windemere Academy are all located approximately 0.5 mile from the Coyote Substation in Morgan Hill. Potentially sensitive wildlife habitats (e.g., suitable nesting areas) have also been identified in the Morgan Hill/San Luis region.

3.17.2 Significance Criteria and Approach to Impact Analysis

3.17.2.1 Approach to Impact Assessment

There are two basic considerations for evaluating noise impacts from the Proposed Action. First, noise levels projected for the proposed O&M activity must comply with the applicable Federal, state, or local standards or regulations. Noise impacts on the surrounding community are enforced through local ordinance, supported by nuisance complaints and subsequent investigation. The second measure of impact is the increase in noise levels above the existing ambient level as a result of the introduction of a new source of noise. A change in noise level due to a new noise source can create an impact on people or biological resources.

3.17.2.2 Significance Criteria

A significant noise impact would result if any of the following were to occur:

- Exceedance of applicable local, state, or Federal noise regulations or guidelines in the vicinity of sensitive receptors such as residences, hospitals, or schools;
- Permanent increase of at least 10 decibels in ambient noise levels at the nearest sensitive receptors within the project vicinity;
- Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels where people live, work, or recreate.

3.17.3 Environmental Consequences from the Proposed Action

3.17.3.1 Category A – Inspection and Minor Maintenance Activities

There are many schools, a hospital, recreation areas, and sensitive habitats within the vicinity of the project area that may be disturbed during an aerial inspection by a helicopter. This is especially true in the case of Tuttletown and Glory Hole Recreation Areas. However, aerial inspections occur only four times a year and would disturb an area along the ROW for less than two minutes. This would result in a less-than-significant, short-term impact as defined by the significance criteria listed above.

3.17.3.2 Category B – Routine Maintenance Activity

Construction noise resulting from Category B activities, typically ranging from 70 to 85 dBA at a distance of 50 feet, would be temporary and short term, although, due to the nature of Category B activities, they would generally be of a longer duration than activities described for Category A. Sensitive noise receptors such as residences, hospitals, recreational facilities, and wildlife habitat could potentially be disturbed by noise generated from these activities. Implementation of NOISE-SOP-1, combined with the relatively short duration of Category B activities, would ensure that any noise or vibration generated by maintenance activities would not significantly adversely affect sensitive receptors or conflict with applicable Federal, state, or local noise guidelines. As such, a less-than-significant, short-term noise impact would be expected.

3.17.3.3 Category C – New Infrastructure

Noise impacts associated with Category C activities would also be similar to those described for Category B activities, but would be of a longer duration. Construction noise would range from 70 to 85 dBA at a distance of 50 feet from the worksite, but would occur for longer durations. Sensitive noise receptors would be potentially affected for longer periods; however, implementation of NOISE-SOP-1 would reduce the noise generated by construction equipment and would ensure compliance with applicable noise Federal, state, and local noise guidelines. As such, a less-than-significant, short-term noise impact would be expected.

3.17.4 Environmental Consequences from No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented as described in **Section 2**. In the absence of the Proposed Action, Western would continue to conduct routine maintenance activities along the San Joaquin Valley ROWs, requiring negotiations documented in a categorical exclusion for each particular maintenance task. Consequently, noise impacts resulting from the No Action Alternative would be generally similar to the impacts resulting from the Proposed Action described above.

Installation of fiber optic cable and cell towers and tower relocation/realignment would not be conducted under the No Action Alternative. Consequently, any less-than-significant, short-term noise impacts associated with these activities would be avoided.

3.18 Transportation

This section examines existing conditions associated with, and potential impacts to, the local transportation environment. Potential transportation impacts under both the Proposed Action and the No Action Alternative are analyzed.

3.18.1 Affected Environment

The roadway network that could be affected by Project activities includes the streets and highways that would be crossed by, or that run parallel to, transmission line ROWs, communication facilities, and access roads.

The following sections describe the affected environment with regard to the transportation network for each of the three regions identified in **Figure 1.2-1** and described in **Section 1.4**. Major roadways in the project area are listed in **Table 3.18-1**.

Table 3.18-1. Major Roadways in the Project Area

County Roadways	State Highways	Federal Highways
Tracy		
County Road J4 County Road J12	State Highway 4 State Highway 12	Interstate 5 Interstate 580
New Melones		
None	State Highway 49	None
Morgan Hill/San Luis		
None	State Highway 33 State Highway 152	U.S. 101 Interstate 5

3.18.1.1 Tracy

The existing Tracy-region transmission line ROWs, substations, and maintenance yard are located in the western portion of the San Joaquin Valley, and extend into the eastern edge of the Livermore Valley. The Hurley-Tracy transmission line ROW parallels Interstate 5 along a 7-mile stretch trending north-northwest and south-southeast, approximately 6 miles west of Lodi. The transmission line ROW crosses both Interstate 5 and State Highway 12 along this stretch. State Highway 4 is crossed by Tracy-region transmission line ROWs in three places: by the Hurley-Tracy transmission line ROW approximately 7 miles west of Stockton, by the Tracy-Contra Costa transmission line ROW near Discovery Bay, and by this ROW near the western terminus of the transmission line ROW in Oakley. The Hurley-Tracy transmission line ROW crosses County Road J12 in the northern part of the project area, approximately 3 miles south of the San Joaquin County–Sacramento County line. The Hurley-Tracy and Tracy-Contra Costa transmission line ROWs cross County Road J4 in the area immediately north of the Tracy Substation. The Tracy-Livermore transmission line ROW crosses Interstate 580 approximately 1.3 miles west of the North Greenville/Laughlin Road exit in Livermore (**Figure 3.18-1**).

No major airports or air fields are within the project area within the Tracy region. Byron Airport, owned by Contra Costa County, is the only airport within 5 miles of the project area, located approximately 1.3 miles from the Tracy-Contra Costa transmission line ROW, 3 miles northwest of the Tracy Substation.

The project area also crosses several railroad ROWs that are all owned by Union Pacific Railroad.

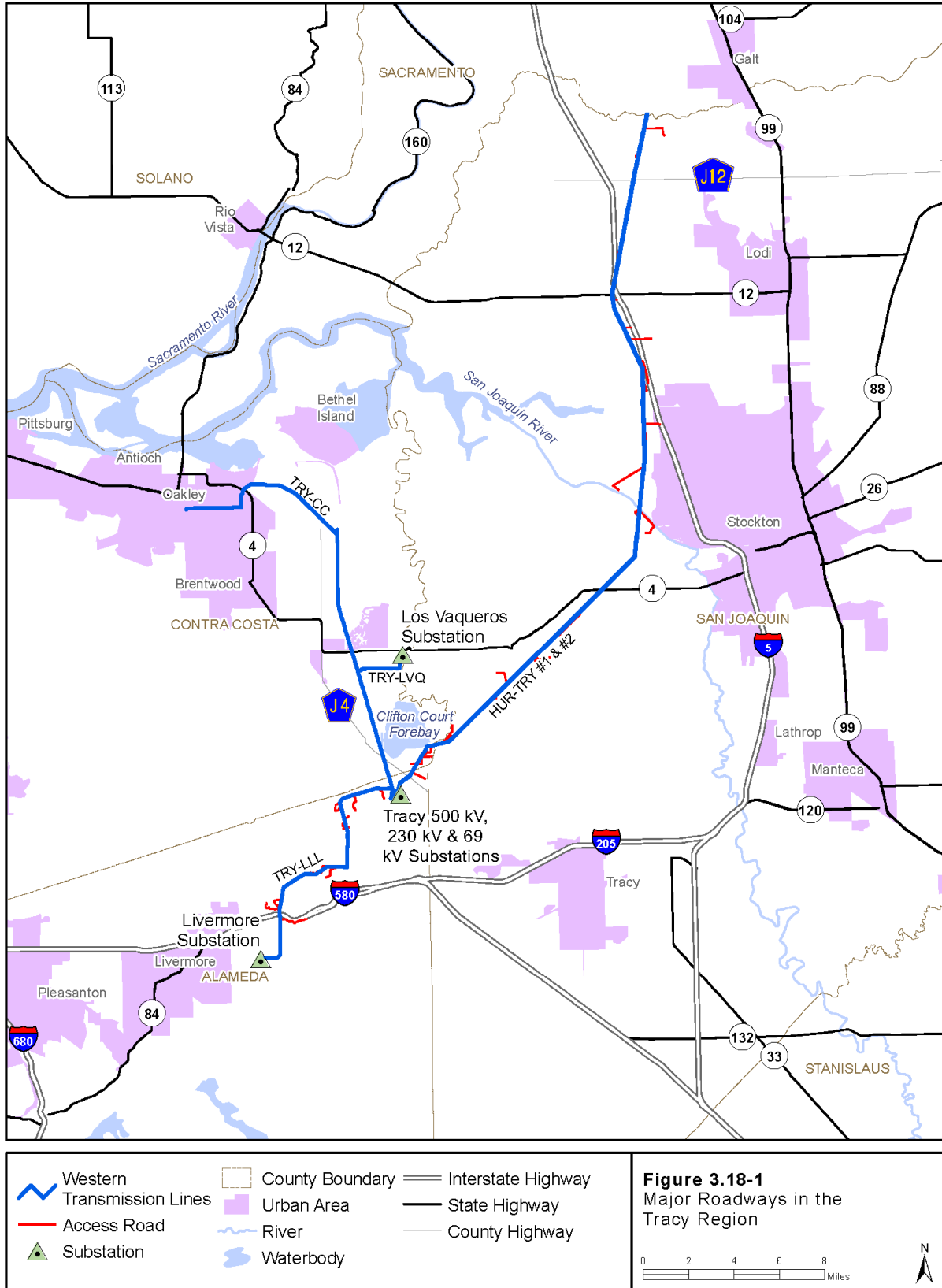


Figure 3.18-1. Major Transportation Routes in the Tracy Region of the Project Area

3.18.1.2 New Melones

State Highway 49 is the only major roadway in the New Melones region that is adjacent to the project area. This highway is intersected at the termini of the Tuttletown and Gloryhole transmission line ROWs between Angels City and Sonora. No airports are located within 5 miles of the project area. The transmission line ROWs do not cross any railroad ROWs.

3.18.1.3 Morgan Hill/San Luis

Although several major roadways, as well as railroad ROWs, exist near the Morgan Hill/San Luis region substations, none is intersected by the project area. No airports are located within 5 miles of the project area.

3.18.2 Significance Criteria and Approach to Impact Assessment

3.18.2.1 Approach to Impact Assessment

This section examines the potential project-related transportation network (i.e., traffic) disruptions or impacts on major roadways, interstate highways, and railways, due to closures associated with proposed project activities. Potential aviation impacts are also examined.

3.18.2.2 Significance Criteria

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

- Increases in traffic that exceed a level of service established by the local or state transportation agency, as applicable;
- Creation of road dust and/or severe road damage at levels that create hazardous situations for motorists and pedestrians;
- Major traffic delays for a substantial number of motorists;
- Major roadway closures to through-traffic with no suitable detour; or
- Changes in air-traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks.

3.18.3 Environmental Consequences from the Proposed Action

3.18.3.1 Category A – Inspection and Minor Maintenance Activities

Under Category A activities, Western would inspect transmission system facilities by helicopter, small plane, or pickup truck within the project area. As described in **Section 2.2.5.1**, maintenance under this category would require access to the project area by limited construction and repair equipment. Maintenance and repair sites would be accessed by rubber-tire vehicles. Because there would be no major construction

activities that would affect roadway or railway traffic, there would be no transportation impacts associated with this category.

As the project area transmission line ROWs have already been identified in Federal Aviation Administration aeronautical charts and guidelines, and no substantial modifications to the height or location of the existing towers would occur, no significant adverse impacts to general or commercial aviation would be expected.

3.18.3.2 Category B – Routine Maintenance Activities

Category B activities could include installation of fiber optic cables on existing transmission towers, replacement of culverts, cutting and dropping of hazardous trees, installation of rip-rap on creek or river banks, and grading and outsloping of access roads. These maintenance activities could affect traffic flow on roadways that run perpendicular to the ROW, especially during installation of fiber optic cables and replacement of existing culverts adjacent to local roadways. As described under TRANS-SOP-1, Western has committed to restrict lane closures on major roadways associated with proposed Category B construction activities to off-peak periods to mitigate traffic congestion and delays. This proactive transportation commitment would eliminate potential traffic-related effects associated with Category B activities.

No modifications to the height or location of the existing towers would occur, so no significant adverse impacts to general or commercial aviation would be likely to occur.

3.18.3.3 Category C – New Infrastructure

Category C activities would be similar to the activities described for Category B; the only difference would be the extent and duration of the disturbance activity. Category C activities could include reconductoring, installation of new culverts in local roadways, upgrading and outsloping of access roads, and installation and repair of communication facilities and microwave towers. Reconductoring existing lines across or adjacent to major roadways could affect traffic flow. TRANS-SOP-1, which would require Western to limit any necessary lane closures on major roadways to off-peak periods, would mitigate traffic congestion and delays.

As described for Categories A and B, no modifications to the height or location of existing towers would occur, so no significant adverse impacts to general or commercial aviation would be expected.

3.18.4 Environmental Consequences from No Action Alternative

Under the No Action Alternative, Western would continue to inspect and identify areas that need to be repaired or upgraded, as described under Category A activities. These regular aerial and ground patrols would not cause any traffic-related impacts.

Under the No Action Alternative, Western would not be able to conduct several identified disturbance activities, such as installation of fiber optic cable, relocation/realignment of existing towers, and installation of new cell towers. These

activities would need to go through separate regulatory compliance processes for each identified task or project.

3.19 Environmental Justice

This section examines existing conditions associated with, and potential impacts to, low-income and minority populations within or near the project area. Potential impacts to such populations, referred to as “Environmental Justice”, are analyzed under both the Proposed Action and the No Action Alternative.

3.19.1 Affected Environment

In 1994, Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was signed by President Clinton to focus attention of Federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately high and adverse human health or environmental effects on these communities (i.e., as compared to other, non-disadvantaged and non-minority communities) are identified and addressed. In order to provide a thorough environmental justice evaluation, this section gives particular attention to the distribution of race and poverty status in areas proximate to the project area.

Estimates of the 2005-2007 population within the counties in the project area showed a majority (58.0 percent) were non-white and/or Hispanic (**Table 3.19-1**). Populations of Hispanic origin (25.7 percent) and Asian origin (21.4 percent) were the largest minorities. The population has increased in all of the counties from 2000 to 2005-2007.

In the 2005-2007 estimate, Merced County had the largest percentage of racial and ethnic minority population. In Merced County, 51.7 percent of the population was Hispanic, and 64.5 percent were either Hispanic or non-white. The percentage of the population considered Black was highest in Alameda County (13.2 percent). The percentage of the population considered Asian was highest in Santa Clara County (29.8 percent). The percentage of the population considered Hispanic was highest in Merced County (51.7 percent). The Native American/Native Alaskan (less than 3 percent in any county) and Hawaiian/Pacific Islander (less than 1 percent in any county) population formed a small percentage of the total populations in all counties. Calaveras County had the lowest minority population at 15.7 percent.

Table 3.19-1. Population by Race/Ethnicity

Population			Race/Ethnicity (percent)									
County	2000	2005-2007 Estimate	% Change	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some other race alone	Two or more races	Hispanic (any race)	Combined Non-White and Hispanic (any race)
Alameda	1,443,741	1,454,159	0.7	46.6	13.2	0.5	24.4	0.7	10.6	3.9	21.1	62.6
Calaveras	40,554	46,389	14.4	91.3	0.4	2.8	0.8	0.5	1.4	2.8	9.5	15.7
Contra Costa	948,816	1,011,372	6.6	60.3	9.3	0.4	13.3	0.4	12.3	4.0	21.8	48.1
Merced	210,554	242,173	15.0	63.3	3.6	0.9	6.9	0.3	22.1	2.9	51.7	64.5
San Joaquin	563,598	664,423	17.9	60.9	7.2	0.8	13.7	0.5	12.4	4.4	35.7	59.8
Santa Clara	1,682,585	1,722,819	2.4	52.5	2.6	0.5	29.8	0.4	11.0	3.2	25.4	60.9
Tuolumne	54,501	56,083	2.9	88.2	2.7	1.4	1.3	0.2	3.7	2.5	9.5	16.9
Total	4,944,349	5,197,418	5.1	54.7	7.5	0.6	21.4	0.5	11.7	3.7	25.7	58.0

Sources: U.S. Census Bureau 2000, 2005-2007 American Community Survey

The U.S. Census Bureau uses income thresholds that vary by family size and composition to determine which families are considered to be below the poverty line. If a family's income is less than the threshold for its size, then that family, and every individual in it, is considered to be below the poverty line. The poverty thresholds do not vary geographically, but they are updated annually for inflation using the Consumer Price Index. For example, in 2007 the average estimated poverty threshold for an individual was an annual income of \$10,590 or less, and for a four-person household, it was \$21,203 or less. The most recent data available for the counties in the project area were developed for 2005 through 2007 and are presented in **Table 3.19-2**. During this period, the average percentage of the population in project area counties below the poverty line was 9.6 and the median household income was \$70,805. Merced County had the highest percentage of households below the poverty line (16.8 percent) and Tuolumne County had the lowest median income (\$43,661). Note that economic events of 2008 and 2009 are not included in these statistics; poverty and income may have changed substantially in some areas during this period due to the nationwide economic crisis and its effect in the San Joaquin Valley area.

Table 3.19-2. Median Household Income and Poverty

County	Number of Households	Median Household Income	Number of Households Below Poverty Level (previous 12 months)	% of Households Below Poverty Level
Alameda	519,056	\$66,430	55,393	10.7
Calaveras	18,393	\$54,356	1,977	10.7
Contra Costa	362,362	\$75,483	27,238	7.5
Merced	72,599	\$44,141	12,214	16.8
San Joaquin	207,792	\$52,872	26,535	12.8
Santa Clara	582,108	\$83,074	44,453	7.6
Tuolumne	22,161	\$43,661	2,647	11.9
Total	1,784,471	\$70,805	170,457	9.6

Sources: U.S. Census Bureau 2000, 2005-2007 American Community Survey

3.19.2 Significance Criteria and Approach to Impact Assessment

As described above, EO 12898 requires "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 EO 12898. Federal agencies received a framework for the assessment of environmental justice in the EPA's *Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis* in 1998. This approach emphasizes the importance of selecting an analytical process appropriate to the unique circumstances of the

potentially affected community. Minority populations, as defined by this guidance document, are identified where either:

- The minority population of the affected area is more than 50 percent of the affected area's general population; or
- The minority population percentage of the area is meaningfully more than the minority population percentage in the general population or other appropriate unit of geographic analysis.

Consistent with the definition of minority populations, many environmental justice analyses in environmental review documents apply the 50 percent threshold to the identification of low-income populations as well. Specifically, low-income populations are identified where either:

- The low-income population of the affected area is more than 50 percent of the affected area's general population; or
- The low-income population percentage of the area is meaningfully more than the low-income population percentage in the general population or other appropriate unit of geographic analysis.

The following study has been conducted to comply with EO 12898:

- Economic, racial, and demographic information has been gathered to identify areas of low income and high minority populations in the counties in which the project area is located (Alameda, Calaveras, Contra Costa, Merced, San Joaquin, Santa Clara, Tuolumne).
- The Proposed Action and the No Action Alternative have been assessed for disproportionate impacts resulting from activities associated with each.

3.19.3 Environmental Consequences from the Proposed Action

ROW maintenance activities analyzed in this EA would not involve establishing new ROWs or constructing new transmission lines or tower alignments. The necessity of ROW maintenance activities is dictated by conditions at a particular point along the ROW. Analyses have shown that effects of these ROW maintenance activities to the public would not be significant (e.g., in terms of air quality, public health and safety, etc.); therefore, no environmental justice-related project effects are anticipated.

3.19.4 Environmental Consequences from No Action Alternative

As with the Proposed Action, ROW maintenance activities analyzed in this EA would not involve establishing new ROWs or constructing new transmission lines or tower alignments. The necessity of ROW maintenance activities is dictated by conditions at a particular point along the ROW. Analyses have shown that effects of these ROW maintenance activities to the public would not be significant; therefore, no environmental justice-related project effects are anticipated.

3.20 Intentional Destructive Acts

Similar to any other overhead electrical transmission and substation infrastructure, intentional destructive acts may be directed at Western's transmissions system and facilities within the San Joaquin Valley project area. Destroying a tower or equipment could disrupt the supply of electricity, in turn affecting utility customers and end users. The extent and duration of this impact would depend upon the specific role and relationship of damaged or destroyed equipment to and within the overall infrastructure network (i.e., the potential for cascading effects), as well as upon the degree of damage. Air quality could temporarily decrease if those affected customers have to rely on backup generators for power while the system is repaired. However, as opposed to acts of terrorism, more routine vandalism and theft are more likely forms of destruction. Although potentially costly, such acts do not usually disrupt the provision of electricity or have significant environmental effects.

It is not possible to predict whether or not an intentional destructive act would occur within the project area, where it would occur, or what the magnitude would be. Securing the entire corridor and related facilities to protect against such acts would be prohibitively expensive. Based on past experience, such acts are rare, limited in extent, and benign in overall impact. Western also takes reasonable and prudent measures to protect its infrastructure from such acts, including regular monitoring and periodic patrols of the properties. The potential for such acts under either the Proposed Action or the No Action Alternative would be similar; proposed activities under the Proposed Action would not increase or decrease this risk.

3.21 Growth Inducement and Related Effects

A proposed action is considered growth inducing if it directly or indirectly fosters economic or population growth or the construction of additional housing; or encourages other activities that could result in significant environmental effects (California Environmental Quality Act [CEQA] Guidelines Sec. 15126.2[d]). A proposed action may also be considered growth inducing if it removes an existing obstacle to growth (e.g., insufficient transportation or water supply infrastructure).

When discussing growth-inducing impacts of a proposed action, "it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment" (CEQA Guidelines 15126(2d)).

3.21.1 Project Growth Inducement

The majority of proposed O&M activities described in Section 2 would be applied to existing infrastructure (e.g., inspection, vegetation management) and therefore are not growth inducing. However, reconductoring or other infrastructure upgrades that would increase Western's San Joaquin Valley transmission capacity, could directly serve the electricity needs of new growth. If this capacity were expanded or upgraded in advance of (rather than in response to) the requirements of currently planned growth, this could be considered growth inducing because it would remove an obstacle to growth.

Western provides electricity to customers whose plans for growth are identified through the local jurisdiction planning (i.e., general plan) process. Western is required under contract to provide electric service to their customers as well as allow utilities transmitting non-Federal power to use available transmission capacity. Decisions regarding general plans and the growth of a community are made by local city and county jurisdictions regardless of the presence or absence of electrical infrastructure because it is generally assumed by local jurisdictions, property owners, and developers assume that electric service would be provided regardless of where the development occurs.

Given these considerations, the proposed O&M activities are considered growth accommodating and the proposed action's potential to induce growth is less than significant.

3.21.2 No Action Growth Inducement

Under the No Action Alternative, the Proposed Action would not be implemented as described in Section 2. In the absence of the Proposed Action there would be no potential infrastructure upgrades that would increase Western's San Joaquin Valley transmission capacity. No growth-inducing impacts would occur.

3.22 Summary of Environmental Consequences

The following sections summarize the potential project-related impacts associated with the three activity categories of the Proposed Action: Category A, Category B, and Category C.

There is overlap among issue areas. Potential water-quality degradation is discussed for habitats, wildlife, fishes, and water resources. The danger of improper or careless use of herbicides is discussed for habitats, water resources, and public health. Potential erosion impacts are discussed in sections on habitats, wildlife, fishes, and geology/soils. The need to contain and remove trash on a daily basis is important for wildlife and aesthetics. The spread of noxious weeds has potential impacts for habitats, special-status plants, special-status wildlife, and land use. Changes in traffic patterns are discussed in both transportation and public health sections.

3.22.1 Proposed Action

Provided below are brief summaries of the types of activities that could be undertaken in each category, followed by brief bulleted entries on potential impacts. As each issue area has already been discussed at length, only a summary of the impacts is provided below. Implementation of SOPs and PCMs found in **Tables 2.4-1 through 2.4-6** is expected to minimize adverse effects to sensitive resources.

3.22.1.1 Category A – No or Nominal Adverse Effect

The following adverse effects could result from Category A activities:

- Disturbance to Federally listed plants and wildlife from travel off of designated legal access roads;
- Introduction or spread of noxious weeds carried on vehicles into habitats;
- Disturbance to breeding wildlife through maintenance noise at existing facilities.

3.22.1.2 Category B – Potential to Cause Minimal Associated Effects, and Category C – Potential for Adverse Effects

Categories B and C are combined below. Potential adverse effects are the same for both. Only the degree or magnitude of impact differs between them. Category B activities have greater potential to adversely affect sensitive resources and receptors than Category A, because they may occur in areas where ambient conditions do not include regular human disturbance, because they potentially disturb more ground, or because they potentially require more time to complete. Category C activities may cause adverse effects to sensitive resources and receptors if PCMs are not implemented. Category C activities, which comprise the major maintenance activities, could disturb large areas and/or rely on the use of heavy equipment.

Implementation of SOPs and PCMs would avoid, minimize, and/or compensate for any potential impacts, reducing the potential for adverse effects to sensitive resources. Without implementation of SOPs and PCMs, the following adverse effects could occur:

- Increases in air pollution, dust/particulates, or other airborne contaminants exceeding applicable state and/or Federal standards that could affect either human health or nearby crops;
- Destruction of or damage to individuals or populations of special-status plants or sensitive or other habitats that support special-status plants or wildlife; reproductive failure, e.g., loss of breeding adults, nests/dens/burrows, eggs, or young of any species;
- Loss of general plant diversity at a local level; loss of habitat structure and diversity affecting fish and wildlife; introduction or spread of noxious weeds through various means;
- Degradation of water quality in wetlands and bodies of water, potentially affecting habitats, fishes, aquatic invertebrates, aquatic plants, and terrestrial wildlife that depend on aquatic features;
- Damage to or degradation of nontarget and/or special-status plants, sensitive habitats, or bodies of water through improper or careless use of herbicides or through accidental spills of herbicides or other toxic chemicals;
- Bird mortality at cell towers through collision, misorientation, or disorientation;
- Damage to or loss of archaeological deposits or artifacts, loss or degradation of a TCP or sacred site, or disturbance to human remains outside of cemeteries;

- Damage to fences or gates, damage to non-Western utilities through Western actions; impacts to special-use areas such as refuges; impacts to or conflicts with existing recreational areas or substantial loss of recreational uses;
- Degradation of views from sensitive viewer locations, increased air pollution, substantial changes to the scenic quality of an important landscape;
- Contamination of surface water through erosion or stormwater runoff, or ground water through leaching or subsurface migration of pollutants; depletion of groundwater resources or interference with groundwater recharge; or increased long-term susceptibility to onsite or offsite flooding, erosion, or siltation through altered surface hydrology;
- Increase in the probability or magnitude of mass geologic movements such as slope failures, slumps, or rockfalls; adverse effects to state-identified rock outcrops of significance; accelerated erosion causing rills and/or gullies; increased slope instability;
- Hazards to workers and neighbors from improper use of herbicides or spills of other toxic chemicals, falling trees, excavations, fires, and exposure to EMF;
- Noise levels that exceed applicable local, state, or Federal regulations; noise levels that cause reproductive failure in wildlife; excessive ground borne vibration;
- Major traffic delays, excessive road dust, road damage, road closures, or adverse effects to air traffic patterns.

3.22.2 No Action Alternative

Project-related impacts associated with the No Action Alternative would not change over existing conditions. These are the existing impacts of as-needed maintenance, repairs, and vegetation management. The Proposed Action may increase the potential for impacts in the short term, but is expected to reduce the frequency of vegetation management activities in the long term, reducing the potential of some environmental impacts.

3.22.3 Conclusion

Western has proactively coordinated with land managers to identify the occurrence of, or potential for, sensitive resources within the project area. Additionally, Western has coordinated with Federal agencies to determine the most effective methods to reduce public and worker safety hazards and minimize potential impacts to the environment from the Proposed Action. As a result of this collaborative effort, PCMs and SOPs have been developed and incorporated into a state-of-the-art GIS database that will allow Western and other Federal agencies to efficiently manage O&M activities while minimizing the potential for environmental impacts.

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4.0 CUMULATIVE EFFECTS

As defined by Council on Environmental Quality Regulations at 40 CFR Part 1508.7, cumulative impacts are those that “result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, without regard to the agency (Federal or non-Federal) or individual who undertakes such other actions.” Cumulative impact analysis captures the effects that result from the Proposed Action in combination with the effects of other actions in the Proposed Action’s region of influence.

Because of the number of past, present, and reasonably foreseeable future actions within the vicinity of the approximately 115-mile-long San Joaquin Valley ROW project area (plus associated legal access roads, substations, and maintenance yard), cumulative effects are the most difficult to analyze. NEPA requires the analysis of cumulative environmental effects of a Proposed Action on resources that may often be manifested only at the cumulative level, such as traffic congestion, air quality, noise, biological resources, cultural resources, socioeconomic conditions, and others.

In this EA, cumulative effects would include the impacts of Western’s proposed comprehensive ROW maintenance program (Proposed Action), together with the impacts of other actions taking place throughout the region.

4.1 Cumulative Effects within the Region

Overall, the Proposed Action is located within a region that is experiencing moderate growth. As shown in **Section 3.19**, all seven counties in which the Proposed Action is located have experienced growth in the last decade. The recent economic downturn has somewhat slowed this growth over the short-term. However, this growth may continue as the economy improves.

This growth puts pressure on resources and the environment, including increased regional traffic congestion, air quality impacts, and other environmental effects, placing increased demands on services, utilities, and infrastructure, and consuming former open space areas with new development. Development of former open space results in associated natural and cultural resources impacts, and the conversion of prime and unique farmlands to non-agricultural uses, among other environmental effects.

However, as described in **Section 5**, numerous Federal, state, and local laws and regulations affording protection to environmental resources are in place. These laws serve to control the impacts of individual projects to the extent possible. Regional natural resource management plans, as well as local land use plans, serve to further mitigate individual and cumulative impacts to sensitive resources.

4.2 Cumulative Effects of the Proposed Action

The Proposed Action would result in the impacts identified throughout **Section 3**. These include potential less-than-significant adverse impacts to all environmental issue areas examined.

With careful implementation of the proposed environmental PCMs and SOPs, Western's O&M activities would not produce significant adverse environmental effects. Through implementation of these measures, environmental protection would be ensured and the environmental review process proactively streamlined. Over the long-term, a low-growth ROW would be established and maintained through implementation of the IVM Program, thereby reducing the frequency of O&M activities in the long term.

Consequently, implementation of the Proposed Action is not expected to cause significant cumulative adverse impacts within any environmental issue area discussed in this EA. Because Proposed Action activities are spread along a relatively narrow, linear ROW, covering a large geographical area (including portions of seven counties), the proposed ROW maintenance program would only be expected to contribute relatively minor, very localized, and generally short-term impacts. These impacts would be controlled through implementation of the PCMs and SOPs identified above for each environmental issue area. As such, these effects would not significantly contribute to regional adverse effects.

As identified in this EA, and given the primary purpose of the Proposed Action is to maintain Western's ROW by generally managing and altering the ROW's vegetative composition, potential impacts to biological and cultural resources are of greatest concern. Through proactive, comprehensive studies conducted as part of this EA, Western has identified locations of important biological and cultural resources, and has proposed specific measures that would ensure significant impacts to habitats, vegetation, wildlife, special status species, fisheries, and cultural resources are avoided. Further, implementation of other proposed measures, as described in this EA, would serve to proactively mitigate impacts to land use, recreational resources, aesthetics, surface and ground water quality, geology and soils, public health, air quality, noise, transportation, and environmental justice. With implementation of these PCMs and SOPs, no significant adverse individual or cumulative effects would be anticipated.

4.3 Summary

No significant adverse cumulative impacts to the environment, induced by changes under the Proposed Action, are anticipated within the region. Close coordination between Western and involved land management agencies, land owners, and local planning authorities would serve to ameliorate any identified potential future land use conflicts and other concerns. Implementation of land use and resource management plans, as well as Western's proposed PCMs and SOPs, would serve to control the extent of environmental impacts, and proper planning would ensure that future socioeconomic conditions maintain the quality of life that area residents currently enjoy. Implementation of effective environmental management plans and programs should minimize or eliminate any potential cumulative degradation of the natural ecosystem.

Under the No Action Alternative, Western would continue to implement O&M activities on an as-needed basis without a holistic, integrated, and proactive approach. While each activity would be analyzed and environmental effects minimized, additional resources would be consumed due to this less efficient, more labor-intensive, and time-

consuming process. In addition, no long-term decrease in O&M activities would be anticipated, as a sustainable, low-growing vegetation community within the ROW would not be provided. With implementation of site- and activity-specific environmental mitigation, however, cumulative, significant adverse impacts under the No Action Alternative would not be anticipated.

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5.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

This section presents the Federal, state, and local laws, plans, ordinances, and regulations applicable, or potentially applicable, to the Proposed Action. Please refer to **Section 8.0** for the applicable regulatory citation of each identified regulation.

5.1 Federal

5.1.1 *National Environmental Policy Act (NEPA)*

NEPA of 1969, as amended, requires Federal agencies to consider the impacts to the human and natural environment from their Proposed Actions, prior to making a decision to undertake such actions. The Act also requires Federal agencies to solicit and consider public and agency input into the decision-making process, and to document the environmental impact analysis. Where possible, the Act recommends that Federal agencies implement measures to protect, restore, and enhance the environment. The Council on Environmental Quality has published implementing regulations (40 CFR Parts 1500-1508) and the DOE has published implementing procedures (10 CFR Part 1021) that govern Western's compliance with NEPA.

Proposed Actions such as ROW maintenance can normally be categorically excluded as part of the routine maintenance exclusion in Appendix B to Subpart D of 10 CFR Part 1021, as long as the Proposed Action meets the integral elements of that exclusion. However, other land managing agencies may have other requirements when the actions are taken on their lands.

5.1.2 *Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)*

FIFRA of 1947, as amended, regulates the manufacture, use, storage, and disposal of chemicals used as pesticides (which include herbicides) as described in 40 CFR Parts 150-180. The focus of the FIFRA is on pesticide manufacturers; however, this section will emphasize the parts of the regulation applicable to the use, storage, and disposal of pesticides, including herbicides, such as that proposed by Western under the Proposed Action. FIFRA:

- Regulates pesticides including herbicides, insecticides, fungicides, and plant growth regulators;
- Regulates pesticide labels and packaging;
- Classifies pesticides as unclassified, general use, or restricted use (i.e., restrictions relating to the products, composition, labeling, packaging, uses, or the status or qualifications of the user);
- Describes the written records that need to be kept by certified applicators;

- Provides for fines of up to \$25,000 and jail sentences of up to 1 year for misapplication of pesticides and violation of FIFRA standards;
- Provides for the registration of pesticides or the cancellation of a registration; and
- Provides work protection standards.

Users of restricted-use pesticides should particularly note the following regulations:

- Disposal and Storage of Pesticides (40 CFR Part 165) specifies the regulations and procedures for the disposal or storage of pesticides, pesticide containers, and pesticide-related wastes, and for the acceptance for safe disposal by the EPA of pesticides whose registration has been canceled.
- Certification of Pesticide Applicators (40 CFR Part 171) outlines the requirement for applicators of restricted-use pesticides. These requirements include categorization of commercial and private applicators, standards for certification of commercial and private applicators, and supervision of non-certified applicators.

5.1.3 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

CERCLA of 1980, as amended, addresses and regulates past and present environmental contamination. Among other things, CERCLA:

- Defines what is meant by the term “hazardous substances”;
- Defines periods within which the EPA and other agencies must be notified of current spills of hazardous substances;
- Uses reportable quantities of hazardous substances to decide when Federal and state agencies are notified of spills; and
- Along with the National Contingency Plan, specifies Federal natural resource trustees. DOE is a designated trustee for natural resources that are on, over, or under land under its jurisdiction and not specifically the responsibility of some other resource management agency.

DOE may have a dual role where its own activities have resulted in hazardous substance releases, as defined under CERCLA. DOE is the CERCLA lead response agency and, as such, may be subject to natural resource liabilities to other trustees. DOE is also the trustee for the natural resources under its own jurisdiction.

5.1.4 Superfund Amendments and Reauthorization Act (SARA Title III), and the Emergency Planning and Community Right-To-Know Act (EPCRA)

SARA Title III and EPCRA of 1986 establish state emergency response commissions and local emergency planning committees. These laws require industrial facilities to provide written plans to describe what they would do in the event of a chemical emergency as defined in the Acts. An annual inventory of all chemicals on site when certain amounts are exceeded is also required. Facilities are required to provide state emergency response commissions, local emergency planning departments, and the local fire department with names and quantities of hazardous substances stored.

5.1.5 Federal Occupational Safety and Health Act (OSHA)

OSHA of 1970 protects worker health and safety. The OSHA Hazard Communication Standard requires workers to be provided with a material safety data sheet for all hazardous materials, including pesticides. The Standard requires that workers be trained on the hazards of the materials handled, and be provided with information on how to protect themselves and what to do during emergencies, such as spills and fires.

5.1.6 Hazardous Materials Transportation Act

The *Hazardous Materials Transportation Act* of 1975, as amended, requires placards and shipping papers for shipping certain quantities of hazardous materials, as well as reporting of transportation accidents involving hazardous chemicals. State OSHA, EPA, agricultural agencies, and local health and weed-control agencies may also have specific regulations that deal with pesticide use, spills, transportation, and disposal of hazardous materials.

5.1.7 Federal Noxious Weed Act

The *Federal Noxious Weed Act* of 1974:

- Defines a noxious weed as any living stage of a plant that can directly or indirectly injure crops, other useful plants, livestock, poultry, or other interests of agriculture including irrigation, navigation, the fish and wildlife resources of the U.S., or public health;
- Regulates the sale, purchase, and transportation of noxious weeds into or through the U.S.;
- Regulates the inspection and quarantine of areas suspected of infestation and provides for the disposal or destruction of infested products, articles, means of conveyance, or noxious weeds;
- Provides for fines of up to \$5,000 and/or imprisonment up to one year for violation of the regulation; and

- Requires Federal agencies to work with state and local agencies to develop and implement noxious weed management programs on Federal lands.

5.1.8 Endangered Species Act (ESA)

ESA of 1973, as amended:

- Protects listed (i.e., threatened and endangered) plants and animals that are threatened by habitat destruction, pollution, overharvesting, disease, predation, or other natural or man-made factors;
- Stipulates that listed species cannot be taken without a special permit. Take, as defined under the ESA, means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” All Federal agencies must ensure that their activities do not jeopardize a listed species or its critical habitat; and
- Provides for review of pesticide formulations and their application methods and rates to determine if pesticide use may have potential adverse effects on listed species or their critical habitats.

5.1.9 Fish and Wildlife Coordination Act

The *Fish and Wildlife Coordination Act* of 1934 requires all Federal agencies to coordinate with applicable state and Federal wildlife management agencies prior to approving any Federal action that may affect a stream or other body of water.

5.1.10 Migratory Bird Treaty Act

The *Migratory Bird Treaty Act* of 1918, as amended protects migratory birds by making it unlawful to pursue, take, attempt to take, capture, possess, or kill any migratory bird, or any part, nest, or egg of any such bird, unless and except as permitted by regulation. The Act is intended to protect birds that have common migratory patterns within the U.S., Canada, Mexico, Japan, and Russia. Section 704 of the Act states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take.

5.1.11 Bald Eagle Protection Act

The *Bald Eagle Protection Act* of 1940 makes it unlawful to capture, kill, destroy, molest, or disturb bald eagles, their nests, or their eggs anywhere in the U.S. The Act also protects golden eagles because they are similar in appearance. A permit must be obtained from the U.S. Department of Interior to relocate a nest that interferes with resource development or recovery operations. This Act also:

- Imposes criminal and civil penalties on anyone (including associations, partnerships, and corporations) in the US or within its jurisdiction who, unless excepted, takes,

possesses, sells, purchases, barter, offers to sell or purchase or barter, transports, exports or imports at any time or in any manner a bald or golden eagle, alive or dead; or any part, nest or egg of these eagles; or violates any permit or regulations issued under the Act; and

- Allows, if compatible with the preservation of bald and golden eagles, the Secretary of the Interior to issue regulations authorizing the taking, possessing, and transporting of these eagles for scientific or exhibition purposes, for religious purposes of Indian tribes, or for the protection of wildlife, agricultural, or other interests.

5.1.12 National Historic Preservation Act (NHPA)

The NHPA of 1966, as amended, directs that Federal agencies must locate and inventory historic properties and cultural resources eligible for the NRHP prior to taking an action that might harm them, with the intent of minimizing such harm through appropriate avoidance measures. Federal agencies must consider the effects of their actions on identified historic properties prior to implementing the action.

5.1.13 American Indian Religious Freedom Act

The *American Indian Religious Freedom Act* of 1978 establishes that it is the policy of the U.S. to protect and preserve for Native Americans their inherent right of freedom to believe, express, and exercise their traditional religions. This includes access to sites, use and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites.

5.1.14 Executive Order 13007, Indian Sacred Sites

This EO, effective 24 May 1996, directs Federal agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of those sacred sites. This includes providing reasonable notice of Proposed Actions or land management policies that may restrict access to, or affect the physical integrity of, sacred sites. This EO also directs Federal agencies to keep confidential information pertaining to such sites.

5.1.15 Archaeological Resources Protection Act

The *Archaeological Resources Protection Act* of 1979 secures the protection of archaeological resources and sites on both public and Indian lands. The Act prescribes penalties and fines for a detailed list of prohibited acts, and sets forth uniform regulations for excavation, removal, disposition, exchange, and information disclosure of archaeological resources.

5.1.16 Clean Air Act

The *Clean Air Act* (CAA) of 1970, and the CAA Amendments of 1990, as amended, establish air quality standards for protection of public health and the environment. The

ambient air quality in an area is characterized in terms of whether or not it complies with the primary and secondary NAAQS. The CAA, as amended, requires the EPA to set NAAQS for pollutants considered harmful to public health and the environment. NAAQS are provided for six principal pollutants, called “criteria pollutants” (as listed under Section 108 of the CAA): CO, lead, NO_x, SO₂, ozone, and PM, divided into two size classes (aerodynamic size less than or equal to 10 micrometers [PM₁₀] and aerodynamic size less than or equal to 2.5 micrometers [PM_{2.5}]).

Title III of the CAA, as amended, provides for regulation of 187 specifically listed hazardous air pollutants (HAPs). Emission standards have been developed for sources that emit HAPs, but no AAQS have been developed. The Title V Operating Permit Program under 40 CFR Part 70 requires sources that meet the definition of a “major source” of criteria pollutants or HAPs to apply for and obtain a Title V operating permit. A major source of HAPs has the potential to emit more than 10 tons per year of any individual HAP or 25 tons per year of any combination of HAPs. The definition of a major source for criteria pollutants is dependent upon the air quality attainment status of the region in which the source is located.

5.1.17 Presidential Memorandum Dated April 26, 1994 for the Heads of Executive Departments and Agencies

In this Memo and accompanying guidance (*Office of the Federal Environmental Executive; Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds*, 60 FR 40837; August 10, 1995), Federal agencies are directed to:

- Use regionally native plants for landscaping;
- Design, use, or promote construction practices that minimize adverse effects on natural habitat;
- Seek to prevent pollution by, among other things, reducing fertilizer and pesticide use, using integrated pest management techniques, recycling green waste, and minimizing run-off;
- Implement water-efficient practices, such as use of mulches, efficient irrigation systems, audits to determine water-use needs, and siting of plants in a manner that conserves water and controls soil erosion;
- Plant regionally native shade trees to reduce air conditioning demands; and
- Create outdoor demonstrations incorporating native plants, as well as pollution prevention and water-conservation techniques.

5.1.18 Farmland Protection Policy Act

The *Farmland Protection Policy Act* (Public Law 97-98) was enacted as part of the *Agriculture and Food Act* of 1981. The final rule was published in 1994. The Act codified

the need for all Federal agencies to recognize the effect of their actions and programs on the Nation's farmlands.

The U.S. Department of Agriculture (USDA) was charged with implementing a program to develop criteria for identifying the effects of Federal programs on the conversion of farmlands to non-agricultural uses. These criteria were published in 1983. The major requirements are that Federal agencies must:

- Use USDA criteria to identify and take into account the adverse effects of their programs on the preservation of farmland; and
- Consider alternative actions, as appropriate, to lessen such adverse effects and ensure that their programs, to the extent practicable, are compatible with state, local, and private programs.

The Act also authorizes local governments to identify farmland of local importance and exempts land already committed to urban development.

The Soil Conservation Service developed the following definitions of important farmlands, as modified for California:

- **Prime Farmland** is land with the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture regime needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime farmland must have been used for the production of irrigated crops within the last three years. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.
- **Unique Farmland** is land that does not meet the criteria for prime farmland, but is currently used for the production of specific high-economic-value crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

5.1.19 Paleontological Resources Preservation Act

The *Paleontological Resources Preservation Act* of 2009 is part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D). This Act directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on Federal land, and develop plans for inventorying, monitoring, and deriving the scientific and educational use of such resources. It prohibits the removal of paleontological resources from Federal land without a permit issued under this Act, establishes penalties for violation of this Act, and establishes a program to increase public awareness about such resources.

5.1.20 Other Applicable Federal Regulations, Guidance, and Executive Orders

The following identifies other Federal requirements potentially applicable to the Proposed Action:

- **Pollution Prevention Act of 1990.** The *Pollution Prevention Act* recognizes that "pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally sound manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally sound manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner."
- **Resource Conservation and Recovery Act of 1976 (RCRA).** RCRA establishes a system for managing non-hazardous and hazardous solid wastes in an environmentally sound manner. Specifically, it provides for the management of hazardous wastes from the point of origin to the point of final disposal (i.e., "cradle to grave"). RCRA also promotes resource recovery and waste minimization.
- **Safe Drinking Water Act of 1974 (SDWA).** SDWA manages potential contamination threats to groundwater. The Act instructs the EPA to establish a national program to prevent underground injections of contaminated fluids that would endanger drinking water sources. Drinking water standards established under the SDWA are used to determine groundwater protection regulations under a number of other statutes (e.g., RCRA). Therefore, many of the SDWA requirements apply to DOE activities, especially cleanup of contaminated sites and storage and disposal of materials containing inorganic chemicals, organic chemicals, and hazardous wastes.
- **Toxic Substances Control Act of 1976 (TSCA).** TSCA authorizes the EPA to secure information on all new and existing chemical substances and to control any of these substances that could cause an unreasonable risk to public health or the environment, including lead, asbestos, radon, and polychlorinated biphenyls.
- **EO 13175, Consultation and Coordination with Indian Tribal Governments.** This EO requires Federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications.
- **EO 13112, Invasive Species.** This EO requires Federal agencies to: "prevent the introduction of invasive species"; "detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner"; "monitor invasive species populations accurately and reliably, provide for restoration of native species and habitat conditions in ecosystems that have been invaded"; "conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species"; and "promote public education on invasive species and the means to address them."

- **National Aquatic Invasive Species Act of 1996.** This Act prescribes actions to combat invasive aquatic species.
- **Native American Graves Protection and Repatriation Act (NAGPRA).** NAGPRA and its implementing regulations (43 CFR Part 10) protect Native American human remains, burials, and associated burial goods.
- **Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990.** This Act establishes a program to prevent the introduction of, and to control the spread of, introduced aquatic nuisance species.
- **EO 11988, Floodplain Management.** This EO requires Federal agencies to assess the effects that their actions may have on floodplains and to consider alternatives to avoid adverse effects and incompatible development on floodplains.
- **EO 11990, Protection of Wetlands.** This EO requires Federal agencies to take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the beneficial values of wetlands.
- **Soil Conservation and Domestic Allotment Act.** This Act provides for soil conservation practices on Federal lands.

5.1.21 DOE Policies and Orders

- **DOE Order 450.1A – Department of Energy Environmental Protection Program, dated 4 June 2008,** establishes DOE's sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by DOE operations, and by which DOE cost-effectively meets or exceeds compliance with applicable environmental, public health, and resource protection requirements in a sustainable manner.
- **DOE Policy 141.1 – Department of Energy Management of Cultural Resources, dated 2 May 2001,** establishes cultural resource management as a necessary part of DOE program implementation and establishes program responsibilities, requirements, and authorities.
- **DOE Policy 450.2A, Identifying, Implementing and Complying with Environment, Safety and Health Requirements, dated 15 May 1996,** sets forth the framework for identifying, implementing, and complying with environment, safety, and health requirements so work is performed in a manner that ensures adequate protection of workers, the public, and the environment.
- **DOE Policy 450.4, Safety Management System Policy, dated 15 October 1996,** provides a formal, organized process whereby people plan, perform, assess, and improve environmental processes.
- **DOE Order 5480.4, Environmental Protection, Safety, and Health Protection Standards, dated 15 May 1984,** specifies requirements for the application of mandatory environmental protection standards. A DOE memorandum dated 3

November 1997, issued from the DOE Office of NEPA Policy and Assistance, emphasizes the need to consider environmentally and economically beneficial landscape practices and the above guidance when developing NEPA documents.

5.1.22 Western Policies and Orders

Western is a highly regulated entity, subject to Federal, DOE, and its own regulatory standards. O&M activities performed under either the Proposed Action or No Action Alternative must comply with numerous Western orders, policies, SOPs, and programmatic management documents related to protection of the environment and public and worker health. Indirectly, Western's engineering and quality standards can also protect the human and natural environment through reduction of fire potential. Individual regulations are not listed here. Under this EA, Western would be subject to SOPs and PCMs listed in **Section 2.4**.

5.2 State

The **California Endangered Species Act (CESA)** (Fish & Game Code §§ 2050, *et seq.*), generally parallels the main provisions of the Federal ESA and is administered by the CDFG. Under CESA, an endangered species is defined as a plant or animal that is "in serious danger of becoming extinct throughout all, or a significant portion of its range" and is limited to species or subspecies native to California. The CESA establishes a petitioning process for the listing of threatened or endangered species. The California Fish and Game Commission is required to adopt regulations for this process and establish criteria for determining whether a species is endangered or threatened. The California Code of Regulations, Title 14, §670.1(a), sets forth the required contents for such a petition. The CESA prohibits the "taking" of listed species except as otherwise provided in state law. Unlike the Federal ESA, the CESA applies the take prohibitions to species petitioned for listing (i.e., state candidates). State-listed species are only afforded protection on Federal land under the jurisdiction of the BLM, National Park Service, and U.S. Forest Service, as directed by these Federal agencies. While the CESA does not legally apply to Western's actions (as a non-listed Federal agency), for the purpose of this EA, Western has considered and afforded protection to state-listed species.

