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### Impact Analysis and Mitigation Measures

#### Analysis Methodology

This section describes impacts to biological resources from vegetation treatment under the CalVTP. It describes the methods used to determine the impacts, lists the criteria used to conclude whether an impact would be significant, and characterizes the impact. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Among other factors, the determination of impacts includes an evaluation of whether treatments under the proposed CalVTP could result in a loss of habitat function. Maintenance of habitat function is one of the performance standards for mitigation. Habitat function is defined here as the arrangement and capability of habitat features to provide refuge, foraging, and reproduction habitat to plants and animals, and thereby contribute to the conservation of biological and genetic diversity and evolutionary processes (de Groot et al. 2002). Some modification of habitat characteristics may occur without causing a significant effect, provided that habitat function is maintained (i.e., the location, essential habitat features, and species supported are not substantially changed). Essential habitat features are those that provide food, water, shelter, living space, breeding areas or substrates, and nursery areas to the species that reside in or migrate through the habitat type.

Significance determinations assume that project proponents implementing qualifying treatments under the CalVTP would comply with relevant federal, state, and local ordinances and regulations to the extent the project is subject to them. Significance determinations also account for the influence of relevant SPRs, which are incorporated into treatment design and listed below.

* **SPR AD-1 Project Proponent Coordination:** For treatments coordinated with CAL FIRE, CAL FIRE will meet with the project proponent to discuss all natural and environmental resources that must be protected using SPRs and any applicable mitigation measures; identify any sensitive resources onsite; and discuss resource protection measures. For any prescribed burn treatments, CAL FIRE will also discuss the ~~and~~ details of the burn plan in the incident action plan (IAP) ~~for any prescribed burn treatments~~. This SPR applies to all treatment activities and treatment types, including treatment maintenance.
* **SPR AD-3 Consistency with Local Plans, Policies, and Ordinances**: The project proponent will design and implement the treatment in a manner that is consistent with applicable local plans (e.g., general plans, Community Wildfire Protection Plans, CAL FIRE Unit Fire Plans), policies, and ordinances to the extent the project is subject to them. This SPR applies to all treatment activities and treatment types, including treatment maintenance.
* **SPR AQ-3 Create Burn Plan**: The project proponent will create a burn plan using the CAL FIRE burn plan template for all prescribed burns. The burn plan will include a fire behavior model output of First Order Fire Effects Model and BEHAVE or other fire behavior modeling simulation and that is performed by a qualified fire behavior technical specialist that predicts fire behavior, calculates consumption of fuels, tree mortality, predicted emissions, greenhouse gas emissions, and soil heating. The project proponent will minimize soil burn severity from broadcast burning to reduce the potential for runoff and soil erosion. The burn plan will be created with input from a qualified technician or certified State burn boss. This SPR applies only to prescribed burning treatment activities and all treatment types, including treatment maintenance.
* **SPR AQ-4 Minimize Dust**: To minimize dust during treatment activities, the project proponent will implement the following measures:
* Limit the speed of vehicles and equipment traveling on unpaved areas to 15 miles per hour to reduce fugitive dust emissions, in accordance with the California Air Resources Board (CARB) Fugitive Dust protocol.
* If road use creates excessive dust, the project proponent will wet appurtenant, unpaved, dirt roads using water trucks or treat roads with a non-toxic chemical dust suppressant (e.g., emulsion polymers, organic material) during dry, dusty conditions. Any dust suppressant product used will be environmentally benign (i.e., non-toxic to plants and will not negatively impact water quality) and its use will not be prohibited by ARB, EPA, or the State Water Resources Control Board (SWRCB). The project proponent will not over-water exposed areas such that the water results in runoff. The type of dust suppression method will be selected by the project proponent based on soil, traffic, site-specific conditions, and air quality regulations.
* Remove visible dust, silt, or mud tracked-out on to public paved roadways where sufficient water supplies and access to water is available. The project proponent will remove dust, silt, and mud from vehicles at the conclusion of each workday, or at a minimum of every 24 hours for continuous treatment activities, in accordance with Vehicle Code Section 23113.
* Suspend ground-disturbing treatment activities, including land clearing and bulldozer lines, when there is visible dust transport (particulate pollution) outside the treatment boundary, if the particulate emissions may “cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property,” per Health and Safety Code Section 41700.

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

#### General Biological Resources

Biological resource SPRs and mitigation measures require that qualified individuals implement components of the measures. The requirements listed below will be met to be considered qualified and may be performed by individuals of various titles (including biologist, botanist, ecologist, Registered Professional Forester (RPF), biological technician, or supervised designees working at the direction of a qualified professional) as long as they are qualified for the task at hand.

**Qualified RPF or Biologist:** To be qualified, an RPF or biologist would hold a wildlife biology, botany, ecology, forestry, or other relevant degree from an accredited university and: 1) be knowledgeable in relevant species life histories and ecology, 2) be able to correctly identify relevant species and habitats, 3) have experience conducting field surveys of relevant species or resources, 4) be knowledgeable about survey protocols, 5) be knowledgeable about state and federal laws regarding the protection of special-status species, and 6) have experience with CDFW’s California Natural Diversity Database (CNDDB) and Biogeographic Information and Observation System (BIOS). The project proponent will review the resume and approve the qualifications of RPFs or biologists. If species-specific protocol surveys are performed, surveys would be conducted by qualified RPFs or biologists with the minimum qualifications required by the appropriate protocols, including having CDFW or USFWS approval to conduct such surveys, if required by certain protocols.