California Public Utilities Commission General Order 95, Rules for Overhead Electric Line Construction formulates uniform requirements for overhead electric and communication line construction for the State of California.

Western will comply not only with all Federal regulations regarding pesticides as described in **Section 5.1**, but also will follow certain state regulations. Western will follow the regulations listed in the **California Code of Regulations, Title 3, Division 6, Pesticides and Pest Control Operations**, as applicable. These regulations deal with:

- Pesticide applicator certification and licensing (§§ 6500-6574);
- Work requirements (§§6600-6686);

- Pesticide worker safety (§§ 6700-6795);
- Ground water (§§ 6800-6806);
- Air (§§ 6860-6890);
- Aquatic and marine environments (§§ 6900-6920); and
- Surface water (§ 6960).

The California Department of Pesticide Regulation evaluates and registers pesticides for use in the state and defines conditions for use (California Department of Pesticide Regulation 2001).

The **Food and Agricultural Code §§ 7270-7274** provides the California Department of Food and Agriculture with the authority to form weed management areas, which are local organizations that bring together all interested land owners, land managers (i.e., city, county, state, and Federal), special districts, and the public in a county or other geographical area for the purpose of coordinating and combining their actions and expertise to deal with their common weed-control problems. A chairperson or a steering committee may voluntarily govern a weed-management area.

5.3 Federal and State Water Quality Regulations and Programs

Federal and state 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*, as amended (33 U.S.C. §§ 1251-1387) and the state Porter-Cologne Water Quality Control Act, which created the State Water Resources Control Board and nine RWQCBs. Each RWQCB is responsible for preparing and updating a water quality control plan (basin plan) every 3 years; the basin plan for a specific region identifies water quality protection policies and procedures for that region (California RWQCB 1998).

The project area is within the **San Francisco Bay and Central Valley Regions** of the **California SWRCB** (see **Section 5.4.1**).

Specific sections of the *Clean Water Act* that may be applicable to the Proposed Action include:

- **Section 401 of the *Clean Water Act*.** Activities covered by the USACE jurisdiction over wetlands (Section 404 Department of Army permits) require Section 401 water quality certifications or waivers from the regional (San Francisco Bay and Central Valley) RWQCB. The water quality certification program requires that states certify compliance of Federal permits and licenses with state water quality standards. A Federal permit to conduct an activity that results in discharges into waters of the U.S., including wetlands, is issued only after the affected state certifies that existing water quality standards would not be violated if the permit were issued.

- **Section 404 of the *Clean Water Act*.** Authorization from the USACE is required in accordance with the provisions of Section 404 when dredged or fill material is discharged into waters of the U.S., including wetlands. This includes excavation activities that result in the discharge of dredged material that could destroy or degrade waters of the U.S. The repair and upgrade of access roads could impact waters of the U.S.
- **Section 1601/1603 of the Fish and Game Code.** The CDFG typically specifies water quality protection measures when they issue streambed alteration agreements pursuant to Section 1601/1603 of California Fish and Game Code. However, as an agency of the Federal government, these requirements do not apply to Western.
- **Nationwide permits.** Nationwide permits (NWP) are a type of general permit issued by the USACE that are designed to regulate, with little delay or paperwork, certain activities having minimal impacts. Western would perform ROW maintenance work under the NWP listed in Table 5.3-1. The NWP are proposed, issued, modified, reissued (extended), and revoked from time to time after an opportunity for public notice and comment. Western would comply with any changes to these permits in effect at the time the action is proposed. Thresholds of effect are incorporated into these NWP; Western would adhere to the thresholds as specified. In addition, Western would adhere to the general and regional conditions associated with these NWP.

Table 5.3-1. Summary of Applicable Nationwide Permits

Permit and Title	Description	Thresholds	Notification Requirements
Nationwide Permit 3 - Maintenance	Activities related to: (i) the repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure, or fill; (ii) discharges of dredged or fill material, including excavation, into all waters of the U.S. to remove accumulated sediments and debris in the vicinity of, and within, existing structures and the placement of rip-rap; and (iii) discharges of dredged or fill material, including excavation, into all waters of the U.S. for activities associated with the restoration of upland areas damaged by a storm, flood, or other discrete event, including the construction, placement, or installation of upland protection structures and minor dredging to remove obstructions in a water of the U.S.	Under (ii), the removal of sediment is limited to the minimum necessary to restore the waterway in the immediate vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 ft in any direction from the structure. Under (iii), minor dredging to remove obstructions from the adjacent waterbody is limited to 50 cubic yards below the plane of ordinary high water mark.	Under (iii), Western must notify the district engineer within 12 months of the date of the damage.
Nationwide Permit 12 – Utility Line Activities	Activities required for the construction, maintenance, and repair of utility lines and associated facilities in waters of the U.S. as follows: (i) utility lines: The construction, maintenance, or repair of utility lines, including outfall and intake structures and the associated excavation, backfill, or bedding for the utility lines, in all waters of the U.S., provided there is no change in preconstruction, maintenance, or expansion of a substation facility associated with a power line or utility line in non-tidal waters of the U.S., excluding non-tidal wetlands adjacent to tidal waters. (ii) foundations for overhead utility line towers, poles, and anchors: The construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the U.S. (iv) access roads: The construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the U.S., excluding non tidal wetlands adjacent to tidal waters.	Activities may not exceed a total of 0.5-acre loss of waters of the U.S.	Western must notify the district engineer if any of the following criteria are met: (a) mechanized land clearing in a forested wetland for the utility line right-of-way; (b) a Section 10 permit is required; (c) the utility line in waters of the U.S., excluding overhead lines, exceeds 500 ft; (d) the utility line is placed within a jurisdictional area (i.e., water of the U.S.), and it runs parallel to a stream bed that is within that jurisdictional area; (e) discharges associated with the construction of utility line substations that result in the loss of more the 0.1 acre of waters of the U.S.; (f) permanent access roads constructed above grade in waters of the U.S. for a distance of more the 500 ft.; or (g) permanent access roads constructed in waters of the U.S. with impervious materials. (Sections 10 and 404).
Nationwide Permit 13 – Bank Stabilization	Bank stabilization activities necessary for erosion prevention.	The bank stabilization activity must be less than 500 ft in length.	Bank stabilization activities in excess of 500 ft in length or more than an average of one cubic yard per running foot may be authorized if Western notifies the district engineer.
Nationwide Permit 14 – Linear Transportation Projects	Activities required for the construction, expansion, modification, or improvement of linear transportation crossings (e.g., highways, railways, trails, airport runways, and taxiways) in waters of the U.S., including wetlands.	For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of more than 0.5 acre of waters of the U.S.; for linear transportation projects in tidal waters, the discharge cannot cause the loss of more than 0.33 acre of waters of the U.S.	Western must notify the district engineer if any of the following criteria are met: (1) the discharge causes the loss more than 0.1 acre of waters on the U.S.; or (2) there is a discharge in a special aquatic site, including wetlands
Nationwide Permit 41 – Reshaping Existing Drainage Ditches	Discharges of dredged or fill material into non-tidal waters of the U.S., excluding non-tidal wetlands adjacent to tidal waters, to modify the cross-sectional configuration of currently serviceable drainage ditches constructed in waters of the U.S.	The reshaping of the ditch cannot increase drainage capacity beyond the original design capacity, nor can it expand the area drained by the ditch as originally designed.	Western must notify the district engineer if more than 500 linear ft of drainage ditch will be reshaped.

5.4 Regional and Local

As described in specific sections of the EA, Western may conform to certain regional and local regulations, including county codes and general plans, to the extent that such orders or plans: 1) do not conflict with Western's duties; or 2) impose a direct regulation of Western. The project area is also located in areas that have several habitat conservation plans (HCPs) and natural community conservation plans (NCCPs) in place. These are identified in the following sections. In addition, **Section 5.4.1** identifies regional authorities that have jurisdiction over certain environmental attributes within the project area, and the nature of that jurisdiction.

5.4.1 Regional

The California Air Resources Board has designated primary responsibility for permitting all sources of air pollution, except vehicular sources, to the local and regional air pollution control authorities known as air pollution control districts or air quality management districts. Each district establishes its own rules and thresholds to meet air quality goals. The project area is under the jurisdiction of the following local air districts in California:

- **Bay Area Air Quality Management District:** Alameda, Contra Costa, and Santa Clara Counties; City of Antioch, Town of Discovery Bay, Town of Knightsen, Town of Oakley, and City of Stockton.
- **Tuolumne County Air Pollution Control District:** Tuolumne County.
- **San Joaquin Valley Air Pollution Control District:** San Joaquin and Merced Counties; City of Morgan Hill.

The CALFED Bay-Delta Program comprises 25 state and Federal agencies working cooperatively to improve the quality and reliability of California's water supplies while restoring the Bay-Delta ecosystem. The CALFED Programmatic Natural Community Conservation Plan was approved in June 2000. The Bay-Delta Conservation Plan (BDCP; Bay Delta Conservation Plan 2009) is intended to promote the recovery of endangered, threatened, and sensitive fish and wildlife species and their habitats in the Sacramento-San Joaquin Delta in a way that will also protect and restore water supplies. The BDCP identifies: conservation strategies to improve the overall ecological health of the Delta; ecologically friendly ways to move fresh water through and/or around the Delta; potential and known sources of toxic pollutants, invasive species, and impairments to water quality; and a framework and funding mechanisms to implement the Plan over time. The BDCP was developed in compliance with the Federal ESA and the California Natural Communities Conservation Planning Act. The BDCP provides the basis for the issuance of endangered species permits for the operation of the state and Federal water projects. The BDCP focuses primarily on aquatic ecosystems and natural communities, but may also cover adjacent riparian and floodplain natural communities.

5.4.2 Local

The project area includes portions of:

- **Alameda, Contra Costa, and San Joaquin counties**, including the cities of Antioch, Oakley, and Stockton (Tracy region), and the towns of Discovery Bay and Knightsen;
- **Calaveras and Tuolumne counties** (New Melones region); and
- **Merced and Santa Clara counties**, including the city of Morgan Hill (Morgan Hill/San Luis region).

Table 5.4-2 presents county codes, general plans, and local ordinances that Western has reviewed and may follow for the Proposed Action in the above jurisdictions.

Table 5.4-2. Local Requirements in the Project Area

Project Region	Jurisdiction ^a	Ordinance/Provision	Summary of Local Regulations Western Has Examined
Tracy	Alameda County	East County General Plan, 2000	<p>Noise: The County endeavors to maintain acceptable noise levels throughout East County. The County requires noise studies as part of development review for projects exposed to high noise areas and in areas adjacent to existing residential or other sensitive land uses.</p>
		Draft Historic Preservation Ordinance, 1997	<p>Grading: The County requires the off-site visibility of cut-and-fill slopes and drainage improvements be minimized when grading is necessary. Graded slopes shall be designed to simulate natural contours and support vegetation to blend with surrounding undisturbed slopes. Grading should avoid areas containing large stands of mature, healthy vegetation, scenic natural formations, or natural watercourses. Access roads shall be sited and designed to minimize grading according to County grading guidelines.</p>
		General Ordinance Code	<p>Cultural Resources: A draft Historic Preservation Ordinance would give the County Planning Department authority to review and make determinations regarding project applications involving historic resources.</p>
		<p>Noise: Construction activities are exempt from compliance with noise standards in Section 6.60 during specified daytime hours, between 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 8:00 a.m. and 5:00 p.m. Saturday and Sunday. Construction, maintenance, and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public are exempt from Alameda County's noise ordinances</p> <p>Grading: The following are exempted from obtaining a permit per Section 15.36: Minor projects which have cuts or fills, each of which is less than five feet in vertical depth at its deepest point measured from the existing ground surface, and which include all of the following: 1) Less than 150 cubic yards of graded material, 2) The removal, plowing under or burial of less than ten thousand (10,000) square feet of vegetation on slopes ten percent or greater or any amount of vegetation on slopes less than ten percent, and 3) Do not create unstable or erodible slopes.</p>	
Tracy	Contra Costa County	East Contra Costa County Plan	<p>Soils: Development on slopes above 26% requires special erosion control and construction techniques.</p>
		East Contra Costa County Habitat Conservation Plan / Natural Communities Conservation Plan	<p>Noise: The Plan sets maximum noise limits for residential areas. Construction activities shall be concentrated during normal work hours.</p>
		Covers Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, the East Bay Regional Park District, the Cities of Brentwood, Clayton, Oakley and Pittsburg	<p>Water Resources: Channel crossings must be adequate to carry 100-year flows. Grading, filling and construction activity near watercourses must be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution. Revegetation of a watercourse must employ native vegetation, provided it is compatible with the watercourse's maintenance program and does not adversely alter channel capacity.</p>
		<p>Wetlands: A setback from the edge of any wetland area may be required for any new structures and plans must be reviewed by the County. Avoidance, minimization, and/or compensatory mitigation must be employed on projects with potential to affect a wetland. The County may require a 3:1 compensatory mitigation of any project affecting a "Significant Wetland" as defined in the Plan.</p>	
<p>Biological/Natural Resources: The Conservation Plan/Natural Community Conservation Plan provides a framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts to endangered species. The Plan also provides for comprehensive species, wetlands, and ecosystem conservation and contributes to the recovery of endangered species in northern California.</p>			
<p>The Permittees are asking the USFWS to issue to them a 30-year permit that authorizes incidental take on listed species under the Federal ESA. The Permittees are also asking the CDFG to issue to them a 30-year permit that authorizes take of all covered species under the Natural Community Conservation Planning Act. The local jurisdictions will then be able to use those permits to extend take authorization to development and other activities that meet the terms of the Plan.</p>			
<p>The Plan also serves as the basis for subsequent applications for regional wetlands permits or permit programs currently in development. The County is working with the USACE, the State Water Resources Control Board, the San Francisco Bay Regional Water Quality Control Board, the Central Valley RWQCBs, the EPA, and the CDFG to develop and operate regional permit programs for jurisdictional wetlands and waters under Sections 404 and 401 of the <i>Clean Water Act</i>, the Porter-Cologne Water Quality Control Act, and Section 1602 of the</p>			

Project Region	Jurisdiction ^a	Ordinance/Provision	Summary of Local Regulations Western Has Examined
			California Fish and Game Code relating to Streambed Alteration Agreements
Tracy	Contra Costa County	General Ordinance Code	<p>Grading: Per Section 716-4.204, A grading permit is <u>not</u> required for:</p> <p>(a) An excavation which meets all of the following requirements:</p> <p>(1) Is less than five feet (1.524 meters) in depth below natural grade and is adequately supported by a retaining structure designed and constructed in accordance with Division 74;</p> <p>(2) Does not create a cut slope greater than seven feet (2.134 meters) in height and steeper than one vertical to two horizontal; and</p> <p>(3) Does not exceed two hundred cubic yards (152.92 cubic meters).</p> <p>(b) A fill which meets all of the following requirements:</p> <p>(1) Is not intended to support structures;</p> <p>(2) Does not obstruct a drainage course;</p> <p>(3) Is placed on natural grade that has a slope not steeper than one vertical to five horizontal;</p> <p>(4) Is less than three feet (0.914 meters) in depth at its deepest point, measured vertically upward from natural grade to the surface of the fill; and</p> <p>(5) Does not exceed two hundred cubic yards (152.92 cubic meters).</p> <p>Per Section 814-2.1002, any parcel of land subject to this chapter with an average slope of more than 26% and/or significant ridgelines and hilltops, regardless of their slope, shall not be graded without the specific authorization of the director of planning. Such grading shall only be done after it is shown, to the satisfaction of the director of planning (or the planning agency when it has jurisdiction), that the proposed grading development will comply with the objectives and regulations of this chapter and will not have a substantial visual impact when viewed from related community areas.</p>
		General Ordinance Code	Tree Removal: Per Section 816-6.1002 , a tree permit is not required for trimming and clearing within public agency or utility easements and ROWs for maintenance of easement or ROW.
Tracy	City of Antioch	General Plan	<p>Noise: Per Section 11.6, the City's objective is to achieve and maintain exterior noise levels appropriate to planned land uses throughout the City of Antioch. Construction-related noise shall be limited to between 7:00 a.m. and 7:00 p.m. Monday through Saturday.</p> <p>Grading: The City may require species and habitat surveys prior to issuance of grading permits for areas designated as sensitive.</p>
		Municipal Ordinance Code	<p>Noise: Per Section 9-5, stationary noise sources adjacent to outdoor living areas (e.g., backyards for single-family homes and patios for multi-family units) and parks shall not cause an increase in background ambient noise which will exceed 60 CNEL.</p> <p>Storm water: Per Section 8-13, storm water pollution control measures shall be implemented during all construction phases of development to prevent pollution from entering the waterways.</p>
Tracy	Town of Discovery Bay	n/a	This unincorporated Special District has a Community Service Board but no land use or zoning authority. <u>Requirements default to Contra Costa County.</u>
Tracy	Town of Knightsen	n/a	This unincorporated Town has a Community Service Board but no land use or zoning authority. <u>Requirements default to Contra Costa County.</u>

Project Region	Jurisdiction ^a	Ordinance/Provision	Summary of Local Regulations Western Has Examined
Tracy	City of Oakley	Municipal Code	Noise: Per Section 4.2.208 , construction or repair work which creates noise within or adjacent to a residential land use district is restricted to the following hours: 1) Monday through Friday: 7:30 a.m. to 7:00 p.m. 2) Saturdays, Sundays and holidays: 9:00 a.m. to 7:00 p.m.
Tracy	City of Stockton	General Plan	Noise: Construction activities are limited to between the hours of 7 a.m. to 7 p.m. Monday through Saturday. No construction is permitted on Sundays or national holidays without a written permit from the City.
		General Plan	Air Quality: Dust suppression methods are required during construction activities.
		Municipal Code	Noise: Construction activities operating or causing the operation of tools or equipment on private property used in alteration, construction, demolition, drilling, or repair work are prohibited between the hours of 10:00 p.m. and 7:00 a.m. if the sound creates a noise disturbance across a residential property line, except for emergency work of public service utilities.
		Municipal Code	Grading: A grading and erosion control permit is not required to grade, fill, excavate, store or dispose of earth material in accordance with the following: A. Less than 50 cubic yards of material is involved or less than one-half acre is cleared and grubbed; B. An excavation below finished grade for a structure authorized by a building permit conditioned with erosion control requirements; C. Cemetery graves; D. Refuse disposal sites controlled by other regulations; E. Excavations for wells; F. Mining, quarrying, excavating, processing, stockpiling of rock, sand, gravel, aggregate or clay, where established and provided for by law provided such operations do not affect the lateral pressure support or increase the stresses in or pressure upon any adjacent or contiguous property; G. Exploratory excavations under the direction of a civil engineer, geotechnical engineer, or engineering geologist; H. Production of agricultural crops.
		Municipal Code	Lighting: Exterior lights shall be located so as to eliminate spillover illumination or glare onto adjoining properties and to prohibit any interference with the normal operation or enjoyment of adjacent property. Exterior lights shall be made up of a light source, reflector, and shielding devices so that, acting together, the light beam is controlled and not directed across a property line or upward into the sky. Bare bulbs shall not be allowed.
		Municipal Code	Water Quality: No liquids of any kind shall be discharged into a public or private sewage or drainage system, watercourse, body of water, or into the ground, except in compliance with applicable regulations of the California Regional Water Quality Control Board (California Administrative Code, Title 23, Chapter 3 and the California Water Code).

Project Region	Jurisdiction ^a	Ordinance/Provision	Summary of Local Regulations Western Has Examined
		Municipal Code	<p>Cultural Resources: In the event that archaeological resources are discovered during construction, construction activities shall cease, and the Department shall be notified so that the extent and location of discovered materials may be recorded by a qualified archaeologist and disposition of artifacts may occur in compliance with state and Federal law. Human Remains: In the event human remains are discovered during any construction, construction activities shall cease, and the County Coroner and Director shall be notified immediately in compliance with CEQA Guidelines 15064.5 (d). A qualified archaeologist shall be contacted to evaluate the situation. If the human remains are of Native American origin, the Coroner shall notify the NAHC within 24 hours of this identification. The NAHC will identify the most likely descendent of the Native American to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.</p>
		Municipal Code	<p>Landscaping: All projects that require approval by the City shall provide and maintain landscaping in compliance with the provisions of Section 16.56.040.</p>
Tracy	San Joaquin County	San Joaquin County General Plan	<p>Visual Resources: The San Joaquin County General Plan includes the following goals which may be applicable to the visual resources analysis of the project: Views of waterways, hilltops, and oak groves from public land and public roadways shall be protected; Outstanding scenic vistas shall be preserved and public access provided to them whenever possible; Development proposals along scenic routes shall not detract from the visual and recreational experience; Waterway development and development on Delta islands shall protect the natural beauty, the fisheries, wildlife, riparian vegetation, and the navigability of the waterway.</p> <p>Noise: Construction activities are exempt from compliance with noise standards during specified daytime hours, between 6:00 a.m. and 9:00 p.m., Sunday through Saturday.</p>
		San Joaquin County Multi-Species Habitat Conservation and Open Space Plan	<p>Biological Resources: The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan allows the County and the cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy to issue Incidental Take Permits or allows project applicants to mitigate for impacts to covered species resulting from Open Space land conversion resulting from covered projects. The Plan covers the following activities: urban development, mining, expansion of existing urban boundaries, non-agricultural activities occurring on agriculturally zoned properties, projects within non-jurisdictional waters which could affect fisheries or wetlands indirectly, transportation projects, school expansions, non-Federal flood control projects, new parks and trails, utility installation, maintenance activities, managing preserves, and similar public agency projects.</p>
		County Code	<p>Grading: Per Section 9-1405.3, a grading permit is not required for:</p> <p>(a) An excavation which meets all of the following requirements:</p> <p>(1) Involve the removal, plowing under, or burial of less than 10,000 square feet of vegetation on a slope 8% or greater, or any amount of vegetation on slopes less than 8%;</p> <p>(2) Do not create unstable or erodible slopes;</p> <p>(3) Do not encroach onto sewage disposal systems or areas;</p> <p>(4) The cut is either less than 2 feet in depth or does not create slope > 5 feet in height and steeper than 1 ½ horizontal to 1 vertical.</p>
		County Code	<p>Noise: Outside of 6:00 a.m. and 9:00 p.m., Sunday through Saturday, construction activities are subject to the county's stationary noise source limits, which are 45 dB, L_{max}, as measured at the property line of the nearest receiver. In addition, work performed by private or public utilities in the maintenance or modification of its facilities is exempt from San Joaquin County noise ordinances.</p>
		County Code	<p>Landscaping: A minimum of 10 foot planting strip is required along streets for industrial development.</p>
		County Code	<p>Lighting: Outdoor lighting shall conform with provisions of Section 9-1025.6.</p>

Project Region	Jurisdiction ^a	Ordinance/Provision	Summary of Local Regulations Western Has Examined
New Melones	Calaveras County	General Plan	Noise: The County's policy is to improve compatibility between new and existing land uses.
		Municipal Ordinance	<p>Grading: A grading permit is not required for the following exempted activities:</p> <ul style="list-style-type: none"> Grading that meets any one of the following criteria: the total volume of material is less than fifty cubic yards; or fills that include less than one acre of land area, are less than one foot in depth, and are placed on natural terrain with a slope flatter than one unit vertical for every five units horizontal; or cuts that include less than one acre of land area, extend to less than two feet below ground surface, and do not result in the off-site disposal of more than fifty cubic yards of material. Maintenance of existing firebreaks, driveways, and roadways provided that the work does not result in any significant grade changes or drainage system modifications. Site clearing operations, including fuel reduction and fire protection measures that do not substantially change the natural contour of the land and disturb less than one acre of soil. Emergency work. <p>Notwithstanding the above exemptions, Western would need a grading permit for any grading that:</p> <ol style="list-style-type: none"> Requires an engineered design pursuant to Section 15.05.090; Involves grading within a floodplain as shown on the most recent FEMA floodplain maps; Requires a streambed or lakebed alteration agreement under Fish and Game Code Section 1600 et seq.; Requires a USACE permit under Section 10 and Section 404 of the <i>Clean Water Act</i>; or Is associated with a project subject to CEQA review; or has the potential to do any of the following: a) Endanger any structure intended for human or animal occupancy; b) Threaten the stability of any public roadway; c) Cause adverse impacts to existing drainage facilities; d) Exacerbate existing flood conditions; and/or e) Divert or modify drainage onto an adjacent parcel.
New Melones	Calaveras County	Municipal Ordinance	Erosion and Sediment Control: Regardless of whether or not a grading permit is required, all grading and earthwork activities within unincorporated Calaveras County require BMPs to minimize erosion and to control sediment discharges to the maximum extent practicable in accordance with the County manual and as required by the most recently adopted version of the State Water Resources Control Board's "General Permit for Discharges of Storm Water Associated with Construction Activities."
		Municipal Ordinance	Flood Damage Prevention: Per Section 15.06.130 , a development permit is required before any construction or other development begins within any area of special flood hazard established in Section 15.06.070 . Per Section 15.06.210 , encroachments, including fill, new construction, substantial improvement, and other new development is prohibited unless certification by a registered professional engineer or architect is provided demonstrating that encroachments shall not result in any increase in the base flood elevation during the occurrence of the base flood discharge.
	Tuolumne County	General Plan	Noise: Maximum allowable noise exposure levels from stationary noise sources are 70 decibels (7 a.m. to 10 p.m.) and 65 decibels (10 p.m. to 7 a.m.). Maximum hourly equivalent levels are 70 decibels (7 a.m. to 10 p.m.) and 45 decibels (10 p.m. to 7 a.m.).
		County Code	Flood Damage Prevention: Per Section 15.24.145 , a development permit must be obtained before any construction or other development within any area of special flood hazard established in Section 15.24.070 .
Morgan Hill/San Luis	Merced County	General Plan	Safety: All proposed structures, utilities, or public facilities within recognized near-surface subsidence or liquefaction areas should be located and constructed in a manner to minimize or eliminate damage. Within areas subject to 100-year frequency floods, all public utilities and facilities, such as roads, sewage disposal, gas, electrical and water systems, should be located and constructed to minimize or eliminate flood damage to the facilities.

Project Region	Jurisdiction ^a	Ordinance/Provision	Summary of Local Regulations Western Has Examined
		General Plan	Water Resources: In wetland areas, all public utilities and facilities, such as roads, sewage disposal ponds and gas, electrical and water systems, should be located and constructed to minimize or avoid significant loss of wetland resources. Structures, utilities, or public facilities located within watershed recharge areas that are determined to be important should be designed and constructed in a manner to minimize or eliminate risk of erosion and impact on water quantity or quality.
		County Code	Noise: Maximum permissible sound levels for residential areas are 65 dBA Ldn or 70 dBA Lmax. Noise from construction activity is exempt from this requirement, provided that construction in or adjacent to urban areas is limited to the daytime hours between 7 a.m. and 6 p.m., and all construction equipment is properly muffled and maintained. Section 10.60.040 prohibits operating or permitting the operation of any tools or equipment used in construction, drilling, earthmoving, excavating, or demolition work between 6 p.m. and 7 a.m. the following day on a weekday or at any time on a weekend day or legal holiday, except for emergency work, or when the sound level does not exceed any applicable relative or absolute limit specified in Section 10.60.030 .
	Santa Clara County	General Plan	The General Plan contains separate urban and rural planning documents, providing policy and implementation strategies to achieve desired objectives.
		Habitat Conservation Plan (HCP)	The Santa Clara Valley HCP/NCCP is a regional partnership between six Local Partners (the County of Santa Clara, Santa Clara Valley Transportation Authority, Santa Clara Valley Water District, and the Cities of San Jose, Gilroy and Morgan Hill) and three Wildlife Agencies (the CDFG, the USFWS, and the NMFS. The HCP is in its second administrative draft as of November 2009.
Morgan Hill/San Luis	Santa Clara County	County Code	Noise: Construction activities are exempt from exterior noise standards set forth in Section B11-152 . Section B11-154 prohibits operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekdays and Saturday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, that the sound there from creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance.
		County Code	Grading: A grading permit is not required if the grading work meets the Santa Clara County land use requirements, does not endanger adjacent property or divert or impair the flow of water in a watercourse, or cause a public nuisance, and meets one of the following two conditions: (a) Minor projects which: (1) have cuts and/or fills each of which is less than 5 feet in vertical depth at their deepest points measured from the natural ground surface, (2) the combined cuts and the combined fills are each less than 150 cubic yards in volume, and (3) do not create unstable slopes. These volume and height limits apply to all work performed regardless of the time period and do not represent annual exempt amounts; (b) Grading performed by or under the supervision or construction control of a governmental agency, including the County of Santa Clara, where that agency assumes full responsibility for the work, or by a public utility on property owned by the public utility or within recorded public utility easements where the work is under the exclusive jurisdiction of the State of California Public Utilities Commission and the public utility assumes full responsibility for the work.

Project Region	Jurisdiction ^a	Ordinance/Provision	Summary of Local Regulations Western Has Examined
	Morgan Hill	General Plan	Noise: Goal 7 of the General Plan is the prevention of noise from interfering with human activities or causing health problems. The Plan sets appropriate indoor and outdoor maximum noise levels.
		Municipal Code	Noise: Construction activities are prohibited other than between the hours of 7 a.m. and 8 p.m., Monday through Friday, and between the hours of 9 a.m. to 6 p.m. on Saturday. Construction activities may not occur on Sundays or Federal holidays.

Sources: Alameda County 1985, 1994, and 2009; City of Antioch 2009a and 2009b; Calaveras County 1996 and 2009; Contra Costa County 2005, 2007a, 2007b, and 2009; Town of Discovery Bay 2005, 2009a, and 2009b; Town of Knightsen 2009; Merced County 2000, 2009a, and 2009b; City of Morgan Hill 2006, 2009a, and 2009b; City of Oakley 2006; San Joaquin County 1992 and 2009a; Santa Clara County 1994, 2005, 2009a, and 2009b; City of Stockton 2007a, 2007b, 2007c, 2007d, and 2009; Tuolumne County 1996 and 2009a.

^a It is also noted, as discussed in **Section 3.10** of this EA, that some lands affected by the Proposed Action are owned by the State of California or the Federal government rather than by individual municipalities. These jurisdictions may have additional requirements specific to a given property in addition to applicable Federal or state laws and regulations. These entities include:

- **U.S. Bureau of Reclamation (BOR)** – The BOR brings water to more than 31 million people, and provides irrigation water for 10 million acres of farmland. Its mission is to assist in meeting the increasing water demands of the West while protecting the environment and the public's investment.
- **California Department of Fish and Game (CDFG)** - The CDFG maintains native fish, wildlife, plant species and natural communities for their intrinsic and ecological value and their benefits to people. This includes habitat protection and maintenance in a sufficient amount and quality to ensure the survival of all species and natural communities. The Department is also responsible for the diversified use of fish and wildlife including recreational, commercial, scientific and educational uses. Management plans are written to provide the necessary information for consistent and effective management of Department lands, fulfill environmental analysis requirements, and support operational and infrastructural funding.
- **California Department of Water Resources (DWR)** - The California Water Plan provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The Plan, which is updated every five years, presents basic data and information on California's water resources including water supply evaluations and assessments of agricultural, urban, and environmental water uses to quantify the gap between water supplies and uses. The Plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the state's water needs.
- **California Department of Parks and Recreation** - The California Department of Parks and Recreation manages its parks according to the *2002 General Plan*. The Park General Plan directs the long-range development and management of a park by providing broad policy and program guidance. In addition, the Department is developing General Plans for individual parks. A California State Park must have an approved General Plan before any major park facilities can be developed. Individual General Plans contain management guidance and resource inventories.

6.0 COORDINATION AND REVIEW OF THE ENVIRONMENTAL ASSESSMENT

Western proactively encouraged the involvement of governmental agencies during the preparation of this EA. Western held an outreach meeting on October 8, 2009, which was attended by representatives of the BOR and the California Department of Parks and Recreation. As a result of this meeting, Western sent an invitation to the BOR South-Central California Area Office to further discuss the project. There were no cooperating agencies for this EA.

The Proposed Action in this EA is based on a previous EA for the O&M of Western's northern California transmission systems. During the development of the Proposed Action for that EA, Western worked extensively with the USFWS and NMFS in order to address their concerns. Western has communicated to both of these agencies that an EA to cover the San Joaquin Valley portion of the system is under development.

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7.0 MONITORING AND ADAPTIVE MANAGEMENT

The monitoring and adaptive management plan for the San Joaquin Valley ROW Maintenance Project is intended to ensure the success of the project while minimizing impacts. Western's IVM Program requires O&M activities to be monitored to ensure that the desired results are produced as well as the reliable operation of Western's electric transmission system. To this end, Western is continuously monitoring its vegetation management practices to achieve the following IVM performance objectives:

- Protect public and worker safety;
- Prevent operational hazards, such as tall-growing trees on transmission line ROWs;
- Maintain unimpaired access to transmission facilities and ROWs;
- Protect substations, switchyards, and microwave stations from fire hazards;
- Control the spread of noxious weeds in compliance with applicable state and county regulations;
- Manage vegetation growth in a technical and efficient manner;
- Protect environmental quality of water, wildlife, and aesthetic resources;
- Establish stable, low-growing plant communities on transmission line ROWs; and
- Use IVM methods to meet objectives.

Where an O&M activity does not meet the performance objectives, adaptive management practices are implemented to modify the activity to be in compliance. This is achieved through implementation of the following program objectives, in concert with the SOPs and PCMs presented in **Tables 2.4-1 through 2.4-6**:

- Clearly delegate responsibility for monitoring reports;
- Delineate clear vegetation management objectives;
- Maintain schedules that are consistent with vegetation growth cycles and vegetation control management activities;
- Provide for groundwater and surface water monitoring; and
- Meet guidelines for processing information and feedback.

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8.0 TERMS AND ACRONYMS

Agriculture, rice (Agri): rice fields.

Agriculture, orchard (Agor): fruit trees.

Agriculture, pasture (Agps)

Agriculture, grain (Aggr): alfalfa, hay.

Agriculture, vineyard (Agvn): grapes.

Agriculture, row crop (Agrc): tomatoes, wheat, corn, etc.

Alluvial: Applied to the environments, processes, and products or rivers or streams.

Ambient air quality: The normal or average prevailing quality of the surrounding air in a given area in terms of the type and amounts of various air pollutants present.

Ambient Air Quality Standards (AAQS): AAQS define clean air, and are established to protect even the most sensitive individuals. An air quality standard defines the maximum amount of a pollutant that can be present in outdoor air without harm to the public's health. The Air Resources Board and the EPA are authorized to set AAQS.

Archaeological Resource Protection Act (ARPA), 16 U.S.C §§ 470aa-mm

Area of Potential Effects (APE): The APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. It is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

Assembly Bill (AB)

Attainment area: A geographic region where the concentration of a criteria air pollutant does not exceed national ambient air quality standards.

Bald Eagle Protection Act of 1940, 16 U.S.C. §§ 668-668d.

Barren (Bar): Rock, pavement, sand, etc.

Bay-Delta Conservation Plan (BDCP)

Best Management Practices (BMPs): Common-sense actions required, by law, to manage resources from pollution, BMPs are designed to prevent new pollution.

California Ambient Air Quality Standards (CAAQS)

California Code of Regulations (CCR)

California Department of Fish and Game (CDFG): Governmental agency in charge of managing California's fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values for their use and enjoyment by the public.

California Department of Water Resources (DWR): DWR is a governmental agency that operates and maintains the State Water Project. Additionally, the department also provides dam safety and flood control services, assists local water districts in water management and conservation activities, promotes recreational opportunities, and plans for future statewide water needs.

California Endangered Species Act (CESA)

California Environmental Quality Act (CEQA)

California Native Plant Society (CNPS)

California Natural Diversity Database (CNDDDB): CNDDDB is a program that inventories the status and locations of rare plants and animals in California.

California Occupational Safety and Health Administration (Cal/OSHA)

Carbon monoxide (CO)

Chaparral, mixed (Cmi): shrub dominant, chamise, buckthorn, poison oak, fremontia, toyon; <5,000 feet.

Chaparral, oak (Coa): dense, tall, live/blue oak, manzanita, toyon, buckbrush, poison oak; Sierra foothills.

Clean Air Act (CAA), 42 U.S.C. §§ 7401-7671q.

Clean Water Act (CWA), 33 U.S.C. §§ 1251-1387.

Code of Federal Regulations (CFR): CFR is a codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government.

Commercial, industrial (Com): developed land use other than residential or farms.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 - 9675

Critical Habitat: Critical habitat is defined as specific areas that are essential to the conservation of a Federally listed species, and that may require special management considerations or protection.

dBA: Abbreviation for decibels adjusted on an A-weighted decibel scale. Decibel is a unit used to describe the strength or intensity of wave-propagated phenomena such as sound transmitted signals. Technically, a logarithmic scale is used. 2) One dB equals

the least sound level detectable by the human ear, while 70 dB is equivalent to busy traffic and 150 dB is equal to a nearby jet taking off.

Department of Energy (DOE): DOE is a governmental department whose mission is to advance energy technology and promote related innovation in the U.S.

Elderberry, isolated (Ebis): Elderberry shrub not in savanna setting.

Electric and Magnetic Fields (EMF): Of or pertaining to the magnetic forces produced in a surrounding medium by the flow of current in a conductor, as used in this document, meaning electric and magnetic fields.

Emergency Planning & Community Right to Know Act (EPCRA), 42 U.S.C. §§ 11001-11050.

Endangered Species Act (ESA), 16 U.S.C. §§ 1531 - 1544

Environmental Assessment (EA)

Environmental Impact Statement (EIS)

Environmental Protection Agency (EPA): EPA is a Federal government agency with the mission to protect human health and the environment.

Evolutionary Significant Unit (ESU): ESU is a population of organisms that is considered distinct for purposes of conservation.

Executive Order (EO)

Farmland Protection Policy Act, 7 U.S.C. §§ 4201-4209.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. §§ 136 – 136y.

Federal Noxious Weed Act of 1974, 7 U.S.C. §§ 2801-2814.

Finding of No Significant Impact (FONSI)

Fish and Wildlife Coordination Act of 1934, 16 U.S.C. §§ 661-667e.

Fungicides: Chemical compounds used to prevent the spread of fungi in gardens and crops, which can cause serious damage to the plants.

Geographic Information System (GIS)

Global Positioning System (GPS)

Grasslands, non-native (Gnn): Soft chess, wild oats, ripgut, ryegrass.

Grasslands, native perennial (Gnp): Soft chess, orchardgrass, oatgrass, fescue, hairgrass.

Greenhouse Gas (GHG)

Guidelines, Requirements, Inspections, and Procedures (GRIP)

Hazardous Air Pollutant (HAP)

Herbicides: Herbicide is a pesticide used to control unwanted target plants.

Hydrologic Region (HR): HR represents geographic areas which contain the drainage area of a major river or rivers.

Impact: Direct or indirect changes in the existing environment, whether beneficial or adverse.

Integrated Risk Information System (IRIS)

Integrated Vegetation Management (IVM)

Invasive plant: Invasive plants are those that are not part of (if exotic), or are a minor component of (if native), the original plant community or communities that have the potential to become a dominant or co-dominant species on the site if their future establishment and growth are not actively controlled by management interventions, or are classified as exotic or noxious plants under applicable state or Federal law. Species that become dominant for only one to several years (e.g., a short-term response to drought or wildlife) are not invasive plants.

Kilovolt (kV): A unit of potential difference equal to 1000 volts.

Lacustrine: Lacustrine is a geology term for a sedimentary environment of a lake.

L_{dn}: L_{dn} is the day-night average sound level, a measure of average noise level over a 24-hour period.

Limited Operating Period (LOP)

Meadows (Mot): Seasonally dry swales, ann. grasses, forbs, some meadow species when wet.

Mesozoic: Mesozoic is a geologic era of the Phanerozoic eon. Mesozoic descended from a lineage of so-called “mammal-like reptiles”.

Migratory Bird Treaty Act of 1918, 16 U.S.C. §§ 703-712.

National Ambient Air Quality Standards (NAAQS)

National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 – 4370h.

National Historic Preservation Act (NHPA), 16 U.S.C. §§ 470 – 470w. NHPA is a statute to ensure that government provides leadership for preservation, contribute to

and give maximum encouragement to preservation, and foster conditions under which our modern society and our prehistoric resources can exist in productive harmony.

National Marine Fisheries Service (NMFS): NMFS is a Federal agency focused on the condition of the oceans and the atmosphere under the Department of Commerce. This agency oversees ocean and river fish harvest limits and determines which stocks are to be listed as endangered or threatened under the ESA.

National Register of Historic Places (NRHP): Nation's official list of cultural resources worthy of preservation.

Nationwide permits (NWP)

Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. §§ 3001-3013.

Native American Heritage Commission (NAHC): NAHC is a governmental agency which strives for the preservation and protection of Native American human remains and associated grave goods.

Native species: A plant or animal that historically occurred or currently occurs in a particular ecosystem and was not introduced.

Nitrogen Dioxide (NO₂)

Nitrogen Oxides (NO_x)

Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended (16 U.S.C §§ 4701-4751).

Noxious weed: A noxious weed is any plant designated by a Federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property.

Occupational Safety and Health Act, 29 U.S.C. §§ 651, *et seq.*

Occupational Safety and Health Administration (OSHA): OSHA is the main Federal agency charged with the enforcement of safety and health legislation.

Operation and Maintenance (O&M)

Paleozoic: Paleozoic is the earliest of three geologic eras of the Phanerozoic Eon. Paleozoic covers the time from the first appearance of abundant, hard-shelled fossils to the time when the continents were beginning to be dominated by large, relatively sophisticated reptiles and relatively modern plants.

Particulate matter (PM)

Pesticides: Any substance or mixture of substances intended to preventing, destroying, repelling, or lessening the damage of any pest.

Physiographic: A geology term for a landform considered with regard to its origin, cause, or history.

PM_{2.5}: Fine particulate matter less than 2.5 microns in diameter.

PM₁₀: Particulate matter less than 10 microns in diameter.

Pollution Prevention Act of 1990, 42 U.S.C. §§ 13101-13109.

Porter-Cologne Water Quality Control Act (Porter-Cologne)

Programmatic Agreement (PA)

Project Conservation Measure (PCM): Measure developed to avoid adverse impacts to specific sensitive resources with an associated location within the project area.

Reactive Organic Gasses (ROG)

Regional Water Quality Control Board (RWQCB): There are nine RWQCBs in California with the mission to preserve, enhance and restore the quality of California's water resources.

Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901- 6992k.

Right-of-Way (ROW): An easement, permit, or grant for a certain purpose over the land of another, such as the strip of land used for a road, electric transmission infrastructure, communication facilities, or pipeline. Western's rights within the easement include the right to construct, reconstruct, operate, maintain, and patrol the transmission and communication infrastructure. Rights usually reserved to the land owner include the right to cultivate, occupy, and use the land for any purpose that does not conflict with Western's use of its easement

Riparian, Great Valley forest (Rgf): Valley oak, California walnut, box elder, cottonwood, willow.

Riparian, Great Valley scrub (Rgs): Willow, blue elderberry, verbena, blackberry.

Riverine: Any habitat defined by water flowing through a channel.

Safe Drinking Water Act (SDWA), 42 U.S.C. §§ 300f-300j-26.

Scrub, chenopod (Scc): goosefoot family, especially iodine bush.

Soil Conservation and Domestic Allotment Act, 16 U.S.C. §§ 590a-590q3.

Sheetwash: The removal of loose surface materials by overland flow.

Standard Operating Procedure (SOP): Measure developed to reduce public and worker safety hazards and limit the potential impacts to the environment that shall be followed at all times, during all O&M activities, and throughout the entire project area.

State Historic Preservation Officer (SHPO)

Substation: A subsidiary station of an electricity generation, transmission, and distribution system where voltage is transformed from high to low or the reverse using transformers.

Sulfur Dioxide (SO₂)

Superfund Amendments and Reauthorization Act (SARA), Public Law .No. 99-499 (1986).

Toxic Air Contaminants (TACs)

Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2601-2695d.

Traditional Cultural Properties (TCPs)

Transmission: The bulk transport of electricity from large generation centers over significant distances to interchanges with large industries and distribution networks of utilities.

Transmission line: A high-voltage, extra-high-voltage, or ultra-high-voltage power line used to carry electric power efficiently over long distances.

Undesirable plant (or vegetation): Undesirable plants are species classified as undesirable, noxious, harmful, exotic, injurious, or poisonous under applicable state or Federal law, but not including species listed as endangered by the ESA, or species indigenous to the planning area.

Urban (Urb): lawns, trees, backyard.

U.S. Army Corps of Engineers (USACE): Governmental agency responsible for the investigation, developing and maintaining the nation's water and related environmental resources.

U.S. Bureau of Land Management (BLM): A Bureau within the Department of the Interior responsible for managing public lands, including resources such as timber, minerals, oil and gas, geothermal energy, wildlife habitat, endangered species, recreation and cultural values, and open space.

U.S. Bureau of Reclamation (BOR)

U.S. Code (U.S.C.)

U.S. Department of Agriculture (USDA) U.S. Fish and Wildlife Service (USFWS): Governmental agency with the mission of working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

Waters, creek, intermittent (Waci): Intermittent creek, < 20 feet wide.

Waters, creek, perennial (Wacp): Continually flowing, < 20 feet wide.

Waters, pond (Wapd): Small, < 6' deep.

Waters, lake (Walk): Large, > 6' deep.

Waters, river (Warv): Perennial/intermittent, > 20 feet wide.

Waters, seep/spring (Wasp)

Waters, impoundment (Waim): Stock pond, man-made ponding feature.

Waters, drainage (Wadr): Ditches, agriculture drainages (usually well vegetated and shallow).

Waters, irrigation canal (Waic): Flooded up to supply irrigation water to fields, usually deeper.

Weed: Plants that interfere with management objectives for a given area at a given point in time.

Wetlands, freshwater marsh (Wfm): Rushes, nutsedge, cattail, bulrush.

Wetlands, seasonal (Wse): Seasonal ponding, ryegrass, barley, curly dock, rushes, eleocharis.

Wetlands, vernal pool (Wvpi): Seasonal ponding, coyote thistle, popcorn flower, downingia, toadrush, goldfields, typically with colorful, concentric rings.

Wetlands, vernal pool grassland (Wvpagn)

Western Area Power Administration (Western): One of the DOE's four power marketing agencies.

Woodland, blue oak (Wblu): Blue oak, foothill pine, valley grassland understory.

Woodland, foothill pine-chaparral (Wfp): Foothill pine, blue oak, ridges and canyons.

9.0 LIST OF PREPARERS AND PERSONS CONSULTED

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9 years of experience

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23 years of experience

M.S. Geological Sciences, Rutgers University, New Brunswick NJ, 1987

B.S. Geological Sciences, University of Washington, Seattle WA, 1982

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Appendix A

USFWS Correspondence

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Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

APR 5 2010

Mr. Dan Russell
Deputy Assistant Field Supervisor
U.S. Department of the Interior
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Dear Mr. Russell:

The Western Area Power Administration (Western), Sierra Nevada Region, is a power marketing administration of the U.S. Department of Energy. Western owns, operates and/or maintains various distribution and transmission lines, substations and maintenance facilities throughout California. Western also has legal use of various improved and unimproved access roads to these lines. This letter is intended to introduce the U.S. Fish and Wildlife Service (Service) to Western's San Joaquin Valley Right-of-Way (ROW) Maintenance Program (San Joaquin Valley Project) and to request that this effort be added to a currently ongoing informal consultation process.

The San Joaquin Valley Project consists of 17.2-kilovolt (kV) distribution lines, 69-kV and 230-kV transmission lines, associated substations (including a 50-foot buffer around the substation), a maintenance facility, and associated access road ROW located within the counties of Alameda, Calaveras, Contra Costa, San Joaquin, Merced, Santa Clara, and Tuolumne (Figure 1). In total, there are approximately 115 miles of distribution and transmission line ROW, 28 miles of access roads, 7 substations, and 1 maintenance facility within the proposed Project area. Additionally, as part of this effort, Western's infrastructure in Placer, Sacramento and Sutter counties were resurveyed in order to update the Section 7 consultations with the Service. This infrastructure was previously addressed in Western's Sacramento Valley ROW Maintenance Environmental Analysis (Sac Valley Project) and was not included in the environmental analysis for the San Joaquin Valley Project.

Pursuant to Section 7 of the Federal *Endangered Species Act*, Western has a programmatic biological opinion from the Service for existing operation and maintenance (O&M) activities (USFWS 1998), as well as a Programmatic Informal Consultation on the North Area Right-of-Way Operations and Maintenance Project (North Area, Service File No. 81420-2009-I-0743-1). These documents address current routine maintenance along Western's ROWs, including access roads and substations;

however, the most recent informal consultation does not include the San Joaquin Valley Project or the Sac Valley Project updates.

San Joaquin Valley Project serves to update the existing O&M Program to include all transmission lines, associated legal access roads, substations, and the maintenance facility, into one comprehensive Master O&M Program. The Master O&M Program would include additional maintenance activities that are outside the scope of the existing biological opinion and outside the area of the North Area informal consultation. Western would like to have the San Joaquin Valley Project and Sac Valley Project updates added to the informal consultation process, or covered under a parallel process to the North Area consultation.

The purpose of the San Joaquin Valley Project is to maintain existing transmission line and legal access road ROWs, as well as substations and a maintenance facility, in a manner: (1) consistent with prudent utility practices, including applicable reliability standards; and (2) that protects environmental resources while improving the efficiency and effectiveness of maintenance activities. Western has designed this maintenance program to balance environmental protection with system reliability and compliance with the National Electric Safety Code, Western Electricity Coordinating Council requirements, North American Electric Reliability Corporation reliability standards, Institute of Electrical and Electronics Engineers standards, and Western directives for maintaining system reliability and protection of human safety.

To meet this purpose, Western's objectives are to maintain its ROWs to:

- Protect from operational hazards
- Provide access for maintenance
- Protect facilities from fire
- Control the spread of noxious weeds and protect environmental quality
- Develop a technically and economically efficient program
- Protect public and worker safety
- Maintain sound relationships with landowners and managers
- Streamline regulatory permitting activities
- Protect significant environmental resources, as defined by applicable Federal, state, and local laws
- Comply with environmental laws and regulations affecting Federal actions

The need for the Proposed Action 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 trees falling onto the transmission lines.

environment from arcing (which can cause fires) and trees falling onto the transmission lines.

- Performing O&M activities in a cost-effective manner that would benefit the public and natural ecosystems.
- Maintaining the transmission line and legal access road ROWs to ensure that Western's maintenance crews have safe and all-weather access to ROW facilities.

To facilitate evaluation with this addition to the informal consultation, the San Joaquin Valley Project area has been divided into three geographical regions: Tracy, New Melones, and Morgan Hill/San Luis. The following describes the transmission line ROW, substations (including a 50-foot buffer surrounding each substation), and maintenance facility that comprise the Project area. Legal access roads, as described above, run close to but outside of transmission line ROWs.

The Tracy region of the Project area consists of the ROWs and legal access roads for the following transmission lines:

- Hurley-Tracy (#1 & #2) 230-kV between the Tracy Substation and the San Joaquin County/Sacramento County border
- Tracy-Contra Costa 69-kV between the Tracy Substation and Contra Costa #4 in Antioch
- Tracy-Los Vaqueros 69-kV between the Tracy-Contra Costa transmission line (near Kellogg Creek Road in Contra Costa County) and the Los Vaqueros Substation
- Tracy-Lawrence Livermore National Laboratory 230-kV between the Tracy Substation and Livermore Substation

The Tracy Substation, Los Vaqueros Substation, and Livermore Substation are all within the Tracy region. The Tracy Maintenance Facility is contained within the same fenced area as the Tracy Substation.

The New Melones region of the Project area consists of the ROWs for the following transmission and distribution lines:

- New Melones (#1 & #2) 230-kV between the New Melones Powerstation and the New Melones Substation
- Tuttle town 17.2-kV, east of New Melones Lake
- Gloryhole 17.2-kV, north of New Melones Lake

The New Melones Substation is included within the New Melones region.

The Morgan Hill/San Luis region of the Project area consists of three substations:

- Coyote Substation in Morgan Hill
- Pacheco Substation, west of the San Luis Reservoir
- O'Neill Substation, east of the San Luis Reservoir

Western is currently working on an Environmental Assessment for the San Joaquin Valley Project; additional detailed information is included in that document. Full sized maps for each of the above mentioned facilities will be included, as well as a complete analysis of impacts to species. This document will be provided to your office as soon as a draft copy is available for review.

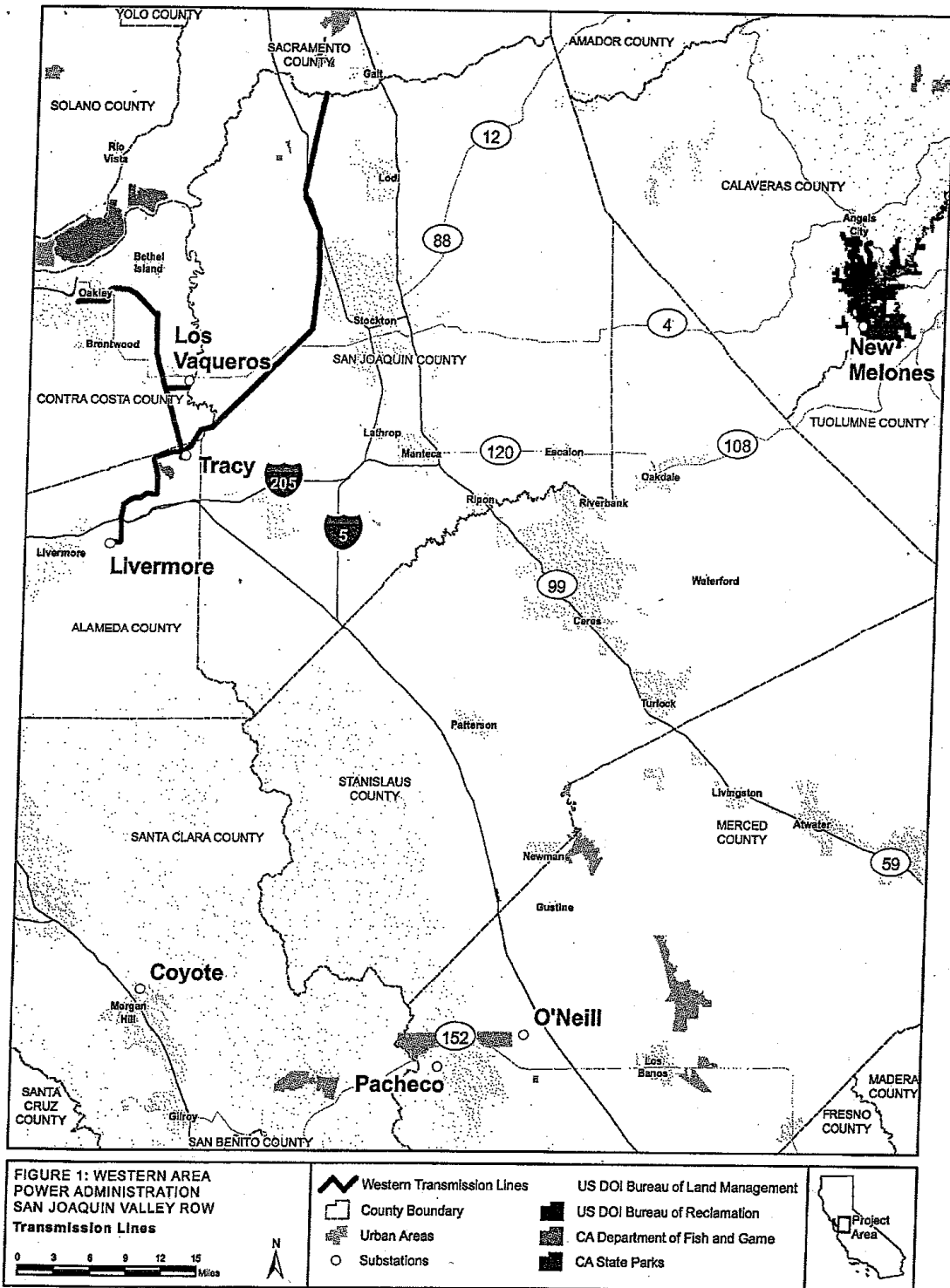
Again, Western would like to address our O&M needs for the San Joaquin Valley Project via an informal consultation process similar to, if not included in, the North Area consultation. Western currently has a meeting planned for the week of April 5, 2010, to address this effort with your staff. If you have any questions please do not hesitate to call the project manager, Ricardo Velarde, at (916) 353-4565, or the staff biologist, Misti Schriener, at (720) 962-7239.

Sincerely,

Ricardo Velarde
for Steve Tuggle

Stephen Tuggle
Natural Resources Manager

Enclosure





Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

APR 28 2010

Mr. Dan Russell
Deputy Assistant Field Supervisor
U.S. Department of the Interior
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Dear Mr. Russell:

This is a follow-up to the letter sent to your office on April 5, 2010, by the Western Area Power Administration (Western), Sierra Nevada Region. It includes more detailed information on the Sacramento Valley Right-of-Way (ROW) Maintenance Program (Sac Valley Project). Western's infrastructure in Placer, Sacramento and Sutter counties were resurveyed in order to update the Section 7 consultations with the U.S. Fish and Wildlife Service (Service).

The Sac Valley Project updates encompass the ROWs and legal access roads for the following transmission lines (Figure 1):

- O'Banion-Elverta (#1 & #2) 230-kilovolt (kV) between the O'Banion Substation and the Elverta Substation.
- Cottonwood-Roseville 230-kV between the Sutter/Yuba County line to the Roseville Substation.
- Hurley-Tracy (#1 & #2) 230-kV between the Hurley Substation and the Sacramento/San Joaquin County Line.
- Roseville-Elverta 230-kV between the Roseville Substation and the Elverta Substation.
- Elverta-Hurley (#1 & #2) 230-kV between the Elverta Substation and the Hurley Substation.
- Nimbus-Folsom 115-kV between the Nimbus Substation and the Folsom Substation.
- Folsom-Roseville 230-kV between the Folsom Substation and the Roseville Substation.

In addition, the following facilities were also resurveyed:

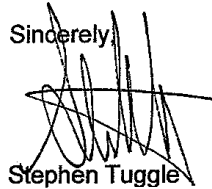
- O'Banion Substation in Sutter County
- Roseville and Fiddymont Substations in Placerville County

- Folsom and Elverta Substations in Sacramento County
- Elverta Maintenance Facility in Sacramento County

In total, there are approximately 137 miles of transmission line ROW, 7 miles of access roads, five substations and one maintenance facility within the Sac Valley Project area.

Western and Service staff have met and discussed these updates along with other projects, in particular, the San Joaquin Valley ROW Maintenance Program. As explained in the initial letter (enclosed) and discussed in subsequent meetings, Western would like these updates added to the informal consultation process that was completed for the North Area ROW Maintenance Program (Service File # 81420-2009-I-0743-1). If you have any questions regarding the Project, please do not hesitate to call the Environmental Assessment Project Manager, Ricardo Velarde, at (916) 353-4565 or the Staff Biologist, Misti Schriener, at (720) 962-7239.

Sincerely,



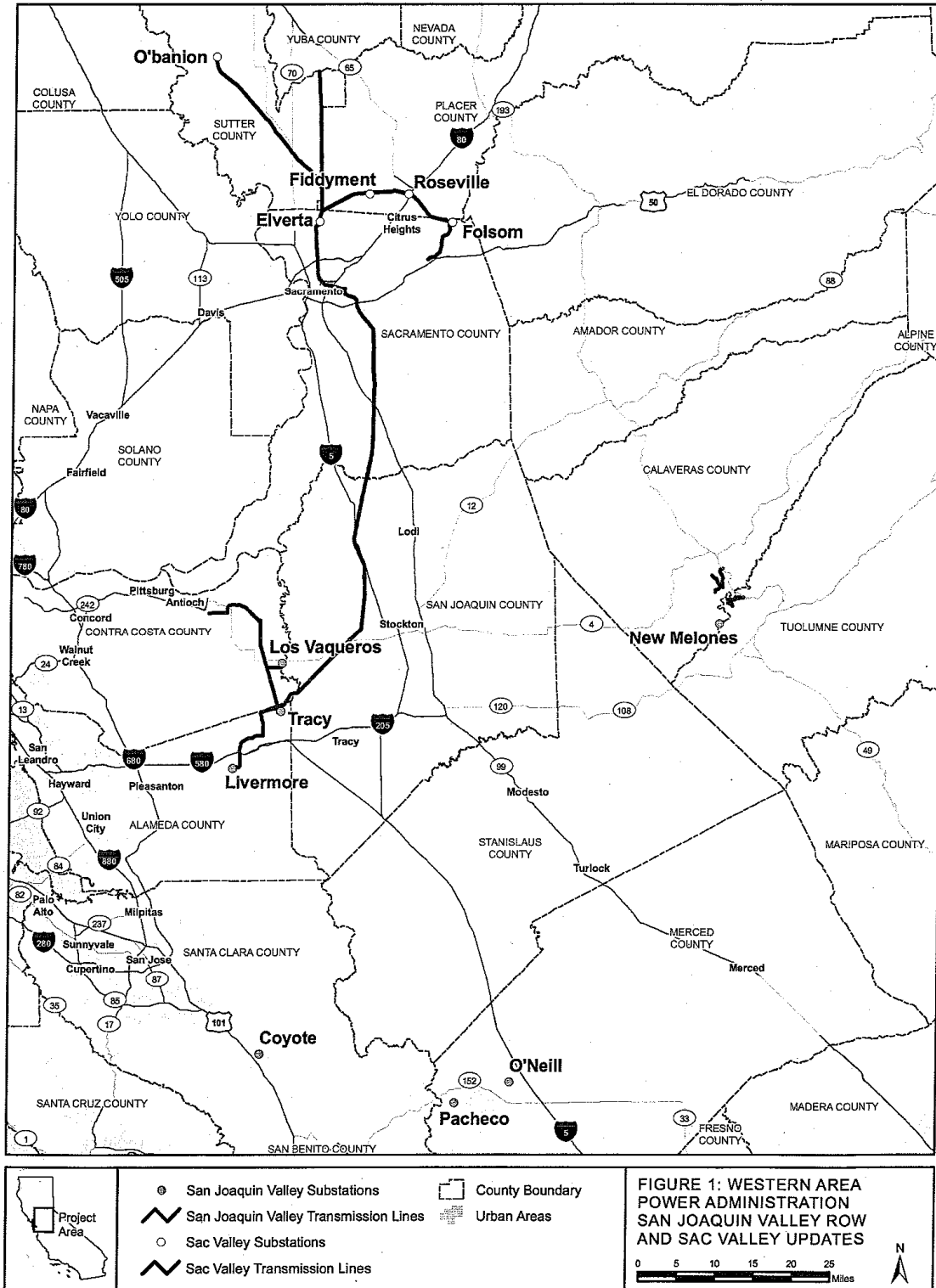
Stephen Tuggle
Natural Resources Manager

Enclosures (2)

cc (w/ Enclosures):
Ms. Jana Affonso
Chief, Sacramento Valley Branch
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Mr. Ryan Olah
Chief, Coastal Branch
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Ms. Susan Jones
Chief, San Joaquin Valley Branch
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825



Appendix B

NMFS Correspondence

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Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

APR 28 2010

Ms. Maria Rea
Sacramento Area Office Supervisor
National Marine Fisheries Service
650 Capitol Mall, Suite 8-300
Sacramento, CA 95814

Dear Ms. Rea:

The Western Area Power Administration (Western), Sierra Nevada Region, is a power marketing administration of the U.S. Department of Energy. Western owns, operates, and/or maintains various distribution and transmission lines, substations, and maintenance facilities throughout California. Western also has legal use of various improved and unimproved access roads to these lines. This letter is intended to introduce the National Marine Fisheries Service (NMFS) to Western's San Joaquin Valley Right-of-Way (ROW) Maintenance Program (San Joaquin Valley Project) and the Sacramento Valley ROW Maintenance Program (Sac Valley Project), and to request that these efforts be added to the informal consultation process that was completed on the North Area ROW Operation and Maintenance Program (North Area Project).

The San Joaquin Valley Project consists of 17.2-kilovolt (kV) distribution lines, 69-kV and 230-kV transmission lines, associated substations (including a 50-foot buffer around the substations), a maintenance facility, and associated access road ROW located within the counties of Alameda, Calaveras, Contra Costa, San Joaquin, Merced, Santa Clara, and Tuolumne (Figure 1). In total, there are approximately 115 miles of distribution and transmission line ROW, 28 miles of access roads, seven substations, and one maintenance facility within the proposed San Joaquin Valley Project area.

Additionally, as part of this effort, Western's infrastructure in Placer, Sacramento, and Sutter counties were resurveyed in order to update the Section 7 consultations with NMFS. This infrastructure was previously addressed in Western's Sacramento Valley ROW Maintenance Environmental Analysis and was not included in the environmental analysis for the San Joaquin Valley Project. In total, there are approximately 137 miles of transmission line ROW, 7 miles of access roads, five substations, and one maintenance facility within the proposed Sac Valley Project area.

Pursuant to Section 7 of the Federal *Endangered Species Act*, Western has a Programmatic Informal Consultation on the North Area Project (North Area, NMFS File No. 2008/07762). These documents address current routine maintenance along Western's ROWs, including access roads and substations; however, the most recent informal consultation does not include the San Joaquin Valley Project or the Sac Valley Project updates.

The San Joaquin Valley Project serves to update the existing Operation and Maintenance (O&M) Program to include all transmission lines, associated legal access roads, substations, and the maintenance facility into one comprehensive Master O&M Program. In order to accomplish this, Western would like to have the San Joaquin Valley Project and Sac Valley Project areas added to the informal consultation that was completed for the North Area Project, or covered under an identical consultation. Western is currently working with your staff to arrange a meeting during the month of April 2010 to discuss these efforts, as well as the proposed process for consultation.

The purpose of the San Joaquin Valley Project is to maintain existing transmission line and legal access road ROWs, as well as substations and a maintenance facility, in a manner: (1) consistent with prudent utility practices, including applicable reliability standards; and (2) that protects environmental resources while improving the efficiency and effectiveness of maintenance activities. Western has designed this maintenance program to balance environmental protection with system reliability and compliance with the National Electric Safety Code, Western Electricity Coordinating Council requirements, North American Electric Reliability Corporation reliability standards, Institute of Electrical and Electronics Engineers standards, and Western directives for maintaining system reliability and protection of human safety.

To meet this purpose, Western's objectives are to maintain its ROWs to:

- Protect from operational hazards.
- Provide access for maintenance.
- Protect facilities from fire.
- Control the spread of noxious weeds and protect environmental quality.
- Develop a technically and economically efficient program.
- Protect public and worker safety.
- Maintain sound relationships with landowners and managers.
- Streamline regulatory permitting activities.
- Protect significant environmental resources, as defined by applicable Federal, State, and local laws.
- Comply with environmental laws and regulations affecting Federal actions.

The need for the Proposed Action 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 trees falling onto the transmission lines.
- Performing O&M activities in a cost-effective manner that would benefit the public and natural ecosystems.
- Maintaining the transmission line and legal access road ROWs to ensure that Western's maintenance crews have safe and all-weather access to ROW facilities.

To facilitate evaluation in this addition to the informal consultation, the San Joaquin Valley Project area has been divided into three geographical regions: Tracy, New Melones, and Morgan Hill/San Luis. The following describes the transmission line ROW, substations (including a 50-foot buffer surrounding each substation), and a maintenance facility that comprise the Project area. Legal access roads, as described above, run close to but outside of transmission line ROWs.

The Tracy region of the Project area consists of the ROWs and legal access roads for the following transmission lines:

- Hurley-Tracy (#1 & #2) 230-kV between the Tracy Substation and the San Joaquin County/Sacramento County border.
- Tracy-Contra Costa 69-kV between the Tracy Substation and Contra Costa #4 in Antioch.
- Tracy-Los Vaqueros 69-kV between the Tracy-Contra Costa transmission line (near Kellogg Creek Road in Contra Costa County) and the Los Vaqueros Substation.
- Tracy-Lawrence Livermore National Laboratory 230-kV between the Tracy Substation and Livermore Substation.

The Tracy Substation, Los Vaqueros Substation, and Livermore Substation are all within the Tracy region. The Tracy Maintenance Facility is contained within the same fenced area as the Tracy Substation.

The New Melones region of the Project area consists of the ROWs for the following transmission and distribution lines:

- New Melones (#1 & #2) 230-kV between the New Melones Powerstation and the New Melones Substation.
- Tuttle town 17.2-kV, east of New Melones Lake.
- Gloryhole 17.2-kV, north of New Melones Lake.

The New Melones Substation is included within the New Melones region.

The Morgan Hill/San Luis region of the Project area consists of three substations:

- Coyote Substation in Morgan Hill.
- Pacheco Substation, west of the San Luis Reservoir.
- O'Neill Substation, east of the San Luis Reservoir.

The Sac Valley Project updates encompass the ROWs and legal access roads for the following transmission lines (Figure 1):

- O'Banion-Elverta (#1 & #2) 230-kV between the O'Banion Substation and the Elverta Substation.
- Cottonwood-Roseville 230-kV between the Sutter/Yuba County line and the Roseville Substation.
- Hurley-Tracy (#1 & #2) 230-kV between the Hurley Substation and the Sacramento/San Joaquin County Line.
- Roseville-Elverta 230-kV between the Roseville Substation and the Elverta Substation.
- Elverta-Hurley (#1 & #2) 230-kV between the Elverta Substation and the Hurley Substation.
- Nimbus-Folsom 115-kV between the Nimbus Substation and the Folsom Substation.
- Folsom-Roseville 230-kV between the Folsom Substation and the Roseville Substation.

In addition, the following facilities were also resurveyed:

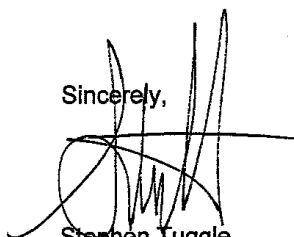
- O'Banion Substation in Sutter County
- Roseville and Fiddymont substations in Placerville County
- Folsom and Elverta substations in Sacramento County
- Elverta Maintenance Facility in Sacramento County

In total, there are approximately 137 miles of transmission line ROW, 7 miles of access roads, five substations and one maintenance facility within the Sac Valley Project area.

Western is currently working on an Environmental Assessment (EA) for the San Joaquin Valley Project; additional detailed information is included in that document. Full sized maps for each of the above mentioned facilities will be included, as well as a complete analysis of impacts to species. This document will be provided to your office as soon as a draft copy is available for review.

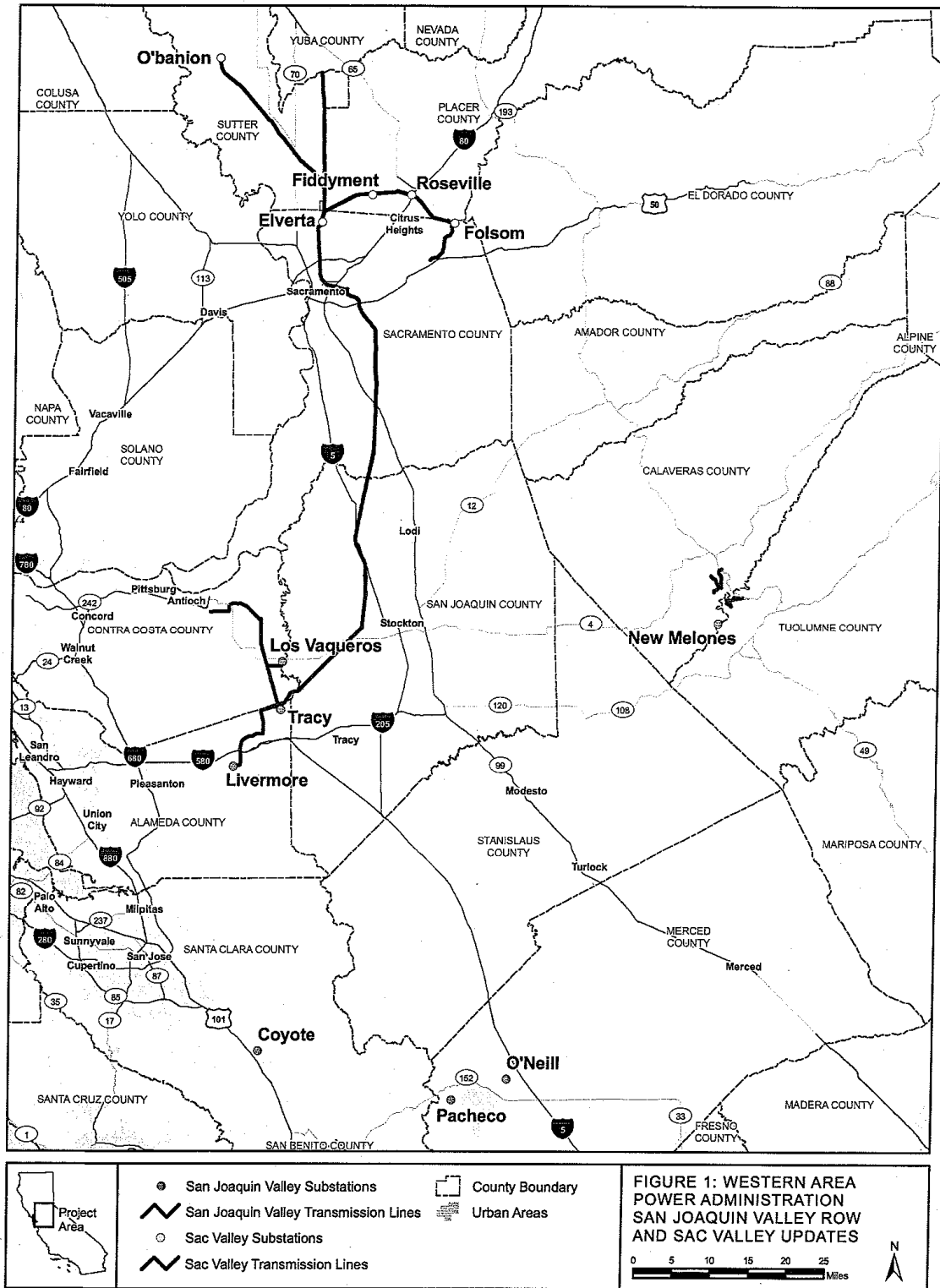
Western would like these updates added to the informal consultation process that was completed for the North Area ROW Maintenance Program. If you have any questions regarding the Project, please do not hesitate to call the EA Project Manager, Mr. Ricardo Velarde, at (916) 353-4565 or the Staff Biologist, Ms. Misti Schriener, at (720) 962-7239.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen Tuggle". The signature is stylized with a large, sweeping initial "S" and several vertical strokes.

Stephen Tuggle
Natural Resources Manager

Enclosure



Appendix C

BLM Correspondence

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Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

SEP 22 2009

Mr. William Haigh
Field Manager
Bureau of Land Management
Mother Lode Field Office
5152 Hillside Circle
El Dorado Hills, CA 95762

Dear Mr. Haigh:

The Western Area Power Administration (Western) an agency of the Department of Energy, markets and delivers reliable, cost-based, hydroelectric power and related services within a 15-state service area of the central and western United States. The Sierra Nevada Region (SNR) makes up one of four customer service regions of Western. SNR is responsible for the operation and maintenance (O&M) of Federal transmission facilities within a geographic service territory that includes northern California and a portion of Nevada. In order to effectively operate and maintain the facilities, Western must comply with various directives, regulations, and orders, including the National Electric Safety Code and Western States Coordinating Council, which ensure protection of human safety and reliability of the transmission system.

Western proposes to update the O&M procedures, and currently has one completed Environmental Assessment (EA) and another that is nearing completion. These EAs fulfill the various environmental documentation requirements for routine O&M activities which allow Western to conduct necessary routine activities in an efficient manner, rather than reacting to O&M activities with a time-consuming, project-by-project approach. However, these two EAs are only applicable to O&M actions within roughly two-thirds of SNR's service area. Western is seeking to produce a third EA that would cover O&M activities for the remaining facilities within SNR. The proposed Project, for the purposes of this document, will be referred to as the San Joaquin Valley Right-of-Way (ROW) Maintenance EA Project (Project).

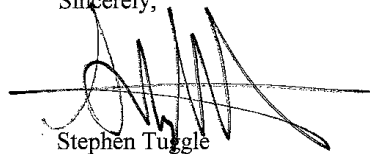
The Project area includes the majority of Western's transmission lines, legal access road ROWs, and facilities within the counties of San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne and Santa Clara (enclosure 1). Each ROW may contain either single-circuit (one set of conductors on one set of towers) or double-circuit (two sets of conductors on one set of towers) transmission lines. Much of Western's infrastructure is not accessible by paved road; therefore, Western has legally established access roads that allow personnel to drive to facilities and various locations along the transmission lines. Western's documented legal access roads are generally dirt or gravel, and require occasional maintenance.

Our teams of biologists and archaeologists are conducting biological and cultural resource surveys within the Project area to collect comprehensive environmental baseline data. All biological and cultural data is logged using Geographic Positioning System technology and other mapping media.

Western's ROW in the San Joaquin Valley overlaps a portion of the Bureau of Land Management's land (enclosure 2). Western would like to extend an invitation for you to attend an inter-agency meeting where you can hear about the Project, ask questions, and discuss the data collected and our approach for preparation of the EA. Other topics to discuss at the meeting include the proposed EA schedule, purpose and need, opportunities for agencies to be involved in the EA process with Western, ROW access, and field survey coordination. Also included in the meeting will be a presentation of Western's Geographic Information System data resources shown within the Project area, which will characterize the baseline conditions along the ROW. The meeting is scheduled to be held on October 8, 2009, at 11 a.m. at Western's regional office in Folsom, California.

Western appreciates your cooperation with our office. We look forward to collaborating with you and other agencies on the Project. Please contact Mr. Ricardo Velarde, Environmental Protection Specialist, by no later than October 2, 2009, at (916) 353-4565 or at velarde@wapa.gov to confirm meeting attendance or for additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stephen Tuggle', written over a horizontal line.

Stephen Tuggle
Natural Resources Manager

2 Enclosures

FEB 18 2010

Mr. William Haigh
Field Manager
Bureau of Land Management
Mother Lode Field Office
5152 Hillside Circle
El Dorado Hills, CA 95762

Dear Mr. Haigh:

In September 2009, you received a letter from Western Area Power Administration (Western) (enclosure 1) introducing Western's proposal to update its current operation and maintenance (O&M) procedures within their facilities, transmission line rights-of-way (ROW) and associated access roads in the San Joaquin Valley. A workshop was held at Western's Folsom office on October 8, 2009, where the proposal was further discussed. Although no one from your agency was present, representatives from California State Parks and the U.S. Bureau of Reclamation attended the workshop.

Since that workshop, biologists and archaeologists have completed field surveys within the Project area. The data was logged using Global Positioning System technology and organized into comprehensive baseline data for a Preliminary Draft Environmental Assessment (EA). This EA is similar to two EAs that Western previously prepared for its O&M activities in the North Area and the Sacramento Valley.

Western would like to extend an invitation for you to continue participating with this Project. There are several options for participating. Enclosed is the Preliminary Draft EA (enclosure 2). After reviewing it, you may provide informal comments or ask questions by February 26, 2010. We anticipate the formal 30-day comment period for the EA will begin in March or April. As an interested party, you will receive notice of the comment period along with a copy of the EA; you will have the opportunity to provide comments formally during this period. Also, we can deliver all biological and cultural data to you that we have collected from portions of the ROW that cross your lands.

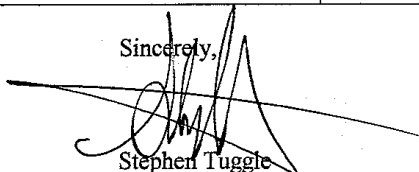
Another option for your participation in this action would be as a Cooperating Agency. A Cooperating Agency is any Federal, state, or local agency, or Indian Tribe, which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. The selection and responsibilities of a Cooperating Agency are described in 40 CFR Part 1501.6. Should you request this option, we would develop a Memorandum of Understanding (MOU) describing the environmental compliance roles and responsibilities for the proposed Project by and between Western and your agency. As a Cooperating Agency, some of your responsibilities would include the following:

- Provide any and all background information, technical reports, or existing supporting data that may be pertinent to the Project and EA development.
- Make staff available for support.
- Participate in all communications regarding the National Environmental Policy Act (NEPA) process for the proposed Project, including, but not limited to, conference calls, meetings, and emails. When appropriate, send a representative(s) to attend Project-related meetings.
- Provide review and written comments on NEPA-related documents, including public notices for which review and comments are requested by Western.
- Provide review and written comments on the administrative draft versions of the Draft and Final EA and major biological and cultural reports within the agreed upon review time for meeting the overall Project schedule requirements.
- Identify additional compliance reporting actually needed for this proposed Project. Provide direction, review, and comment on the preparation of these reports.
- Adopt the EA and issue a Finding of No Significant Impact to support decisions relative to your agency.

To discuss your options for participation, which are summarized below, please contact Mr. Ricardo Velarde at (916) 353-4565 or at velarde@wapa.com. If you do not respond, the next communication you will receive about this Project will be a notice of the 30-day comment period. Western will mail you a copy of the EA with instructions about how to comment on it.

Options for Participation	Request Participation (check those applicable)
1. We have reviewed the Preliminary Draft EA and will provide informal comments to you by February 26, 2010.	
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2. As an Interested Party we will plan to review the EA during the 30-day comment period and we may provide comments at that time.	
3. We would like to receive all cultural and biological data that you gathered on our properties.	
4. We would like to be a Cooperating Agency for this action. I will contact you by February 26, 2010, to initiate development of a MOU between our agencies.	

Sincerely,



Stephen Tuggle
Natural Resources Manager

2 enclosures

Appendix D

BOR Correspondence

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Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

SEP 22 2009

Mr. Michael R. Finnegan
Area Manager
Central California Area Office
Bureau of Reclamation
7794 Folsom Dam Road
Folsom, CA 95630-1799

Dear Mr. Finnegan:

The Western Area Power Administration (Western) an agency of the Department of Energy, markets and delivers reliable, cost-based, hydroelectric power, and related services within a 15-state service area of the central and western United States. The Sierra Nevada Region (SNR) makes up one of four customer service regions of Western. SNR is responsible for the operation and maintenance (O&M) of Federal transmission facilities within a geographic service territory that includes northern California and a portion of Nevada. In order to effectively operate and maintain the facilities, Western must comply with various directives, regulations, and orders, including the National Electric Safety Code and Western States Coordinating Council, which ensure protection of human safety and reliability of the transmission system.

Western proposes to update the O&M procedures, and currently has one completed Environmental Assessment (EA) and another that is nearing completion. These EAs fulfill the various environmental documentation requirements for routine O&M activities which allow Western to conduct necessary routine activities in an efficient manner, rather than reacting to O&M activities with a time-consuming, project-by-project approach. However, these two EAs are only applicable to O&M actions within roughly two-thirds of SNR's service area. Western is seeking to produce a third EA that would cover O&M activities for the remaining facilities within SNR. The proposed Project, for the purposes of this document, will be referred to as the San Joaquin Valley Right-of-Way (ROW) Maintenance EA Project (Project).

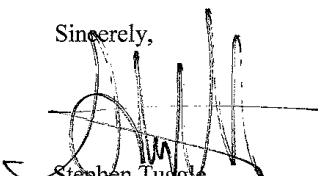
The Project area includes the majority of Western's transmission lines, legal access road ROWs, and facilities within the counties of San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne and Santa Clara (enclosure 1). Each ROW may contain either single-circuit (one set of conductors on one set of towers) or double-circuit (two sets of conductors on one set of towers) transmission lines. Much of Western's infrastructure is not accessible by paved road; therefore, Western has legally established access roads that allow personnel to drive to facilities and various locations along the transmission lines. Western's documented legal access roads are generally dirt or gravel, and require occasional maintenance.

Our teams of biologists and archaeologists are conducting biological and cultural resource surveys within the Project area to collect comprehensive environmental baseline data. All biological and cultural data is logged using Geographic Positioning System technology and other mapping media.

Western's ROW in the San Joaquin Valley overlaps a portion of the Bureau of Reclamation's land (enclosure 2). Western would like to extend an invitation for you to attend an inter-agency meeting where you can hear about the Project, ask questions, and discuss the data collected and our approach for preparation of the EA. Other topics to discuss at the meeting include the proposed EA schedule, purpose and need, opportunities for agencies to be involved in the EA process with Western, ROW access, and field survey coordination. Also included in the meeting will be a presentation of Western's Geographic Information System data resources shown within the Project area, which will characterize the baseline conditions along the ROW. The meeting is scheduled to be held on October 8, 2009, at 11 a.m. at Western's regional office in Folsom, California.

Western appreciates your cooperation with our office. We look forward to collaborating with you and other agencies on the Project. Please contact Mr. Ricardo Velarde, Environmental Protection Specialist, by no later than October 2, 2009, at (916) 353-4565 or at velarde@wapa.gov to confirm meeting attendance or for additional information.

Sincerely,



Stephen Tuggie
Natural Resources Manager

2 Enclosures

FEB 18 2010

Mr. Michael Jackson
Area Manager
Bureau of Reclamation
South-Central California Area Office
1243 N Street
Fresno, CA 93721-1813

Dear Mr. Jackson:

In November 2009, you received a letter from Western Area Power Administration (Western) (enclosure 1) introducing Western's proposal to update its current operation and maintenance (O&M) procedures within their facilities, transmission line rights-of-way (ROW) and associated access roads in the San Joaquin Valley. A workshop was held at Western's Folsom office on October 8, 2009, where the proposal was further discussed. Melissa Vignau, Mary Ellingsworth, Dan Holsapple and Brandee Bruce from the Bureau of Reclamation attended the workshop, along with a representative from California State Parks.

Since that workshop, biologists and archaeologists have completed field surveys within the Project area. The data was logged using Global Positioning System technology and organized into comprehensive baseline data for a Preliminary Draft Environmental Assessment (EA). This EA is similar to two EAs that Western previously prepared for its O&M activities in the North Area and the Sacramento Valley.

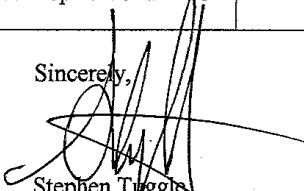
Western would like to extend an invitation for you to continue participating with this Project. There are several options for participating. Enclosed is the Preliminary Draft EA (enclosure 2). After reviewing it, you may provide informal comments or ask questions by February 26, 2010. We anticipate the formal 30-day comment period for the EA will begin in March or April. As an interested party, you will receive notice of the comment period along with a copy of the EA; you will have the opportunity to provide comments formally during this period. Also, we can deliver all biological and cultural data to you that we have collected from portions of the ROW that cross your lands.

Another option for your participation in this action would be as a Cooperating Agency. A Cooperating Agency is any Federal, state, or local agency, or Indian Tribe, which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. The selection and responsibilities of a Cooperating Agency are described in 40 CFR Part 1501.6. Should you request this option, we would develop a Memorandum of Understanding (MOU) describing the environmental compliance roles and responsibilities for the proposed Project by and between Western and your agency. As a Cooperating Agency, some of your responsibilities would include the following:

- Provide any and all background information, technical reports, or existing supporting data that may be pertinent to the Project and EA development.
- Make staff available for support.
- Participate in all communications regarding the National Environmental Policy Act (NEPA) process for the proposed Project, including, but not limited to, conference calls, meetings, and emails. When appropriate, send a representative(s) to attend Project-related meetings.
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- Provide review and written comments on the administrative draft versions of the Draft and Final EA and major biological and cultural reports within the agreed upon review time for meeting the overall Project schedule requirements.
- Identify additional compliance reporting actually needed for this proposed Project. Provide direction, review, and comment on the preparation of these reports.
- Adopt the EA and issue a Finding of No Significant Impact to support decisions relative to your agency.

To discuss your options for participation, which are summarized below, please contact Mr. Ricardo Velarde at (916) 353-4565 or at velarde@wapa.com. If you do not respond, the next communication you will receive about this Project will be a notice of the 30-day comment period. Western will mail you a copy of the EA with instructions about how to comment on it.

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1. We have reviewed the Preliminary Draft EA and do not have any comments on it at this time.	
2. As an Interested Party we will plan to review the EA during the 30-day comment period and we may provide comments at that time.	
3. We would like to receive all cultural and biological data that you gathered on our properties.	
4. We would like to be a Cooperating Agency for this action. I will contact you by February 26, 2010, to initiate development of a MGU between our agencies.	

Sincerely,

 Stephen Tuggle
 Natural Resources Manager

2 enclosures

FEB 18 2010

Mr. Michael R. Finnegan
Area Manager
Bureau of Reclamation
Central California Area Office
7794 Folsom Dam Road
Folsom CA 95630-1799

Dear Mr. Finnegan:

In September 2009, you received a letter from Western Area Power Administration (Western) (enclosure 1) introducing Western's proposal to update its current operation and maintenance (O&M) procedures within their facilities, transmission line rights-of-way (ROW) and associated access roads in the San Joaquin Valley. A workshop was held at Western's Folsom office on October 8, 2009, where the proposal was further discussed. Melissa Vignau, Mary Ellingsworth, Dan Holsapple and Brandee Bruce from the Bureau of Reclamation attended the workshop, along with a representative from California State Parks.

Since that workshop, biologists and archaeologists have completed field surveys within the Project area. The data was logged using Global Positioning System technology and organized into comprehensive baseline data for a Preliminary Draft Environmental Assessment (EA). This EA is similar to two EAs that Western previously prepared for its O&M activities in the North Area and the Sacramento Valley.

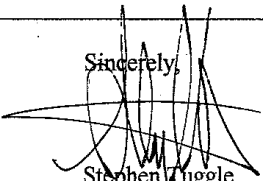
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Another option for your participation in this action would be as a Cooperating Agency. A Cooperating Agency is any Federal, state, or local agency, or Indian Tribe, which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. The selection and responsibilities of a Cooperating Agency are described in 40 CFR Part 1501.6. Should you request this option, we would develop a Memorandum of Understanding (MOU) describing the environmental compliance roles and responsibilities for the proposed Project by and between Western and your agency. As a Cooperating Agency, some of your responsibilities would include the following:

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To discuss your options for participation, which are summarized below, please contact Mr. Ricardo Velarde at (916) 353-4565 or at velarde@wapa.com. If you do not respond, the next communication you will receive about this Project will be a notice of the 30-day comment period. Western will mail you a copy of the EA with instructions about how to comment on it.

Options for Participation	Request Participation (check those applicable)
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3. We would like to receive all cultural and biological data that you gathered on our properties.	
4. We would like to be a Cooperating Agency for this action. I will contact you by February 26, 2010, to initiate development of a MOU between our agencies.	

Sincerely,

 Stephen Tuggle
 Natural Resources Manager

2 enclosures



United States Department of the Interior

BUREAU OF RECLAMATION

Central California Area Office
7794 Folsom Dam Road
Folsom, California 95630-1799

IN REPLY REFER TO:

CC-418
ENV-6.00

MAR 17 2010

Mr. Stephen Tuggle
Western Area Power Administration
114 Parkshore Drive
Folsom, California 95630

Subject: San Joaquin Valley Right-of-Way Maintenance Environmental Assessment

Dear Mr. Tuggle:

Thank you for your letter dated February 18, 2010. In the letter Western Area Power Administration (WAPA) extended an invitation to the Bureau of Reclamation to continue to participate in the review of the San Joaquin Valley Right-of-Way Maintenance Environmental Assessment (EA) as a continued 'interested party' or a cooperating agency.

Reclamation would like to continue to be considered as an 'interested party' during the environmental process. As an interested party, we look forward to receiving the notice of the comment period along with a copy of the EA. Reclamation appreciates the opportunity to provide comments formally during that time and additionally, receiving all biological and cultural data that the WAPA has collected from portions of the Right-of-Way that cross Reclamation lands.

If you have any questions or concerns please contact Melissa Vignau at 916-989-7182 or mbrockman@usbr.gov. Reclamation looks forward to working with you during this review process.

Sincerely,

Michael R. Finnegan
Area Manager

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Appendix E

State Agency Correspondence

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Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

SEP 22 2009

Mr. Chuck Armor
Regional Manager
Bay Delta Region
Department of Fish and Game
7329 Silverado Trail
Napa, CA 94558

Dear Mr. Armor:

The Western Area Power Administration (Western) an agency of the Department of Energy, markets and delivers reliable, cost-based, hydroelectric power, and related services within a 15-state service area of the central and western United States. The Sierra Nevada Region (SNR) makes up one of four customer service regions of Western. SNR is responsible for the operation and maintenance (O&M) of Federal transmission facilities within a geographic service territory that includes Northern California and a portion of Nevada. In order to effectively operate and maintain the facilities, Western must comply with various directives, regulations, and orders, including the National Electric Safety Code and Western States Coordinating Council, which ensure protection of human safety and reliability of the transmission system.

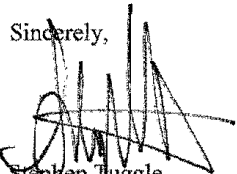
Western proposes to update the O&M procedures, and currently has one completed Environmental Assessment (EA) and another that is nearing completion. These EAs fulfill the various environmental documentation requirements for routine O&M activities which allow Western to conduct necessary routine activities in an efficient manner, rather than reacting to O&M activities with a time-consuming, project-by-project approach. However, these two EAs are only applicable to O&M actions within roughly two-thirds of SNR's service area. Western is seeking to produce a third EA that would cover O&M activities for the remaining facilities within SNR. The proposed Project, for the purposes of this document, will be referred to as the San Joaquin Valley Right-of-Way (ROW) Maintenance EA Project (Project).

The Project area includes the majority of Western's transmission lines, legal access road ROWs, and facilities within the counties of San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne and Santa Clara (enclosure 1). Each ROW may contain either single-circuit (one set of conductors on one set of towers) or double-circuit (two sets of conductors on one set of towers) transmission lines. Much of Western's infrastructure is not accessible by paved road; therefore, Western has legally established access roads that allow personnel to drive to facilities and various locations along the transmission lines. Western's documented legal access roads are generally dirt or gravel, and require occasional maintenance.

Our teams of biologists and archaeologists are conducting biological and cultural resource surveys within the Project area to collect comprehensive environmental baseline data. All biological and cultural data is logged using Geographic Positioning System technology and other mapping media.

Western's ROW in the San Joaquin Valley overlaps a portion of the Department of Fish and Game's land (enclosure 2). Western would like to extend an invitation for you to attend an inter-agency meeting where you can hear about the Project, ask questions, and discuss the data collected and our approach for preparation of the EA. Other topics to discuss at the meeting include the proposed EA schedule, purpose and need, opportunities for agencies to be involved in the EA process with Western, ROW access, and field survey coordination. A presentation of Western's Geographic Information System data resources shown within the Project area, which characterize the baseline conditions along the ROW will also be included in the discussion. The meeting is scheduled to be held on October 8, 2009, at 11 a.m. at Western's regional office in Folsom, California.

Western appreciates your cooperation with our office. We look forward to collaborating with you and other agencies on the Project. Please contact Mr. Ricardo Velarde, Environmental Protection Specialist, by no later than October 2, 2009, at (916) 353-4565 or at velarde@wapa.gov to confirm meeting attendance or for additional information.

Sincerely,

Stephen Huggle
Natural Resources Manager

2 Enclosures



Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

SEP 22 2009

Mr. Dan Ray
Chief of Planning
California State Parks
Resources Management Division
P.O. Box 942896
Sacramento, CA 94296-0001

Dear Mr. Ray:

The Western Area Power Administration (Western) an agency of the Department of Energy, markets and delivers reliable, cost-based, hydroelectric power, and related services within a 15-state service area of the central and western United States. The Sierra Nevada Region (SNR) makes up one of four customer service regions of Western. SNR is responsible for the operation and maintenance (O&M) of Federal transmission facilities within a geographic service territory that includes northern California and a portion of Nevada. In order to effectively operate and maintain the facilities, Western must comply with various directives, regulations, and orders, including the National Electric Safety Code and Western States Coordinating Council, which ensure protection of human safety and reliability of the transmission system.

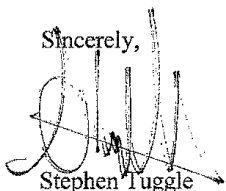
Western proposes to update the O&M procedures, and currently has one completed Environmental Assessment (EA) and another that is nearing completion. These EAs fulfill the various environmental documentation requirements for routine O&M activities which allow Western to conduct necessary routine activities in an efficient manner, rather than reacting to O&M activities with a time-consuming, project-by-project approach. However, these two EAs are only applicable to O&M actions within roughly two-thirds of SNR's service area. Western is seeking to produce a third EA that would cover O&M activities for the remaining facilities within SNR. The proposed Project, for the purposes of this document, will be referred to as the San Joaquin Valley Right-of-Way (ROW) Maintenance EA Project (Project).

The Project area includes the majority of Western's transmission lines, legal access road ROWs, and facilities within the counties of San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne and Santa Clara (enclosure 1). Each ROW may contain either single-circuit (one set of conductors on one set of towers) or double-circuit (two sets of conductors on one set of towers) transmission lines. Much of Western's infrastructure is not accessible by paved road; therefore, Western has legally established access roads that allow personnel to drive to facilities and various locations along the transmission lines. Western's documented legal access roads are generally dirt or gravel, and require occasional maintenance.

Our teams of biologists and archaeologists are conducting biological and cultural resource surveys within the Project area to collect comprehensive environmental baseline data. All biological and cultural data is logged using Geographic Positioning System technology and other mapping media.

Western's ROW in the San Joaquin Valley overlaps a portion of California State Parks' land (enclosure 2). Western would like to extend an invitation for you to attend an inter-agency meeting where you can hear about the Project, ask questions, and discuss the data collected and our approach for preparation of the EA. Other topics to discuss at the meeting include the proposed EA schedule, purpose and need, opportunities for agencies to be involved in the EA process with Western, ROW access, and field survey coordination. Also included in the meeting will be a presentation of Western's Geographic Information System data resources shown within the Project area, which will characterize the baseline conditions along the ROW. The meeting is scheduled to be held on October 8, 2009, at 11 a.m. at Western's regional office in Folsom, California.

Western appreciates your cooperation with our office. We look forward to collaborating with you and other agencies on the Project. Please contact Mr. Ricardo Velarde, Environmental Protection Specialist, by no later than October 2, 2009, at (916) 353-4565 or at velarde@wapa.gov to confirm meeting attendance or for additional information.

Sincerely,

Stephen Tuggle
Natural Resources Manager

2 Enclosures

FEB 18 2010

Mr. Chuck Armor
Regional Manager
Bay Delta Region
Department of Fish and Game
7329 Silverado Trail
Napa, CA 94558

Dear Mr. Armor:

In September 2009, you received a letter from Western Area Power Administration (Western) (enclosure 1) introducing Western's proposal to update its current operation and maintenance (O&M) procedures within their facilities, transmission line rights-of-way (ROW) and associated access roads in the San Joaquin Valley. A workshop was held at Western's Folsom office on October 8, 2009, where the proposal was further discussed. Although no one from your agency was present, representatives from California State Parks and the U.S. Bureau of Reclamation attended the workshop.

Since that workshop, biologists and archaeologists have completed field surveys within the Project area. The data was logged using Global Positioning System technology and organized into comprehensive baseline data for a Preliminary Draft Environmental Assessment (EA). This EA is similar to two EAs that Western previously prepared for its O&M activities in the North Area and the Sacramento Valley.

Western would like to extend an invitation for you to continue participating with this Project. There are several options for participating. Enclosed is the Preliminary Draft EA (enclosure 2). After reviewing it, you may provide informal comments or ask questions by February 26, 2010. We anticipate the formal 30-day comment period for the EA will begin in March or April. As an interested party, you will receive notice of the comment period along with a copy of the EA; you will have the opportunity to provide comments formally during this period. Also, we can deliver all biological and cultural data to you that we have collected from portions of the ROW that cross your lands.

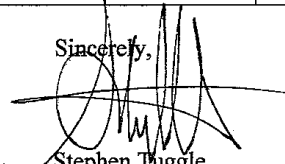
Another option for your participation in this action would be as a Cooperating Agency. A Cooperating Agency is any Federal, state, or local agency, or Indian Tribe, which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. The selection and responsibilities of a Cooperating Agency are described in 40 CFR Part 1501.6. Should you request this option, we would develop a Memorandum of Understanding (MOU) describing the environmental compliance roles and responsibilities for the proposed Project by and between Western and your agency. As a Cooperating Agency, some of your responsibilities would include the following:

As a Cooperating Agency, some of your responsibilities would include the following:

- Provide any and all background information, technical reports, or existing supporting data that may be pertinent to the Project and EA development.
- Participate in all communications regarding the National Environmental Preservation Act (NEPA) process for the proposed Project, including, but not limited to, conference calls, meetings, and emails. When appropriate, send a representative(s) to attend Project-related meetings.
- Provide review and written comments on NEPA-related documents, including public notices for which review and comments are requested by Western.
- Provide review and written comments on the administrative draft versions of the Draft and Final EA and major biological and cultural reports within the agreed upon review time for meeting the overall Project schedule requirements.
- Identify additional compliance reporting actually needed for this proposed Project. Provide direction, review, and comment on the preparation of these reports.
- Adopt the EA to support decisions relative to your agency.

To discuss your options for participation, which are summarized below, please contact Mr. Ricardo Velarde at (916) 353-4565 or at velarde@wapa.com. If you do not respond, the next communication you will receive about this Project will be a notice of the 30-day comment period. The State Clearing House will mail you a copy of the EA with instructions about how to comment on it.

Options for Participation	Request Participation (check those applicable)
1. We have reviewed the Preliminary Draft EA and will provide informal comments to you by February 20, 2010.	
1. We have reviewed the Preliminary Draft EA and do not have any comments on it at this time.	
2. As an Interested Party we will plan to review the EA during the 30-day comment period and we may provide comments at that time.	
3. We would like to receive all cultural and biological data that you gathered on our properties.	
4. We would like to be a Cooperating Agency for this action. I will contact you by February 20, 2010, to initiate development of a MOU between our agencies.	

Sincerely,

 Stephen Tuggle
 Natural Resources Manager

2 enclosures

FEB 18 2010

Mr. Dan Ray
Chief of Planning
California State Parks
Resources Management Division
P.O. Box 942896
Sacramento, CA 94296-0001

Dear Mr. Ray:

In September 2009, you received a letter from Western Area Power Administration (Western) (enclosure 1) introducing Western's proposal to update its current operation and maintenance (O&M) procedures within their facilities, transmission line rights-of-way (ROW) and associated access roads in the San Joaquin Valley. A workshop was held at Western's Folsom office on October 8, 2009, where the proposal was further discussed. Bill Lutton from California State Parks and representatives from the U.S. Bureau of Reclamation attended the workshop.

Since that workshop, biologists and archaeologists have completed field surveys within the Project area. The data was logged using Global Positioning System technology and organized into comprehensive baseline data for a Preliminary Draft Environmental Assessment (EA). This EA is similar to two EAs that Western previously prepared for its O&M activities in the North Area and the Sacramento Valley.

Western would like to extend an invitation for you to continue participating with this Project. There are several options for participating. Enclosed is the Preliminary Draft EA (enclosure 2). After reviewing it, you may provide informal comments or ask questions by February 26, 2010. We anticipate the formal 30-day comment period for the EA will begin in March or April. As an interested party, you will receive notice of the comment period along with a copy of the EA; you will have the opportunity to provide comments formally during this period. Also, we can deliver all biological and cultural data to you that we have collected from portions of the ROW that cross your lands.

Another option for your participation in this action would be as a Cooperating Agency. A Cooperating Agency is any Federal, state, or local agency, or Indian Tribe, which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. The selection and responsibilities of a Cooperating Agency are described in 40 CFR Part 1501.6. Should you request this option, we would develop a Memorandum of Understanding (MOU) describing the environmental compliance roles and responsibilities for the proposed Project by and between Western and your agency.

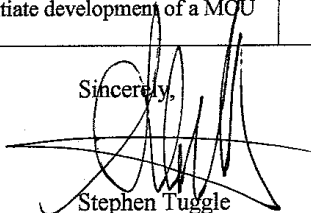
As a Cooperating Agency, some of your responsibilities would include the following:

- Provide any and all background information, technical reports, or existing supporting data that may be pertinent to the Project and EA development.
- Make staff available for support.
- Participate in all communications regarding the National Environmental Policy Act (NEPA) process for the proposed Project, including, but not limited to, conference calls, meetings, and emails. When appropriate, send a representative(s) to attend Project-related meetings.
- Provide review and written comments on NEPA-related documents, including public notices for which review and comments are requested by Western.
- Provide review and written comments on the administrative draft versions of the Draft and Final EA and major biological and cultural reports within the agreed upon review time for meeting the overall Project schedule requirements.
- Identify additional compliance reporting actually needed for this proposed Project. Provide direction, review, and comment on the preparation of these reports.
- Adopt the EA and issue a Finding of No Significant Impact to support decisions relative to your agency.

To discuss your options for participation, which are summarized below, please contact Mr. Ricardo Velarde at (916) 353-4565 or at velarde@wapa.com. If you do not respond, the next communication you will receive about this Project will be a notice of the 30-day comment period. Western will mail you a copy of the EA with instructions about how to comment on it.

Options for Participation	Request Participation (check those applicable)
1. We have reviewed the Preliminary Draft EA and will provide informal comments to you by February 26, 2010.	
1. We have reviewed the Preliminary Draft EA and do not have any comments on it at this time.	
2. As an Interested Party we will plan to review the EA during the 30-day comment period and we may provide comments at that time.	
3. We would like to receive all cultural and biological data that you gathered on our properties.	
4. We would like to be a Cooperating Agency for this action. I will contact you by February 26, 2010, to initiate development of a MOU between our agencies.	

Sincerely,



Stephen Tuggle
Natural Resources Manager

2 enclosures

Appendix F

Concurrence Letters under the Endangered Species Act

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Concurrence letters to be added for Final EA.

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Appendix G

Herbicide Information

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G.1. INTRODUCTION

This appendix describes Western's approach to using herbicides to control vegetation along the San Joaquin Valley ROWs. The approach is based on Western's 2007 Integrated Vegetation Management (IVM) Guide and Transmission Vegetation Management Program (Western 2007) and related operations and maintenance (O&M) activities planned for the San Joaquin Valley. Western updates its IVM Guide periodically in response to changes in regulatory requirements, best management practices, and industry standards. The use of some herbicides listed in this appendix may be restricted, new herbicides may be approved for use, and application techniques may evolve. This appendix presents information current at the time of publication of this Environmental Assessment (EA); future changes in Western's herbicide practices would be within the scope of environmental evaluations described in this EA.

Historically, Western's vegetation management activities have been restricted primarily to control vegetation which poses a fire or safety hazard to transmission facilities. However, the IVM approach expands the vegetation management activities to include the control of noxious or undesirable weeds and to promote low-growing plant communities within the ROW. IVM is a more sustainable, cost-effective, and long-term solution, through the use of herbicides in a controlled and managed way.

Western considers several factors when selecting the appropriate, effective, and safe herbicides for IVM. Western has determined that it is generally desirable to select an herbicide that has low toxicity, will not move from its target or leach into groundwater (low water solubility), and will not persist in the environment for a long period of time (low persistence). Western selects herbicides that meet these criteria.

Western uses several different methods to apply herbicides. The method selected depends on the type of control needed, the type of vegetation to be controlled, and the site situation (site conditions and locations). Some of the methods that Western utilizes are stump treatment, basal spray/treatment, foliage spray/treatment, soil treatment (preemergence), and under- surfacing materials treatment.

Sections 7 and 8 of Western's 2007 IVM Guide provide information on herbicide formulation, herbicide application, pre-application procedures, safety precautions, record keeping, and clean up. The portions of this information that are related to the evaluation of environmental effects of the Proposed Action in this Environmental Assessment are presented in this Appendix.

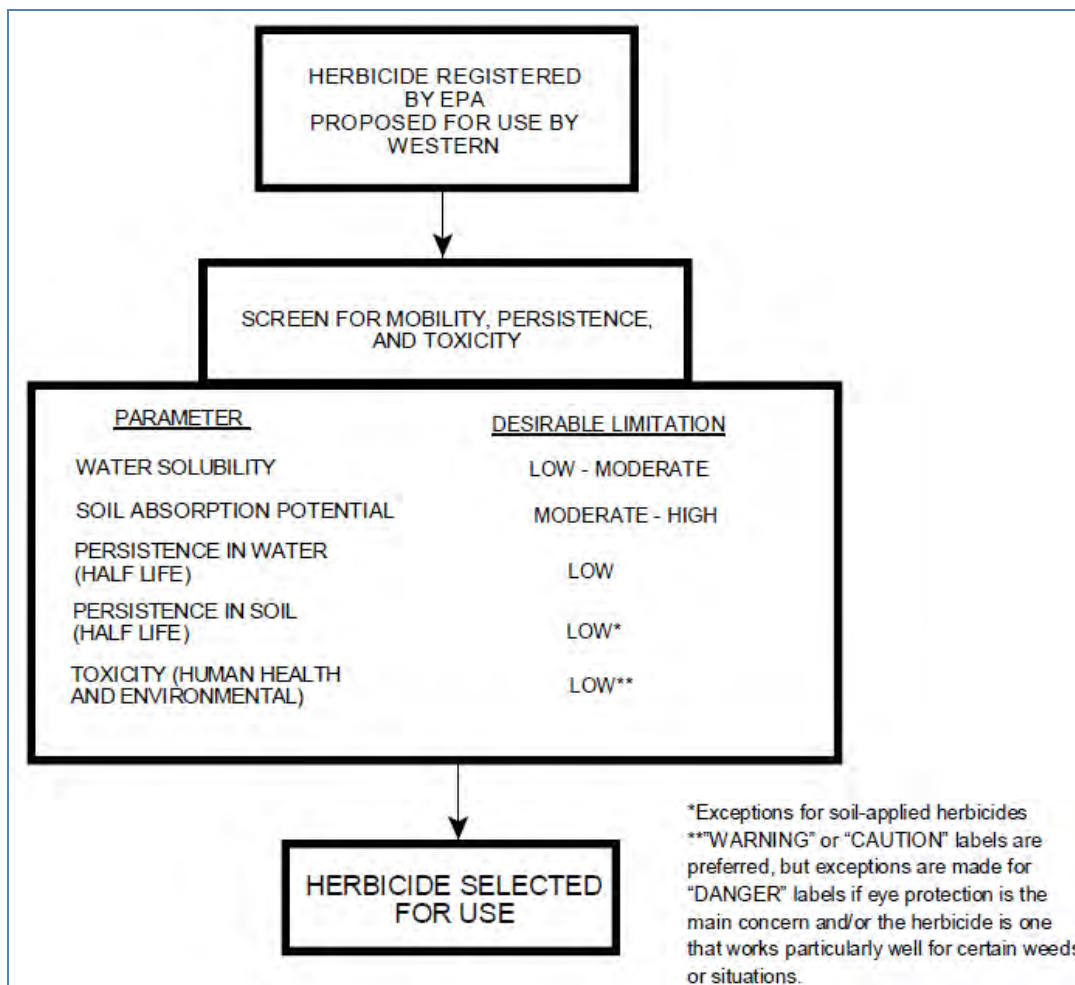
G.2. HERBICIDES SELECTED FOR USE BY WESTERN

Western considers several factors in selecting appropriate, effective and safe herbicides for use in the project area. Figure G.2-1 demonstrates a screening process for selecting an herbicide. It is generally desirable to select an herbicide that has low toxicity, will not move from its target or leach into groundwater (low water solubility), and will not remain in the environment for a long period of time (low persistence). However, each factor

must be considered in light of the herbicide’s intended use, its effectiveness, the target vegetation, and the site characteristics.

Selecting the right herbicide treatment can also be done through a decision tree exercise, in which the most important factors are queried with a “yes”/”no” outcome to lead to the best herbicide mix for the species present, site conditions, seasonal or climatic conditions, and type of application used.

Based on information about herbicides that have been successfully used by Western, a list of suggested herbicides has been developed. Table G.2-1 lists those herbicides by common (chemical) and trade names, along with their EPA Registration numbers, manufacturers, and type of use.



Source: Western 2007

Figure G.2-1. Western’s Herbicide Selection Process

Table G.2-1. Herbicides Selected for Use in the Project Area

Herbicide	Trade Name	EPA Registration Number	Manufacturer or Distributor	Use
Chlorsulfuron	Telar® DF**	352-522	DuPont	ROW
Dithiopyr	Dimension Ultra 40®	62719-445	Dow AgroSciences	Landscaped Areas
Flumioxazin	Payload®	59639-120	Valent USA	Bareground – Substations, <i>Kochia</i> control
Glyphosate	Roundup® PRO**	524-475	Monsanto	Substations Areas near water, wetlands
	Aquamaster® (aquatic)**	524-343	Monsanto	Areas near water, wetlands
	Rodeo® (aquatic)**	62719-324	Dow	
Imazapyr	Habitat® (liquid)**	241-246	BASF Corporation	Substations, ROW
	Stalker®**	241-398	BASF Agricultural Products	Stump Treatment
	Arsenal® ACC**	241-299	BASF	Substations, some ROW
Oxyfluorfen	GoalTender®	62719-447	Dow AgroSciences	Landscaped Sites – Bareground Control
Sulfometuron Methyl	Oust® XP**	352-601	DuPont	Storage Yards, Subs
Sulfometuron Methyl and Chlorsulfuron	Landmark® MP®	352-621	DuPont	Bareground - Substations
Mefluidide	Embark® 2S** (Plant growth regulator)	2217-759	PBI/Gordon	Buffers, around subs. (on grass)
Tebuthiuron	Spike® 80DF**	62719-107	Dow AgroSciences	Substations
Triclopyr	Garlon 3A®**	62719-37	Dow AgroSciences	ROW
	Garlon 4®*8	62719-40		
	Pathfinder®**	62719-176		Stump Treatment

Herbicide	Trade Name	EPA Registration Number	Manufacturer or Distributor	Use
Pendamethalin	Pendulum WDG®	241-340	BASF Specialty Products	Substations
Oryzalin	Surflan A.S.®	70506-44-829	United Phosphorus Inc	Substations
Fluroxypyr	Vista®	62719-308	Dow AgroSciences	ROW, Substation esp. for Kochia
Paclobutrazol	Profile 2SC® (Tree growth regulator)	67690-22	SePRO Corporation	ROW (sensitive areas) Substations (screens)
Trifluralin	Biobarrier®	59823-1	Reemay	Substations, yards
	Biobarrier II®	59823-3		

Source: Western 2007

Not all herbicides are equally appropriate, effective, or safe, given different site conditions and locations. In selecting a particular herbicide and formulation to use, Western follows label directions, and matches the particular site conditions to the label precautions and type of herbicides (e.g., selective vs. nonselective). Also, Western checks to see if the herbicide is restricted to certain uses under State of California regulations or if it is approved by a Federal land management agency, if one is involved. Table G.2-2 presents some factors that Western considers in selecting a particular herbicide/formulation for vegetation control.

To help in determining which herbicide is most appropriate, Tables G.2-3 and G.2-4 present more information about the suggested herbicides, such as:

- Relative toxicity
- Persistence
- Leaching potential
- Label restrictions
- State-specific restrictions
- Formulation or application method normally used

Table G.2-3 lists the non-selective herbicides that are used primarily at substations and yards. Table G.2-4 lists the selective herbicides that affect broadleaf plants and trees, but not grasses, and are used on rights-of-way, plus some selective pre-emergent herbicides and growth regulators used at substations, yards, and tree screens.

Table G.2-2. Factors Western Considers In Selecting an Herbicide

Factor	Comment
Type of control needed	Generally use <u>non-selective</u> herbicides for "bareground" only or where they can be applied <u>very</u> selectively.
Type of undesirable species	Check label, literature and applicator experience for plant susceptibility to certain herbicides; see Table 11-1 for herbicides recommended for specific noxious weeds.
Potential damage to adjacent crops and/or desirable vegetation (from soil-applied herbicides)	Do not use herbicides with multiple chemical characteristics that have significant potential for off-target movement. Check label for precautions. Use only herbicides that will not injure or destroy desirable plants by root absorption if roots of desirable plants extend under area to be treated.
Potential pollution of surface water - proximity and topography	Use only an herbicide approved for use close to water bodies where runoff could carry herbicide to water.
Potential pollution of groundwater - site geology/soils and depth to groundwater	Use an herbicide with low leaching potential and low persistence if groundwater is shallow and/or soils are sandy (permeable) and have low organic matter. Check label for particular susceptibilities; use low-drift formulation and nonpersistent herbicide.
Exposure of humans and animals	Check label for restrictions; use low toxicity herbicide.
Exposure of sensitive aquatic species, including amphibians	Use herbicides and adjuvants that are labeled for aquatic use and that do not contain a surfactant as an inert ingredient (e.g., Aquamaster®, Rodeo®); restrict or limit use near sensitive habitat.
State or Federal Agency (e.g., BOR) restrictions	Check State and agency approved lists or guidance

Source: Western 2007

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Table G.2-3. Non-Selective Herbicides Available for Use in the Project Area

Chemical Common Name	Trade Name(s)	Treatment Method(s) Available	Soil Persistence	Leaching Potential	Label Restrictions (see label for details)
Glyphosate	Roundup® PRO; Rodeo® (aquatic), Aquamaster® (aquatic) Accord® Concentrate	Foliage Spray	Depends on soil texture and organic matter content. Half-life is from 3-130 days (30 days). Not active in soil.	Low potential ^{1,6}	Limit drift; use only when potential for drift to sensitive areas (e.g., endangered species habitat) is minimal. Skin/eye contact; inhalation; ingestion. Note: Rodeo® and Aquamaster® do not contain a surfactant; the inert ingredient is water.
Imazapyr	Arsenal® Stalker®	Soil Treatment	Broken down by exposure to sunlight and by soil microorganisms. Remains active in the soil for 6 months to 2 years. ¹ Half-life in soil is 90 days.	Low potential ^{1,7,8}	Limit drift; use in/near water, wetlands, irrigation ditches or water flows onto agricultural land; endangered plants and habitat; inhalation, ingestion, skin/eye contact.
Sulfometuron Methyl	Oust® XP	Soil Treatment	Half-life in soil is 60 days	Relatively high ⁶	Limit drift or use in/near water; particles that move off site can damage non-target crops, vegetation.
Sulfometuron methyl and Chlorsulfuron	Landmark MP®	Soil Treatment	See base chemicals	Relatively high – see base chemicals	Limit drift or use in/near water; particles that move off site can damage non-target crops, vegetation.

Chemical Common Name	Trade Name(s)	Treatment Method(s) Available	Soil Persistence	Leaching Potential	Label Restrictions (see label for details)
Flumioxazin	Payload®	Foliage Spray	Low – half-life of 15 days	Low	Do not apply to water; toxic to aquatic invertebrates; so no apply where runoff is likely to occur
Diuron and Tebuthiuron	SpraKil SR-13®	Soil Treatment	See Diuron. Tebuthiuron can persist for up to 2 years	Known to leach under certain conditions	Do not apply to water; may result in groundwater contamination in areas with very permeable soils and shallow water table
Dithiopyr	Dimension Ultra 40®	Foliage spray	Highly adsorbed; persistent	Highly immobile	Highly toxic to aquatic organisms; watch for drift and runoff near aquatic sites; do not apply directly to water or when conditions favor drift
Oxyfluorfen	GoalTender®	Soil Treatment	Readily biodegradable	High potential for mobility in soil	Do not apply to water; highly toxic to fish, wildlife, aquatic invertebrates, and plants; runoff is an issue

Source: Western 2007

Table G.2-4. Selective Herbicides Available for Use in the Project Area

Chemical Common Name	Trade Name(s)	Treatment Method(s) Available	Soil Persistence	Leaching Potential	Label Restrictions (see label for details)
Chlorsulfuron	Telar® DF	Foliage Spray	6-12 months residual ² . Half-life of 1-3 months. (30 days)	High potential in permeable soils.	Limit drift, do not apply to water.
Clopyralid	Transline®	Foliage Spray	Moderate residual ² 1-5 months. Half-life of 2-10 weeks. (20 days)	Relatively high.	Human health - ingestion, skin/eye contact. Do not apply to water, where have permeable soils.
Triclopyr	Garlon 3A® Garlon 4® Pathfinder II®	Foliage Spray Basal Treatment	Moderately residual. Half-life or 46 days.	Low to Moderate - leaching potential depends on soil type, acidity, and rainfall.	Limit drift, use near endangered plants; irrigation ditches, domestic water; inhalation skin/eye contact; combustible.
Pendamehalin (does not affect many weeds, trees)	Pendulum WDG®	Soil Treatment (Preemergent control; often used in mix with Roundup® in landscaped areas)	Half-life of 60 days.	Low	Toxic to fish; do not apply to water; limit drift. Avoid contact with eyes, skin, and clothing. May discolor sprayed surfaces.
Oryzalin (does not affect many weeds, trees)	Surflan A.S.® Oryzalin 4®	Soil Treatment (Preemergent control; often used in mix with Roundup®) in landscaped areas)	Half-life of 60-90 days	Low	Do not apply to water; limit drift; avoid contact with skin, eyes, and clothing. May discolor sprayed surfaces.

Chemical Common Name	Trade Name(s)	Treatment Method(s) Available	Soil Persistence	Leaching Potential	Label Restrictions (see label for details)
Mefluidide	Embark® (Plant Growth Regulator)	Foliage Spray	Not persistent in soil. Half-life of 2 days.	Low - adsorption on the soil insignificant.	Limit drift; do not allow animals to graze on treated areas; avoid contact with skin, clothing; do not apply to water.
Paclobutrazol	Profile or Cambistat 2SC® Tree Growth Regulator	Soil drench, Soil injection	Average half-life = 1-3 years.	Very low. High adsorption, low solubility.	Do not apply to water or where surface water present; avoid contact with skin, eyes, clothing. (Can affect nearby non-target vegetation)
Trifluralin	Biobarrier® Biobarrier II®	Subsurface herbicide impregnated geotextile placement	Half-life of 60 days.	Usually high ⁴ , but probably lower in this product (time-release nodules)	Toxic to fish; do not apply to water or wetlands; avoid contact with eyes, skin, clothing.
Fluroxypyr	Vista®	Foliage Spray	Half-life of 1-4 weeks	Relatively low sorptivity and therefore has potential for leaching, but also low water solubility and rapid dissipation in field.	Toxic to fish; do not apply to water or wetlands; drift can affect non-target aquatic organisms and plants.

Chemical Common Name	Trade Name(s)	Treatment Method(s) Available	Soil Persistence	Leaching Potential	Label Restrictions (see label for details)
Aminopyralid	Milestone®	Foliage Spray	Relatively immobile; not very persistent; shorter half-life than clopyralid and picloram.	Minimal leaching below 15-30 cm	Do not apply to water

Source: Western 2007

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G.3. HERBICIDE APPLICATION METHODS

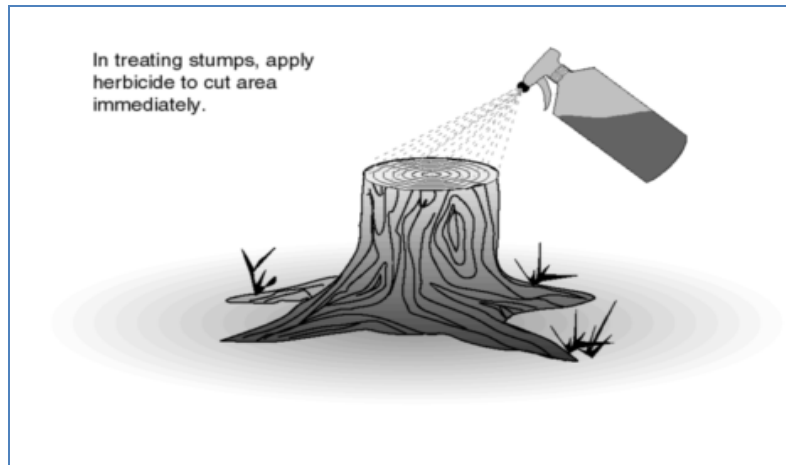
Western uses several different methods to apply herbicides. Selecting a method depends on the type of control needed, the type of vegetation, and the site situation (site conditions, location). These methods include:

- Stump treatment
- Basal spray/treatment
- Foliage spray/treatment (post-emergence)
- Soil treatment (pre-emergence)
- Under surfacing materials treatment

Generally, all of these are options for use on rights-of-way to control brush or noxious weeds. At substations and yards, non-selective herbicides are usually applied either as soil treatments or foliage applications.

G.3.1 Stump Treatment

Stump treatment generally involves cutting a tree down and treating the freshly cut surface, specifically the cambium layer, with herbicide. Species, stem diameter, and stump height dictate which herbicide and solution type (i.e., oil-based, water-based, or undiluted herbicide) should be used (Figure G.3-1). This type of treatment is used when vegetation is cut to ground line. Therefore, its primary uses are: (1) initial clearing and (2) maintenance clearing of individual trees that have grown.



Source: Western 2007

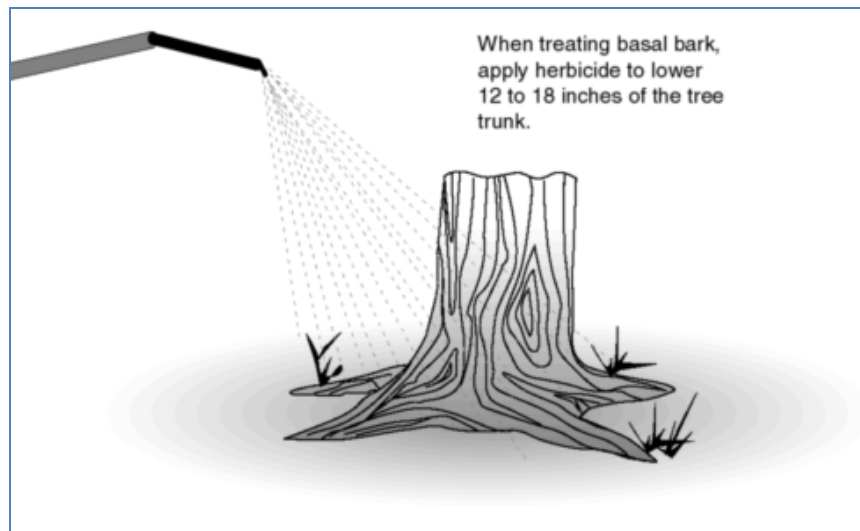
Figure G.3-1. Example of Stump Treatment Method

Stump injection is another method of stump treatment. The method that has been used within Western is the EZJECT® capsule injection system. The system is composed of two parts - an application lance and an herbicide-impregnated capsule, which can contain one of several different herbicides. With this system, the herbicide is injected directly in the tree or stump, thereby avoiding drift or impacts to desirable vegetation.

G.3.2 Basal Spray/Treatment

The basal treatment method involves spraying the lower part of the stem of target vegetation with an herbicide diluted in oil. Only certain herbicides are appropriate for this use (Figure G.3-2). It is more selective than a foliage spray and is low profile; it does not produce immediate brownout of vegetation and can be applied during the dormant season. Therefore, this treatment may be prescribed where:

- Brush is too tall to foliage spray without causing unacceptable drift.
- The right-of-way is adjacent to cropland, residences, susceptible vegetation, or other sensitive areas, and drift is a problem.
- The right-of-way contains a high density of desirable vegetation, which could not be avoided with foliage spray.
- The right-of-way is in a visually sensitive area where immediate brownout would be unacceptable, and, due to seasonal limitations, only those foliage sprays which cause immediate brownout can be used.



Source: Western 2007

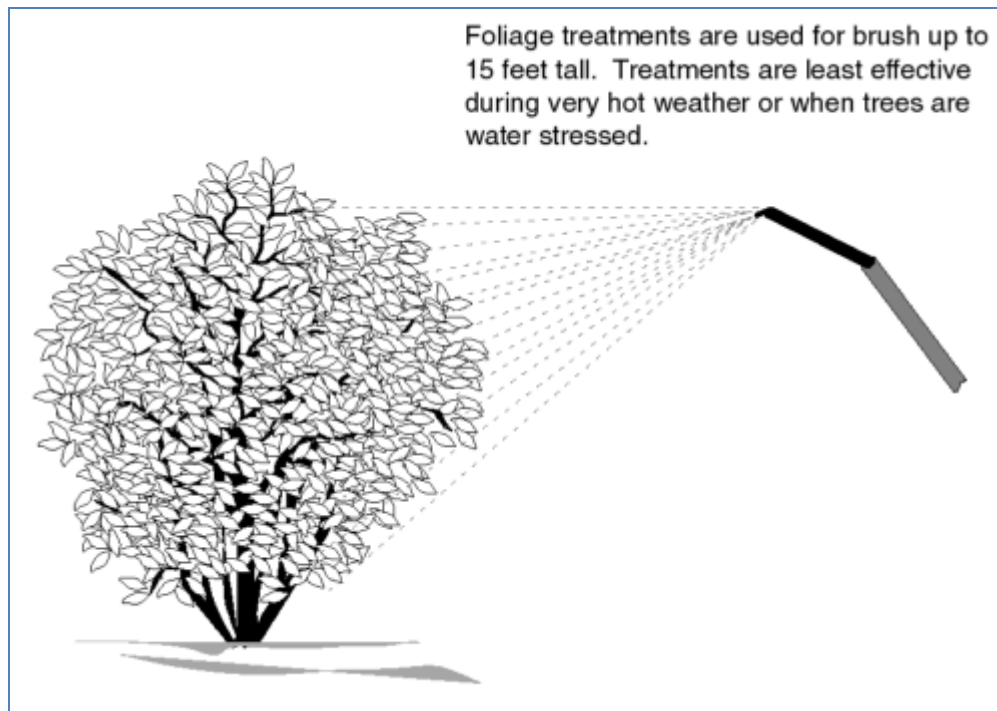
Figure G.3-2. Example of Basal Spray Treatment Method

To basal spray, maintenance personnel apply the herbicide to the lower 12 to 18 inches of the tree trunk or brush from early spring to mid-fall. Some species can be treated during winter, as long as snow/ice do not prevent contact of the chemical with the bark.

G.3.3 Foliage Spray

Foliar spraying is a common method of applying herbicides on brush up to 15 feet tall. This consists of applying a mixture of herbicide, water, and surfactant to the entire plant's foliage and stems (Figure G.3-3). Because it is sprayed up into the air, drift can be a problem under certain conditions. Also, most foliage sprays cause immediate brownout of vegetation. Therefore, in cases where drift or brownout is a problem, either foliage spraying is eliminated, or an alternate treatment (basal, or cut and stump treatment) is prescribed.

To apply herbicides using a foliar spray, make applications from early summer to late September, depending on the choice of herbicide.

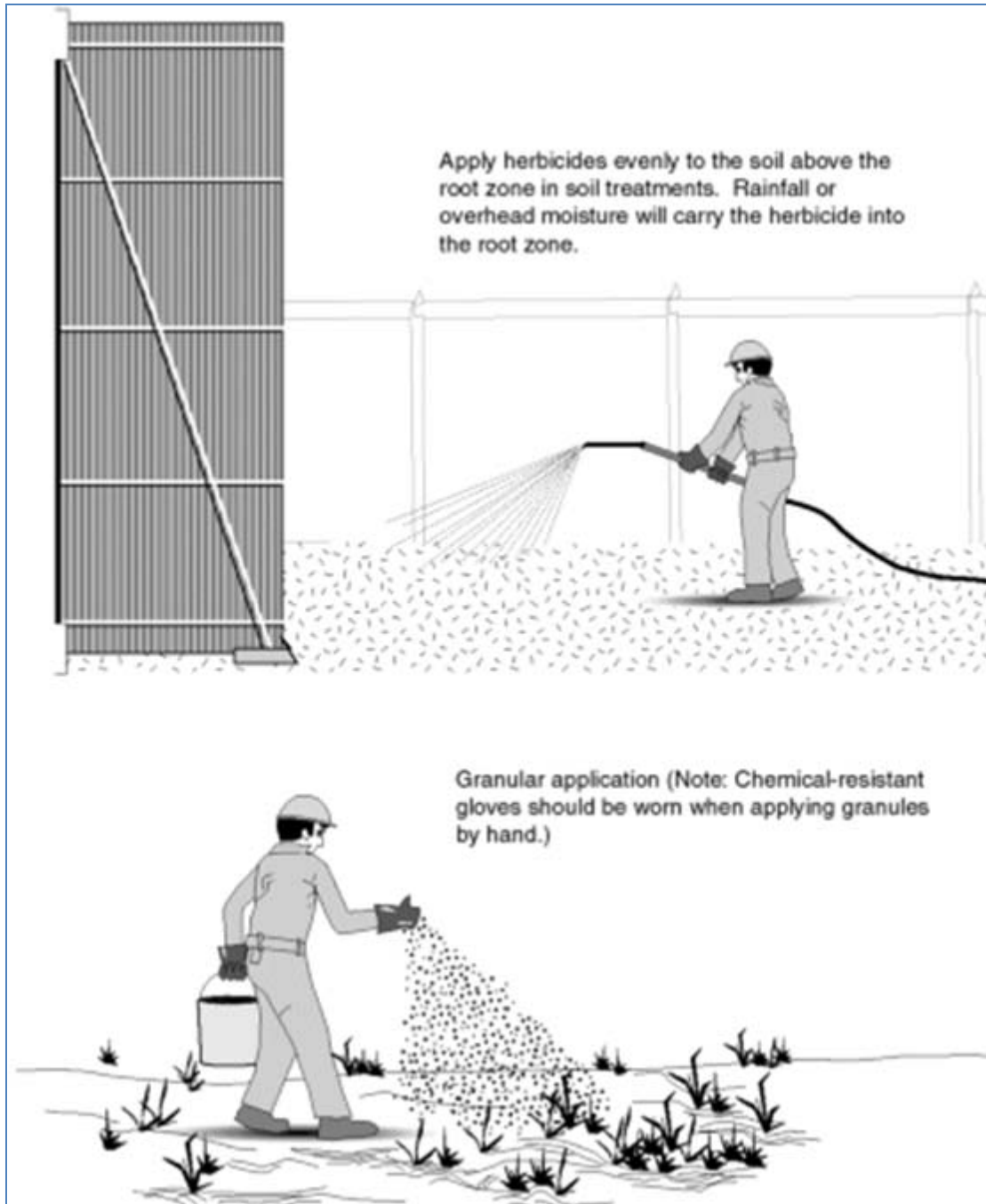


Source: Western 2007

Figure G.3-3. Example of Foliage Spray Treatment Method

G.3.4 Soil Treatment

Bareground applications of non-selective herbicides prevent the establishment of vegetation. In some instances, soil-active herbicides can be applied to the base of a tree to provide control. These herbicides are available in both liquid and solid (granular or pellet) formulations. Rainfall is required for activation (Figure G.3-4).



Source: Western 2007

Figure G.3-4. Examples of Soil Treatment Methods

Herbicides applied evenly to the soil surface move into the root zone of the targeted plants with rainfall or overhead moisture.

As a component of Western's Transmission Vegetation Management Program, Western has developed multiple year weed control programs for substations and other yards where "total" or bare ground residual weed control is necessary. Following this type of vegetation management program for bare ground control offers high performance, economical use of funds, and labor savings. Western can eliminate all vegetation from a given site by establishing a multiple year program. This plan is based on an initial first year program, followed by several years with a maintenance program.

Consistency, when using bare ground herbicides, is achieved when reducing the influence of key limiting factors. Western's standard for bare ground control should be an area that is clean, free of weeds, for an entire growing season. To achieve this expectation, manage these seven limiting factors:

1. Skipping an annual treatment typically results in weed escapes.
2. Mismatching an herbicide to a tolerant weed will result in poor control.
3. Rate shaving the recommended rate results in weed escapes.
4. The use of weak, less persistent herbicides allows for regrowth on the site.
5. The lack of a multiple year program adds unnecessary retreatment cost.
6. Failure to initially clean up the site results in chronic control problems.
7. Applications made after the weeds have emerged, late in the season, typically result in reduced performance. The weeds become established and moisture is not present to properly activate the residual herbicide to place it in the root zone of the germinating weeds.

G.3.4.1 Initial Treatment (First year clean up)

This program is implemented when an area has not been previously treated or the area is experiencing weed escapes during the growing season. A preemergent application must be used to clean up areas previously untreated or neglected.

G.3.4.2 Maintenance Treatment Programs (Second and Third years)

This program is used to maintain the initial treatment. If weeds begin to reenter this treatment, Western rotates back to the initial treatment program for one year. A yearly evaluation is often performed to fine tune the herbicide rate and combination.

G.3.4.3 Weed Resistance

These multi-year programs involve the rotation of herbicide products to achieve better control and best management practices to minimize off-site environmental impacts. Different herbicide products have different modes of action related to how they affect weed growth. When mixing herbicides with different modes of action, a broader spectrum of control is achieved for weed resistant to particular herbicides.

G.3.4.4 Non-Selective Herbicides

Non-selective herbicides can be very effective, but require special attention because they can affect adjacent desirable vegetation (including underlying roots) and/or readily leach into shallow groundwater. To reduce off-target risk, Western applies these herbicides only (1) where they will not be carried from treated areas in drift or surface water runoff; (2) where treated soil will not be blown or otherwise be moved into cropland; and (3) where shallow groundwater will not be affected.

G.3.4.5 Postemergent Contact Herbicides

On occasion it is necessary to add a postemergent contact herbicide to a tank mix of bare ground herbicides for a quick burn down, if weeds have already emerged from the ground. Postemergent contact herbicides have little or no residual soil activity, and therefore need to be applied throughout the growing season. A very effective, nonselective postemergence herbicide is glyphosate. Any postemergent herbicide would have to be applied periodically to control weeds germinating throughout the growing season if no residual herbicides have been applied in conjunction with the postemergent contact herbicides. Complete control of weeds may require retreatment. There are glyphosate formulations that are registered for aquatic sites.

G.3.4.6 Application Timing

Bare-ground applications can be done in the spring or fall. Fall applications (October - November) are appropriate under the following conditions:

1. Rainfall is less than 15 inches per year.
2. Wind and temperature are stable.
3. Winter rain and snow accumulation insure that the herbicide will be positioned into the soil below the plant's roots germinating in the spring.
4. Sensitive crops adjacent to treated areas will be harvested.

Spring applications (February - March) are appropriate under the following conditions:

1. When the rainfall is greater than 15 inches per year.
2. With soil types that have greater potential for leaching or run off.
3. In warmer climates where weed germination might occur earlier in the season.

G.3.4.7 Application Parameters

Sensitive Crops – During application, Western minimizes spray drift to avoid off-target damage to desirable plants. Applicators are knowledgeable of the chemical tolerance of adjacent vegetation, crops, and ornamentals. Care is taken with treatments which will interface (e.g., surface runoff or drift) with agricultural crops. Western accounts for

weather conditions and limits applications accordingly. Additionally, Western uses drift control agents to reduce drift.

Spray-Marking Dye – Western may require that a spray-marking dye be added to the spray solution when liquid herbicides are being applied. The spray-marking dye is a temporary colorant added to the spray solution for marking spray applications. Sunlight or rain will entirely fade the colorant in about 1.5 to 2 days. By adding a colorant to the spraying system, spray application contractors will be able to accurately and uniformly apply herbicides. In addition, Western personnel will be able to observe where herbicides have and have not been applied to the surface of the graveled yard and outside the perimeter of the security fence. This makes inspection of contractor work by Western personnel much easier and more reliable.

G.3.4.8 Best Management Practice for Bare Ground Applications

When applying any bare ground herbicide, there are always inherent risks that the chemical will move off-site with surface water runoff. To minimize future movement of herbicides from applications done at substations, yards, around transmission line structures, and other facilities where bare ground control is desired, Western considers the following best management practices:

Climatic Conditions – The degree of pesticide leaching and transport in surface water at a particular site depends in part on precipitation events. Runoff potential can be minimized by observing weather patterns and avoiding pesticide application before major precipitation events. The immediate weather forecast is useful in making a specific application decision.

Application Perimeter Buffer Zone – Applications should be done so as to minimize off-site impacts by minimizing drift and restricting weed control to 2 feet outside the security fence of any substation or yard, and to minimize drift to any portion of the right-of-way around structures where clearing of vegetation is needed for fire control. On occasion, the ditches which collect and direct surface water runoff can act as detention structures where vegetation is killed. Outside the security fence, vegetation should be mowed if possible.

Highly Sensitive Areas – In those areas where potential exists to damage sensitive crops as a result of runoff, a post-emergent strategy that includes the herbicide glyphosate should be considered. The post-emergent strategy will, however, require multiple applications during the growing season since there is no residual control. Consideration can be given to using glyphosate in a mix with other herbicides to gain broader coverage and preemergent control.

G.4. WESTERN ENVIRONMENTAL PROTECTION REQUIREMENTS

Adverse effects to the atmosphere, soil, or water in the environment can occur as a result of misuse of herbicides. Western selects herbicides based on site-specific conditions and applied according to all directions, warnings, and precautions on the herbicide label.

The following environmental standards and procedures are relevant to all methods of vegetation control in the project area. These measures should be looked upon as means to avoid or minimize environmental impacts of vegetation control, thereby mitigating the effects of the various control procedures.

1. Comply with all applicable Federal and State laws and regulations, and interagency agreements, in conducting vegetation management treatments. If interagency agreements limit vegetation clearing such that power system reliability could be compromised, attempt to re-negotiate these agreements to allow for removal or reduction of vegetation where flashover or fire dangers exist.
2. Select treatments for specific sites based on considerations of sociological, economic, and ecological consequences; that is, use an IVM decision-making process.
3. Strictly observe herbicide application rates, application techniques, and restrictions as specified on EPA-approved label instructions .
4. Use licensed herbicide applicators exclusively as specified by State law.
5. Strictly observe application buffer zones around water bodies -- See Table G.4-1 for minimal buffers that should be observed during herbicide application near water bodies, unless other buffers are specified by agency agreement or regulation.

Table G.4-1. Application Buffers Near Water Bodies

Herbicide Application Method	Minimum Water Buffer Width*
Foliage Spray	50 feet
Basal Spray	10 feet
Stump Treatment	10 feet
Soil Treatment - Pellets	10 feet

Source: Western 2007

*These are minimum buffers – buffers used should be sufficient to prevent adverse environmental impacts and should depend on site specific conditions, label restrictions, and any land management agency restrictions

6. Observe wind and weather limitations for herbicide applications to minimize drift and runoff. Apply chemicals when wind is calm or when a light breeze is

blowing away from non-target plants. See Table G.4-2 for a summary of weather-related restrictions for herbicides applications. Use drift control agents (if necessary) to avoid hazard of damage to nearby plants.

Table G.4-2. Weather summary - restrictions for herbicide applications

Control Method	Max. Temp	Minimum Humidity	Precip.	Wind	Season
Foliar Spray	75°	30%	None	0-5 MPH	Spring/Summer ³
Stump Treatment	--	--	Minimal	--	Frost Free ¹
Pellet/Soil Applications	--	--	²	--	Frost Free ¹
Basal Spray	75°	30%	Minimal	0-10 MPH	Frost Free ¹

Source: Western 2007

¹ Wood must not be frozen to permit penetration.

² Moderate precipitation required to move chemical in soil.

³ Or as specified on herbicide label.

7. Prevent groundwater and surface water contamination by using preventative measures. Recognize that the greatest potential for groundwater contamination from herbicides occurs with the following conditions:
 - Herbicide - highly soluble; low soil absorption; persistent.
 - Soil - permeable - sandy, gravel, low organic matter.
 - Site - shallow groundwater, nearby surface water, wet climate, floodplain.
 - Management - high rate or frequency of application, soil-applied herbicide, application before heavy rain.
8. Where warranted and feasible, monitor herbicide residues and soil and water; monitor the fate of herbicides (in groundwater and surface water) used as high allocation rates for substation weed control.
9. Strictly observe all laws and regulations governing herbicide handling, storage, and disposal and spill cleanup.
10. Observe buffers/reduce disturbance if endangered/threatened/rare species are likely; check label restrictions.
11. Research continually into new vegetation control methods and documentation of study designs and results.
12. Train herbicide applicators to ensure proper application rates and herbicide placement are used; inspect herbicide operations to ensure proper implementation.

G.5. Herbicide Risk

The following sections provide summaries of the risks for a subset of herbicides for which the U.S. Forest Service (USFS) has performed risk assessments and that are available for use in the project area as determined by the Western. Full risk assessments are available at www.fs.fed.us/foresthealth/pesticide/risk.shtml.

G.5.1 Clopyralid

The Forest Service uses only the commercial formulation of Clopyralid named Transline. Transline is a liquid formulation that is manufactured by Dow AgroSciences. The most common method of application of Transline is backpack (selective foliar) and boom spray (broadcast foliar). Transline is labeled for use only in non-crop areas such as rights-of-way and the maintenance of wildlife openings, tree plantations, rangeland, and permanent grass pastures. Technical-grade Clopyralid contains hexachlorobenzene as a contaminant, a classified carcinogen; however, Clopyralid is classified as practically nontoxic in microorganisms, aquatic vertebrates, aquatic freshwater invertebrates, estuarine/marine invertebrates, and slightly toxic in terrestrial animals.

The herbicide Clopyralid is used in the control and management of broadleaf weeds. This herbicide is relatively specific to broadleaf plants because Clopyralid is rapidly absorbed across leaf surfaces but much less readily absorbed by the roots of plants. Clopyralid is a plant growth regulator and acts as a synthetic auxin or hormone, altering the plant's metabolism and growth characteristics, causing a proliferation of abnormal growth that interferes with the transport of nutrients throughout the plant. Terrestrial plants are the nontarget species that would most likely be damaged by Clopyralid. Sensitive crops or other desirable sensitive plant species could be adversely affected by the off-site drift of Clopyralid under a variety of different scenarios depending on local site-specific conditions. However, more tolerant plant species are not likely to be affected unless they are directly sprayed or subject to substantial drift, although drift should not be allowed. Transline should only be used under calm conditions (wind no greater than 10 mph) and should be kept out of lakes, ponds, streams, and other bodies of water.

Clopyralid has a tendency to move into soil rather than to be transported by runoff, additionally; off-site movement of Clopyralid by soil runoff does not appear to be a substantial risk to nontarget plant species. Clopyralid does not bind tightly to soil and thus would seem to have a high potential for leaching. Studies indicate that leaching and subsequent contamination of ground water is likely to be minimal. Aquatic plants do not appear to be at any substantial risk from any plausible acute or chronic exposures; however, in the very extreme case of an accidental spill of a large amount of the herbicide into a relatively small body of water, sensitive aquatic plants could be damaged.

In technical grade Clopyralid, hexachlorobenzene, a carcinogen, is a contaminant with a concentration of approximately 2.5 ppm or less. Although technical grade Clopyralid has been subject to several chronic bioassays for carcinogenicity and none of the bioassays have shown that Clopyralid has carcinogenic potential, it does contain low levels of hexachlorobenzene which is ubiquitous and persistent in the environment. The major sources of general exposure for the public to hexachlorobenzene involve industrial emissions, proximity to hazardous waste sites, and the consumption of contaminated food. Virtually all individuals are exposed to hexachlorobenzene and virtually all individuals are exposed to hexachlorobenzene in their bodies. Due to the relatively

small amounts of Clopyralid that will be used Western, the application of herbicide is not expected to increase ambient levels of hexachlorobenzene.

G.5.2 Chlorsulfuron

Three commercial formulations of chlorsulfuron that are most commonly used for preemergent and early postemergent control of many annual, biennial and perennial broadleaf weeds are Telar®DF, Glean® produced by Dupont, and Corsair™ produced by Riverdale. The primary method of application for Telar®DF and Corsair™ is backpack (selective foliar) and boom spray (broadcast foliar). Boom spray is the application used in rights-of-way management. Glean® is the only formulation of chlorsulfuron registered for aerial application; however, the Forest Service does not use aerial application of chlorsulfuron.

All formulations of chlorsulfuron are labeled for the control of many annual, biennial, and perennial broadleaf weeds. None of the formulations are specifically registered for forestry use. Additionally, Telar®DF and Corsair™ are labeled specifically for noncrop, industrial site use and Glean® is labeled for agricultural use. For Telar®DF there is a label specifically for use in California. All formulations are recommended to have a non-ionic surfactant added as an adjuvant for postemergence applications. Chlorsulfuron is formulated as a dry flowable granule.

Chlorsulfuron is an effective and potent herbicide and could have adverse effects on some nontarget plant species, both terrestrial and aquatic, unless measures are taken to limit exposure. Damage to nontarget plant species after ground broadcast applications could extend to distances of greater than 900 feet from the application site; however, when used in backpack (directed foliar) application offsite drift could be reduced substantially. The acetolactate synthase (an enzyme that catalyzes the biosynthesis of three branched-chain amino acids), which is essential for plant growth, is inhibited by chlorsulfuron and effects plant growth. Under conditions that favor runoff, the offsite movement of chlorsulfuron via runoff could be substantial. Chlorsulfuron has limited water solubility; however, like many other herbicides, chlorsulfuron is much more toxic to aquatic plants than to aquatic animals. Thus, if chlorsulfuron is applied in areas where transport to water containing aquatic macrophytes is likely, it would be plausible that detectable damage could be observed.

Chlorsulfuron used in Telar®DF has a practically nontoxic classification in microorganisms, aquatic vertebrates, freshwater invertebrates, aquatic estuarine/marine invertebrates, and terrestrial animals. Application of chlorsulfuron should only be applied under calm conditions and drift should not be allowed from the treatment area. Chlorsulfuron should be kept out of lakes, ponds, streams, and other bodies of water.

G.5.3 Glyphosate

The herbicide glyphosate is used primarily in conifer release, noxious weed control, and site preparation. The most common commercial glyphosate products used by Western are Accord, Rodeo, and Roundup which use the isopropylamine salt of glyphosate. Technical grade glyphosate contains an impurity, N-nitrosoglyphosate, but the amount

of this impurity in glyphosate has been classified as toxicologically insignificant by the U.S. EPA.

The most common method of application for glyphosate in Forest Service programs involves backpack applied directed foliar sprays; however, glyphosate is applied in hack and squirt applications (the bark and cambium of a standing tree is cut with a hatchet and the herbicide is then applied to the cut using a squirt bottle) for tree removal maintenance of right-of-ways, during site preparation, and conifer release operations.

The herbicidal activity of glyphosate is due primarily to the inhibition of the shikimate pathway which is involved in the synthesis of aromatic amino acids in plants and microorganisms (the metabolic pathway does not occur in humans or other animals). The two specific biochemical mechanisms of action for glyphosate are uncoupling of oxidative phosphorylation and inhibition of hepatic mixed function oxidases. It should be noted that the U.S. EPA indicates that glyphosate is classified as Group E: Evidence of non-carcinogenicity for humans (although this assessment has been challenged).

Some formulations of glyphosate recommend the use of a surfactant to improve the efficacy of glyphosate and some surfactants may be more toxic than the herbicides with which they are used. A risk of using a surfactant is that they may play a substantial role in the interpretation of a large number of suicides and attempted suicides involving the ingestion of glyphosate formulations, primarily Roundup, the acute mammalian toxicity of different glyphosate formulation does not appear to differ substantially. On the other hand, the risk characterization for both workers and members of the public in contact with glyphosate indicates that there is very little potential risk at the typical application rate of 2 lbs a.e./acre. However, glyphosate and glyphosate formulations are skin and eye irritants.

Available toxicity studies suggest potential effects of glyphosate in mammals and birds to inhibit oxidative phosphorylation and consequently reduce food conversion efficiency as well as the apparent lack of teratogenic activity. In soil microorganisms, under field conditions, there is very little information suggesting that glyphosate will be harmful. However, glyphosate has a variety of toxic effects in plants, including the inhibition of photosynthesis as well as inhibition of respiration and nucleic acid syntheses in plants and microorganisms. In higher plants, inhibition of the shikimic acid pathway leads to an inhibition or cessation of growth, cellular disruption, and, at sufficiently high levels of exposure, plant death. Unintended drift as well as unintended direct deposition are the more plausible exposure scenarios for nontarget terrestrial plant species which could induce plant death in nontarget species. For sensitive nontarget species of plants the upper range of application rate of glyphosate could affect plants as much as 100 feet from the application site. Some fish species such as salmonids are more sensitive to glyphosate than other species of fish. Yet, amphibians are generally no more sensitive to glyphosate than fish. Thus, the use of glyphosate near bodies of water where sensitive species of fish may be found (i.e., salmonids) should be conducted with substantial care to avoid contamination of surface water. It is worth noting that aquatic plants appear to be somewhat less sensitive to glyphosate than the most sensitive aquatic animals.

G.5.4 Imazapyr

The herbicide Imazapyr is used in the control of a variety of grasses, broadleaf weeds, vines, and brush species, site preparation, wildlife habitat improvement and conifer or hardwood release, and right-of-way maintenance. While Imazapyr formulations can be used in pre-emergence applications, the most common and effective applications are post-emergent when the vegetation to be controlled is growing vigorously. The most common application of Imazapyr for right-of-way maintenance is boom spray. However, the commercial formulation of Imazapyr, Habitat and Arsenal AC, are commonly applied with cut-surface treatment methods while Arsenal and Chopper formulations involve backpack (selective foliar) and boom spray (broadcast foliar) operations.

Imazapyr is an effective herbicide, one in which even tolerant plants that are directly sprayed with Imazapyr at normal application rates are likely to be damaged. However, Imazapyr is less toxic to conifers, but is toxic to many other non-target plants. Some sensitive plant species could be affected by the off-site drift or by off-site movement in runoff of Imazapyr depending on local site-specific conditions. Imazapyr inhibits acetolactate synthase (ALS), an enzyme that catalyzes the biosynthesis of three branched-chain amino acids, all of which are essential for plant growth. Imazapyr is not metabolized extensively in plants but is transported rapidly from treated leaves to root systems and may be exuded into the soil from the roots of treated plants. Therefore, post-emergence application method is more effective than the pre-emergence application method.

Where runoff is prevalent, damage from runoff appears to pose a greater hazard than drift. Residual soil contamination with Imazapyr could be prolonged in some areas. Some effects are also plausible in aquatic plants. Aquatic macrophytes appear to be more sensitive to Imazapyr than unicellular algae. Peak concentrations of Imazapyr in surface water could be associated with adverse effects in some aquatic macrophytes.

Adverse effects in workers, members of the general public, as well as terrestrial or aquatic animals do not appear to be likely. Imazapyr is relatively non-toxic to soil microorganisms, aquatic invertebrates, and fish and is not expected to bioaccumulate in the food chain. Additionally, Imazapyr is practically non-toxic in terrestrial animals and birds. The most sensitive species appears to be aquatic macrophytes, *Lemna minor* and *Myrophyllium sibiricum*; however, some aquatic algae appear to be substantially less sensitive.

G.5.5 Oxyfluorfen

Oxyfluorfen is used for the control of weeds around conifers and some deciduous trees. Oxyfluorfen is a diphenyl-ether herbicide that is used to control a large number of broadleaf weeds in both forestry and agriculture. Oxyfluorfen is known to inhibit protoporphyrinogen oxidase (also known as "protoporphyrinogen IX oxidase" or "protox"), resulting in inhibition of heme biosynthesis, and induction of symptoms in rodents consistent with the expression of human variegate porphyria (i.e. effects on the liver, blood, blood-forming tissue.). Oxyfluorfen is relatively ineffective in inhibiting seed germination but is toxic after either direct spray or soil application. Oxyfluorfen is more

effective in pre-emergent soil applications than direct spray since it is most toxic to plants when they germinate.

Adverse effects on populations of nontarget terrestrial plants, mammals, and birds are plausible following use of Oxyfluorfen at the typical and maximum application rates and methods. Adverse effects on aquatic life, especially plants and aquatic invertebrates, are virtually certain if steps are not taken to prevent contamination of nearby aquatic habitats; Oxyfluorfen is highly toxic to aquatic animals even though it is not very soluble in water. Aquatic algae are more sensitive than fish but are equal in sensitivity with aquatic invertebrates. Formulations of Oxyfluorfen appear to be more toxic than technical grade herbicide, regardless of purity. Aquatic macrophytes are equally sensitive to Oxyfluorfen with respect to algae.

It is plausible that Oxyfluorfen exposure resulting from typical and maximum application rates and methods could result in adverse health effects among workers who handle herbicides without extensive use of personal protective equipment, and among members of the general public who might consume vegetation contaminated with the herbicide primarily through spray drift. Oxyfluorfen is of a low order of acute oral toxicity, is a mild eye and skin irritant, and only causes reproductive/development effects in rodents and rabbits at doses/concentrations which cause toxicity in pregnant dams or does. Oxyfluorfen is classified as a Group C, possible human carcinogen by the U.S. EPA. Additionally, Oxyfluorfen inhibits protoporphyrinogen oxidase, individuals who are innately deficient in protoporphyrinogen oxidase (i.e. have variegate porphyria) might be uniquely sensitive to Oxyfluorfen exposure.

Oxyfluorfen is practically non-toxic to mammals, birds, and honey bees; highly toxic to fish; and very highly toxic to aquatic invertebrates. This herbicide causes phytotoxicity in non-target plants at concentrations which are likely used under field conditions. A limited number of studies suggest that the effects of Oxyfluorfen on soil microorganisms are also likely to be transient, with measured variables in exposed populations ultimately rebounding above those of control levels.

G.5.6 Triclopyr

The herbicide triclopyr mimics auxin, a plant growth hormone, thus disrupting the normal growth and viability of plants. Triclopyr is used for wildlife habitat improvement, noxious weed control, conifer or hardwood release, and site preparation, among other uses such as right-of-way management, hardwood control, facilities maintenance, and seed orchard protection. Triclopyr has a low order of acute lethal potency, although, just like any chemical, Triclopyr at sufficiently high exposure levels can cause toxic effects.

Although triclopyr causes developmental effects only at doses that cause maternal toxicity, reproductive effects are an endpoint of concern to both the human health and ecological risk assessments and the quantitative risk assessment for mammalian wildlife is based on the same data as used in the human health risk assessment. The U.S. EPA /OPP (1998a) has classified triclopyr acid as being practically non-toxic to slightly toxic to birds and practically non-toxic to honey bees. Very high concentrations of triclopyr have been shown to cause growth inhibition in bacteria and fungi in

laboratory bioassays. Some bryophytes and lichens may be sensitive to long term effects after triclopyr exposure. There is very little suggestion in any field studies that triclopyr had any direct adverse effects on both animal and plant terrestrial organisms and most reported effects may simply reflect changes in habitat secondary to vegetation management practices.

Fish tend to be lethargic to hyper sensitive to triclopyr. The environmental metabolite of triclopyr (TCP) is potentially more toxic in fish than either triclopyr acid or triclopyr TEA. In free-living amphibians observations of hind limb deformities has been observed; however, Garlon 3A and Garlon 4 (commercial formulations of triclopyr) have been specifically tested for malformations in the frog embryo teratogenesis assay and no statistically significant effects were noted. Aquatic vertebrates appear to be about equally or somewhat less sensitive than fish to the various forms of triclopyr.

Although triclopyr BEE (butoxyethyl ester) is much more toxic to aquatic species than triclopyr TEA (triethylamine) or triclopyr acid, the projected levels of exposure are much less even for acute scenarios because of the rapid hydrolysis of triclopyr BEE to triclopyr acid as well as the lesser runoff of triclopyr BEE because of its lower water solubility and higher affinity for soils. Nonetheless, triclopyr BEE is projected to be somewhat more hazardous when used near bodies of water where runoff to open water may occur. If triclopyr is applied at high rates of exposure in areas where surface water contamination is plausible, implementation of BMPs would protect aquatic resources. Site-specific modeling and/or environmental monitoring could be useful to ensure and verify that concentrations TCP do not reach harmful concentrations.

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Appendix H

Floodplains/Wetlands Assessment

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Floodplains/Wetlands Assessment

for the

Western Area Power Administration San Joaquin Valley Right-of-Way Maintenance Activities Project

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December 2009

Introduction

Project Background

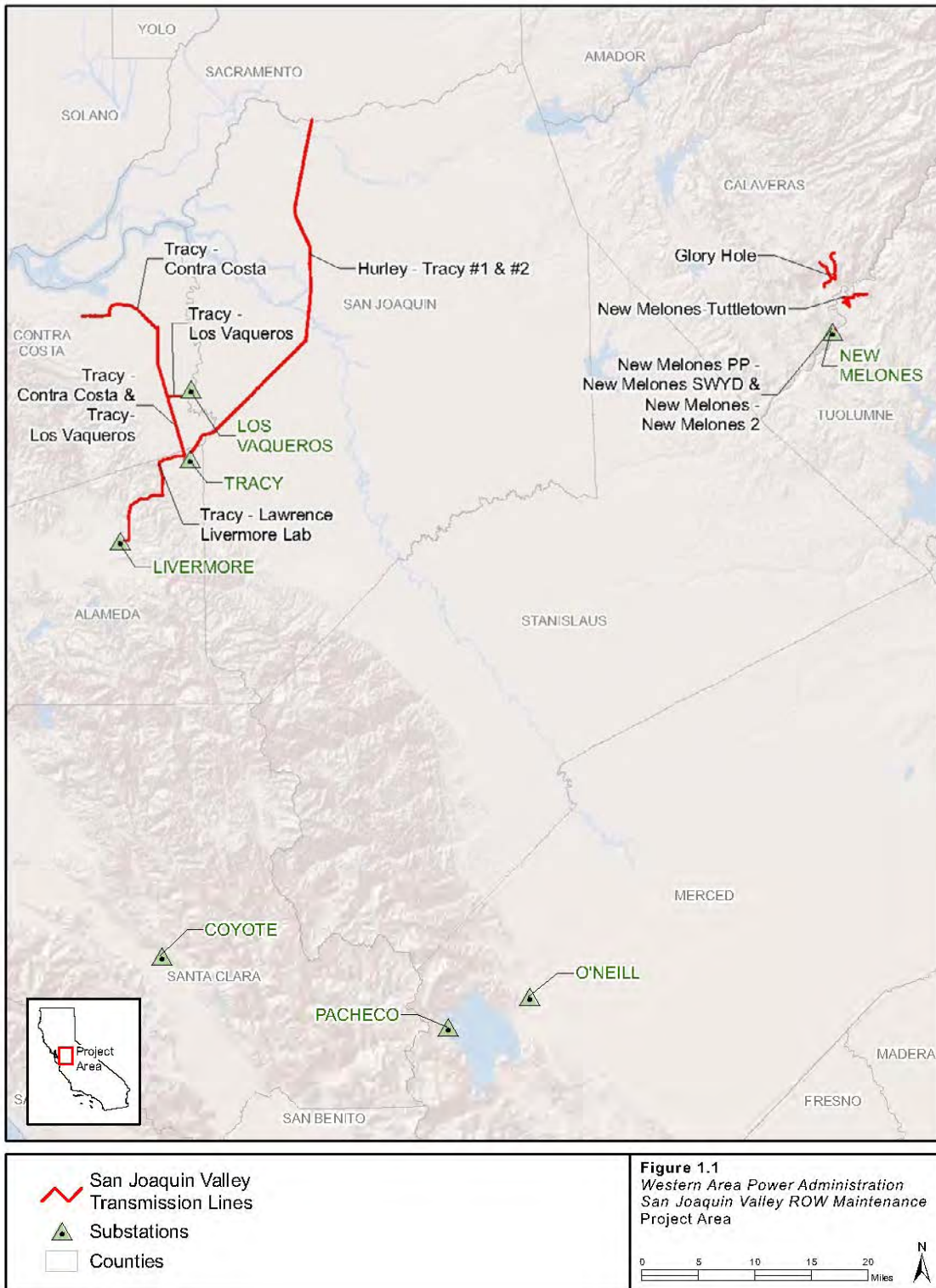
The Western Area Power Administration (Western), an agency of the Department of Energy (DOE), markets and delivers hydroelectric power and related services within a 15-state service area of the central and western United States. The Sierra Nevada Region (SNR) is one of four customer service regions and is responsible for the operation and maintenance of federal transmission facilities within a geographic service territory that includes Northern California and a portion of Nevada. In order to effectively operate and maintain the facilities, Western must comply with various directives, regulations, and orders, including the National Electric Safety Code and Western States Coordinating Council, which ensure protection of human safety and reliability of the transmission system.

Western currently has one completed Environmental Assessment (EA), and another that is nearing completion, which address routine right-of-way (ROW) operations and maintenance activities. These two EAs, however, are only applicable to operation and maintenance (O&M) activities within roughly two-thirds of the SNR's service area. The current EA, entitled San Joaquin Valley ROW Maintenance EA, addresses O&M activities within the remaining portion of the SNR's service area.

Several sections of the ROW are within floodplains and wetlands areas. The project therefore requires the preparation of a Floodplain/Wetlands Assessment in accordance with Title 10 *Code of Federal Regulations* (CFR) Part 1022. This Floodplain/Wetlands Assessment examines the effects of proposed ROW maintenance on floodplains and wetlands along existing ROWs within the project area.

The project area is in the northern San Joaquin Valley and includes portions of San Joaquin, Contra Costa, Calaveras, Tuolumne, Merced, Alameda, and Santa Clara counties (Figure 1).

The present natural settings of the project ROWs are shaped by a variety of landscapes. These include agricultural lands on the San Joaquin Valley floor, the dry rolling hills and rangelands of the Coastal Mountain Range, the scrub oak dotted foothills east of the Sierra Nevada Range Mountains, and small riparian corridors near major and minor watercourses. Much of the ROW crosses through diked reclaimed lands in the Sacramento-San Joaquin River Delta.



Regulatory Background

DOE is required by Executive Order (E.O.) 11988—Floodplain Management (May 24, 1977) to ensure that the potential effects of any action it may take in a floodplain are evaluated and its planning programs and budget requests reflect consideration of flood hazards and floodplain management. DOE is also required by E.O. 11990—Protection of Wetlands (May 24, 1977) to ensure consideration of wetlands protection in decision making, and to ensure the evaluation of the potential impacts of any new construction proposed in a wetland. Title 10 CFR Part 1022 establishes DOE policies to comply with E.O. 11988 and E.O. 11990.

Title 10 CFR Part 1022.11(c) requires DOE to determine whether a proposed action would be located within a wetland by consulting the most authoritative information available for the site. DOE reviewed available sources of information to determine the extent of wetlands located within the project area, including:

- U.S. Fish and Wildlife Service National Wetlands inventory data (USFWS 1990)
- Results of biological surveys conducted for Western transmission-line and access-road ROWs within the project area. Surveys collected locational data for a variety of wetland and habitat features, including:
 - Vernal pools
 - Other wetlands
 - Rivers and streams
 - Potential habitat for special-status species

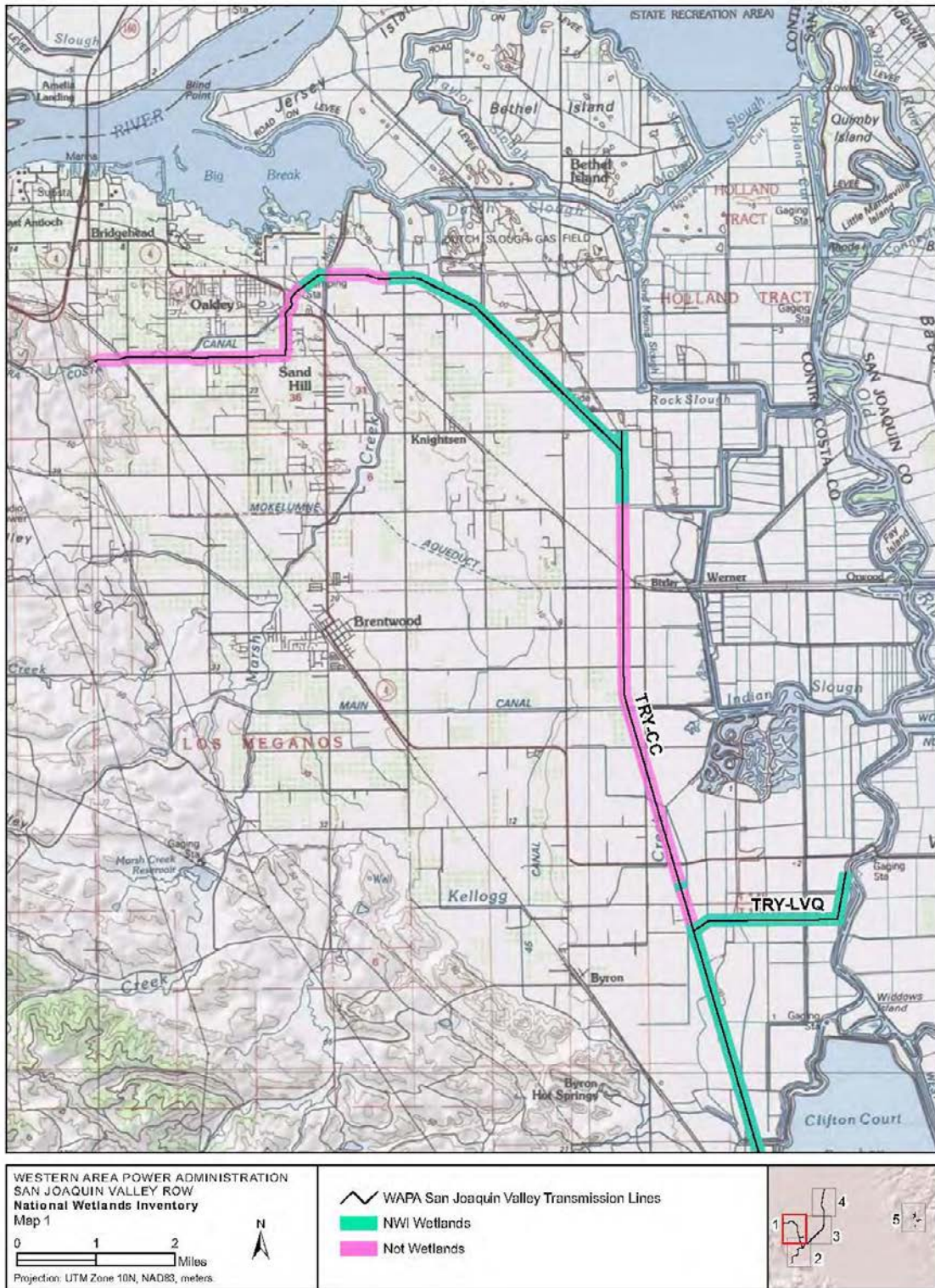
Title 10 CFR Part 1022.11(b) requires DOE to determine whether a proposed action would be located within a floodplain by consulting the most authoritative information available for the site. DOE reviewed available sources of information to determine the extent of floodplains located within the project area, including Flood Insurance Rate Maps or Flood Hazard Boundary Maps prepared by FEMA.

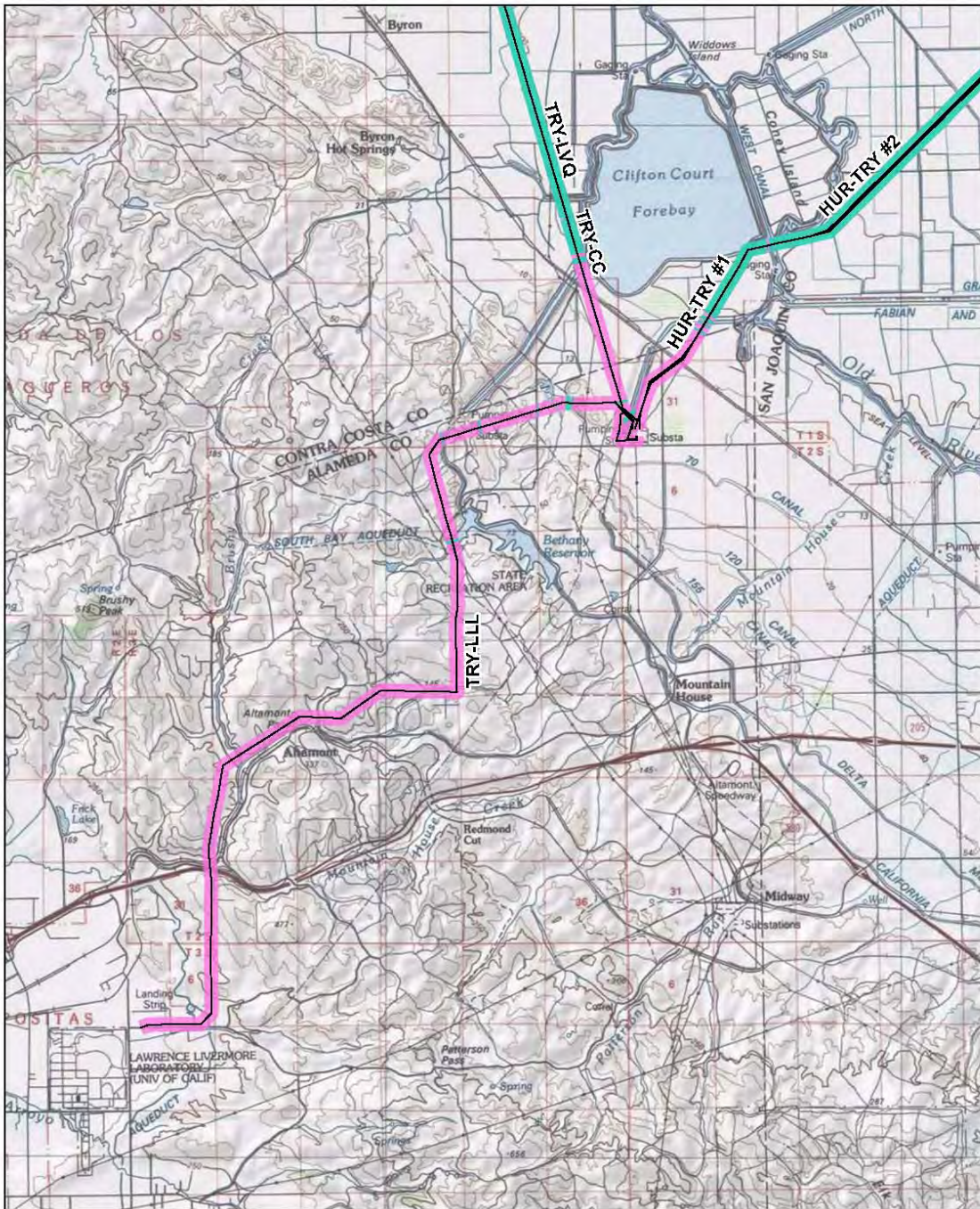
Title 10 CFR Part 1022.4 identifies two kinds of floodplains for consideration in the floodplains/wetlands assessment. The base floodplain is a 100-year floodplain, i.e., the floodplain with a 1.0 percent chance of flooding in a given year. The critical action floodplain is at minimum a 500-year floodplain, i.e., the floodplain with a 0.2 percent chance of flooding in a given year. The critical action floodplain applies to those DOE actions for which even a slight chance of flooding would be too great, including the storage of highly volatile, toxic, or water-reactive materials.

Wetlands

Existing Conditions

The existing environment is described in Section 3 of the EA. The following paragraphs summarize the extent of wetlands in the study area according to data from the National Wetlands Inventory (Figure 2).






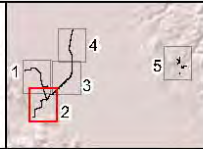


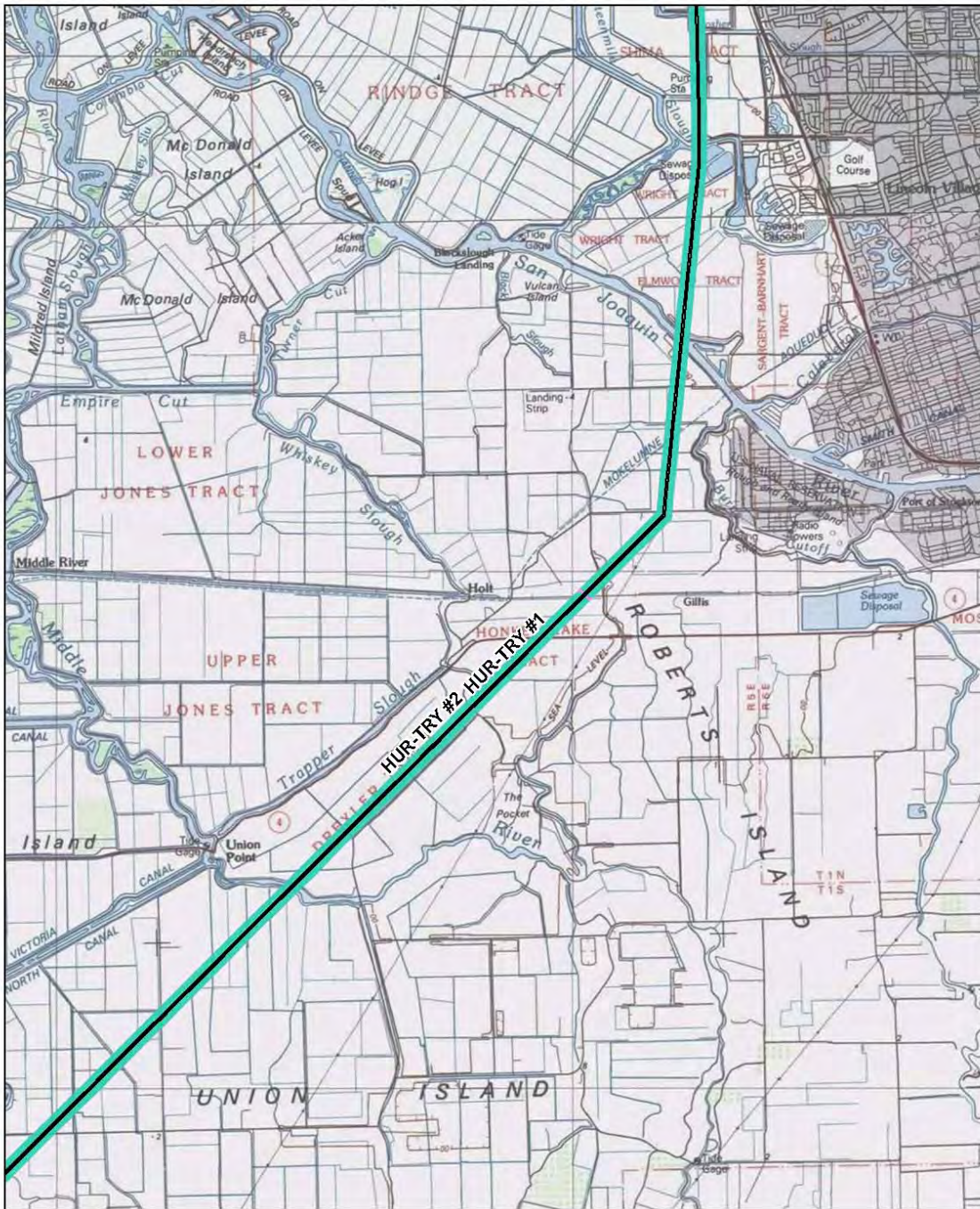
WESTERN AREA POWER ADMINISTRATION
 SAN JOAQUIN VALLEY ROW
 National Wetlands Inventory
 Map 2

0 1 2 Miles

Projection: UTM Zone 10N, NAD83, meters

 WAPA San Joaquin Valley Transmission Lines
 NWl Wetlands
 Not Wetlands



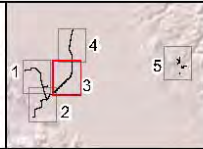


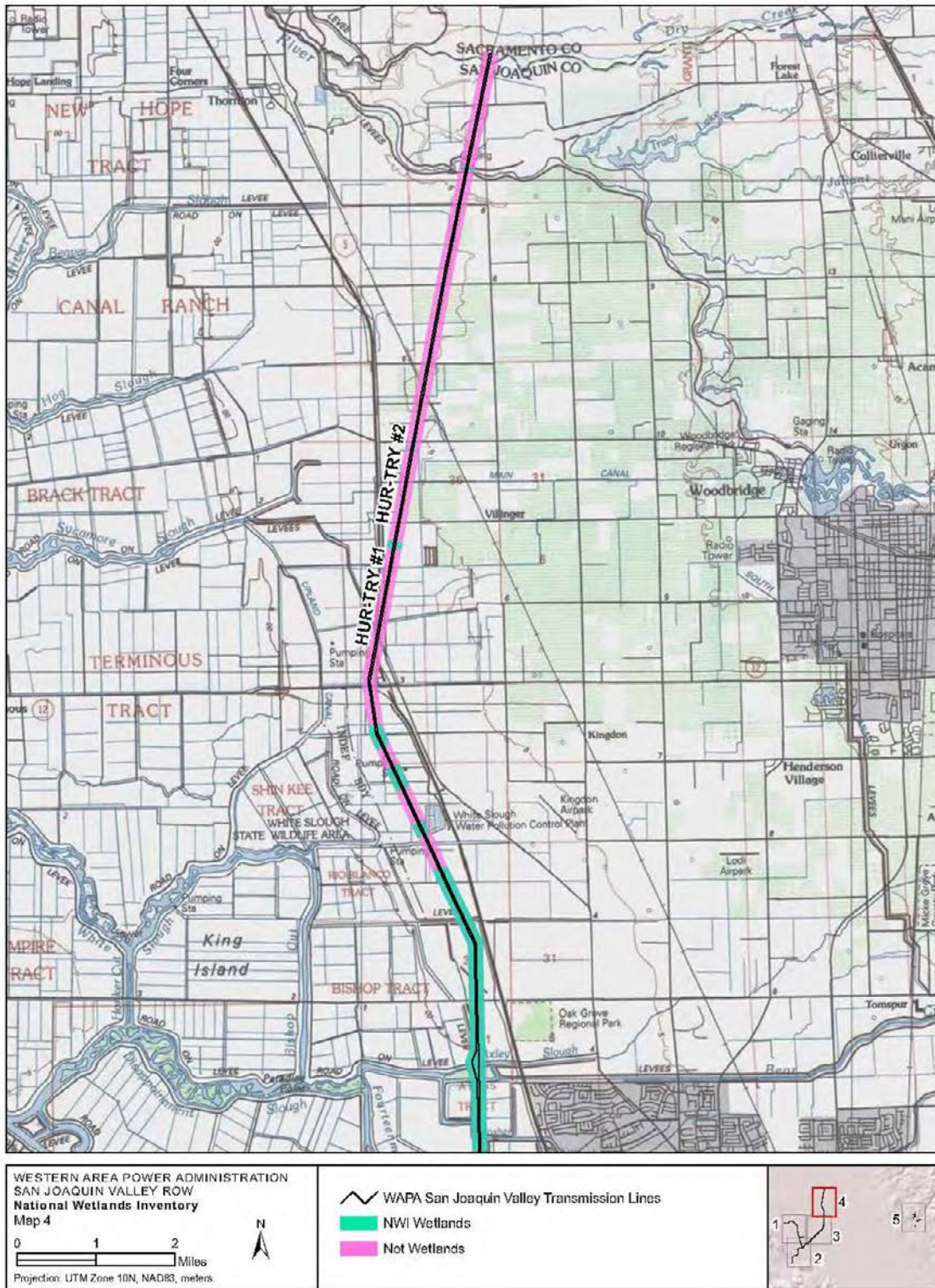
WESTERN AREA POWER ADMINISTRATION
 SAN JOAQUIN VALLEY ROW
 National Wetlands Inventory
 Map 3

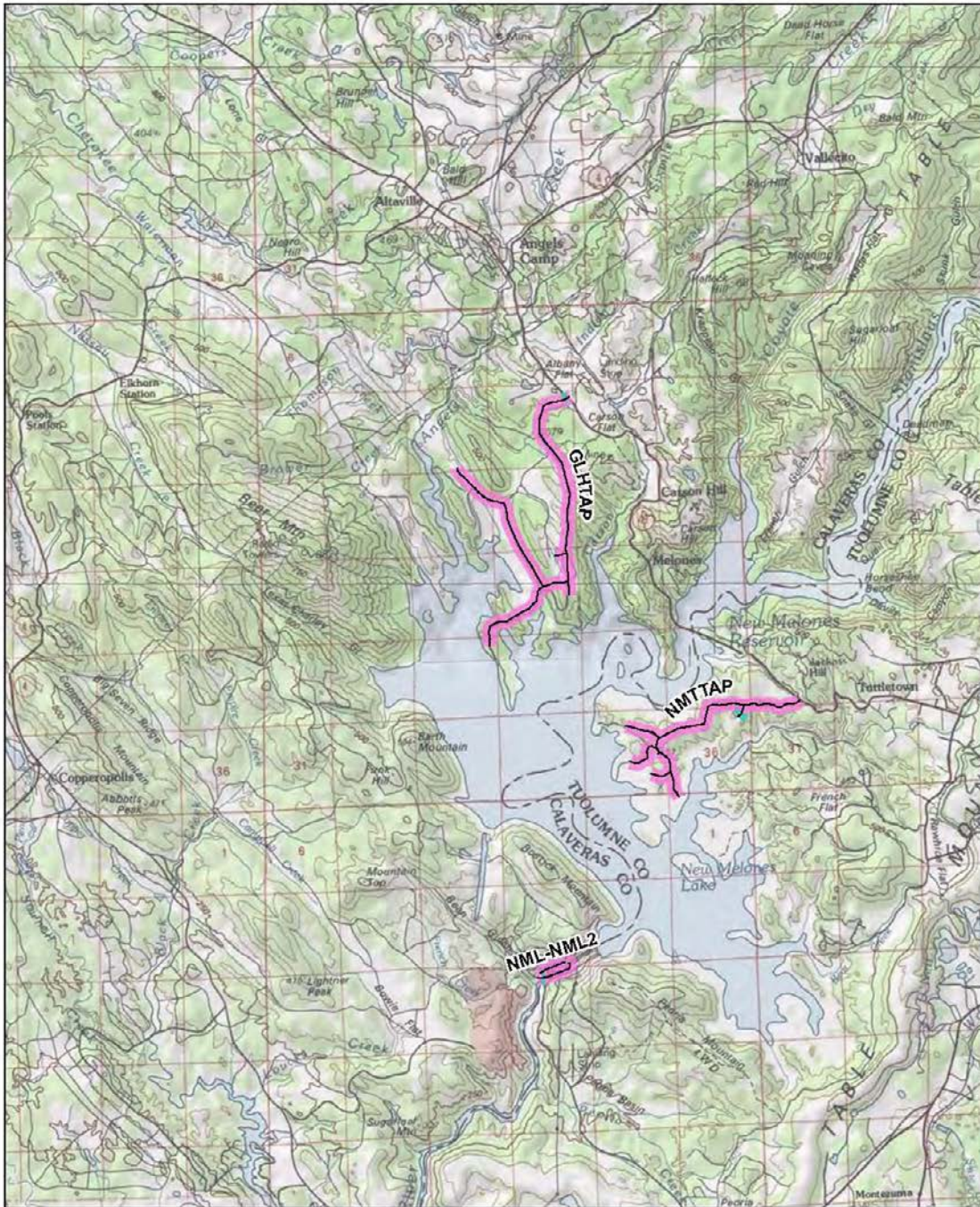
0 1 2 Miles

Projection: UTM Zone 10N, NAD83, meters

WAPA San Joaquin Valley Transmission Lines
 NWI Wetlands
 Not Wetlands








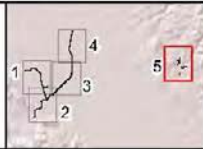


WESTERN AREA POWER ADMINISTRATION
 SAN JOAQUIN VALLEY ROW
 National Wetlands Inventory
 Map 5

0 1 2 Miles

Projection: UTM Zone 10N, NAD83, meters

-  WAPA San Joaquin Valley Transmission Lines
-  NWI Wetlands
-  Not Wetlands



Hurley-Tracy (HUR-TRY) #1 230 kV: This transmission line is comprised of one row of single-circuit steel towers and is paralleled by the HUR-TRY #2 line. The ROW is 125-ft wide. This section of the transmission line begins at the Sacramento-San Joaquin County line, and ends at tower (TWR) 69/2 where it joins with HUR-TRY #2. The length of this transmission line is 32.14 miles (mi), with a ROW area of 487.05 acres. This transmission line passes through 0.27 mi of Freshwater Emergent Wetland, 0.05 mi of Freshwater Forested/Scrub Wetland, 0.01 mi of Freshwater Pond, 0.47 mi of Riverine, and 22.72 mi of Other Wetlands. Other wetlands include several classifications that refer to diked former tidelands, and other natural and artificial wetlands associated with the Sacramento San Joaquin River Delta.

HUR-TRY #2 230 kV: This transmission line is comprised of one row of single-circuit steel towers and is paralleled by the HUR-TRY #1 line. The ROW is 125 ft wide. This section of the transmission line begins at the Sacramento San Joaquin County line, and ends at TWR 69/2 where it joins with HUR-TRY #1. The length of this portion of the transmission line is 32.16 mi, with a ROW area of 487.29 acres. This transmission line passes through 0.26 mi of Freshwater Emergent Wetland, 0.04 mi of Freshwater Forested/Scrub Wetland, 0.05 mi of Freshwater Pond, 0.47 mi of Riverine, and 22.98 mi of Other Wetlands.

HUR-TRY #1 and #2 230 kV: This transmission line is comprised of one row of double-circuit steel towers. The ROW is 125 ft wide. This section of the transmission line begins at TWR 69/2, and ends at Tracy Substation. The length of this ROW segment is 3.38 mi, with a ROW area of 51.22 acres. This transmission line passes through 0.06 mi of Freshwater Emergent Wetland, 0.01 mi of Freshwater Forested/Scrub Wetland, 0.11 mi of Riverine, and 1.59 mi of Other Wetlands.

Tracy-Contra Costa 69 kV: This transmission line is comprised of single suspension wood and steel towers. The transmission line starts at Tracy Substation and ends at CC4. The ROW is 125 ft wide from Tracy Substation to TWR 12/8; the length of this portion of the transmission line is 12.75 mi and the ROW area is 193.19 acres. From TWR 12/8 to CC4 the ROW is 50 ft wide; the length of this transmission line is 8.02 mi, with a ROW area of 48.63 acres. This transmission line passes through 0.29 mi of Freshwater Emergent Wetland, 0.04 mi of Freshwater Pond, 0.07 mi of Lake, 0.06 mi of Riverine, and 8.36 mi of Other Wetlands.

Tracy-Lawrence Livermore Lab 230 kV: This transmission line is comprised of steel single-strain towers. The ROW is 120 ft wide. The transmission line starts at Tracy Substation and ends at Lawrence Livermore Lab Substation. The length of this transmission line is 12.7 mi, with a ROW area of 184.68 acres. This transmission line passes through 0.07 mi of Freshwater Emergent Wetland, 0.02 mi of Freshwater Pond, 0.03 mi of Lake, 0.06 mi of Riverine, and 0.04 mi of Other Wetlands.

Tracy-Los Vaqueros 69 kV: This transmission line is comprised of wood horizontal posts. The ROW is 125 ft wide. The transmission line starts at TWR 0/1 and ends at Los

Vaqueros Substation. The length of this transmission line is 2.46 mi, with a ROW area of 37.24 acres. This transmission line passes through 0.29 mi of Freshwater Emergent Wetland, 0.07 mi of Lake, 0.13 mi of Riverine, and 5.75 mi of Other Wetlands.

New Melones (NML) #1 230 kV: This transmission line is comprised of one row of single-circuit steel towers. The ROW is 25 ft wide. The transmission line starts at the NML Powerhouse and ends at NML Substation. The length of this ROW segment is 0.33 mi, with a ROW area of 1.0 acre. This transmission line does not pass through any wetlands.

New Melones #2 230 kV: This transmission line is comprised of one row of single-circuit steel towers. The ROW is 100 ft wide. The transmission line starts at the NML Powerhouse and ends at NML Substation. The length of this transmission line is approximately 0.5 mi, with an area of approximately 5.98 acres. This transmission line passes through 0.04 mi of Lake.

New Melones-Tuttletown 17.2 kV Distribution Line: This distribution line is comprised of wood posts. The ROW is 25 ft wide. The length of this line is 4.20 mi, with a ROW area of 12.73 acres. This distribution line passes through 0.06 mi of Other Wetlands.

Glory Hole 17.2 kV Distribution Line: This distribution line is comprised of wood posts. The ROW is 25 ft wide. The length of this line is 6.16 mi, with a ROW area of 18.68 acres. This distribution line passes through 0.02 mi of Freshwater Emergent Wetland and 0.01 mi of Other Wetlands.

Wetland Impacts and Alternatives

The Proposed Action involves expanding the scope of operations and maintenance activities on existing transmission lines. Techniques for manual and mechanical vegetation control methods under the Proposed Action would be the same as those described for the No Action Alternative, and would include trimming, mowing, removal, disposal, and placement of geotextile barriers for vegetation management. Under the Proposed Action, Western also proposes using herbicides to kill or suppress growth of plants, and using soil borings for geotechnical or environmental analysis.

Removal of plants could alter the wetland habitat values in localized areas. This change in habitat due to maintenance activities is expected to be minimal. This effect would be similar under the Proposed Action and the No Action Alternative. Since the ROW is already established, maintenance activities are not anticipated to cause further fragmentation of habitat.

Maintenance vehicle traffic could cause rutting or compaction in wetlands, altering their habitat value. This effect would be similar under the Proposed Action and the No Action Alternative.

Herbicides could affect non-target vegetation. The degree to which this occurs would depend both on the specific herbicide, and on whether the herbicide contacts non-target

vegetation because of the application technique. Factors include drift (when herbicide drifts through the air or blows away from the intended area of application), water or soil movement, and accidental spills or accidental/careless applications. Effects of the specific herbicide on non-target vegetation would also depend on the “selectivity” of the herbicide. A selective herbicide kills only one type of vegetation (e.g., broadleaf plants). A nonselective herbicide might kill a number of plant types (such as broadleaf and grasses). The more selective a particular herbicide, the less the potential there is for non-targeted vegetation to be harmed. This effect would occur only under the Proposed Action, and would be minimized by following best management practices, described in Western’s *Integrated Vegetation Management Environmental Guidance Manual* (Western 2007), including:

- Reviewing federal and California state pesticide regulations for restrictions on use of particular herbicides
- Reviewing property owner/interagency agreements for herbicide type or application-method restrictions
- Observing site conditions to match specific herbicides and application methods to those conditions, including: the plants that are to be controlled; the season of the year and associated limitations; presence of sensitive environmental areas (e.g., endangered species, habitat, wetlands, etc.); presence/proximity of non-target vegetation; and vegetation conditions (height, amount of tall, growing brush, etc.)
- Reviewing Western’s environmental protection requirements
- Following all restrictions and guidance listed on the herbicide label
- Calibrating equipment to ensure proper mixture and volume of herbicide
- Selecting the proper nozzle tip to avoid overspray
- Handling herbicides to avoid accidental spills and ensure worker and public safety

Floodplains

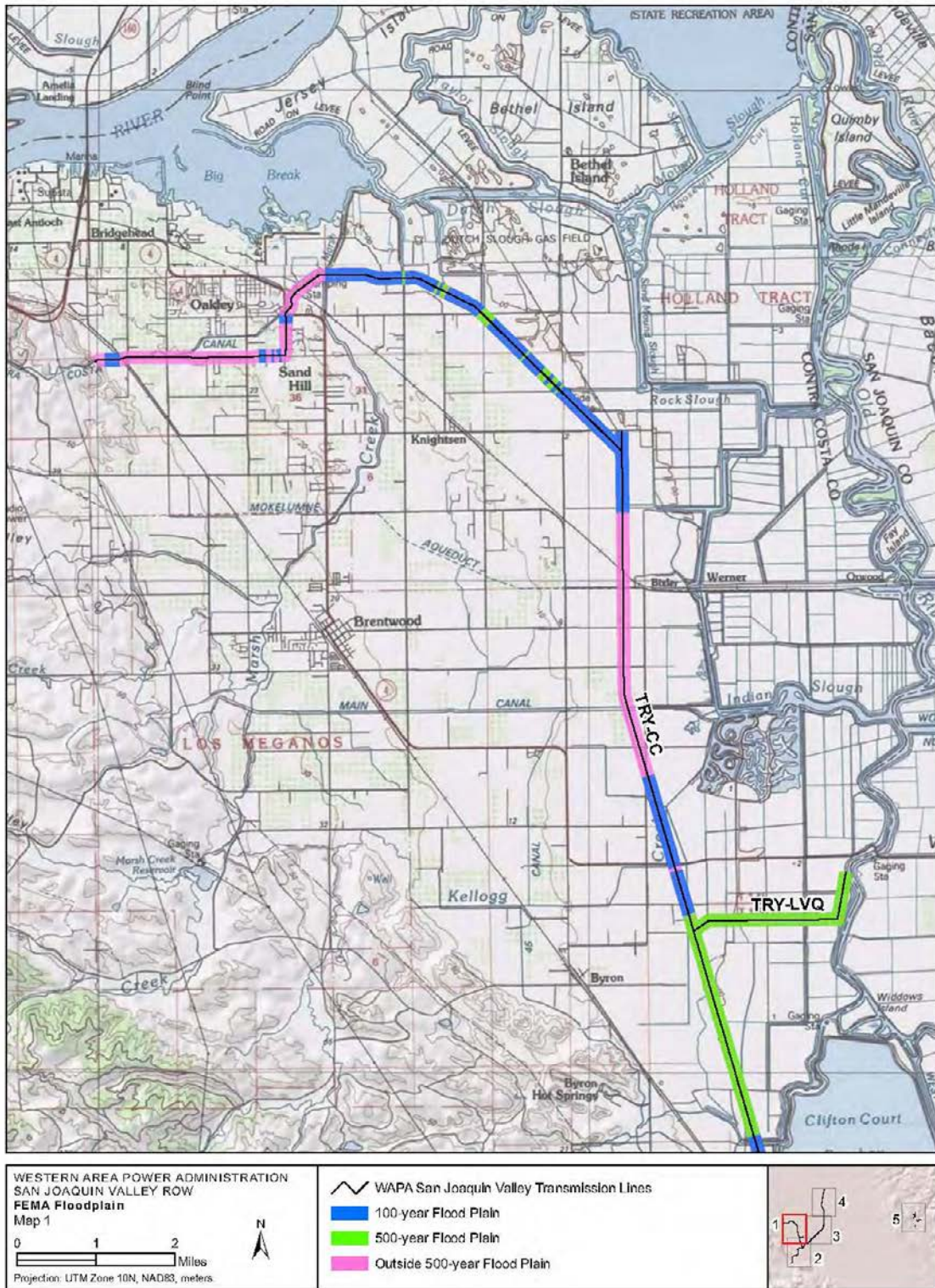
The existing environment is described in Section 3 of the EA. The following paragraphs summarize the extent of floodplains in the study area according to FEMA Flood Hazard Maps (Figure 3).

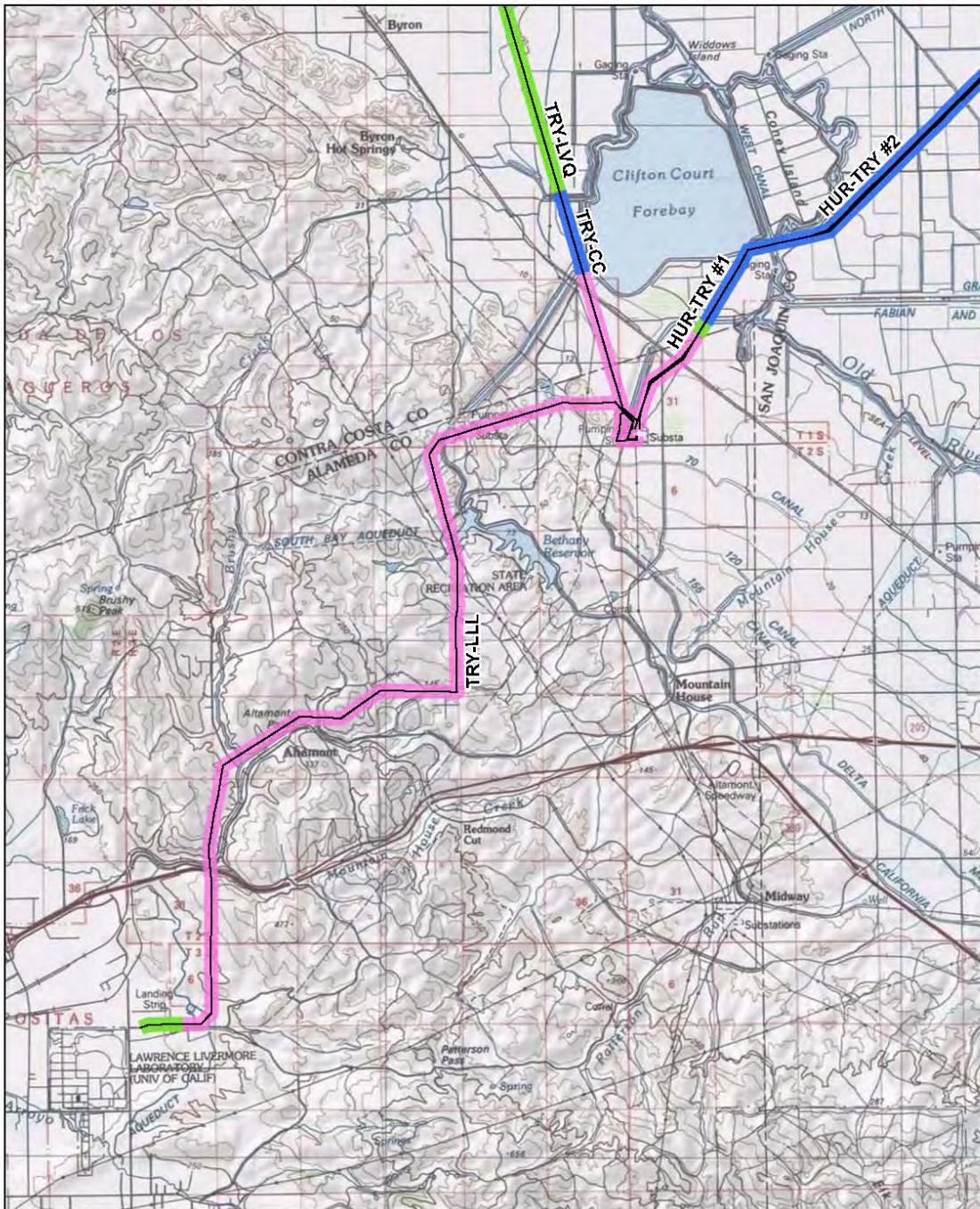
Existing conditions

HUR-TRY #1: This transmission line passes through 25.49 mi of a 100-year floodplain and 8.15 mi of a 500-year floodplain.

HUR-TRY #2: This transmission line passes through 25.54 mi of a 100-year floodplain and 8.10 mi of a 500-year floodplain.

HUR-TRY #1 and #2: This transmission line passes through 1.79 mi of a 100-year floodplain and 0.17 mi of a 500-year floodplain.



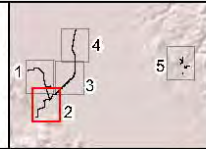


WESTERN AREA POWER ADMINISTRATION
 SAN JOAQUIN VALLEY ROW
 FEMA Floodplain
 Map 2

0 1 2 Miles

Projection: UTM Zone 10N, NAD83, meters

- WAPA San Joaquin Valley Transmission Lines
- 100-year Flood Plain
- 500-year Flood Plain
- Outside 500-year Flood Plain



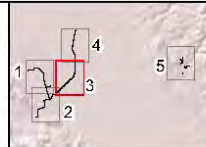


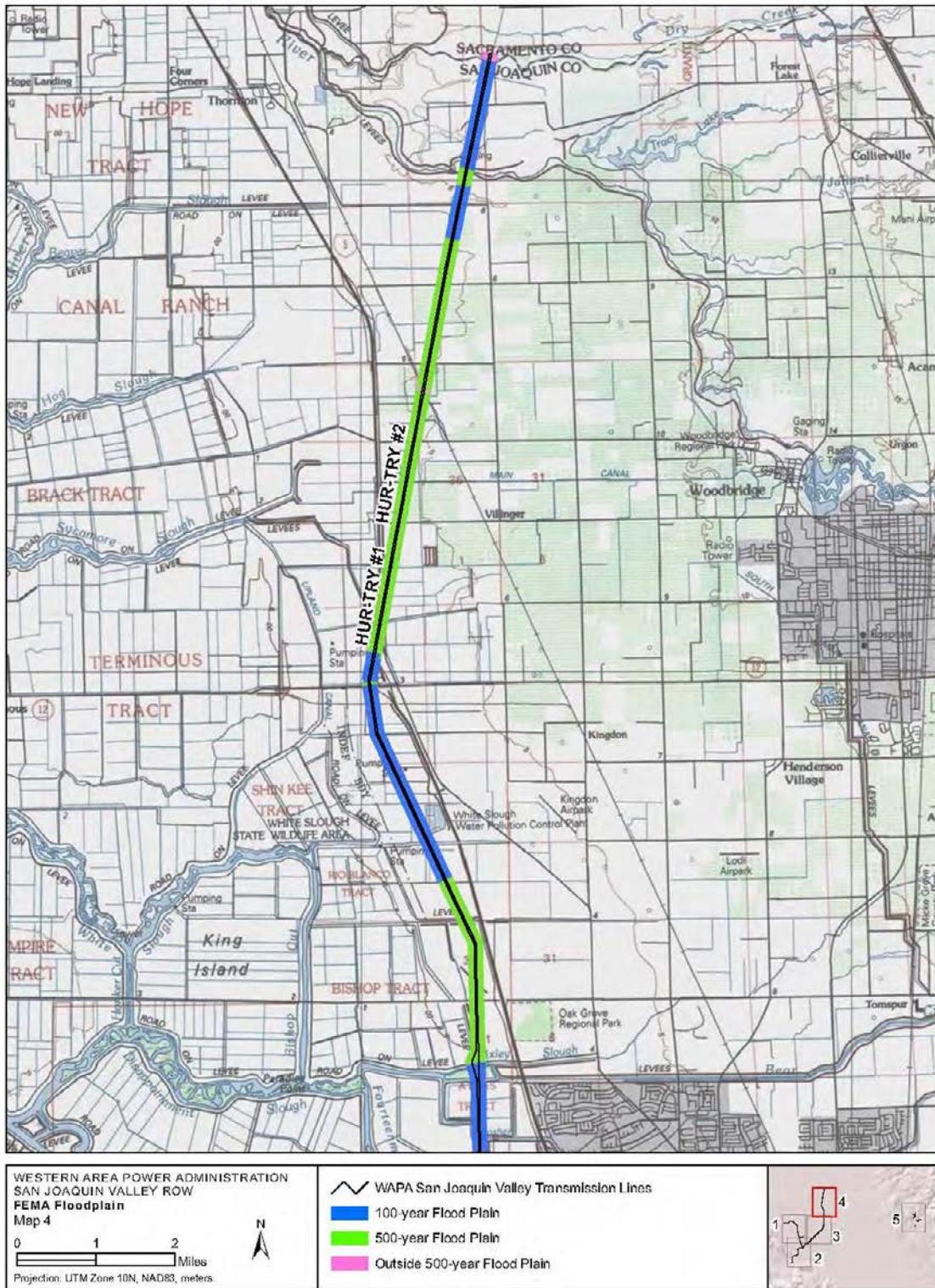
WESTERN AREA POWER ADMINISTRATION
 SAN JOAQUIN VALLEY ROW
 FEMA Floodplain
 Map 3

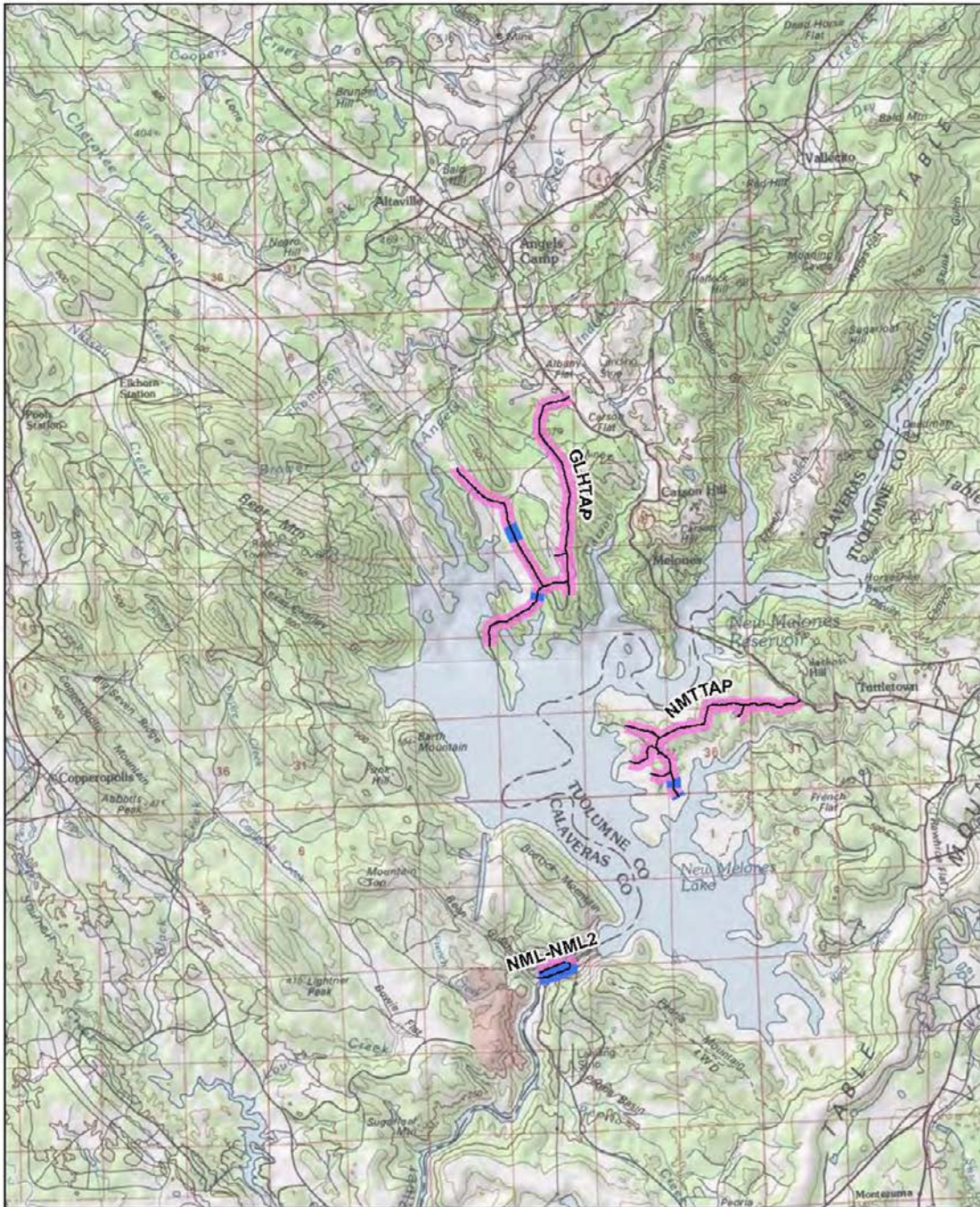
0 1 2 Miles

Projection: UTM Zone 10N, NAD83, meters

- WAPA San Joaquin Valley Transmission Lines
- 100-year Flood Plain
- 500-year Flood Plain
- Outside 500-year Flood Plain









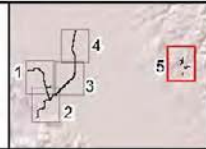


WESTERN AREA POWER ADMINISTRATION
 SAN JOAQUIN VALLEY ROW
FEMA Floodplain
 Map 5

0 1 2 Miles

Projection: UTM Zone 10N, NAD83, meters

-  WAPA San Joaquin Valley Transmission Lines
-  100-year Flood Plain
-  500-year Flood Plain
-  Outside 500-year Flood Plain



Tracy-Contra Costa: This transmission line passes through 8.34 mi of a 100-year floodplain and 3.48 mi of a 500-year floodplain.

Tracy-Lawrence Livermore Lab: This transmission line passes through 0.52 mi of a 500-year floodplain.

Tracy-Los Vaqueros: This transmission line passes through 1.03 mi of a 100-year floodplain and 5.37 mi of a 500-year floodplain.

New Melones # 1: This transmission line does not pass through any floodplains.

New Melones #2: This transmission line passes through 0.43 mi of a 100-year floodplain.

New Melones-Tuttletown 17.2 kV Distribution Line: This distribution line passes through 0.14 mi of a 100-year floodplain.

Glory Hole 17.2 kV Distribution Line: This distribution line passes through 0.31 mi of a 100-year floodplain.

Floodplain Impacts and Alternatives

Adverse impacts to floodplains include the potential for flood damage to structures placed within the floodplain, and increased flooding due to displacement of water from the normal floodplain by road construction activities. Impacts can also occur when resources are degraded enough to lessen the ability of the floodplain to store excess water.

The Proposed Action involves expanding the scope of operations and maintenance activities on existing transmission lines. New activities included in the Proposed Action include the use of herbicides in vegetation management and the use of soil borings for geotechnical or environmental analysis. Both the Proposed Action and the No Action Alternative involve vegetation management activities that could locally alter runoff and drainage patterns. However, removal of vegetation along ROWs would not be expected to influence flow of water during 100- or 500-year flows. The No Action Alternative relies on manual and mechanical vegetation control methods, without herbicides, that are largely corrective and remove tall-growing plants that have already been established on a site. Under the Proposed Action, Western would use herbicide methods—either alone or in concert with manual and mechanical methods—both to remove established vegetation, and prevent its regrowth. The Proposed Action would promote low-growing plant communities and would involve less alteration of vegetation that could impact runoff and drainage patterns.

No structures are proposed as part of this project that could significantly displace water from the normal floodplain. Access road maintenance could cause minor changes to

land contours, affecting floodwater flow on an insignificant scale; this effect would be the same under the Proposed Action and the No Action Alternative.

References

10 CFR Part 1022. "Compliance with Floodplain/Wetlands Environmental Review Requirements," U.S. Department of Energy, Title 10, Code of Federal Regulations, Washington, D.C., March 7, 1979.

Executive Order 11988. "Floodplain Management," May 24, 1977.

Executive Order 11990. "Wetlands Management," May 24, 1977.

USFWS 1990. "National Wetlands Inventory Maps," U.S. Fish and Wildlife Service, Washington, D.C., various dates.

Western 2007. "Integrated Vegetation Management Environmental Guidance Manual," Western Area Power Administration, Folsom, California, February 2007.

Appendix I

Noxious Weed Management

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INTRODUCTION

Western's *Integrated Vegetation Management Guide and Transmission Vegetation Management Program* (February 2007) describes Western's procedures for vegetation management. This appendix presents Section 11 of the Guide, which provides Western's approach to noxious weed management.

NOXIOUS WEED MANAGEMENT

11.1 INTRODUCTION

Western's historical vegetation management activities have been restricted primarily to the control of vegetation which poses a fire or safety hazard to transmission facilities. The existing vegetation management control program has now been expanded to be more proactive, with active management toward the desired condition of a low growth community on the right-of-way, as well as the control of noxious or undesirable weeds. The following sections describe Western's Noxious Weed Management Policy and its implementation during all stages of construction and maintenance activities.

11.2 BACKGROUND

Virtually all noxious weed species are non-native plants that have found ideal growing environments in North America. In their native European habitats, insects, competing organisms, and soil and moisture conditions combine to keep these weeds in check. But in the western United States, an ideal environment, coupled with the species' prolific reproductive capabilities (seed production) and the lack of natural predators, have allowed noxious weeds to become established and to spread rapidly on both public and private rangeland and farmland. As a result, crop yields and wildlife habitat are being reduced, livestock is poisoned, native plants are displaced, and rangeland in good ecological condition is being invaded.

There are several internet sites with useful information on noxious weeds. A selection of these is provided in Appendix H.

11.3 FEDERAL, STATE AND COUNTY LAWS/REGULATIONS

The Federal Noxious Weed Act of 1974, as amended by Sec. 15, Management of Undesirable Plants on Federal Lands, 1990, mandates each Federal land management agency to:

1. Designate a lead office and person trained in the management of undesirable plant species
2. Establish and fund an undesirable plant management program
3. Complete and implement cooperative agreements with State agencies
4. Establish integrated management systems to control undesirable plant species

Federal agencies responsible for the management of public lands have established an interagency committee which agreed to work cooperatively to manage noxious weeds, increase public awareness, support further research, and provide technical assistance on private lands to accomplish an integrated approach to the management of noxious weeds. All Federal land management agencies have a designated weed coordinator or similar position, which can be found on the agency websites.

Western's General Counsel has concluded that language in the act requires Western to take action on lands we own and have jurisdiction over, including easements and rights-of-way. Additionally, the Department of Energy's (DOE) Office of Environmental Guidance has instructed Western to comply with all Federal and State mandates to control undesirable weeds.

Within Western's service area, all states except Texas have passed laws that address noxious weed management and have developed State noxious weed lists (see Appendix B - State Noxious Weed Lists). Additionally, the majority of State weed management laws allow the governing body of a weed management district (usually the county) to designate additional undesirable plants for management within its jurisdiction.

For example, in 1990 the Colorado Legislature passed the Colorado Undesirable Plant Management Act (HB 1175) requiring county governments to develop integrated weed management plans that would include Federal agency involvement in controlling specific weeds in Colorado. Therefore, **be sure to check with the appropriate County agency** (usually a Weed Management Board) for county-specific requirements.

11.4 FEE-OWNED VERSUS NON-FEE-OWNED LANDS

Western's land management and rights administration fall within two general areas; fee-owned/withdrawn and non-fee-owned (easements, rights-of-way, permits, etc.). Weed management practices, responsibilities, and liabilities for these two situations are quite different. In the fee-owned/withdrawn situation, Western is the property owner/administrator and must assume the burden of full compliance with the weed laws.

In the non-fee-owned situation, Western must defer to the landowner or administrator as the responsible party for compliance with Federal and State laws, while ensuring that any actions taken are not detrimental to the rights held by Western.

Implementation of Western's noxious weed policy should be prioritized according to Western's vested interest in the land. First priority for noxious weed control should be on those lands owned by Western in fee. Second priority for control of noxious weeds should be on non-fee-owned Federal lands where transmission facilities either cross or occupy Federal land and where noxious weed infestations occur within permitted areas. Third priority for control of noxious weeds should be on or across non-Federal government lands.

The following sections are proposed guidelines for Western weed management involvement under the two general areas described above.

11.4.1 Western Fee-Owned/Withdrawn Property

Western shall be responsible for the inventory, treatment, and control of those weed species identified by State and/or county noxious weed laws. While current weed control practices generally involve the eradication of all vegetation within controlled sites, such as substations, other fee-owned property, such as buffer zones, receive minimal weed management effort. Given Western's responsible and liability under the Federal law, Western has looked to State law for coordination and compliance requirements, including the identification of target undesirable plants. Western shall be responsible for the inventory, treatment, and control of those weed species identified by State and/or county noxious weed laws. Where necessary, the Western Regional Office will notify the County Agent or County Board of Western's weed management activities.

Where chemical (herbicide) control is carried out by Western personnel, all spray crew personnel should be familiar with the identification of noxious weed species targeted for management by the state/county. Figures 11-1A through 11-1P provide photos of some common noxious weed species. After targeted weed species are identified, Western-approved herbicides can be selectively applied to remove the undesirable species, while maintaining and encouraging the development of desirable shrubs and grasses. Table 11-1 lists the most common noxious weeds expected to be encountered in Western's service area and the herbicides recommended for each weed. For problem weed infestations such as Canada and musk thistle, knapweeds, and ragweeds outside the substation or yard, the herbicide Transline[®] provides excellent control. The active ingredient is clopyralid. It is registered for selective control of broadleaf weeds in non-cropland areas, industrial manufacturing and storage sites and rights-of-way. By removing only unwanted weeds and brush, Transline[®] allows grass to live, thus preserving a grassy ground cover which prevents erosion.

Where vegetation management activities on Western fee-owned land involve contractor application of herbicides, language in statements of work should instruct the contractor to not only control weed growth within the security fence, but also to selectively control the growth of state/county targeted weed species on nearby Western fee-owned land. These fee-owned lands generally include substations and buffer zones, access roads, and electric transmission line approaches.

Noxious Weeds

SCOTCH THISTLE (*Onopordum acanthium*) (Source: The British Columbia Ministry of Agriculture and Food)



GROWTH HABIT: Biennial, sometimes annual, erect, up to 8 ft. tall. **Rosette formed first year, flowering stem elongates second year.**

LEAVES: Large, coarsely lobed, **hairy on both sides, velvety gray appearance.** Margins lined with sharp conspicuous spines. Basal leaves up to 2 ft. long and 1 ft. wide.

STEMS: Erect, branching, **spiny leaf wings extend down onto stem,** covered with dense fine hairs.

FLOWER: Solitary, terminal, 1 to 2 inches in diameter violet to reddish colored. Bracts spine tipped.

ROOTS: **Large fleshy taproot.**

SEEDS: Deep brown to black, distinctly wrinkled, 3/16 in. long.

OTHER: **Reproduce by seed only.** Dense stands may be impenetrable to livestock.

FIG. 11-1A

Noxious Weeds

DIFFUSE KNAPWEED (*Centaurea diffusa*)

(Source: The British Columbia Ministry of Agriculture and Food)



Bolting plant

GROWTH HABIT: Annual or biennial, bushy, up to 2 ft. tall. **Rosette formed first year flowering stalk elongates second year.**

LEAVES: Greyish-green, alternate, basal leaves whorled, upper leaves much reduced. **Covered with fine hair.**

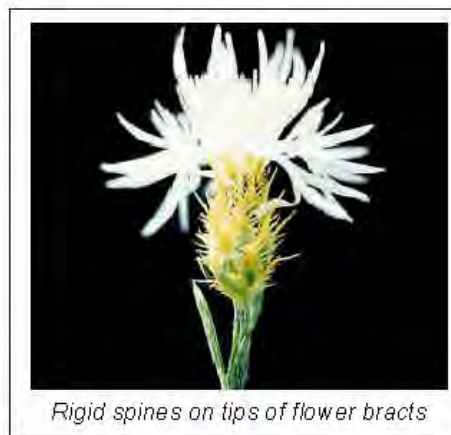
STEM: Hairy, erect, single main stem from a rootstock, branched near or above the base.

FLOWER: Solitary, usually white, sometimes pink, rose or lavender; **seedhead bracts end as sharp, rigid spines.**

ROOTS: Elongated taproot.

SEEDS: Oblong, dark brown or grey with **longitudinal lines.**

OTHER: May seriously reduce productive potential of infested rangelands.



Rigid spines on tips of flower bracts

FIG. 11-1B

Noxious Weeds
MUSK THISTLE (*Carduus nutans*)
(Source: The British Columbia Ministry of Agriculture and Food)



Large flowers with spine-tipped bracts "nod" at maturity

GROWTH HABIT: Biennial, or winter annual, erect up to 7' tall. Freely branching. **Rosette formed 1st year, flowering stem elongates 2nd year.**

LEAVES: **Dark green with light midrib, hairless on both sides, long sharp spines.**

STEM: **Hairless.**

FLOWER: Solitary, terminal, **nodding heads 1 1/2" to 3" diameter, deep rose to violet to purple.**

ROOTS: **Fleshy tap root, hollow near ground surface.**

SEEDS: Can be in excess of 20,000 per plan with 90% viable. Ninety percent may germinate in first 2 years. Seeds may germinate after 10 years in soil.

OTHER: **Reproduce by seed only.**

FIG. 11-1C

Noxious Weeds
HOARY CRESS (*Cardaria draba*)
 (Source: The British Columbia Ministry of Agriculture and Food)



Heart-shaped seedpods



"White-top" infestation

GROWTH HABIT: Perennial herb, up to 24' tall, erect, **becoming lodged with age.**

LEAVES: Alternate, lance-shaped and slightly irregular, **greyish-green, base of upper leaves clasping stem.**

STEMS: Stoutish, branched toward top.

FLOWERS: Small, white, 4 petals; numerous flower branches and dense flowers give plant a **dense, white, flat-topped appearance.** Numerous white flowers produced at the top of the plant gives rise to its other common name of "white-top".

ROOTS: **Extensive** horizontally and vertically **frequent shoots arising from root stocks.**

SEEDS: Reddish-brown, granular, egg-shaped, contained in heart-shaped pods.

OTHER: **Flowers early** (April and May), **reproduces by seeds, root stocks and creeping roots.**

FIG. 11-1D

Noxious Weeds
FIELD BINDWEED (*Convolvulus arvensis*)
(Source: The British Columbia Ministry of Agriculture and Food)



GROWTH HABIT: Perennial **vine**, reproducing from seeds and roots.

LEAVES: Alternate, simple, **arrowhead-shaped, rounded or blunt tipped**.

STEM: **Prostrate, twining and mat-forming**, up to 10 ft. long.

FLOWER: **Funnel-shaped**, pale pink to white, up to 1 in. wide; **two small scale-like bracts** attached below flower on flower stem.

ROOTS: **Creeping rhizomes**, extensive.

SEEDS: Four per capsule, dark grey to reddish brown, three sided.

OTHER: Seeds viable over 60 years. **Often confused with wild buckwheat which has heart-shaped sharp pointed leaves and tiny inconspicuous flowers.**

FIG. 11-1E

Noxious Weeds
SPOTTED KNAPWEED (*Centaurea maculosa*)
 (Source: The British Columbia Ministry of Agriculture and Food)



GROWTH HABIT: Biennial or short lived perennial, up to 3 ft. tall. **Rosette formed first year flowering stalk elongates second year.**

LEAVES: Long and divided below, **short and narrow above. Covered with fine hair.**

STEM: Erect with slender wiry branches. **Covered with fine hair.**

FLOWER: Seed heads mostly on branch tips solitary, to 1" diameter. **Pink to purple, rarely white. Seed head bracts are black tipped, with 5 to 7 pairs of short feathery appendages.**

ROOTS: Taproot not well developed.

SEEDS: Brownish, 1/8" long, notched on one side of base, short tuft of bristles at tip end.

OTHER: Very aggressive, can infest large areas quickly, offers very little big game or livestock forage value.

FIG. 11-1F

Noxious Weeds
PLUMELESS THISTLE (*Carduus acanthoides*)
(Source: The British Columbia Ministry of Agriculture and Food)



GROWTH HABIT: Biennial, sometimes annual, erect, up to 8 ft. tall. **Rosette formed first year, flowering stem elongates second year.**

LEAVES: Dark green with a light midrib, hair only on the underside, leaf margin with sharp spines.

STEMS: To 4 ft. tall, erect, winged to flowering heads.

FLOWER: Solitary, terminal or clusters of 2 to 5. Narrow seedhead bracts spine tipped. **Reddish-purple blooms 1/2 to 1 inch diameter.**

ROOTS: Stout fleshy taproot.

SEEDS: Striped lengthwise, slightly curved, with a protrusion at one end.

OTHER: **Reproduce by seed only.**

FIG. 11-1G

Noxious Weeds

RUSSIAN THISTLE (*Salsola kali*)

(Source: The British Columbia Ministry of Agriculture and Food)



Spine-tipped leaves



Seedling

GROWTH HABIT: Annual which reproduces by seed.

LEAVES: Alternate with the first ones being dark green, soft, slender, and 1 to 2 1/2 inches long. These drop off and later leaves are short, stiff, spiny, with two sharp-pointed bracts at the base.

STEM: Rounded, bushy, much branched, annual growth to 1.2 meters in height; stem usually red or purple striped.

FLOWER: Inconspicuous, green with 2 spiny-tipped stiff bracts.

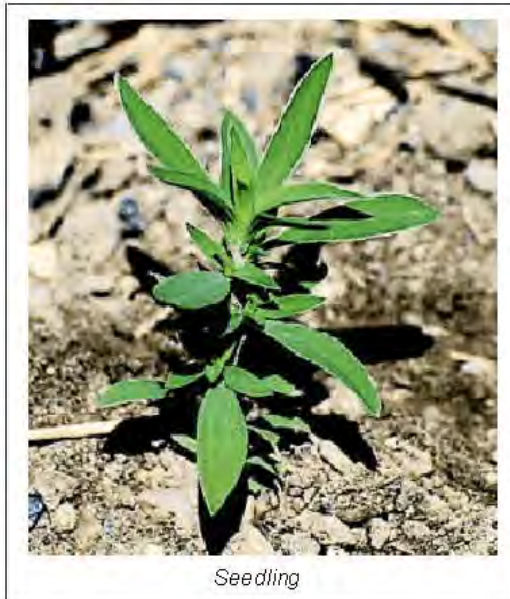
SEEDS: Can produce over 200,000 seeds per plant.

OTHER: Nicknamed "tumbleweed" when mature plants blow on the wind.

FIG. 11-1H

Noxious Weeds **KOCHIA (*Kochia scoparia*)**

(Source: The British Columbia Ministry of Agriculture and Food)



Seedling



Flower clusters

GROWTH HABIT: Annual, erect, up to 6 ft. tall, spreading by seeds.

LEAVES: Narrow, bright green, hairy, numerous and attached directly to the stem. The upper leaves are narrow. Entire margins often turn purple in autumn.

STEM: Erect, round, slender, pale green, much branched. Main stem often tinged with red.

FLOWER: Inconspicuous in the axils of upper leaves.

OTHER: Also called Fireweed or Mexican burning bush.

FIG. 11-11

Noxious Weeds

CANADA THISTLE (*Cirsium arvense*)

(Source: The British Columbia Ministry of Agriculture and Food)



Flowerheads with spineless bracts



Seedling



Young rosette

GROWTH HABIT: Perennial, erect, up to 4 ft. tall.

LEAVES: Varies from **light to dark green, oblong or lance-shaped**, deeply cut, spiny toothed margins (some may be smooth), slightly hairy below. Tremendous leaf variability.

STEM: Smooth to **slightly hairy**, branched at top.

FLOWER: **Small bristly clusters, 3/8 to 5/8 inch in diameter**, light lavender to deep rose purple. Plants are male or female.

ROOTS: Extensive, fleshy, **creeping root stocks**.

SEEDS: Smooth, light to dark brown, tipped by a cupped conical point, approx. 1/8" long.

OTHER: Reproduces by seed and creeping rootstocks.

FIG. 11-1J

Noxious Weeds **LEAFY SPURGE (*Euphorbia esula*)**

(Source: The British Columbia Ministry of Agriculture and Food)



GROWTH HABIT: Perennial, erect, up to 3 ft. tall, spreading by seed or **creeping roots**.

LEAVES: Alternate, **long, narrow**, 1/4" wide and 2" long, usually drooping.

STEMS: Branched near top, hairless, **entire plant contains milky sap**.

FLOWERS: Inconspicuous, surrounded by **large heart-shaped floral leaves** which turn **yellow-green** near maturity.

ROOTS: **Brown, numerous pink buds**, deep spreading, very persistent.

OTHER: Grows in nearly all soil types and habitats. Seed is thrown to 20' by exploding seed capsule. All parts of the plant contain a white milky latex that can irritate skin of livestock and humans.

FIG. 11-1K

Noxious Weeds

DALMATIAN TOADFLAX (*Linaria dalmatica*)

(Source: The British Columbia Ministry of Agriculture and Food)



Snapdragon-like flowers



Waxy leaves clasp the stem

GROWTH HABIT: Perennial, often over 3 ft. tall, erect.

LEAVES: Light green, alternate, **broad, heart-shaped**, clasping the stem.

STEM: Branching, light green, smooth, and **leafy**.

FLOWERS: Snapdragon type, **bright yellow**, tinged with orange, **to 1 1/2" long with long spur**, born in upper leaf axils.

ROOTS: Vigorous, deep and extensive, **creeping roots**.

SEEDS: Numerous, irregularly angled.

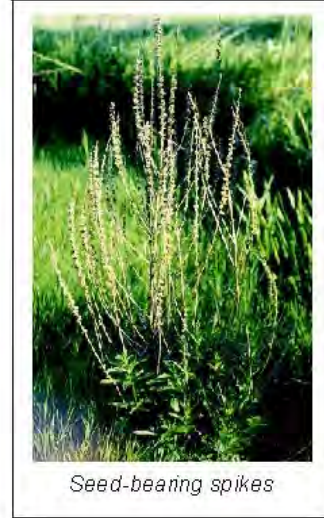
OTHER: Spread by seed and creeping roots. Likely introduced to North America as an ornamental.

FIG. 11-1L

Noxious Weeds
PURPLE LOOSESTRIFE (*Lythrum salicaria*)
(Source: The British Columbia Ministry of Agriculture and Food)



Purple flowers produced on terminal spikes



Seed-bearing spikes

GROWTH HABIT: Wetland perennial, 1 1/2 to 8 ft. tall in height.

LEAVES: Opposite or sometimes whorled stalkless leaves.

STEM: Stiff, four-sided stem.

FLOWERS: Purple flowers in a dense terminal spike.

ROOTS: Woody taproot and branching fibrous root system.

SEEDS: Can produce over 2.5 million seeds annually.

OTHER: Sometimes confused with fireweed (*Epilobium angustifolium*), many infestations have resulted from escape of ornamental varieties. Highly aggressive invader species. If left unchecked, a wetland will eventually become a monoculture of loosestrife. This plant poses a severe threat to waterfowl habitat.



Fireweed

FIG. 11-1M

Noxious Weeds
RUSSIAN KNAPWEED (*Acroptilon repens*)
 (Source: The British Columbia Ministry of Agriculture and Food)



Purple flower with papery margined bracts



Creeping roots produce dense infestations

GROWTH HABIT: Perennial herb, up to 3 ft. tall, erect, may be in dense clumps. Greyish color.

LEAVES: Alternate, simple, of **several types:**

Upper leaves - small, narrow, unbroken edge;

Stem leaves - intermediate in size, slight toothed margins;

Basal leaves - deeply notched.

STEM: Numerous branched, each ending with a single flower.

FLOWER HEAD: Single, **terminal, lavender, thistle-like, scaly seed head.**

ROOTS: **Dark brown to black and heavily scaled.**

SEEDS: Flattened, ivory-colored, **retained in cup-shaped seed heads.**

OTHER: Leaves and stems covered with short stiff hairs giving **plant an appearance of knap.** Spreads by seeds and creeping rootstocks. It is very poisonous to horses.

FIG. 11-1N

Noxious Weeds

YELLOW STARHISTLE (*Centaurea solstitialis*)

(Source: California Department of Food and Agriculture)



GROWTH HABIT: Annual, sometimes biennial, erect, to 6 feet tall.

LEAVES: Alternate, mostly linear and somewhat narrowly oblong to oblanceolate.

STEM: Stiff, openly branched from rear or above the base. Leaf bases extend down stems, giving a winged appearance.

FLOWER: Heads ovoid, spiny, solitary on stem tips, consisting of numerous yellow disk flowers.

ROOTS: Tap roots grow vigorously early in the season to depths of 3 feet or more.

SEEDS: Barrel-shaped, about 2 – 3 mm long, with broad bases; laterally notched at the base.

OTHER: Usually senesces in late summer or early fall.

FIG. 11-10

Noxious Weeds
SCOTCH BROOM (*Cytisus scoparius*)
 (Source: California Department of Food and Agriculture)



Flower



Infestation



Full view of plant

GROWTH HABIT: Shrubs, up to 7 feet tall.

LEAVES: Alternate, compound, 3 leaflets; sometimes single on new twigs. About 5 - 20 mm long, oblong to obviate.

STEM: Erect, dense, green; sharply 5-angled or ridged, and star-shaped in cross section, often with few leaves.

FLOWER: Bright yellow, pea-like, single or paired in leaf axils. Calyx typically less than 5 mm long, 2-lipped, glabrous.

ROOTS: Taproots deep, branched, associated with nitrogen-fixing bacteria.

SEEDS: Pods mature June – July; are dark brown to black, flattened, about 2 - 5 cm long, densely lined with long silky golden to silvery hairs, and contain an average of 5 - 9 seeds.

OTHER: Tolerate frost, but die back after severe cold. Ants attracted to seed appendages and disperse seed while foraging.

FIG. 11-1P

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**TABLE 11-1
HERBICIDES FOR NOXIOUS WEED CONTROL**

Noxious Weed (Common Name)	Recommended Herbicide(s)	Optimum Treatment Time	Quantity	Notes
Canada Thistle	Vanquish® +2,4-D	End of bud stage or fall	1 quart each/acre	--
	Tordon® +2,4-D		1 quart each/acre	--
	Tordon® +Vanquish®		1 pint each/acre	--
	Curtail® (Clopyralid +2,4-D)	From rosette (6-8 inches) up to pre-bud stage.	2 quarts/acre	--
	Transline®		12-16 ounces/acre	--
	Telar®	Bud to early bloom or fall.	1 ounce/acre	Roadside/non-crop land use
Musk Thistle	Vanquish® +2,4-D	Rosette stage (spring and fall)	1 pint + 1 quart/acre	--
	Tordon® +2,4-D		.5 pint + 1 quart/acre	--
	Tordon® +Vanquish®		.5 pint + 1 pint/acre	--
	Telar®	After bolt up to early flower stage.	1 ounce/acre	--
	Curtail® (Clopyralid +2,4-D)	Rosette (spring or fall) up to pre-bud stage.	2 quarts/acre	--
	Transline®	Rosette stage (spring and fall) to pre-bud stage.	12-16 ounce/acre	--

**TABLE 11-1
(Continued)**

Noxious Weed (Common Name)	Recommended Herbicide(s)	Optimum Treatment Time	Quantity	Notes
Leafy Spurge	Tordon [®] +2,4-D	Spring during true flower stage or fall to regrowth.	1-2 pints + 1 quart/acre	3-4 years consecutive treatment necessary.
	Vanquish [®] +2,4-D		1-2 quarts + 1 quart/acre	Should combine chemical control with other methods - e.g., chemical or cultural.
	Roundup [®] +2,4-D	Treat 2-3 times/season with first treatment at true flower stage and subsequent treatments at 30 day intervals.	.5-1 pint + 1-2 pints/acre	Use under trees or combine with reseeding of competitive perennial grass.
Russian Knapweed	Tordon [®] +2,4-D	Bud Stage or fall.	1 quart each/acre	--
	Vanquish [®] +2,4-D		1-2 quarts + 1 quart/acre	--
	Curtail [®] (Clopyralid +2,4-D)	Rosette to early flower.	3 quarts/acre	--
	Transline [®]		18-24 ounces/acre	--
	Telar [®]	Fall.	1 ounce/acre	--
Diffuse and Spotted Knapweed	Tordon [®]	Rosette to early bolt.	1 pint/acre	--
	Tordon [®] +2,4-D		12 ounces + 1 quart/acre	--
	Tordon [®] + Vanquish [®]		.5-1 pint +1-2 pints/acre	--
	Vanquish [®] +2,4-D		1 pint + 1 quart/acre	--
	Curtail [®] (Clopyralid +2,4-D)		2 quarts/acre	--

**TABLE 11-1
(Concluded)**

Noxious Weed (Common Name)	Recommended Herbicide(s)	Optimum Treatment Time	Quantity	Notes
Field Bindweed	Vanquish [®] +2,4-D	During flower stage or fall.	1 quart each/acre	--
	Tordon [®] +2,4-D		1 quart each/acre	--
	Tordon [®] +Vanquish [®]		1 pint each/acre	--
Hoary Cress (Whitetop)	Telar [®]	Bud to early bloom stage.	.5-1 ounce/acre	Roadside/noncropland
			.5-.75 ounce/acre	Range/pasture
	2,4-D amine	Apply first treatment at early bloom stage, second treatment at mid summer (July), and third treatment to any fall regrowth.	2-3 quarts/acre	--
Perennial Pepperweed (Tall Whitetop)	Telar [®]	Bud to early bloom stage and fall rosette.	1 ounce/acre	Roadside/noncropland
	2,4-D amine	Apply first treatment at early bloom stage, second treatment at mid summer (July), and third treatment to any fall regrowth.	2-3 quarts/acre	--
Yellow and Dalmation Toadflax	Tordon [®]	Bud to early bloom.	1-2 quarts/acre	When using 1 quart/acre treat for 2-3 conservative years
Kochia	Vista [®]	Apply to actively growing weeds.	2/3 - 1 1/2 pt/ac	--
Yellow Starthistle	Transline [®]	Apply from rosette to mid-bolt growth stage.	½ - 1 pint/acre	--
	Roundup [®]	Apply when actively growing.	1 pound AI/acre	--
	HI-DEP [®]	Apply to rosette.	1-2 pounds AI/acre if late in season	--

Sources: Colorado Weed Management Association, Dow, and UC Davis website.

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Western's completed and approved vegetation management guidance can be used as a vehicle for entering into good neighbor Weed Management Plans, when necessary, with Federal, State, or local government entities. This practice will help to ensure consistency throughout Western. The vegetation management guidance includes any or all of the following:

- Site Specific Weed Inventories
- Integrated Approaches for Control
 - Mechanical Control (Manual, Mowing)
 - Biological Control (Introduce Natural Insect Predators, Grazing)
 - Chemical Control (Herbicides, Fertilizers)
- Environmental Protection Requirements and Best Management Practices
- Herbicide Application Certification Requirements
- New Vegetation Control Methods Procedures
- Monitoring and Reporting Procedures

11.4.2 Western Non-fee-Owned Rights

The administration of Western's rights on other than fee-owned land is difficult to assess in terms of responsibility and liability, especially where weed control is at issue. As stated in the assumptions above and pertaining to weed management responsibility, Western will defer compliance with Federal and State weed control laws and regulations to the landowner or administrator. There is a potential liability issue associated with this assumption in terms of "cause and effect". Weed occurrences may have resulted from or may have been accelerated by construction activities associated with transmission line and related facilities installations. Given the relationship of Western as a right-holder on the land and the fact that it is in Western's best interest to develop a good neighbor policy, Western would provide funding support, where deemed appropriate and where funds are made available, to the government entity responsible for compliance with the Federal and State laws.

The following subsections provide a breakdown of Western's activities involving the various landowner/administrator situations.

Rights On or Across Federal Lands

Western is responsible for the development of Interagency Agreements (IA) which includes the management of noxious weeds (see Section 2.4). Where there are active

county-wide weed management programs, Western will advise the county of its ongoing efforts with other Federal agencies and will support the integration of such efforts when in the best interest of the government to do so.

IAs will be developed with the Federal agency with surface administration jurisdiction, where necessary. As in the case of BLM, an environmental impact statement was finalized in 1991 that specifies their weed control commitment in the Western States, excluding California. BLM assumes the responsibility of weed management planning and implementation on all lands within their administration. If necessary, Western may execute an IA providing for funding support given Western's right-of-way and Western's acceptance of the estimate and availability of funds.

The Colorado River Storage Project Office and the CSO - Office of Environment developed IAs with Colorado western slope Forest Service District Offices in 1994 and 1995. These agreements can serve as examples for other State weed control activities, where necessary.

Executed IAs will be forwarded to the specific County Agent or Board, when applicable, to ensure coordination and as an effort to demonstrate Western's good intentions toward controlling specific weed problems.

Rights On or Across Non-Federal Government Entities (State or Local)

Cooperative agreements will be developed with State or local government entities with surface administration jurisdiction, where necessary. These government entities are responsible for compliance with State laws, as well as the EPA regulations concerning the application of herbicides. The entity would provide Western with a plan and, after approval and availability of funds, Western will direct transfer of funds to the designated representative. Copies of executed cooperative agreements will be forwarded to the County Agent or Board for coordination purposes, where applicable.

Rights On or Across Private-owned Lands

Cooperative agreements will be developed with County Agents or Boards in those counties where weed management plans have been implemented and where private lands containing Western facilities and their associated rights are within identified weed control areas. The County Agent or Board would be responsible for the inventory and

identification of targeted undesirable plants or private lands and the corresponding Western easement. Where Western concurs with the findings and recommendation for control, including cost estimates, funding may then be directed to the respective county representative. Direct coordination with the landowner is not recommended due to the requirements for compliance with State law and EPA regulations. Payments to landowners who are not certified or trained in herbicide application are, in themselves, a liability concern.

11.5 BEST MANAGEMENT PRACTICES FOR NOXIOUS WEED MANAGEMENT

Best Management Practices (BMPs) for weed control will be used to reduce the spread of noxious weed and to increase the effectiveness of treatment. The following lists BMPs that should be considered for use within Western's service area:

- Learn how to identify high-priority weed species. Identification is the first step—know your weeds!
- Report new infestations to the appropriate resource manager.
- Treat intensely when a new or small patch is found; monitor the site periodically and repeat physical removal of the weed or treat with herbicides.
- Inspect roads before maintenance to prevent the spread of weeds by vehicles or equipment.
- Inspect bare soil or disturbed sites frequently for weeds.
- Understand the biology of the weed, including the growth stage, to identify the best and most effective management practices.
- Use seed, hay, and mulch that are certified weed-free.
- Avoid the introduction of ornamental flowers that are on State or county invasive species lists.
- Re-seed areas immediately after disturbance with an appropriate mix of native, competitive species.
- Avoid transporting weed seeds on clothing, vehicles, and equipment.
- Avoid driving in noxious weed infested areas with your vehicle and then traveling to unaffected areas; restrict travel to established roads and trails. .
- Whenever possible, clean all construction and maintenance equipment before moving between sites.
- Drought causes plants to shut down their growth process. Spraying weeds during dry periods is not recommended because effectiveness is greatly

reduced. Treat after rainfall if the weed is still in the proper growth stage for control.

- Not all herbicides work equally on all weeds nor can every herbicide be used in every situation. Read the label, use the information provided in this manual, and consult weed experts and manuals for the most effective treatment method and chemical.

Appendix J

Cultural Background Material

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INTRODUCTION

The attached report, *Cultural Resources Background Research/Field Strategy Report for the San Joaquin Valley Right-of-Way Maintenance Environmental Assessment*, presents information on cultural resources background research and the procedures used in conducting the cultural resources field survey.

**Cultural Resources Background Research/
Field Strategy Report
for the
San Joaquin Valley Right-of-Way
Maintenance
Environmental Assessment**

Prepared for:

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March 2009

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- Appendix A: Previously Conducted Inventories within 200 meters of the ROW
- Appendix B: Previously Recorded Sites within 200 meters of the ROW
- Appendix C: Significant and Potentially Significant Previously Recorded Resources more than 200 meters from the ROW.

Acronyms and Abbreviations

amsl	above mean sea level
APE	Area of Potential Effects
BP	Before Present
CA	California
CCIC	Central California Information Center of the CHRIS
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
circuit	Three conductors connecting two nodes of the transmission system
COHP	California Office of Historic Preservation
conductor	An individual transmission system
corridor	A transmission line right-of-way zone containing one or more rows of towers
DoE	Department of Energy
DPR	Department of Parks and Recreation (CA)
EA	Environmental Assessment
GIS	Geographic Information System
GPS	Global Positioning System
kV	kilovolt
line	A single-circuit (three conductors) of electrical transmission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

NRHP	National Register of Historic Places
NWIC	Northwest Information Center of the CHRIS
O&M	Operations and Maintenance
PG&E	Pacific Gas & Electric Company
PGT-PG&E	Pacific Gas Transmission-Pacific Gas & Electric
row	a single set of transmission towers, carrying one or more circuits
ROW	Right-of-Way
SJVEA	San Joaquin Valley Environmental Assessment
SJVROW	San Joaquin Valley Right-of-Way
SNR	Sierra Nevada Region
SHPO	State Historic Preservation Office
TANC	Transmission Agency of Northern California
TCP	Traditional Cultural Property
tower	A wooden or metal structure that supports transmission conductors
USGS	U.S. Geological Survey
Western	Western Area Power Administration

Abstract

The Western Area Power Administration (Western) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act, to assess the potential environmental effects of its operations and maintenance program for the San Joaquin Valley Project Area. Western's transmission lines transmit power from federal hydroelectric power facilities in California. The ROW for the project crosses through San Joaquin, Alameda, Contra Costa, Santa Clara, Calaveras, Tuolumne, and Merced counties, California. San Joaquin Valley ROW maintenance activities include, but are not limited to, access road upgrades, erosion control measures, tower repair, and vegetation control. In the future, Western plans to clear vegetation between the towers to enhance wildlife habitat, prevent safety hazards, and improve system reliability.

In support of the proposed project, Western will be conducting cultural resources inventories within the ROW and associated access roads of the San Joaquin Valley transmission system to ensure continued compliance with Section 106 of the National Historic Preservation Act and 36 CFR 800, the implementing regulations. The ROW consists of seven major transmission corridors and four project facilities, which include: (1) Hurley-Tracy #2 (2) Tracy-Lawrence Livermore Lab; (3) Hurley-Tracy #1; (4) Tracy-Los Vaqueros; (5) Tracy-Contra Costa; (6) Gloryhole 17.2 kV Distribution Line; (7) New Melones-Tuttletown 17.2 kV Distribution Line; and the following substations: (1) New Melones Substation; (2) Coyote Substation; (3) Pacheco Substation; and (4) O'Neill Substation.

This document presents a summary of all previously documented cultural resources and inventories within or near Western's ROW and associated legal access roads and facilities, and presents a strategy for completing a comprehensive cultural resources inventory.

The intent of this report is to:

1. Summarize the methods of research conducted for this report.
2. Present a summary of existing background research and knowledge of cultural resources within 200 meters of the centerline of the ROW and associated access roads.¹
3. Present the goals of the cultural resources inventory.
4. Present a field strategy to complete an accurate, comprehensive inventory of all cultural resources within the ROW and associated access roads.

¹ "Within 200 meters of the ROW" is used throughout this document to indicate a 200-meter area of analysis on each side of the centerline of the ROW and associated access roads. While background research was conducted within a 1.0-mile radius of the ROW and associated access roads, and project facilities, the research results reported in this document have been limited to within 200 meters of the centerline of the ROW and the associated access roads to refine the potential sensitivity directly within and adjacent to the ROW and associated access roads to inform the field survey.

5. Analyze and describe the types of sites expected to be identified in the field during surveys and the sensitivity of areas along the transmission line and associated access roads, based on the project activities and potential impacts, existing land use and natural setting, and results of previous research in each project segment.
6. Present recommendations for accomplishing the project goals.

It is important to note here that this report and the tables presented in Appendices A and B address the resources that have been previously identified within 200 meters of either side of the centerline of the ROW, associated access roads, and project facilities. While the records search was conducted to identify all previously identified resources within 1.0 mile of the ROW, associated access roads, and project facilities, one of the primary goals of this document is to ascertain the actual on the ground sensitivity of the specific portions of the ROW, associated access roads, and project facilities that will be subject to actual ground disturbance during project implementation. It is most important to identify those resources that may be encountered during the field survey and have the potential to be impacted rather than present the overall results of the larger records search results in order to focus on the important resources within and adjacent to the ROW, associated access roads, and the project facilities.

While numerous other cultural resources inventories have been conducted within portions of the ROW and associated access roads, no comprehensive inventory has been conducted to date of the full ROW; prior inventories covered only portions of the ROW, utilized inconsistent field strategies, and/or were conducted over many decades. Western's goal is to create one current, accurate, and consistent cultural resources inventory of the entire ROW.

Field survey strategies will include the following components for all portions of the ROW and associated access roads that are accessible:

- Based on Western's direction, the survey area will encompass the entire San Joaquin Valley Project ROW.
- Field survey for the entire ROW will be conducted by teams of cultural resources specialists using no more than 20-meter transects as access allows. Surveyors will record all cultural resources on the appropriate California Department of Parks and Recreation (DPR) form, prepare sketch maps, photograph diagnostic artifacts, and make GPS readings of each resource using a sub-meter-accurate GPS unit. All previously recorded resources will be updated with a sketch map and GPS readings and DPR form if necessary. The boundaries of each resource will be mapped and recorded beyond the limits of the ROW if the site extends outside the ROW and if that area is accessible.

- Areas that cannot be accessed or surveyed at all within the ROW or along the associated access roads will be mapped using a GPS unit and classified as non protocol or not surveyed in the project geographic information system mapping.
- Areas surveyed by other entities will be resurveyed. Based on the extensive analysis of the records searches conducted within the ROW, it does not appear that many portions of the ROW and associated access roads have been subject to systematic, recent investigations and Western has not completed any surveys within the ROW. Therefore, the entire ROW and associated access roads will be subject to intensive survey where access allows.

SECTION 1

Project Background

The Western Area Power Administration (Western), an agency of the Department of Energy (DoE), markets and delivers reliable, cost-based, hydroelectric power and related services within a 15-state service area of the central and western U.S. The Sierra Nevada Region (SNR), one of four customer service regions, is responsible for the operation and maintenance of federal transmission facilities within a geographic service territory which includes Northern California and a portion of Nevada. To operate effectively and maintain the facilities, Western must comply with various directives, regulations, and orders, including the National Electric Safety Code and Western States Coordinating Council, which ensure protection of human safety and reliability of the transmission system. Western is redesigning its right-of-way (ROW) operations and maintenance program and is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to assess the potential environmental effects of this program. This document assesses the current state of knowledge regarding cultural resources within 200 meters of either side of the ROW, Western's transmission corridor, associated access roads, and the project facilities, and presents a strategy for completing a comprehensive cultural resources inventory to comply with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations found at 36 CFR 800.

Western's SNR operates and maintains numerous substations and more than 1,200 miles of transmission lines. These transmission lines are interconnected to other Load Serving Entities, and utility providers. Western's facilities that are included in the San Joaquin Valley ROW and associated access roads include 69-kilovolt (kV), 230-kV, 500- kV transmission lines and distribution lines within the counties of San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne, Santa Clara, and Merced (Figure 1).

1.1 Introduction

Western has defined the San Joaquin EA project in terms of the operations and maintenance activities for Western's transmission system from south of Sacramento to Tracy, north to Oakley and southwest to Livermore, with two additional discrete segments near the New Melones Substation in Calaveras and Tuolumne counties. Western has reconfigured its operation and maintenance methods for this area and is preparing an EA that will consider the environmental consequences of continued maintenance and operations under the revised

protocols. In addition, the EA covers four substations: Coyote Substation (in Santa Clara County), Pacheco and O'Neill substations (in Merced County) and New Melones Substation (in Calaveras County).



As part of Western's environmental compliance review, it is required, under Section 106 of the National Historic Preservation Act (NHPA) (16 USC 470 as amended), to consider the effects of its operations and maintenance on historic properties (properties eligible for listing in the National Register of Historic Places). As a federal agency, Western must follow the implementing regulations of the NHPA as found in 36 CFR 800. These regulations describe the steps that Western, as a federal agency, must take to identify and evaluate historic properties, assess the potential effects of the undertaking (in this case, continued operations and maintenance) on such properties, and to consider and reduce potentially adverse effects of the undertaking on historic properties by implementing avoidance or mitigation measures. This document represents a first step in this program. It presents the results of a background search and literature review of Western's San Joaquin Valley to identify previously discovered and recorded cultural resources and historic properties.

1.2 San Joaquin Valley ROW Maintenance Program

The purpose of the San Joaquin Valley ROW maintenance program is to maintain transmission lines and legal access roads. San Joaquin Valley ROW maintenance activities include, but are not limited to, access road upgrades, erosion control measures, tower repair, and vegetation control. It is Western's responsibility to cost-effectively maintain the federal transmission system in the interests of public safety and reliability. Western's maintenance crews must have safe and all-weather access to transmission line structures, consistent with safety and environmental regulations and policies. In meeting this purpose, Western's key maintenance and operations objectives are to:

- Prevent operational hazards;
- Protect facilities from fire;
- Prevent safety problems for Western employees and the neighboring public; and
- Control the spread of noxious weeds.

To meet these objectives, ongoing ROW maintenance needs include:

- Eliminating the threat for vegetation to interfere with the lines and towers;
- Controlling vegetation; and
- Maintaining the transmission line and legal access road ROW to facilitate year-round access to transmission structures.

The key purpose of the maintenance program is to control vegetation near transmission lines that could cause a human safety hazard or create a fire hazard and result in electrocution, damage to the transmission line, damage to the environment and private property, or an outage which would interrupt service.

descriptions of the transmission lines are presented in Table 2. The ROW is also described in the following text.

- **Hurley-Tracy No. 1 230 kV (HUR-TRY #1).** This transmission line is comprised of one row of single-circuit steel towers. The ROW is 125 feet (ft) wide in total. The length of this ROW segment is 32.14 mi, with a ROW area of 487.05 acres.
- **Hurley-Tracy No. 2 230 kV (HUR-TRY #2).** This transmission line is comprised of one row of single-circuit steel towers. The ROW is 125 feet (ft) wide in total. The length of this ROW segment is 32.16 mi, with a ROW area of 487.29 acres.
- **Hurley-Tracy No. 1 and 2 230kV (HUR-TRY #1&2).** This transmission line is comprised of one row of double-circuit steel towers. The ROW is 125 feet (ft) wide in total. The length of this ROW segment is 3.38 mi, with a ROW area of 51.22 acres.
- **Tracy-Contra Costa 69 kV (TRY-CC).** This transmission line is comprised of single suspension wood and steel towers and runs from the substation to Tower #12/8. The ROW is 125 feet (ft) wide in total. The length of this ROW segment is 12.75 mi, with a ROW area of 193.19 acres.
- **Tracy-Contra Costa 69 kV (TRY-CC).** This transmission line is comprised of single suspension wood and steel towers and runs from Tower #12/8 to CC4. The ROW is 50 feet (ft) wide in total. The length of this ROW segment is 8.02 mi, with a ROW area of 48.63 acres.
- **Tracy-Los Vaqueros 69 kV (TRY-LVQ).** This transmission line is comprised of wood horizontal posts. The ROW is 125 feet (ft) wide in total. The length of this ROW segment is 2.46 mi, with a ROW area of 37.24 acres.
- **Tracy-Lawrence Livermore Lab 230 kV (TRY-LLL).** This transmission line is comprised of steel single-strain towers. The ROW is 120 feet (ft) wide in total. The length of this ROW segment is 12.70 mi, with a ROW area of 184.68 acres.
- **New Melones No. 1 230 kV (NML-NML 1).** This transmission line is comprised of one row of single-circuit steel towers. The ROW is 125 feet (ft) wide in total. The length of this ROW segment is .33 mi, with a ROW area of 1.0 acre.
- **New Melones No. 2 230 kV (NML-NML 2).** This transmission line is comprised of one row of single-circuit steel towers. The ROW is 125 feet (ft) wide in total. The length of this ROW segment is ~0.50 mi, with a ROW area of ~5.98 acres.
- **Tuttletown 17.2 kV.** This distribution line is comprised of wood posts. The ROW is 25 feet (ft) wide in total. The length of this ROW segment is 4.20 mi, with a ROW area of 12.73 acres.
- **Gloryhole 17.2 kV.** This distribution line is comprised of wood posts. The ROW is 25 feet (ft) wide in total. The length of this ROW segment is 6.16 mi, with a ROW area of 18.68 acres.

Table 1: San Joaquin Valley Project Facilities

Facility Name	Facility Code	Facility Type	Perimeter* (feet)	Total Area* (acres)
Los Vaqueros	LVQ	Substation	839	0.96
Tracy 500-kV Tracy 230-kV and 69-kV Tracy	TCY TRY TMF	Substation Substation Maintenance Facility	4,747 (all facilities are enclosed in one fence)	5.45
Livermore	LLL	Substation	2,203	2.53
New Melones	NML	Substation	1,408	1.61
Coyote	COY	Substation	3,272	3.76
Pacheco	PAC	Substation	1,486	1.71
O'Neill	ONE	Substation	541	0.62

* Perimeter/Total Area: These values are the distances/areas around the facilities, minus any areas that overlap with the transmission line ROWs.

Table 2: San Joaquin Valley Project Transmission Lines

Transmission Line*	Start Point	End Point	Length of Transmission Line (miles)	ROW Width (feet)	Total Area (acres)
HUR-TRY #1	TWR 37/2 (Sacramento/ San Joaquin County Line)	TWR 69/2	32.14	125	487.05
HUR-TRY #2	TWR 37/2 (Sacramento/ San Joaquin County Line)	TWR 69/2	32.16	125	487.29
HUR-TRY #1&2	TWR 69/2	TRY Substation	3.38	125	51.22
TRY-CC	TRY	TWR 12/8 (Delta Road)	12.75	125	193.19
TRY-CC	TWR 12/8 (Delta Road)	CC4	8.02	50	48.63
TRY-LVQ	TWR 0/1	LVQ	2.46	125	37.24
TRY-LLL	TRY Substation	LLL Substation	12.70	120	184.68
NML-NML 1	NML Powerhouse	NML Substation	0.33	125	1.00
NML-NML 2	NML Powerhouse	NML Substation	~0.50	125	~5.98
Tuttletown	PG&E Tap	End of Line	4.20	25	12.73
Gloryhole	PG&E Tap	End of Line	6.16	25	18.68

*Each ROW may contain a single-circuit (one set of conductors on one set of towers) or a double-circuit (two sets of conductors on one sets of towers) transmission line. The HUR-TRY transmission line changes from single-circuit to double-circuit along its length; other lines' ROW may change from containing only one set of transmission line towers to containing more than one. For this reason, any one transmission line may be listed more than once with different ROW widths established for different regions of the transmission line.

Routine ROW maintenance activities related to vegetation management include:

- Removing vegetation along the ROW and associated access roads that could grow into the transmission line;
- Applying herbicides to control vegetation in or near the ROW and associated access roads;
- Upgrading and maintaining legal access roads by re-grading and vegetation removal;

Western plans to remove vegetative species with a mature height of greater than 12 feet and to maintain cleared ROW and associated access roads using manual, mechanical, and chemical methods. The cleared ROW will ensure greater transmission reliability and safety.

Other routine ROW maintenance activities include:

- Patrolling the system on the ground and by aircraft;
- Installing, maintaining, and replacing hardware, ground wire, and bird guards;
- Repairing steel equipment at the transmission towers;
- Placing fill or rocks in culverts or around structures;
- Constructing retaining walls and rock buttresses to prevent undermining of roads and structure platforms;
- Conducting geotechnical investigations including soil borings up to 100 feet deep;
- Constructing new tower footings; and
- Improving drainage conditions by diverting water away from slopes and constructing water bars.

Equipment upgrade activities may include:

- Installation of microwave equipment at existing towers;
- Construction of temporary roads for vegetation removal; and
- Installation of fiber optic cables.

1.3 The San Joaquin Valley Transmission System

The study area of Western's San Joaquin Valley transmission system lies within San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne, Santa Clara, and Merced counties. Twelve transmission line ROWs and associated legal access roads, and substations owned, operated, or maintained by Western, comprise the entire ROW. A list of all project facilities is presented in Table 1 and

1.3.1 San Joaquin Valley Access Roads

Much of Western’s infrastructure is not accessible by paved road; therefore, Western has legal access roads that allow personnel to drive to facilities and various locations along the transmission lines. Western’s documented legal access roads are generally dirt or gravel, and require occasional maintenance. For this reason, the ROW of all legal access roads are being considered as part of the project. Table 3 summarizes the total length and ROW width of access roads within the entire project area. Individual access roads are not listed, due to their vast quantity and lack of formal names.

Table 3: San Joaquin Valley Project Documented Legal Access Roads

Location	Cumulative Length of Access Roads (miles)	ROW Width (feet)*	Total Area (acres)
San Joaquin Project Area	27.63	30	100.47

*Cultural surveys will cover a width of 50 feet – 25 feet on each side of the centerline of the road.

SECTION 2

Literature Review

GANDA's cultural resources specialists conducted a review of documented archaeological and historic resources literature pertaining to the San Joaquin Valley Project (SJVROW) to compile a list of previously recorded cultural resources and cultural resource inventories within or near the ROW, associated access roads, and project facilities throughout seven counties. Key sources for the records search were the Northwest Information Center (NWIC) and Central California Information Center (CCIC) of the California Historical Resources Information System (CHRIS) and previous records search documents provided by Western, as well as historic research conducted at numerous libraries and historical repositories discussed below.

2.1 Records Search

All previous, updated, and new record searches conducted for this investigation encompass a one-mile radius of the ROW, associated access roads, and project facilities to document all previously recorded cultural resources and prior inventories to: 1) determine whether known archaeological resources had been recorded within or adjacent to the ROW, associated access roads, and project facilities; 2) to assess the likelihood of discovering unrecorded archaeological resources based on historical references and the distribution of environmental settings of nearby sites; and 3) to develop a context for identification and preliminary evaluation of identified resources.

The record searches were conducted in three parts, which consisted of:

- 1. Previous Record Searches:** In 2007, a records search of the portion of the ROW within Alameda, Contra Costa (NWIC) and San Joaquin (CCIC) counties conducted by Western cultural staff;
- 2. Updated Record Searches:** In 2008, an updated records search was conducted at both the NWIC and CCIC of the ROW and associated access roads to supplement the previously conducted records search conducted by Western in 2007;
- 3. New Record Searches:** In 2008, the CCIC and the NWIC conducted a new records search for portions of the ROW and associated access roads located within Calaveras, Merced, Santa Clara, and Tuolumne counties.

Previous Record Searches: Western cultural staff member Gary Reinoehl conducted two record searches in February 2007; one at the NWIC for portions

of the ROW within Alameda and Contra Costa counties (file #NA) and one at the CCIC (CCIC file # 6613L) for San Joaquin County. The data compiled by Western were reviewed as part of the preparation of this report and the results are included in Appendices A, B, and C.

Updated Record Searches: An updated records search was conducted at the CCIC on November 25, 2008 (CCIC file # 7245L) to supplement Western's records search from February 2007 for portions of the ROW and associated access roads within San Joaquin County. An updated records search was also conducted at the NWIC (NWIC file # 08-0576) for Alameda and Contra Costa counties on December 19, 2008 to supplement Western's records search from February 2007. The data compiled by the project staff were reviewed and the results are included in Appendices A, B, and C of this report.

New Record Searches: A new records search was conducted at the CCIC (CCIC file # 7244I) in November 2008 in order to address portions of the ROW within Calaveras, Tuolumne, and Merced counties that were not addressed in the previous records search. In addition, the NWIC conducted a new records search on December 19, 2008 (NWIC file # 08-0576) for those portions of the ROW within Santa Clara County that were not previously addressed in February 2007. For this report and background research, the data were compiled and reviewed, and the results are included in Appendices A, B, and C of this report.

All archaeological sites and cultural resources inventories within 1.0 mile of the centerline of the ROW, associated access roads, and project facilities including all of the substations, were plotted on USGS topographic maps by the NWIC and CCIC staff. The data have been compiled, summarized, and focused into tables that address all of the identified resources and inventories within 200 meters of the centerline of the ROW, associated access roads, and project facilities to create the following appendixes for the ROW which includes the associated access roads and project facilities: Appendix A: Previously Conducted Inventories within 200 meters of the ROW; Appendix B: Previously Recorded Sites within 200 meters of the ROW, and Appendix C: Significant and Potentially Significant Previously Recorded Resources more than 200 meters from the ROW.

The reason that this report and the Appendixes do not include all of the previously recorded resources and previous inventories from within 1.0 mile of the ROW, associated access roads, and project facilities is because in order to effectively understand and demonstrate the sensitivity of the actual ROW and the area that will be subject to field survey and on the ground disturbance as a result of project implementation, it is more important to understand the resources that have been identified within and adjacent to the ROW. Those are the resources that will likely be encountered in the field and have the potential to be impacted during project implementation.

Both the NWIC and CCIC provided complete bibliographies and copies of relevant inventory reports and archaeological site records. The NWIC and CCIC also reviewed the *California Inventory of Historical Resources* (CA-OHP 1976), the *California Historical Landmarks* (CA-OHP 1996), *California Points of Historical Interest* listing (CA-OHP May 1992 and updates through 2004), the *Historic Properties Directory Listing* (CA-OHP 2008b,c), which includes updated listings of the National Register of Historic Places, the California Register of Historical Resources, and the Archaeological Determination of Eligibility (CA-OHP 2008a), GLO Plats, historic United States Geological Survey (USGS) topographic maps, and other pertinent historic data available for each specific county.

2.2 Archival Research

The project architectural historian conducted archival research at the following local historical society and research institutions:

- San Joaquin County Historical Society, Lodi, California;
- Contra Costa County Historical Society, Martinez, California;
- Amador-Livermore Valley Historical Society, Pleasanton, California;
- and
- Livermore Heritage Guild, Livermore, California.

The materials consulted include historic maps, books, and documents used to develop a broad historic context of the project areas. The architectural historian conducted archival research on historic USGS topographic maps at the following institutions:

- California State University, Chico, Meriam Library Special Collections, California Historic Topographic Map Collection;
- UC Berkeley, Earth Sciences Library, Historic Topographic Maps of the San Francisco Bay Area.

SECTION 3

Field Strategy

The field strategy portion of this report presents the methods that the cultural resources team will employ to provide a comprehensive and accurate cultural resources inventory for the SRJROW Project. First, the goals of the field survey and the actual parameters of the field survey are presented and where, in relation to the SJVROW Project, the survey will be conducted. Second, the basis for the field methods and the preliminary sensitivity analysis for the presence of cultural resources within the ROW, associated access roads, and project facilities is presented. These are based on: 1) the maintenance goals of the SJVROW Project, 2) existing conditions and land use, which include access issues and the basic natural setting, and 3) the results of the background research. Finally, the cultural resources sensitivity for each segment of the SJV ROW is discussed.

As stated earlier in this report, previously recorded studies within 200 meters of the centerline of the ROW, associated access roads, and project facilities have been conducted using greatly varying degrees of intensity and different strategies over many decades. Further, because of the passage of time since some of the surveys have occurred, it is possible that some of these sites have since been impacted or destroyed. Therefore, all portions of the ROW and associated access roads will be subject to 100 percent survey coverage, where access allows, achieving a consistent and accurate inventory of all cultural resources within the ROW.

3.1 Goals of the Field Survey

The goals of the field survey within the SJVROW Project area are:

1. To identify and record all cultural resources, i.e., prehistoric sites, historic sites 45 years or older (including transmission lines and substations), and traditional cultural properties.
2. Identify areas not surveyable due to density of vegetation, inclination of slope, or other physical obstacles;
3. Re-record previously recorded sites; (If the determination is made that the site form is accurate and current, no new form is required; however, a new site map will be drawn to include Western's project activities)
4. Evaluate potential significance of the cultural resources;
5. Assess the potential impact of ROW maintenance on significant, or potentially significant cultural resources; and

6. Identify possible measures for avoiding, reducing, or mitigating impacts to significant cultural resources.

Survey Area- Area of Potential Effects/ROW and Access Roads

All activities to be conducted as part of the proposed project would occur within the existing ROW for each of the transmission lines, substations, and associated legal access roads. The area of potential effects (APE) is defined as the ROW of the existing transmission lines and legal access roads, and a 50 foot radius around the substations.

The cultural resources team will conduct a 100 percent coverage pedestrian survey of the APE no more than 20-meter transects wherever the ROW is accessible. The survey area for both archaeological and architectural resources is considered to be width of the ROW for each transmission line (see Table 2 above), and for each legal access road, the survey area will encompass 25 feet on either side of the centerline of the road, or 50 feet total.

Due to the nature of project maintenance, the depth of ground disturbance is expected to be extremely limited and will not exceed the top 12 inches of surface soil for most maintenance activities. Therefore, archaeological inventory will not encompass an analysis of the geomorphology of the ROW because there is a very low potential for impacting buried prehistoric archaeological resources.

Documentation of Cultural Resources during Survey

The cultural resources team will use a GPS unit capable of sub-meter accuracy to record the locations of all cultural resources and project features, as well as areas that could not be surveyed due to a lack of access because of dense vegetation or inclination of slope. Areas not surveyed will be labeled in the Project GIS mapping as “not surveyed.”

The cultural resources team will record all cultural resources within the APE including isolated finds, prehistoric and historic sites, historic structures and features, and traditional cultural properties (TCPs). All resources will be recorded on Department of Parks and Recreation (DPR) 523 forms, plotted on a USGS map using GPS coordinates, a sketch map of the resources will be prepared, and the resource will be photographed. There will be no artifact collection in the field. All diagnostic artifacts will be drawn and photographed and plotted on maps using GPS. In addition, archaeologists will record the complete visual surface boundaries of each site, including portions of sites that extend beyond the boundaries of the ROW, if that land can be legally and logistically accessed.

3.2 Field Strategy Factors and Potential Sensitivity of the ROW

The primary factors influencing the field strategy will include the 1) SJVROW maintenance needs, 2) the existing conditions and land use/natural setting, and 3) the results of the previous background research. However, the field strategy will remain as consistent as possible throughout the entire ROW and the goal will be 100 percent survey coverage using transects that do not exceed 20 meters in width. All accessible portions of the ROW and associated access roads will be surveyed including orchards, plowed and cultivated agricultural fields, and all other portions of the ROW that are not submerged, on steep slopes, paved, or obscured by dense vegetation, or other obstacles.

The survey will be classified in three ways:

- **Protocol:** 20-meter transects
- **Non-protocol:** more than 20-meter transects in areas of limited access
- **Not surveyed:** unable to survey due to inaccessibility (i.e. steep slopes, impenetrable vegetation, etc.)

The type of survey will depend on the accessibility of each portion of the ROW and existing conditions.

1. San Joaquin Valley ROW Maintenance Project Requirements - Western may require access to all areas within the ROW and along the legal access roads for project related activities such as erosion control, vegetation management, drainage control, and ongoing maintenance of project facilities. Activities which are most likely to have an impact on cultural resources are those which involve some ground disturbance including, but not limited to: grading access roads, placement of water bars, embankments, and other erosion control structures. Western's vegetation management practices could cause ground disturbance as well within the topsoil as plants are extracted during initial clearing. Generally, the maintenance of project facilities such as towers and transmission lines will not likely have an impact on cultural resources due to the lack of ground disturbance. Other considerations are the effects of visual impacts and geoarchaeological considerations, which are discussed below.

Visual Impacts: There will be no new construction as a result of the project; therefore, visual impacts to cultural resources and, particularly with respect to historic architectural resources, will not be a consideration, except for locations of new substations, or within 50 feet of substations that will be modified.

Geoarchaeological Considerations: Based on the project description of maintenance that Western is planning for the ROW, the ROW will not be subject to deep ground disturbances. While much of the Central Valley floor has been subject to considerable alluvial deposition during the Holocene period (approximately the past 10,000 years) and are likely sensitive for the presence of

buried archaeological deposits, due to the nature of the project, no deep ground disturbances will occur. Therefore, there is no need to analyze the potential for the presence of buried archaeological deposits within the ROW because project activities would not affect such resources.

2. Existing Conditions and Land Use/Natural Setting- The present natural setting of the Project ROW is shaped by a variety of landscapes. These include agricultural lands on the San Joaquin Valley floor, the dry rolling hills and rangelands of the Coastal Mountain Range, the scrub oak dotted foothills east of the Sierra Nevada Range Mountains, and small riparian corridors near major and minor watercourses. This natural topography helps to inform the potential for prehistoric and historic archaeological sensitivity; California prehistoric occupation sites types are regularly identified near natural water sources.

Agricultural Lands/Valley Floor: Within the ROW and associated access roads, there are large stretches of cultivated fields, orchard, and vineyards that are not likely to be sensitive for the presence of surface deposits. Valley floors that have been subject to considerable alluvial deposits over the past ten thousand years and are likely more sensitive for the presence of buried archaeological deposits. However, due to the nature of the project, no deep ground disturbances will occur.

Rolling Hills/Rangelands: These portions of the ROW are not likely to be sensitive for prehistoric archaeological resources due to the lack of dependable or any water sources, shelter, oaks to procure acorns, and additional resources that would have been attractive for Native American habitation and use. These areas are, however, sensitive for the presence of historic archaeological resources and features related to the mining industry that was prevalent throughout the foothills of the Central Valley.

Riparian Corridors/Wetlands: Portions of the ROW within, adjacent to and near areas where there are year-round water sources such as the Stanislaus River, the San Joaquin River and Delta, and secondary tributaries such as streams, rivers, and seasonal watercourse will be the most sensitive areas for the presence of prehistoric archaeological resources. This is due to the dependable water sources and abundance of essential natural resources such as plants and game that Native American populations used for their subsistence. These portions of the ROW are also sensitive for the presence of historic archaeological resources and features associated with the mining industry that was prevalent throughout the Central Valley that often used water resources as part of the hydraulic mining industry.

3. Results of the Background Research-

While the cultural resources team will be conducting intensive pedestrian survey in all accessible portions of the ROW and associated access roads, there are portions of the ROW that are particularly sensitive for the presence of

archaeological sites and historic features. The purpose of the extensive background research is to understand what types of resources have been identified within each segment of the ROW so that the cultural resources team can predict what types of resources may be identified in the field and the potential for cultural resources sensitivity throughout the ROW.

Previous Survey Coverage- Large portions of the ROW have not been subject to systematic intensive survey; therefore, it is clear that in order to create one comprehensive, accurate and current inventory, the entire ROW and associated access roads requires full survey coverage. Below, each segment of the ROW is described in terms of what types of resources have been identified, the general natural setting, documented site density and general percentage of prior survey coverage, in addition to presumed sensitivity for the presence of cultural resources.

3.3 Summary of Cultural Resources Sensitivity of the ROW by Project Segment:

Hurley-Tracy #1 and #2:

Archaeological Sensitivity

Previous archaeological inventories within this project segment, located in San Joaquin County, have resulted in one prehistoric resource along the north rim of the historic Atlas Tract Levee (P-39-004529) consisting of an occupation and burial site (P-39-000269/CA-SJO-151) at Bear Creek. This is indicative of California occupation site types which are regularly identified near natural water sources. There are eleven occupation and burial sites recorded near this segment and are located within 200 m of the ROW to the east and west along the Mokelumne River, Mokelumne Lake, and Dry Creek. Known and presumed archaeological site density is relatively high in areas around these naturally occurring water sources. Approximately 85 percent of the project segment has not been surveyed.

Historic Architectural Sensitivity

Specific to this segment, reclamation in the San Joaquin Valley Delta began in the 1850s and 1860s as a result of the Swamp and Overflow Land Act of 1850 which transferred ownership of the Delta from the federal government to the state, and opened up the land for speculation by land developers. The Delta was a series of waterways interspersed with islands formed by natural sand levee deposits. Beginning in the 1850s and 1860s, reclamation districts were established and Delta islands were reclaimed with the construction of new levees that were engineered to be a more permanent levee system. A series of ditch systems and pumping stations were constructed as components to the reclamation/levee systems.

Agricultural resources in this portion of the ROW include agricultural farm and ranch complexes. Asian Labor Camps were prominent in the mid-19th and early 20th centuries, and sometimes canneries were built next to the fields and water sources.

Ferries were the initial means of transportation, including ferry landings. Later, railroads became the main form of transporting goods. The historic Western Pacific Railroad Main Line (P-39-000098/CA-SJO-292H) and a Western Pacific Railroad grade spur, and the Atchison, Topeka & Santa Fe Railroad (P-39-000112/CA-SJO-293H) cross the ROW.

Natural water resources include the Mokelumne River, Dry Creek, Mosher Slough, Pixley Slough, Bear Slough, Five Mile Slough, the Middle River, Old River, the Stockton Deep Water Channel, the San Joaquin River, Burns Cutoff, and Clifton Court Forebay. The Mokelumne Aqueduct (P-39-004399/P-07-002612/CA-SJO-286H) runs through the ROW in San Joaquin County primarily as an underground pipeline. The Grant Line and Fabian and Bell canals run just east of the project area, and the West Canal (P-39-004856) runs just west of the project area near Clifton Court Forebay.

The towns and cities that developed within, adjacent or near to the ROW include Holt, and Rough & Ready Island/US Navel Supply Annex.

Tracy- Contra Costa:

Archaeological Sensitivity

This segment of the ROW, situated in Contra Costa County, is a densely populated urban area with approximately 20 percent agricultural land. The archaeological inventories have resulted in the recordation of engineering structures such as canals, aqueducts, bridges and a Railroad segment. No prehistoric archaeological resources have been identified.

Archaeological surveys have been limited to the agricultural landscape. Known archaeological inventories have been completed within 50 percent of the ROW. Known and presumed archaeological site density along this project segment is low.

Historic Architectural Sensitivity

This part of Contra Costa County is known for its agricultural history. In the late 19th century, dry land wheat and barley grain farming were prominent. When technological advancement led to irrigated farming, fruit crops such as apricots, peaches, nectarines, and row crops such as nuts and vegetables became prominent in this region.

Water conveyance systems within and crossing the ROW include the Mokelumne Aqueduct (P-07-002612 /P-39-004399/CA-SJO-286H), the Contra Costa Canal (P-07-002695) and related features such as pumping stations, farm and automobile bridges, and the East Contra Costa Irrigation District main canal complex (P-07-002914).

Transportation resources are the result of popular use of wagons, horses, stage lines and riverboats which were the main forms of transportation for people and goods prior to the arrival of the railroad in 1878. Point of Timber Landing and Iron Horse Landing, both located adjacent to the ROW and associated access roads, are examples of landings used for the transport of goods and people by boat. Two railroads that cross the ROW include the Atchison, Topeka and Santa Fe Railroad (P-07-000776/CA-CCO-718H), and the San Pablo and Tulare Railroad/ San Francisco and New Orleans Line (now Southern Pacific). The towns of Oakley and Bixler are located adjacent to the ROW and Point of Timber Landing, a small village, was historically located adjacent to the ROW and associated access roads.

Natural water resources include Dutch Slough, on the historic delta of Marsh Creek, a former tidal marsh that was diked and drained for agriculture in the mid 19th century. Emerson, Little Dutch Slough, and portions of the Dutch Slough located adjacent to the project area, are artificial channels dredged between 1904 and 1910.

Tracy- Los Vaqueros:

Archaeological Sensitivity

A prehistoric human burial (P-07-000413/CA-CCO-653) and three lithic scatter sites (P-07-000072,-000085,-000086/CA-CCO-130, -143, -144) have been recorded in the ROW in the vicinity of the Italian Slough and Clifton Court Forebay in Contra Costa County. Site record notes (P-07-000413/CA-CCO-653) indicate a possible "mound" approximately two miles away near the San Joaquin River. At present, 25 percent of this project segment is known to have been surveyed. Known and presumed archaeological site density along this project segment is low to moderate.

Historic Architectural Sensitivity

The California Aqueduct, Clifton Court Forebay, and Italian Slough are water conveyance resources that cross or are located adjacent to the ROW and associated access roads in this segment. Natural water resources that cross or are directly adjacent to the ROW include Old River and Kellogg Creek. Transportation resources within this segment include the San Pablo and Tulare Railroad/ San Francisco and New Orleans Line (now Southern Pacific).

Tracy- Lawrence Livermore Lab:

Archaeological Sensitivity

The archaeological sites in this project segment in Alameda County consist of ranch or farm complexes in varying states of condition, and engineering structures, such as transmission line towers and bridges that intersect the project ROW and associated access roads. One prehistoric cave site (P-01-000178/CA-ALA-456) has been identified within the project ROW, making the likelihood of additional sites and isolates probable. Known and presumed archaeological site density along this project segment is relatively low. The project segment has been 85 percent surveyed.

Historic Architectural Sensitivity

Today, the dry and barren rolling hills in the ROW are used for cattle grazing and wind farms. The area is sparsely populated. Transportation resources include railroads, railroad bridges and underpasses within the ROW and associated access roads, and include the Western Pacific Railway/Railroad (now Union Pacific Railroad; P-01-001773), and the Central Pacific Railroad/Transcontinental Niles-Sacramento Line (now Southern Pacific Railroad; P-01-010501) historic railroad grade. Segments of an historic road and telegraph line (on 1860 and 1870 GLO maps) from Mission San Jose to Stockton crossed the project area in several locations.

The former town of Altamont was located adjacent to the ROW and associated access roads. Water conveyance systems within and crossing the ROW include the South Bay Aqueduct (P-01-010629) and two associated farm bridges, the California Aqueduct, the Bethany Reservoir and South Bay Pumping Station, and the Delta Mendota Canal (P-01-010435).

New Melones-Tuttletown 17.2 kV Distribution Line:

Archaeological Sensitivity

This project segment in Tuolumne County is part of the New Melones Archaeological (Historical) District (P-05-002075) documented primarily by M.J. Moratto et al. in 1988. Listed on the *California Register of Historic Resources* (CA-OHP 2008c) and determined eligible for listing on the *National Register of Historic Places* (CA-OHP 2008c). The District is generally located in the Stanislaus River Drainage of Calaveras and Tuolumne counties, which is considered the heart of the Gold Rush country. It contains more than 627 historic and prehistoric sites. All recorded resources within this segment of the ROW and associated access roads are associated with Gold Rush mining operations. Historic and prehistoric sites include ranching complexes, bedrock milling stations,

mining prospect pits, and tailing piles. Known archaeological inventories have been completed within 30 percent of the ROW. Known and presumed archaeological site density is high throughout this project segment.

Historic Architectural Sensitivity

This segment of the ROW and associated access roads is located west of Tuttletown, adjacent to Jackass Hill, a gold mining area that received its name from the jackasses in the pack trains traveling on their way to and from the mines. Mark Twain spent time on Jackass Hill in 1864-1865.

Transportation resources are related to a segment of the Angels Branch of the Sierra Railway (P-55-002305/CA-TOU-1309H) (1898-1902) a National Register eligible resource. While no longer featuring its ties or rails, the railroad grade is located directly adjacent to the ROW. The Angels Branch, a 21-mile long railroad spur serving communities and mines along its length, was built to provide passenger and freight rail service between Angles Camp in Calaveras County and Jamestown in Tuolumne County.

Gloryhole 17.2 kV Distribution Line:

Archaeological Sensitivity

The New Melones Archaeological (Historical) District (P-05-002075) listed on the *California Register of Historic Resources* (CA-OHP 2008c) and determined eligible for listing on the *National Register of Historic Places* (CA-OHP-2008c), dominates this project segment. The District is generally located in the Stanislaus River Drainage of Calaveras and Tuolumne counties, in the heart of the Gold Rush country. It contains more than 627 historic and prehistoric sites that include ranching complexes, bedrock milling stations, mining prospect pits, and tailing piles. All of the recorded resources within this segment of the ROW are related historic features associated with Gold Rush mining operations. Known archaeological inventories have been completed within 20 percent of the ROW. Known and presumed archaeological site density is high throughout this project segment.

Historic Architectural Sensitivity

This area of Calaveras County is rich in gold mining history and is part of the Albany Flat and Angels Camp Mining District. The Albany Flat region, directly adjacent to the project area, and flanked by the flourishing mining towns of Angels Camp and Carson Hill, was well populated in the 1850s with 2,000 inhabitants of several nationalities. The Bruner Mine is located within the ROW and associated access roads, and therefore, it is highly

probable that additional historic mining features and other historic era sites exist within the project area (such as mining ditches).

The Stanislaus River is a natural water resource located adjacent to the ROW. A portion of the New Melones Reservoir (constructed in 1966-1978) is on Bureau of Reclamation land and is a unit of the Central Valley Project, providing irrigation water, hydroelectric power, and flood control.

New Melones Substation:

Archaeological Sensitivity

While this portion of the project facilities is within the New Melones Archaeological District, the substation footprint itself encompasses no known archaeological sites. Based on the more than 627 prehistoric and historic cultural resources identified in the project segments within the Archaeological District along the Stanislaus River, and the tendency for prehistoric sites along such tributaries, discovery of archaeological resources is highly probable. It appears that 80 percent of this project area has been subject to archaeological survey. There are no known archaeological sites within the project area. The archaeological site density is presumed to be moderate to high throughout this project area given the nature of the District.

Historic Architectural Sensitivity

Transportation resources include the Central Ferry site which is located adjacent to and downstream from the project facility. Early travel routes in this area were Indian trails that were later improved into horse trails by miners in the mid-19th century. The roads were integrally linked to the ferries they serviced. These ferrying operations were an essential part of early transportation since the Stanislaus River was too swift and deep to be crossed by horse. Often, ferrying stations offered more than just transportation across the rivers; they also included stores, lodging and other businesses. The site of the Central Ferry was surrounded by several homes and businesses during this time period.

The Stanislaus River is a natural water resource located adjacent to and downstream from the project facility. A portion of the New Melones Dam and the Powerhouse is located upstream from the Stanislaus River.

Coyote Substation:

Archaeological Sensitivity

There are no known archaeological sites documented in this SJVROW facility within Santa Clara County. The Coyote Substation is surrounded by orchards and vineyards. Two lithic scatter sites (P-43-000171/CA-

SCL-159/H and P-43-000172/CA-SCL-160) and one large midden site (P-43-000364/CA-SCL-358) have been identified on historic ranch properties located approximately 0.25-miles from the ROW, near Coyote Creek. Archaeological inventories have been completed within 20 percent of the ROW. Known and presumed archaeological site density is likely to be moderate.

Historic Architectural Sensitivity

Anderson Reservoir, constructed circa 1950, operated by the Santa Clara Valley Water District, and the surrounding County Park, are located adjacent to this project facility. This area of Santa Clara County has a long history of ranching. Two historic houses, the Rhodes House and the Phegley House, are located adjacent to the project facility.

Pacheco Substation:

Archaeological Sensitivity

The Pacheco Substation in Merced County is located within the San Luis Gonzaga Rancho (patented in 1871) (P-24-001856) and the San Luis Gonzaga Archaeological District (P-24-000489) which consists of five midden deposits and bedrock milling stations. Owned by the California State Parks, the property encompasses approximately 100,000 acres. The historic landscape consists of ranch features, stone culverts, adobe ruins, and stone walls. Three inventories and an excavation of prehistoric lithics, ornamental and stone artifacts (ME-3228/P-24-001856/CA-MER-27) were completed within 200 meters of this project facility. It appears that a very small portion of this segment has been surveyed, less than 20 percent. Given the proximity to the project area, to the San Luis Reservoir and Recreational areas, known and presumed archaeological site density is likely to be moderate to high within this project segment.

Historic Architectural Sensitivity

The area around this project facility has historically been a region physically isolated from the population and transportation centers of California. Lieutenant Gabriel Moraga traversed Pacheco Pass by horseback in 1805 on his exploratory journey into the San Joaquin Valley near this area. Since that time, it has been used as a trail, toll road, stagecoach road, and highway. This substation site is adjacent to the San Luis Reservoir constructed in the 1960s.

O'Neill Substation:

Archaeological Sensitivity

The O'Neill Substation is located in Merced County on the northeastern shore of the O'Neill Forebay. No cultural resources have been identified within 200 meters of this SJVROW project facility. No inventories have

been conducted in this project segment. The area appears to be a barren hill landscape traversed by canal and aqueduct systems. Archaeological site sensitivity is unknown but likely low.

Historic Architectural Sensitivity

This area around the project facility has historically been a region physically isolated from the population and transportation centers of California. In the late 19th and early 20th centuries, areas adjacent nearby were used for livestock grazing and wheat growing. This site is adjacent to the San Luis Dam, O'Neil Forebay, the California Aqueduct, and the Delta Mendota Canal, water conveyance system resources that are part of the Central Valley Project, and were constructed in the 1960s.

SECTION 4

Conclusions

4.1 Field Strategy

The goal of this document is to determine the sensitivity of the ROW, associated access roads, and project facilities for the presence of cultural resources and to present the appropriate field strategies that will be used in order to create an accurate, comprehensive cultural resources inventory for the entire SJVROW for Western's use during maintenance activities and to comply with Section 106, and, specifically, 36 CFR 800.4, the identification of cultural resources.

Field strategies are summarized below:

- 1) The survey area will encompass Western's ROW, associated access roads and within 25 feet of each side of the centerline of the legal access roads, and a 50 foot radius around all project facilities.
- 2) Field survey for the entire ROW, associated access roads, and project facilities will be conducted by teams of cultural resources specialists using no more than 20-meter transects as access allows. Surveyors will record all cultural resources on the appropriate DPR form, prepare sketch maps, photograph diagnostic artifacts, and take GPS readings of each resource using a GPS unit capable of sub-meter accuracy. All previously recorded resources will be updated with a sketch map and GPS readings, and DPR form if necessary. The boundaries of each resource will be mapped and recorded beyond the limits of the ROW if the site extends outside the ROW and if that area is accessible.
- 3) Areas that cannot be accessed within the ROW or within 25 feet of the legal access roads will be mapped using a GPS unit and classified as "not surveyed."
- 4) Based on the extensive analysis of the records searches conducted within the ROW and associated access roads, it does not appear that many portions of the ROW have been subject to systematic, recent investigations, and Western has not completed any surveys within the ROW. Areas surveyed by other entities will be resurveyed. Therefore, the entire ROW will be subject to intensive survey where access allows.

- 5) All GPS units used during the field work will contain digital layers of all previously recorded cultural resources within 200 meters of the ROW and associated access roads in order to aid the cultural resources team during survey in relocating previously recorded resources and to provide data regarding the sensitivity of each portion of the ROW.

4.2 Sensitivity of the ROW for Cultural Resources

This document contains a comprehensive analysis regarding the existing knowledge of cultural resources within and near the ROW, associated access roads, and project facilities as presented in Appendices A, B, and C. From this data, a preliminary analysis of the sensitivity for the presence of cultural resources is presented. This sensitivity analysis is preliminary because many portions of the ROW and associated access roads have not yet been inventoried, and for those areas that have been surveyed, it is clear that the intensity, quality, accuracy, and consistency of these previously conducted inventories vary significantly. Thus, the cultural resources team will present the methods, findings, and conclusions of the complete, up-to-date inventory that will be conducted within the SJVROW project in the Section 106 Inventory Report upon completion of the field work.

Table 4: Summary of Sensitivity of the ROW by Project Segment

Project Segment	Approximate Amount of Previous Survey	Preliminary Sensitivity for the Presence of Cultural Resources
Hurley-Tracy Lines 1&2	15% surveyed	High
Tracy-Contra Costa	50% surveyed	Low
Tracy-Los Vaqueros	25% surveyed	Low to moderate
Tracy- Lawrence Livermore Lab	85% surveyed	Low
New Melones-Tuttletown 17.2 kV Distribution Line	30% surveyed	High
Gloryhole 17.2 kV Distribution Line	20% surveyed	High
New Melones Substation	80% surveyed	High
Coyote Substation	Less than 20% surveyed	Moderate
Pacheco Substation	Less than 20% surveyed	Moderate to high
O'Neill Substation	No previous surveys	Low, unknown

SECTION 5

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1894-1906 Lodi, Ca Topographic Quadrangle map
 1907-1948 Tesla, CA Topographic Quadrangle map
 1913 Holt, CA Topographic Quadrangle map
 1913 Stockton, CA Topographic Quadrangle map
 1914 Bethany, CA Topographic Quadrangle map
 1914 Brentwood, CA Topographic Quadrangle map
 1914 Union Island, CA Topographic Quadrangle map
 1916 Byron, CA Topographic Quadrangle map

United States Geological Survey (USGS)

1910 (1942 reprint) Castle, CA Topographic Quadrangle map
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 1917 Morgan Hill, CA Topographic Quadrangle map
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 1948 Columbia, CA Topographic Quadrangle map
 1948 Sonora, CA Topographic Quadrangle map
 1952 Stockton West, CA Topographic Quadrangle map
 1952 Terminus, CA Topographic Quadrangle map
 1953 Lodi North, CA Topographic Quadrangle map
 1953 Lodi South, CA Topographic Quadrangle map
 1953 San Luis Creek, CA Topographic Quadrangle map
 1962 Melones Dam, CA Topographic Quadrangle map
 1662 Angels Camp, CA Topographic Quadrangle map

Alameda County General Land Office (GLO) Plat Maps

<u>Township/Range</u>	<u>Sheet #</u>	<u>Date of Survey</u>
T2S/R3E	-	1857, 1874
T3S/R3E	-	1862, 1874
T1N/R3E	-	1862, 1867
T2N/R3E	-	1862, 1872

T1S/R4E - 1877

Contra Costa County General Land Office (GLO) Plat Maps

<u>Township/Range</u>	<u>Sheet #</u>	<u>Date of Survey</u>
T2N/R2E	-	1862, 1867, 1876
T1N/R3E	-	

San Joaquin County General Land Office (GLO) Plat Maps

<u>Township/Range</u>	<u>Sheet #</u>	<u>Date of Survey</u>
T5N/R5E	41-387	1853-1869
T5N/R6E	41-388	1853-1869
T4N/R5E	41-294	1853-1864
T4N/R6E	41-296	1853-1865
T3N/R5E	41-201	1853-1867
T3N/R6E	41-202	1853-1865
T2N/R5E	41-089	1853-1879
T2N/R6E	41-090	1853-1865
T1N/R5E	41-010	1878-1879
T1N/R6E	41-011	1851-1877
T1N/R4E	-	-
T1S/R4E	44-006	1851-1870
T1S/R5E	-	-
T2S/R4E	44-108	1851-1857

Santa Clara County General Land Office (GLO) Plat Maps

<u>Township/Range</u>	<u>Sheet #</u>	<u>Date of Survey</u>
Y9S/R3E	-	1876

Merced County General Land Office (GLO) Plat Maps

<u>Township/Range</u>	<u>Sheet #</u>	<u>Date of Survey</u>
T10S/R8E	44-691	1854-1860
9S/8E	44-616	1859-1860
9S/9E	44-617	1853-1860
10S/9E	-	-
10S/10E	44-691	1854-60
T10S/R7E	44-690	1858-1879

Calaveras and Tuolumne County General Land Office (GLO) Plat Maps

<u>Township/Range</u>	<u>Sheet #</u>	<u>Date of Survey</u>
T1N/R13E	41-022	1855-1885
T2N/R13E	41-112	1859-1871
1N/13E	41-022	1855-1885
1N/14E	41-029	1855-1871
2N/13E	41-112	1859-1871
2N/14E	41-132	1859-1871

Appendix A: Previously Recorded Inventories within 200 meters of the Right-of-Way

Note: This appendix is being submitted separately to reviewing agencies under a request for confidentiality because it contains information regarding the locations and contents of cultural resource sites.

Appendix B: Previously Recorded Resources within 200 meters of the Right-of-Way

Note: This appendix is being submitted separately to reviewing agencies under a request for confidentiality because it contains information regarding the locations and contents of cultural resource sites.

**Appendix C: Significant and Potentially
Significant Previously Recorded Resources more
than 200 meters from the Right-of-Way**

Note: This appendix is being submitted separately to reviewing agencies under a request for confidentiality because it contains information regarding the locations and contents of cultural resource sites.

Appendix K

Native American Correspondence

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Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

SEP 30 2009

Ms. Debbie Pilas-Treadway
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Dear Ms. Pilas-Treadway:

The Western Area Power Administration (Western), Sierra Nevada Region, an Agency of the U.S. Department of Energy, is preparing an Environmental Assessment (EA) to assess the potential effects of upgrades and new requirements in its operation and maintenance (O&M) program for our existing transmission lines, access roads, and substations in the San Joaquin Valley area (enclosure 1). This Project is referred to as the San Joaquin Valley Right-of-Way (ROW) Maintenance Environmental Assessment (SJVEA). The Project area lies within San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne, Santa Clara, and Merced Counties.

The purpose of the San Joaquin Valley ROW maintenance program is to maintain Western transmission lines and legal access roads. Maintenance activities include access road upgrades, erosion control measures, tower repair, and vegetation control using manual or mechanical methods. Routine ROW maintenance activities related to vegetation management also include:

- Removing vegetation along transmission line ROWs and associated access roads,
- Applying herbicide to control vegetation, and
- Upgrading and maintaining legal access roads by re-grading and vegetation removal.

Other routine ROW maintenance activities include:

- Installing, maintaining, and replacing hardware, ground wire, and bird guards,
- Repairing steel equipment at the transmission towers,
- Placing fill or rocks in culverts,
- Constructing retaining walls and rock buttresses to prevent undermining of roads and structure platforms,
- Conducting geotechnical investigations including soil borings up to 100 feet deep,
- Installation of microwave equipment at existing towers,

- Installation of microwave equipment at existing towers,
- Construction of temporary roads for vegetation removal, and
- Installation of fiber optic cables.

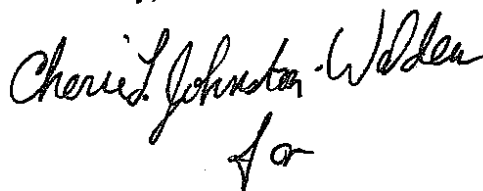
These and other related O&M activities are being evaluated in the SJVEA.

Enclosure 2 provides you with United States Geological Survey maps depicting the existing transmission line ROWs covered in the SJVEA Project area. Enclosure 2 also provides you with a list of the quadrangles, the township, section, and range for the Project area.

Pursuant to §800.2(c)(ii)(A) of CFR Part 800 (amended August 5, 2004) implementing regulations for Section 106 of the National Historic Preservation Act, Western is consulting with Native American groups who may have an interest in the San Joaquin Valley ROW EA Project area. At this time we are requesting your assistance in providing Western with a contact list of Native American groups and Native American individuals or organizations that may have knowledge of cultural resources or traditional cultural properties in the Project area. In addition, please conduct a record search of your sacred land files to assist us in identifying any known cultural resources within the Project area.

If convenient, please send your response to Ms. Cherie Johnston-Waldeal by fax at (916) 985-1935 or by email at waldeal@wapa.gov. If you require any additional information, please contact Ms. Johnston-Waldeal at (916) 353-4035.

Sincerely,

A handwritten signature in black ink that reads "Cherie Johnston-Waldeal" followed by a smaller signature that appears to be "for".

Stephen Tuggle
Natural Resources Manager

2 Enclosures

STATE OF CALIFORNIA

Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION

915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov



October 27, 2009

Stephen Tuggle, Natural Resources Manager
DEPARTMENT OF ENERGY
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, CA 95630-4710

Sent by Fax: 916-985-1935
Number of Pages: 9

Re: Proposed County San Joaquin Valley Right-of-Way Maintenance Environmental Assessment, Merced, Santa Clara County, Tuolumne County, Calaveras County, Alameda County, Contra Costa County, San Joaquin County, .

Dear Mr. Tuggle:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,


Debbie Pilas-Treadway
Environmental Specialist III

[Note: because of potential sensitivity in releasing full personal contact information, the following list of Native American contacts is summarized from the original Native American Heritage Commission correspondence.]

San Joaquin Native American Contacts

Southern Sierra Miwuk Nation
California Valley Miwok Tribe
Muwekna Ohlone Indian Tribe of the SF Bay Area
Tuolumne Band of Me-Wuk
Wilton Rancheria
Wilton Rancheria
Tuolumne Band of Me-Wuk
Amah/Mutsun Tribal Band
Calaveras County Mountain Miwok Indian Council
Ione Band of Miwok Indians
Tuolumne Band of Me-Wuk
The Ohlone Indian Tribe
Trina Marine Ruano Family
Calaveras Band of Miwuk Indians
Calaveras Band of Miwuk Indians
California Valley Miwok Tribe
Southern Sierra Miwuk Nation
Southern Sierra Miwuk Nation
Amah/Mutsun Tribal Band
Amah Mutsun Tribal Band
Chicken Ranch Rancheria of Me-Wuk
Choinumni Tribe
Buena Vista Rancheria
Ione Band of Miwok Indians
Indian Canyon Mutsun Band of Costanoan
Calaveras Band of Miwuk Indians
Calaveras Band of Miwuk Indians
Amah/Mutsun Tribal Band
Ione Band of Miwok Indians



Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

NOV 24 2009

See Address List

Dear «Title»

The Western Area Power Administration, Sierra Nevada Region (Western), an agency of the Department of Energy, is preparing an Environmental Assessment (EA) to assess the potential effects of upgrades and new requirements for its Operation and Maintenance (O&M) program for existing transmission lines, access roads and substations in the San Joaquin Valley area (enclosure 1). This project is referred to as the San Joaquin Valley Maintenance Environmental Assessment (SJVEA). The project area lies within San Joaquin, Contra Costa, Alameda, Calaveras, Tuolumne, Santa Clara, and Merced Counties.

The purpose of the San Joaquin Valley Right-of-way (ROW) maintenance program is to maintain existing Western transmission lines, legal access roads and substations. Maintenance activities include access road upgrades, erosion control measures, tower repair, and vegetation control using manual or mechanical methods. Routine ROW maintenance activities related to vegetation management also include:

- Removing vegetation along transmission line ROWs and associated access roads,
- Applying herbicide to control vegetation, and
- Upgrading and maintaining legal access roads by regrading and vegetation removal.

Other routine ROW maintenance activities include:

- Installing, maintaining, and replacing hardware, ground wire, and bird guards,
- Repairing steel equipment at the transmission towers,
- Placing fill or rocks in culverts,
- Constructing retaining walls to prevent undermining of roads and structure platforms,
- Conducting geotechnical investigations including soil borings up to 100 feet deep,
- Installation of microwave equipment at existing towers,
- Construction of temporary roads for vegetation removal, and
- Installation of fiber optic cables.

These and other related O&M activities are being evaluated in the SJVEA.

Enclosure 2 provides United States Geological Survey maps depicting the existing transmission line ROWs covered in the SJVEA project area.

Pursuant to Section 106 of the National Historic Preservation Act, Western is consulting with Native American groups who may have an interest in the SJVEA Project area. Executive Order 13007 and the American Indian Religious Freedom Act also require that Western identify any impacts to sacred places or religious resources that could result from Western activities. Compliance with Section 106 requires that we identify and evaluate cultural resources in the area of potential effect. We have recently completed a cultural resource reconnaissance survey of our existing transmission lines ROWs and access roads within the SJVEA project area. We are interested in any information you can share with us regarding special ethnographic or archaeological resources, sites, or properties that would not normally be identified through cultural resource surveys that Western should be aware of. We would also appreciate your assistance in identifying any other Tribes with whom we should consult on this project. A listing of other Tribes included in this consultation is enclosed (enclosure 3).

Please contact me at our Western office in Folsom, California at (916) 353-4035 or by email at waldear@wapa.gov within 30 days of receipt of this letter if you would like to discuss Western's proposed O&M activities in this area. I look forward to hearing from you.

Sincerely,



Ms. Cherie Johnston-Waldear
Native American Liaison
Sierra Nevada Region

3 Enclosures

cc:

S. Tromley, A7400, CSO - 2W/220

Appendix L

Section 106 Consultation/Programmatic Agreement

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**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov



January 21, 2010

In Reply Refer To: WAPA970411Z

Thomas R. Boyko
Regional Manager
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

Re: Executed Programmatic Agreement Concerning Emergency and Routine Operation and Maintenance Activities at Western Facilities in California.

Dear Mr. Boyko:

Enclosed are three executed copies of the *Programmatic Agreement Among Western Area Power Administration, The Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Concerning Emergency and Routine Operation and Maintenance Activities at Western Facilities in California*.

If you require further information, please contact William Soule, Associate State Archeologist, at phone 916-654-4614 or email wsoule@parks.ca.gov.

Sincerely,

A handwritten signature in cursive script that reads "Susan H. Stratton for".

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer



Preserving America's Heritage

February 26, 2010

Mr. Thomas R. Boyko
Regional Manager
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Dr.
Folsom, CA 95630-4710

REF: Programmatic Agreement for emergency and routine activities at Western facilities in California

Dear Mr. Boyko:

Enclosed are the two copies of the executed Programmatic Agreement for the referenced programs. By carrying out the terms of the Agreement, the Western Area Power Administration will have fulfilled its responsibilities for these undertakings under Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's regulations.

We appreciate your cooperation in reaching this agreement. If you have any questions, please call Dr. Tom McCulloch at 202-606-8505.

Sincerely,

Caroline D. Hall
Assistant Director
Federal Property Management Section
Office of Federal Agency Programs

Enclosures

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

Contract 09-SNR-01363

PROGRAMMATIC AGREEMENT
AMONG
WESTERN AREA POWER ADMINISTRATION,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, AND
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
CONCERNING EMERGENCY AND
ROUTINE OPERATION AND MAINTENANCE ACTIVITIES AND OTHER ROUTINE
ACTIVITIES AT WESTERN FACILITIES IN CALIFORNIA

WHEREAS, The Western Area Power Administration (Western), Sierra Nevada Region and Desert Southwest Region operate and maintain extensive electrical transmission systems that includes transmission lines, substations, communication sites, maintenance facilities, and ancillary features; and

WHEREAS, Western conducts emergency and routine operation and maintenance (O&M) activities necessary to ensure the reliability of the electrical system and other routine activities; and

WHEREAS, these activities include the actions described in Appendix B; and

WHEREAS, certain of these emergency and routine O&M activities and other routine activities are considered undertakings and may have an effect upon historic properties included in or eligible for inclusion in the National Register of Historic Places; and

WHEREAS, Western has consulted with the Advisory Council on Historic Preservation (ACHP) and the California State Historic Preservation Officer (SHPO) pursuant to 36 C.F.R. §800.14(b)(iv) of the regulations implementing Section 106 of the National Historic Preservation Act, 16 U.S.C. §470f, as amended (NHPA); and

WHEREAS, the parties to this Agreement desire to create an efficient mechanism to ensure that Western's emergency and routine O&M activities and other routine activities identified in this Agreement comply with NHPA requirements; and

WHEREAS, other Federal agencies have been invited to concur in this Agreement because of their land management responsibilities on lands where Western has easements. These agencies include the U.S. Forest Service, the Bureau of Reclamation, and the Bureau of Land Management. The agencies have chosen not to participate as concurring parties; and

WHEREAS, the definitions given in Appendix A are applicable throughout this Agreement; and

WHEREAS, on December 10, 1997, Western, ACHP, and SHPO executed an agreement titled Agreement Concerning Emergency and Routine Maintenance Activities at Western Facilities in California (1997 Agreement). The 1997 Agreement provides for Western to conduct routine and

emergency maintenance activities on Western-owned or -managed facilities in accordance with the stipulations of the 1997 Agreement satisfying Western's Section 106 responsibilities; and

WHEREAS, this Agreement supersedes and replaces the 1997 Agreement referenced above; and

NOW, THEREFORE, Western, ACHP and SHPO agree that Western's emergency and routine O&M program and other routine activities described in this Agreement shall be administered in accordance with the following stipulations to satisfy Western's Section 106 responsibility.

STIPULATIONS

Western will ensure that the following measures are carried out.

- I. The Natural Resources Manager from each region will be responsible for the implementation of and compliance with this Agreement. The Regional Historic Preservation Official (RPO) will coordinate with Western's Federal Historic Preservation Officer (FHPO), Western's Maintenance Supervisor and the Natural Resources Manager to ensure consistent implementation of this Agreement. The RPO will be responsible for developing and reviewing scopes of work, consultant proposals, historic preservation reports, the Area of Potential Effects (APE) of Projects and project impacts, the need for identification and evaluation of historic properties, and the treatment of historic properties affected by routine operation and maintenance actions and other routine activities if avoidance by project design is not appropriate.
- II. The classes of activities listed in Section I of Appendix B will not require any cultural resources investigations or any additional consultation among the parties to this Agreement. These activities have little likelihood of impacting cultural resources. Western will carry out these activities without consulting the SHPO.
- III. The classes of activities listed in Section II of Appendix B have a low probability of affecting cultural resources because they have limited potential to result in surface disturbances or other impacts. The RPO will consult with the Maintenance Supervisor and the Natural Resources Manager to determine the project area and scope and APE for each activity in Section II they plan to undertake and conduct a project review. Such project review will include, but is not limited to, a Class I records and literature search for known cultural resources in the vicinity of the project, information on the location of previously conducted surveys and survey results, and information about the likelihood of the project area containing cultural resources, including integrity of surface conditions and existence of facilities of 45 years or older. Western need not consult with the SHPO if Class III (intensive) level surveys have been completed and no historic properties have been identified or if the undertaking proposed involves facilities less than 45 years of age. If the project area has not been surveyed to Class III (intensive) level or the identified historic property cannot be avoided, the RPO will evaluate existing environmental data to determine the possible existence of cultural resources, the likelihood of impacting such resources, and further actions required. The RPO will determine whether or not a field survey, archeological monitoring or other historic preservation efforts are necessary. In

Contract 09-SNR-01363

large areas where dense vegetation prevents a Class III survey, mechanical means of vegetation removal (use of a masticator) may be used provided best management practices (BMP) as outlined in Appendix C are followed. Western shall discuss every determination in the annual report in accordance with Stipulation IX of this Agreement.

- IV. The classes of activities listed in Section III of Appendix B will be subjected to Class I and Class III inventories by a qualified cultural resource specialist if they have not been subjected to a prior inventory. Additionally, any routine O&M activities and other routine activities Western undertakes that are not identified in one of the three classes will be subjected to Class I and Class III inventories by a qualified cultural resource specialist, if they have not been subjected to a prior inventory. Western's RPO, in consultation with the Natural Resources Manager and Maintenance Supervisor, will determine the APE. They will identify areas not requiring additional survey based on a records search, previous survey and consultation indicating that no historic properties were present and places where there is no potential for survival of the historic property. Western shall discuss every determination in the annual report in accordance with Stipulation IX if this Agreement.
- V. If the surveys that take place under Stipulations II and III find no resources that meet California's SHPO and land-managing agencies' site definition, no consultation with the SHPO in accordance with 36 C.F.R. §§ 800.4 and 800.5 is required. If an archaeological or historic site is located, but the APE can be changed in order to avoid the site, no consultation among the signatories of this Agreement is required. After reviewing for completeness and evaluating for eligibility to the National Register of Historic Places, Western will forward to the SHPO and the land-managing agencies or Tribe (as appropriate) any field survey data including any site survey report as well as site information within four weeks of the acceptance of the completed report and site information. If historic properties meeting site definitions are located and cannot be avoided, consultation will take place in accordance with 36 C.F.R. §§ 800.4 through 800.6.
- VI. Western will review building acquisition, modification, upgrading, disposal, and demolition projects to determine whether historic properties will be impacted. If historic properties will be impacted or if structures (including substation equipment) are more than 45 years old, Western will consult with the SHPO according to 36 C.F.R. §§ 800.4 through 800.6.
- VII. Emergency activities will be carried out without consultation. Emergency activities are defined as situations of unplanned or unscheduled power outages or imminent outages that potentially threaten human life and property. These activities may take place between or at towers and within existing facilities such as substations, and may include replacing structures (including crossarms, insulators, and/or conductors) and tree removal. If one has not been conducted, Western will conduct a Class III survey of the emergency activity APE as soon as practicable and notify the SHPO and the local land-management agency of the findings.

- VIII. Western will provide each land-management agency represented herein with information and any changes on the location of its rights-of-way and facilities within their jurisdiction. Each land-management agency will provide Western with appropriate information on sites identified on Western's rights-of-way or at its facilities subsequent to the preparation of this Agreement.
- IX. On an annual basis, Western will prepare a report detailing actions taken under this Agreement for the portions of the emergency and routine O&M program and other routine activities listed under Section II and III of Appendix B. This report will be submitted to the ACHP and the SHPO by October 1 of each year beginning in 2010. The report will list the actions taken, a short description of each action, the date each action was reviewed, results of records search and inventory (if applicable), any consultations with and by whom, and the decision made based upon this information. The report will also include a general discussion of Western's efforts to identify historic resources, an evaluation of the effectiveness of the Agreement, information about Western's public involvement efforts, and items related to Western's historic property protection program.
- X. Western shall develop and implement a plan for discovery should project activities encounter a previously unknown historic property. All work that might affect the property shall cease until Western, in consultation with all appropriate parties (including the SHPO, Western's HPO, Tribes, private landowners, and state, local, and land-management agencies), can evaluate the property's eligibility and project probable effects. Western shall consult with the SHPO and the land-management agencies or individuals to determine what measures can be taken to mitigate the effects or avoid the property. The consultation shall also determine when work at the location of the discovery may resume.
- XI. Treatment of human remains and items of cultural patrimony will be handled on a case-by-case basis with involvement of the appropriate parties listed in Stipulation X. In the event that human remains or items of cultural patrimony as defined by the Native American Graves Protection and Repatriation Act, 25 U.S.C. § 3001, *et seq.*, (NAGPRA) are encountered on lands under the ownership of Western, Western shall consult with the lineal descendants and culturally affiliated Tribe(s) to establish the appropriate disposition of any Native American human remains or items of cultural patrimony in compliance with NAGPRA. On Federal lands managed by another Federal agency, the Federal land manager, with Western's cooperation, will assume responsibility for compliance with NAGPRA. If Native American human remains are encountered on state or private land, Western shall follow the procedures set forth in the California Public Resources Code § 5097, *et seq.* If a private landowner desires to maintain ownership of archeological items, records, and materials, copies of records shall be maintained by Western, and copies of records shall be forwarded to the appropriate office of the California Historical Resources Information System.

- XII. Curation of Recovered Data:
- A. Any cultural items (artifacts), materials, and records associated with the collection of those cultural items that were obtained by Western in activities associated with this Agreement shall be maintained at a local curatorial facility in accordance with the standards specified in 36 C.F.R. Part 79, as required by any other Federal agency. A curatorial agreement shall be executed between Western, or its representatives, and the curatorial facility prior to the implementation of any collection or recovery. If no suitable facility can be identified to house the material recovered during the implementation of this Agreement, Western shall consult with the SHPO to identify and finalize alternative arrangements.
- B. Western shall return all archeological items, records, and materials recovered from privately held lands to the owner as established under the Archaeological Resources Protection Act, 16 U.S.C. § 470aa-mm (ARPA). If these items, records, or materials are refused by their owner or donated to an appropriate Federal agency, Western shall ensure that the receiving agency acquires title to these items, records, or materials and makes binding arrangements to curate such property. If the owner desires to maintain ownership of the archeological items, records, and materials, copies of the records shall be maintained by Western, and copies of reports shall be forwarded to the appropriate office of the California Historical Resources Information System.
- XIII. The land-management agencies shall provide information to Western about the location of historic properties included in, or eligible for inclusion in, the National Register of Historic Places within Western's rights-of-way and about the location of historic preservation activities (surveys) that did and did not result in the identification of historic properties; e.g. both positive and negative historic property findings.
- XIV. Any signatory party to this Agreement may terminate the Agreement by providing thirty (30) days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event that the parties agree to terminate this Agreement, Western will comply with 36 C.F.R. §§ 800.4 through 800.6 with regard to all activities covered by this Agreement.
- XV. Any signatory party to this Agreement may propose to the other signatory parties that this Agreement be amended, whereupon the parties will consult in accordance with 36 C.F.R. 800.6(c)(1) and (7) to consider such an amendment. Other parties may be added to this Agreement upon mutual agreement of the original signatories.
- XVI. Should any party to this Agreement object within 30 days to any actions proposed pursuant to this Agreement, Western shall consult with the objecting party to resolve the objection. If Western determines that the objections cannot be resolved, Western shall forward all documentation relevant to the dispute to ACHP. Within thirty (30) days after receipt of the pertinent documentation, ACHP shall either:

A. Provide Western with comments which Western will take into consideration in reaching a decision regarding the dispute; or

B. Notify Western that it will comment pursuant to 36 C.F.R. § 800.7(c), and proceed to comment. Any ACHP comment provided in response to such a request will be taken into account by Western in accordance with 36 C.F.R. § 800.7(c)(4) and Section 110(1) of the NHPA with reference to the subject of dispute.


Any recommendation or comment provided by ACHP will be understood to pertain only to the subject of the dispute. Western's responsibility to carry out all actions under this Agreement that are not the subject of the dispute will remain unchanged.

XVII. All appendices attached to this Agreement shall be in force and in effect, as part of this Agreement, until suspended or amended, or until the termination of this Agreement.

Execution and implementation of this Programmatic Agreement and its transmittal by Western to the ACHP in accordance with 36 C.F.R. §800.6(b)(1)(iv), and subsequent implementation of its terms shall evidence, pursuant to 36 C.F.R. §800.6(c) that Western has satisfied its Section 106 responsibilities for all individual undertakings of its emergency and routine operation and maintenance program and other routine activities in California described in this Agreement.

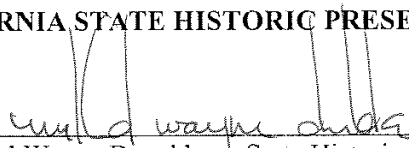
SIGNATORY PARTIES:

WESTERN AREA POWER ADMINISTRATION


By:  Date: 11/2/10
Thomas R. Boyko, Regional Manager, Sierra Nevada Region

By:  Date: 12/29/09
Darrick Moe, Regional Manager, Desert Southwest Region

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

By:  Date: 20 JAN 2010
Milford Wayne Donaldson, State Historic Preservation Officer

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By:  Date: 2/1/10
John M. Fowler, Executive Director

APPENDIX A
Definitions

All-dielectric Self-supporting Cables (ADSS) - Cables installed on transmission and distribution lines for grounding and transferring communication data throughout the transmission line system (see OPGW).

Aircraft Warning Devices - These devices consist of both signs and marker balls. Signs are usually placed on the tops of transmission line structures. "Marker balls" are large colored balls placed around overhead groundwires to make the groundwires more visible to aircraft and birds.

Anchors - Anchors are metal pins or concrete weights attached to the ends of guy wires to secure them to the ground.

A armor Rod - Protective pre-formed wires wrapped around aluminum conductor to prevent damage at point of support. Also used to repair minor conductor damage.

Auger Truck - A truck equipped with a bed-mounted auger used to dig holes for poles or structure foundations.

Bird Guard - A specially designed device placed on transmission line structures to prevent birds from being electrocuted.

Bobcat - A small front-end loader.

Brushhog - A debris chipper that grinds vegetation.

Bucket Truck - A specially designed truck equipped with a bucket and hydraulic arm used to lift men and equipment to the top of transmission line structures during construction, maintenance and inspection of transmission line structures.

Bushing - An electrically insulating lining for a hole to protect a through conductor.

Capacitor Banks - Capacitors are devices which store an electrical charge. Capacitors are grouped in "banks" inside switchyards and substations. Capacitor banks perform various functions including increasing power flow, compensating for voltage drops, and improving power at the point of delivery.

Cellular Tower Antennae - Antennae installed on a Western transmission line tower or other Western facilities by private telecommunication companies for wireless services and telecommunication projects. Installation of cellular tower antennae usually involves the need for other nearby components such as small equipment cabinets, and underground or aerial telephone line connections.

Circuit Breakers or "Breakers" - A circuit breaker is any device designed primarily to provide safe, rapid interruption of abnormal current flow. Circuit breakers interrupt a faulted circuit, and reclose as soon as the fault has been cleared.

Class I Survey - A literature and records search of previously identified archaeological and historic site records within or near the project APE.

Class II Survey - A professionally-conducted sample survey designed to characterize an area.

Class III Survey - An intensive, professionally-conducted, cultural resources survey to identify cultural resources present in the APE. Intensive surveys should be no more than 20 meter transects apart and cover 100% of the APE.

Clipping - The task of permanently attaching the conductor to the insulators during construction. Clipping is the last step in completing conductor stringing.

Communication Sites - Four communication systems are used by Western to track and monitor the power system: microwave transmissions, power line carriers, radio, and leased telephone lines. Microwave communication sites are being used more and more. A microwave site consists of a fenced, level pad occupied by a tower and small control building.

Conductor - Conductors, often called wires or lines, are the actual carriers of current in a transmission system. They are usually made from solid or stranded aluminum and reinforced with steel.

Crossarms - The crossarm is the crossing member of a wood pole or steel transmission line structure which supports the insulators for the conductors.

Cultural Resources - Any definite location of past human activity, occupation, or use. Cultural resources are identifiable through inventory, historical documentation or oral evidence. Cultural resources include archeological, historic, pre-historic, or architectural sites, structures, places, objects, or artifacts and all records and remains related to or located within such resources.

Cut Out Fuse - A fuse is an electrical safety device that melts and interrupts the circuit when the current exceeds certain amperage.

Dampener Installation - Vibration dampeners are installed to inhibit the conductor or overhead ground wires from oscillating, whipping, and/or bouncing. They may be installed using bucket trucks.

Disconnect Switches - A switch is used to open or close a circuit. An open switch stops current from flowing in a circuit, while a closed switch allows current to flow again. Disconnect

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switches are used throughout an electrical system to separate various parts of the system during a fault, and to allow for maintenance and repair.

Footings – An enlargement at the base of a structure used to distribute the load or weight of the structure. Footings are dug with an auger into the ground and sometimes are filled with concrete.

Ground Mat - A large wire mesh mat buried under a substation or other electrical facility used to help ground electrical equipment.

Ground Rod - A metal pole installed in the ground to a depth of at least 5 feet. The rods are attached to grounding cables.

Ground Wire - A safety device that directs current to the earth or “ground”. Overhead ground wires act as lightning rods. They are connected to the transmission line structures and extend down into the ground.

Guy Wire - A steel wire used to support or strengthen a structure. A guy wire securely anchors the structure to the ground. Guy wires are used at deadend and turning structures and at endpoints such as substations.

Insulators - An insulator keeps current from flowing to earth or another conductor. Insulators usually hang from the transmission line structure crossarms. An insulator inhibits the flow of electricity to earth or another conductor. Insulators are usually bell-shaped, arranged in strings, and are made of porcelain, Pyrex glass or plastic.

Knee Brace - An angle support device used to support a transmission line structure’s crossarm.

Light Beacon - A light attached to a tower used for guidance or aircraft warning.

Lightning Arrestor - Any attachment, usually a metal bayonet, used to attract lightning away from the transmission system and direct it to a ground wire and the ground.

Masticator - A tractor-type machine used for mechanically removing vegetation. Two types of masticators are generally used:

1. Feller Buncher - A tractor-type piece of machinery used to mechanically clear or mow dense vegetation. This is a method of vegetation removal that mechanically blades high growth vegetation down to 6-8 inches high while avoiding soil disturbance during normal operations.
2. Hydroax - A hydro-axe is an articulated tractor with a mower-mulcher mounted on the front of the machine. It has rubber flotation-type tires that cause little disturbance to the surface ground in dry soil. The mower-mulcher clips and mulches vegetation from 4 to 10 inches above ground. The hydroax can also be used to remove tree stumps from the ground.

Microwave Radio Tower - A tower, usually constructed of steel lattice, equipped with a microwave receiving dish.

Overhead Fiber Optic Ground Wires (OPGW) - A type of cable that is installed overhead on electric power transmission and distribution lines. OPGW combines the functions of electrical grounding and sending communication data.

Parabolic Dish - A bowl-shaped antennae or reflector used in microwave communications.

Pole Guard - A metal collar or brace used to add strength to a pole. See also "stub".

Portable or Mobile Substation - A mini-substation that can be transported by truck and installed anywhere along the transmission system.

Reactors - Devices used to introduce inductive reactance into a circuit. Usually installed in groups or banks, they help limit current to a safe value and protect equipment from excessive power surges during a fault.

Reclosers - A device associated with a circuit breaker that allows the circuit to close automatically after a fault.

Regulators - See voltage regulators.

Solar Power Array - A collection or grouping of devices such as mirrors or photovoltaic cells, capable of capturing solar energy for use in generating electricity.

Shoo-fly - A temporary tap line used to direct current around a piece of the transmission system that is under construction or repair. It also refers to a temporary road used to get around an obstruction in the normal right-of-way.

Stabilizer or Outrigger Pads - Metal plates used to support lifting equipment.

Stub - A temporary reinforcement done at the base of a pole to provide additional strength. A stub usually consists of a short piece of another pole.

Steel Transmission Line (TL) Structure - A steel structure, usually in a lattice or single pole configuration which can be used in special construction situations and to carry large transmission voltages.

Substations - On-ground facilities consisting of electrical equipment used to transform (step down or up) the voltage for delivery and consumer use.

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Switches (Switchgear) - Substation equipment designed and operated to switch electrical circuits and to interrupt power flow.

Tap Changers - Devices in some transformers that increase or reduce the potential by changing the transformer turns ratio. Tap changing transformers are used to control voltage at loads, substations, and direct current ties.

Transformers - Transformers transfer energy from one circuit to another circuit and are used to increase or decrease voltage in an alternating current system. A transformer consists of two “windings”, or many turns of magnetically coupled wires or coils, placed very close together within an oil cooled cylinder.

Voltage Regulators - Electric devices that regulate voltage flowing through distribution lines. It automatically raises and lowers the voltage to maintain required voltage levels for service.

Wave Traps - A wave trap is used in carrier communications to confine the carrier signal to one transmission line section. It is a parallel circuit tuned to the frequency of the carrier signal.

Wood Transmission Line (TL) Structures - Structures built from large wooden poles (usually of fir, pine, larch or cedar) that are treated with a preservative chemical to protect them against decay fungi.

X-Braces - X-braces, usually constructed of wood, provide reinforced support to large wooden transmission line structures.

APPENDIX B

Routine Operation and Maintenance Activities and Other Routine Activities

I. Activities with No or Minor Associated Surface Disturbance:

Many of these activities take place within the confines of an existing substation or communications site. Most substations have been leveled and graveled. Equipment used for these activities consist of rubber-tired vehicles such as bucket trucks, backhoes, front-end loaders, cranes, auger trucks, bobcats, and pole trucks. Many vehicles require stabilizer pads which can compact a ground area of about 2' by 2'.

A. **Substation Activities:**

- 1) Maintenance and replacement of transformers and breakers.
- 2) Servicing and testing of equipment at existing substations, including oil changeouts.
- 3) Installation or replacement of bushings.
- 4) Cleaning or replacement of capacitor banks.
- 5) Maintenance or installation of propane tanks within a substation yard.
- 6) Maintenance of switches, voltage regulators, reactors, tap changes, reclosers and valves.
- 7) Replacement of wiring in substations and switch yards.
- 8) Replacement of existing substation equipment including regulators, capacitors, switches, wave traps, radiators, and lightning arresters.
- 9) Installation of cut-out fuses.
- 10) Adjust and clean disconnect switches.
- 11) Placement of temporary transformer.
- 12) Maintenance, installation and removal of solar power array and controller.
- 13) Clean up of chemical spills when clean up remains above the ground mat.
- 14) Installation of foundation for storage buildings above ground mat within existing substation yard.
- 15) Ground mat repairs.
- 16) Clearing vegetation by hand within the boundary of a fenced substation.

B. **Transmission Line Activities:**

- 1) Ground and aerial patrols.
- 2) Climbing, inspection, and tightening hardware on wood and steel transmission line structures.
- 3) Replacement or repair of ground wire.
- 4) Replacement or placement of aircraft warning devices.
- 5) Replacement or cleaning of insulators.
- 6) Installation of bird guards.
- 7) Replacement of cross arms on wood pole transmission line structures.
- 8) Cut and drop danger trees.

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- 9) Replacement or repair of steel members of steel transmission line structures.
- 10) Inspection of hardware on wood and steel transmission line structures.
- 11) Installation, repair or replacement of X-brace and knee brace.
- 12) Removal or installation of structure mile markers.
- 13) Dampener installation.
- 14) Installation of ADSS or OPGW.
- 15) Replacing ground spike on wood pole structures.
- 16) Brush removal by hand.
- 17) Installation of ground rods.
- 18) Installation of armor rod and clipping-in structures.
- 19) Replacement of conductor.
- 20) Application of wood preservatives on existing wooden pole structures.
- 21) Place fill or rocks around existing towers or structures.
- 22) Place fill or rocks around existing culverts.
- 23) Adding rock to bases of poles or structures where the soil is blown out.
- 24) Installation of cellular antenna on Western facilities when no underground trenching is required.

C. Communication System Activities:

- 1) Microwave radio tower maintenance.
- 2) Communication tower and antennae maintenance.
- 3) Installation of light beacons.
- 4) Removal of microwave dish.
- 5) Installation, removal and repair of parabolic dish.

D. General Maintenance at Facilities:

- 1) Building maintenance including interior and exterior painting; and roof, ceiling, floor, window and door maintenance.
- 2) Application of soil sterilants and herbicides.
- 3) Clearing vegetation by hand.
- 4) Place fill or rocks around existing culverts.

II. Activities with Minimal Surface Disturbance:

These activities may cause minimal and restricted surface disturbance.

A. Substation Activities:

- 1) Excavation for and installation of new footings.
- 2) Repair or replacement of ground mats.
- 3) Replacement or repair of footings for electrical or communications equipment within an existing substation or communications facility.
- 4) Remediation of small spills of oil and hazardous materials.

B. Transmission Line Activities:

- 1) Replacement of existing culverts (use of a backhoe/front-end loader within an existing access road).
- 2) Installation of gates where no new posts need to be installed.
- 3) Digging out buried anchors.
- 4) Uncovering tower legs from soil deposition.
- 5) Installation of anchors.
- 6) Wood pole replacements.
- 7) Stub an existing wood pole structure.
- 8) Rip-rap installation on creek or river banks where no recontouring is required.
- 9) Repair of pole guards.
- 10) Placement of single post informational signs for accessing the right-of-way.
- 11) Place fill in erosional features on access roads.
- 12) Remediation of small spills of oil and hazardous materials.
- 13) Vegetation removal using a masticator following BMPs in Appendix C.

C. Communication System Activities:

- 1) Removal of foundations or footings at communication sites.
- 2) Installation or removal of solar power array and controller.

D. General Maintenance at Facilities:

- 1) Repair fences and gates.
- 2) Pull existing fences.
- 3) Grounds maintenance for existing facilities, including the use of brush hogs.
- 4) Erosion control projects within an existing facility.

III. Activities Causing Extensive Surface Disturbance:

These types of activities may include the use of bulldozers, graders, backhoes, front-end loaders. Activities could take place on any Western facility including transmission line rights-of-way, substations, communication facilities, microwave facilities, and office locations.

- 1) Access road construction or upgrading. (This activity may take place adjacent to, or outside of, Western facilities.)
- 2) Installation of new culverts.
- 3) Installation of foundation for storage buildings outside graveled area at an existing substation.
- 4) Installation of fences and gates where posts or poles must be installed.
- 5) Erosion control projects outside existing facilities.
- 6) Propane tank and pad installation at a communication site.
- 7) Erosion control projects outside existing substation.
- 8) Vegetation clearing by bulldozer or grader.

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- 9) Installation of microwave and radio tower.
- 10) Rip-rap installation that includes recontouring on creek or river banks.
- 11) Underground installation of water, power, communication or ground electrical line below ground mat or outside a substation.
- 12) Installation of water diversion bars on existing access roads.
- 13) Installation of foundation for storage buildings inside communication site yards.
- 14) Setting up portable substations outside of an established substation.
- 15) Propane tank installation outside of an established substation.
- 16) Excavation for and installation of new footings on a transmission line or at a communication site.
- 17) Installation of cellular antenna on Western facilities when underground trenching is required.

APPENDIX C
Best Management Practices

For project areas where dense vegetation prevents a Class III survey and where due to the scale of the project area vegetation removal by hand is not feasible, mechanical means of vegetation removal using mastication machinery as defined in Appendix A may be used provided the following requirements for best management practices (BMP) are in place.

BMP 1: Western will require mastication operators to prevent blading devices from removing vegetation at ground level to avoid soil disturbance. All mowed vegetation shall not be cut below 6 inches.

BMP 2: Mastication equipment will not be used within areas recently subjected to heavy rains in order to prevent rutting in wet soils from equipment tires.

BMP 3: A qualified archaeologist will be on site during mastication activities to monitor survey areas being cleared of vegetation. Should any cultural resources be detected, mastication activities will cease in the area until an assessment and the significance of the find is made. Results of the monitoring and survey activities will be provided in the annual report.

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APPENDIX D

Differences between the 1997 Programmatic Agreement and this 2009 Programmatic Agreement

The following changes and additions have been made in this Agreement when compared to the 1997 Agreement.

Title: “Other Routine Activities” have been added to “Emergency and Routine Maintenance Activities”. Other routine activities are those activities that Western performs on a regular basis but that are not defined as operation and maintenance activities. Such activities do not include new transmission line construction or other new facility construction.

Second Whereas Clause: “Other routine activities” have been added to “emergency and routine and operation maintenance activities” and throughout.

Last Whereas Clause: Statement of “first amended Agreement” has been added.

STIPULATIONS:

- I. Environmental Manager is changed to Natural Resources Manager.
- II. Regional Historic Preservation Official (RPO) is added as responsible for decisions regarding actions carried out under the Agreement. RPO is responsible for historic preservation requirements at the regional level but is still required to coordinate with Western’s Federal Historic Preservation Officer who oversees activities at the Agency level.
- III. The following language has been added to Stipulation III. “In large areas where dense vegetation prevents a Class III survey, mechanical means of vegetation removal (use of a masticator) may be used provided best management practices (BMP) as outline in Appendix –are followed”.

Throughout: References to 36 C.F.R. Part 800 have been revised/updated to reflect the amendments to 36 C.F.R. Part 800 effective August 5, 2004.

Appendix A:

The following definitions have been added to Appendix A:

Cellular Tower Antennae - Antennae installed on a Western transmission line tower or other Western facilities by private telecommunication companies for wireless services and telecommunication projects. Installation of cellular tower antennae usually involves the need for

other nearby components such as small equipment cabinets, and underground or aerial telephone line connections.

Class III Survey - An intensive, professionally-conducted, cultural resources survey to identify cultural resources present in the APE. Intensive surveys should be no more than 20 meter transects apart and cover 100% of the APE.

Masticator – A Masticator is a tractor-type machine used for mechanically removing vegetation. Two types of masticators are generally used:

1. Feller Buncher – A tractor-type piece of machinery used to mechanically clear or mow dense vegetation. This is a method of vegetation removal that mechanically blades high growth vegetation down to 6 to 8 inches high while avoiding soil disturbance during normal operations.

2. Hydroax – A hydro-axe is an articulated tractor with a mower-mulcher mounted on the front of the machine. It has rubber flotation-type tires that cause little disturbance to the surface ground in dry soil. The mower-mulcher clips and mulches vegetation from 4 to 10 inches above ground. The hydroax can also be used to remove tree stumps from the ground.

Appendix B

The following activities have been added to Appendix B:

BI.B.24. “Installation of cellular antenna on Western facilities when no underground trenching is required.”

BII.B.13. “Vegetation removal using a masticator following BMPs in Appendix C.”

BIII.17. “Installation of cellular antenna on Western facilities when underground trenching is required.”

Appendix C

Appendix C has been added for “Best Management Practices”.

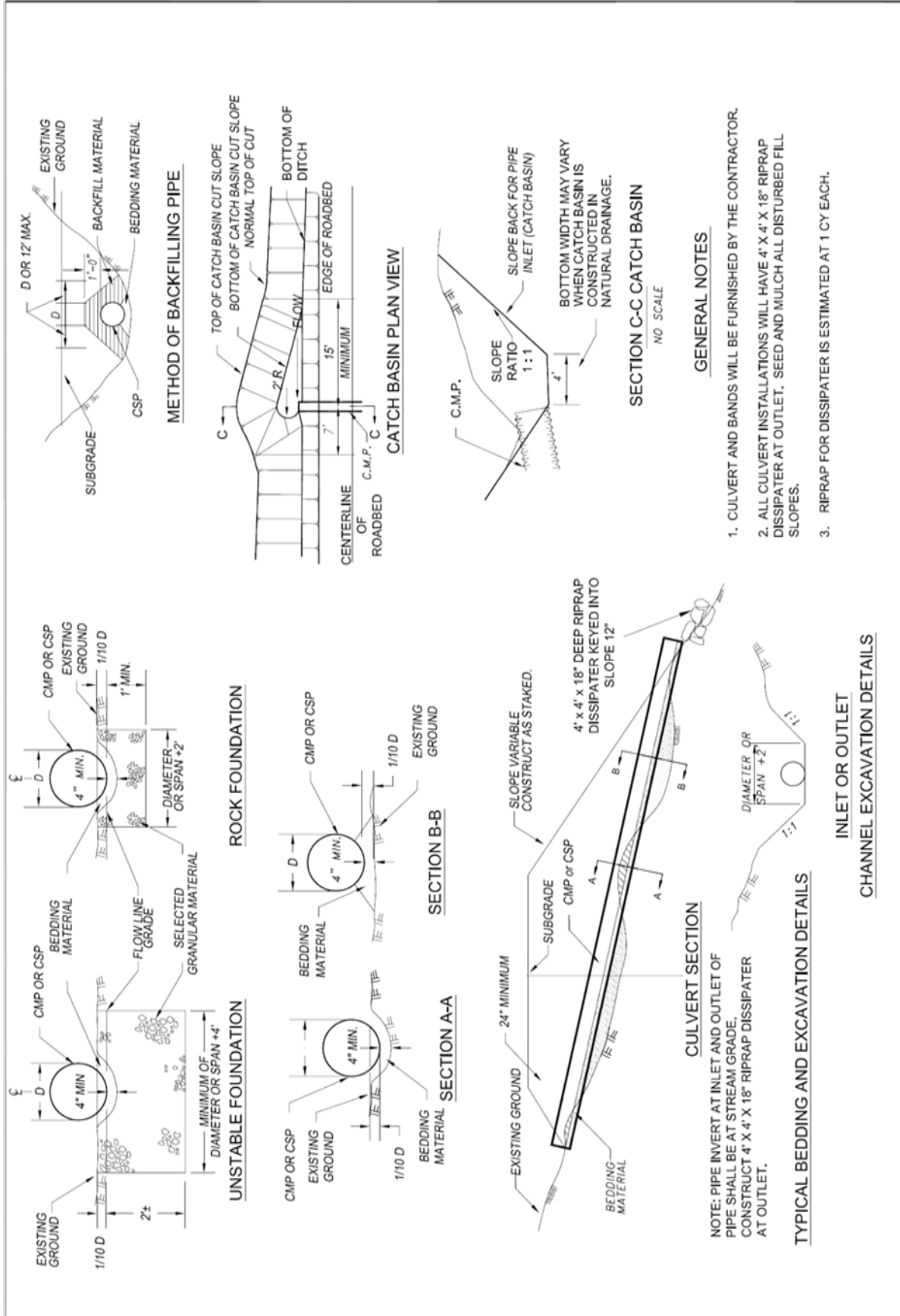
Appendix D

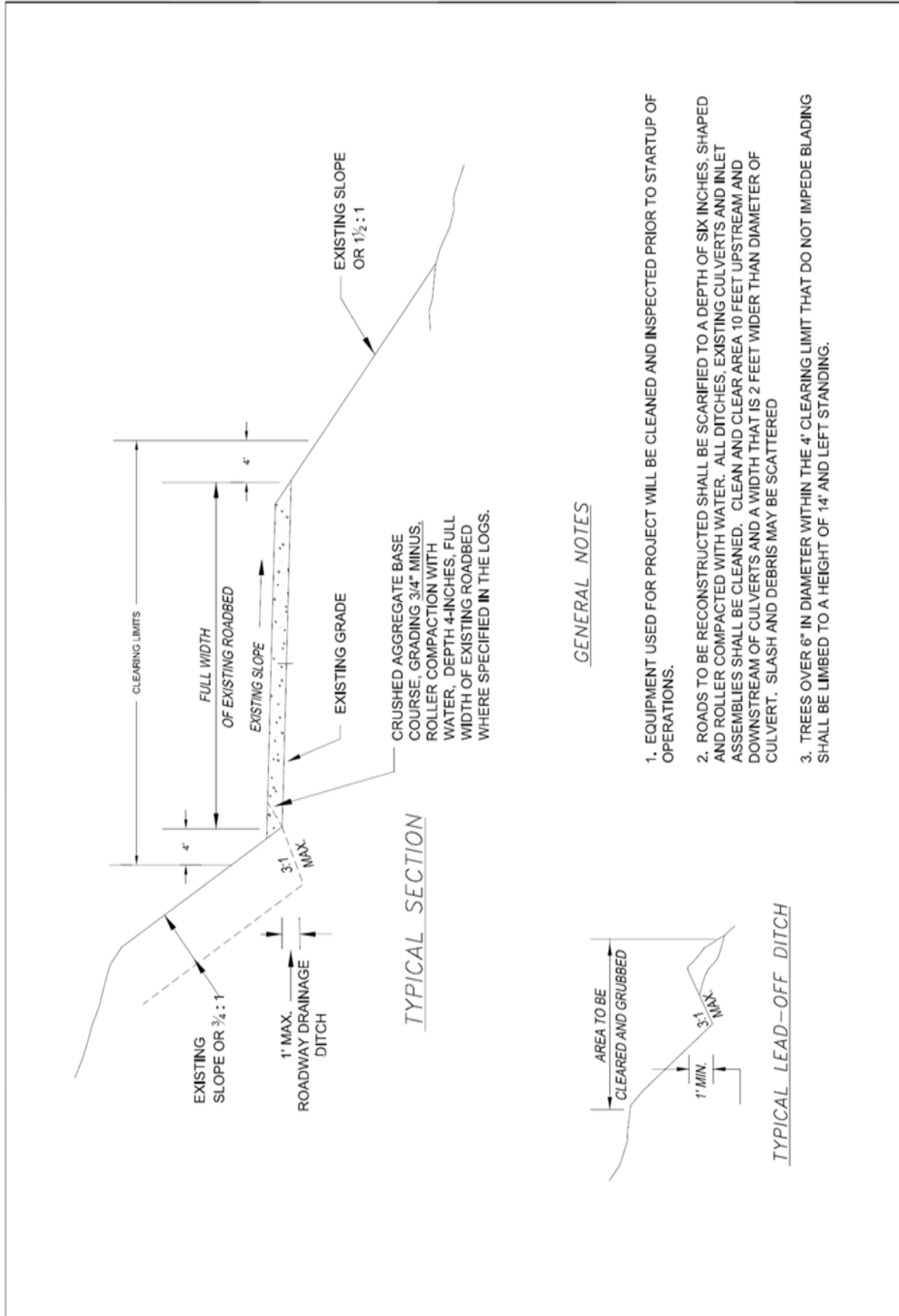
Appendix D has been added to summarize amendments.

Appendix M

Culverts and Drainage Dip Specifications

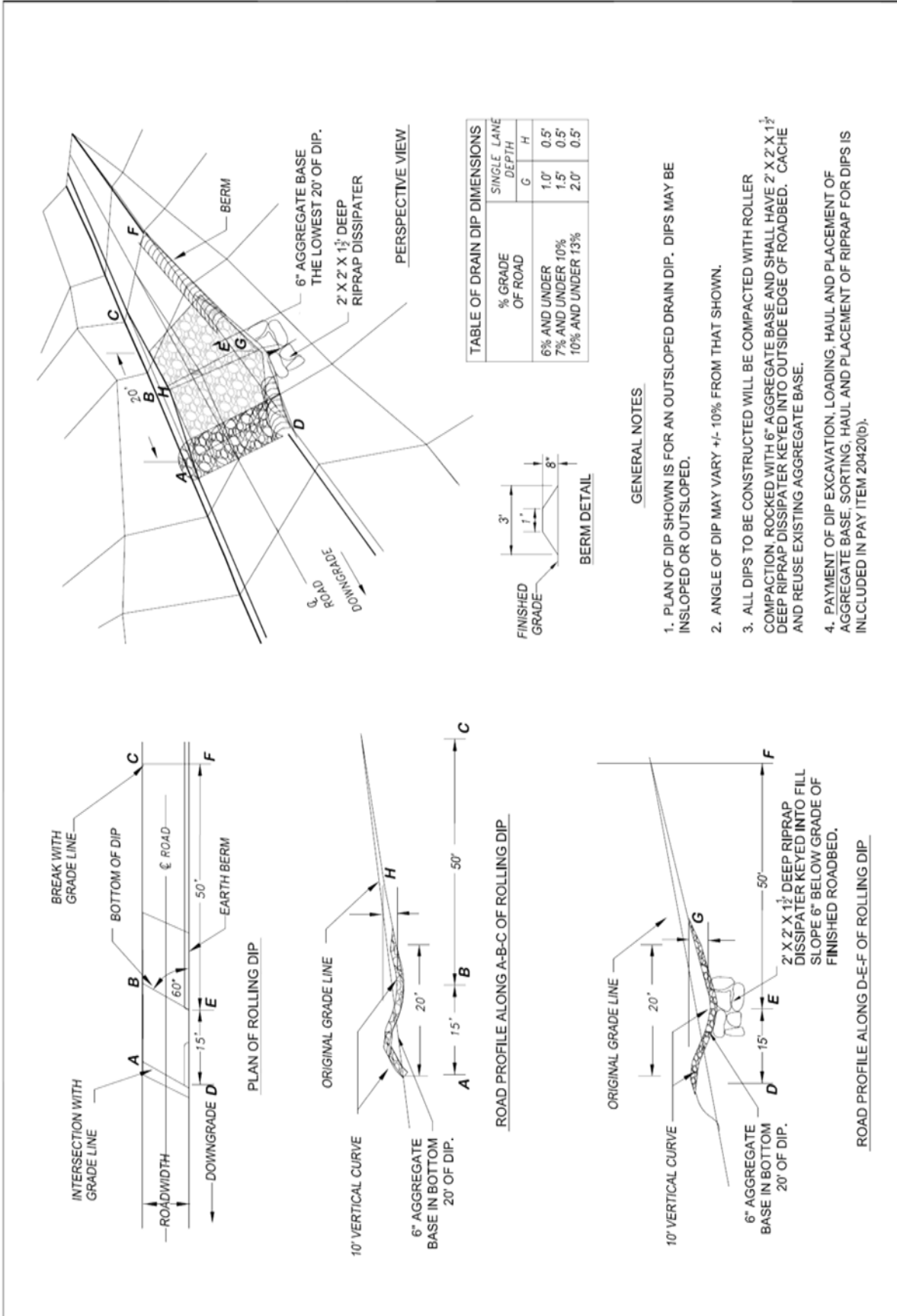
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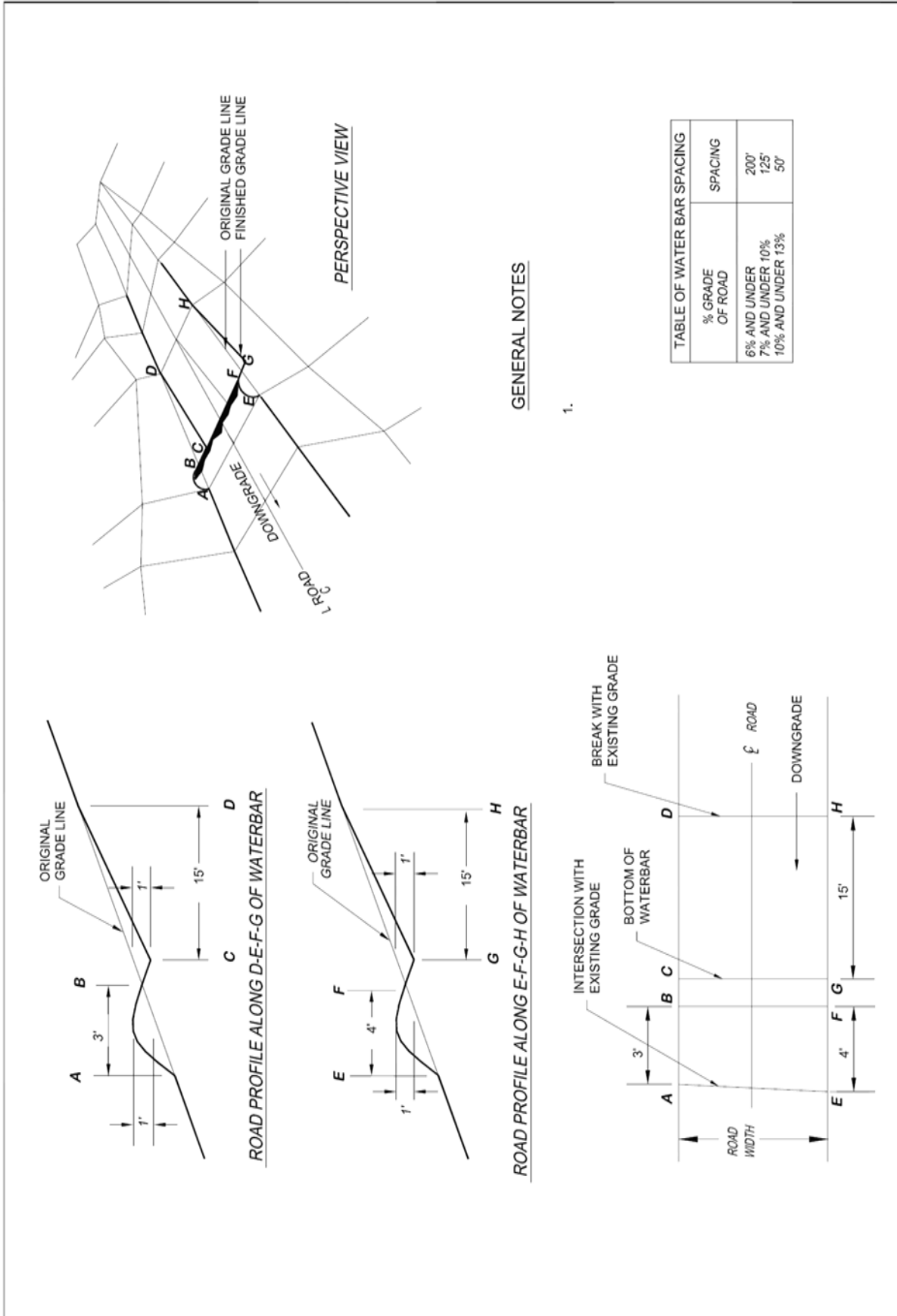




GENERAL NOTES

1. EQUIPMENT USED FOR PROJECT WILL BE CLEANED AND INSPECTED PRIOR TO STARTUP OF OPERATIONS.
2. ROADS TO BE RECONSTRUCTED SHALL BE SCARIFIED TO A DEPTH OF SIX INCHES, SHAPED AND ROLLER COMPACTED WITH WATER. ALL DITCHES, EXISTING CULVERTS AND INLET ASSEMBLIES SHALL BE CLEANED. CLEAN AND CLEAR AREA 10 FEET UPSTREAM AND DOWNSTREAM OF CULVERTS AND A WIDTH THAT IS 2 FEET WIDER THAN DIAMETER OF CULVERT. SLASH AND DEBRIS MAY BE SCATTERED
3. TREES OVER 6" IN DIAMETER WITHIN THE 4' CLEARING LIMIT THAT DO NOT IMPEDE BLADING SHALL BE LIMBED TO A HEIGHT OF 14' AND LEFT STANDING.





Appendix N

Comments and Responses

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Comments and responses to be added for Final Environmental Assessment.

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