**Qualified RPF or Botanist:** To be qualified, an RPF or botanist would 1) be knowledgeable about plant taxonomy, 2) be familiar with plants of the region, including special-status plants and sensitive natural communities, 3) have experience conducting floristic botanical field surveys as described in CDFW “Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities” (current version dated March 20, 2018), or experience conducting such botanical field surveys under the direction of an experienced botanical field surveyor, 4) be familiar with the *California Manual of Vegetation* (Sawyer et al. 2009 or current version, including updated natural communities data at http://vegetation.cnps.org/), and 5) be familiar with federal, state, and local statutes and regulations related to plants and plant collecting. The project proponent will review the resume and approve the qualifications of RPFs or botanists.

**Qualified RPF or Biological Technician:** To be qualified, an RPF or biological technician would 1) be knowledgeable in relevant species life histories and ecology, 2) be able to correctly identify relevant species and habitats, 3) have experience conducting biological monitoring of relevant species or resources, and 4) be knowledgeable about state and federal laws regarding the protection of special-status species. The project proponent will review the resume and approve the qualifications of RPFs or biological technicians.

**SPR BIO-1: Review and Survey Project-Specific Biological Resources.** The project proponent will require a qualified RPF or biologist to conduct a data review and reconnaissance-level survey prior to treatment, no more than one year prior to the submittal of the PSA, and no more than one year between completion of the PSA and implementation of the treatment project. The data reviewed will include the biological resources setting, species and sensitive natural communities tables, and habitat information in this PEIR for the ecoregion(s) where the treatment will occur. It will also include review of the best available, current data for the area, including vegetation mapping data, species distribution/range information, CNDDB, California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California, relevant BIOS queries, and relevant general and regional plans. Reconnaissance-level biological surveys will be general surveys that include visual and auditory inspection for biological resources to help determine the environmental setting of a project site. The qualified surveyor will 1.) identify and document sensitive resources, such as riparian or other sensitive habitats, sensitive natural community, wetlands, or wildlife nursery site or habitat (including bird nests), and 2.) assess the suitability of habitat for special-status plant and animal species. The surveyor will also record any incidental wildlife observations. For each treatment project, ~~H~~habitat assessments will be completed at a time of year that is appropriate for identifying habitat and no more than one year prior to the submittal of the PSA, ~~Project Specific Analysis (Appendix PD-3) for each treatment project~~, unless it can be demonstrated in the PSA that habitat assessments older than one year remain valid (e.g., site conditions are unchanged and no treatment activity has occurred since the assessment). If more than one year passes between completion of the PSA and initiation of the treatment project, the project proponent will verify the continued accuracy of the PSA prior to beginning the treatment project by reviewing for any data updates and/or visiting the site to verify conditions. Based on the results of the data review and reconnaissance-level survey, the project proponent, in consultation with a qualified RPF or biologist, will determine which one of the following best characterizes the treatment:

1. **Suitable Habitat Is Present but Adverse Effects Can Be Clearly Avoided**. If, based on the data review and reconnaissance-level survey, the qualified RPF or biologist determines that suitable habitat for sensitive biological resources is present but adverse effects on the suitable habitat can clearly be avoided through one of the following methods, the avoidance mechanism will be implemented prior to initiating treatment and will remain in effect throughout the treatment:
	1. by physically avoiding the suitable habitat, or
	2. by conducting treatment outside of the season when a sensitive resource could be present within the suitable habitat or outside the season of sensitivity (e.g., outside of special-status bird nesting season, during dormant season of sensitive annual or geophytic plant species, or outside of maternity and rearing season at wildlife nursery sites).

Physical avoidance will include flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway) to delineate the boundary of the avoidance area around the suitable habitat. For physical avoidance, a buffer may be implemented as determined necessary by the qualified RPF or biologist.

1. **Suitable Habitat is Present and Adverse Effects Cannot Be Clearly Avoided**. Further review and surveys will be conducted to determine presence/absence of sensitive biological resources that may be affected, as described in the SPRs below. Further review may include contacting USFWS, NOAA Fisheries, CDFW, CNPS, or local resource agencies as necessary to determine the potential for special-status species or other sensitive biological resources to be affected by the treatment activity. Focused or protocol-level surveys will be conducted as necessary to determine presence/absence. If protocol surveys are conducted, survey procedures will adhere to methodologies approved by resource agencies and the scientific community, such as those that are available on the CDFW webpage at: <https://www.wildlife.ca.gov/Conservation/Survey-Protocols>. Specific survey requirements are addressed for each resource type in relevant SPRs (e.g., additional survey requirements are presented for special-status plants in SPR BIO-7).

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

* **SPR BIO-2: Require Biological Resource Training for Workers.** The project proponent will require crew members and contractors to receive training from a qualified RPF or biologist prior to beginning a treatment project. The training will describe the appropriate work practices necessary to effectively implement the biological SPRs and mitigation measures and to comply with the applicable environmental laws and regulations. The training will include the identification, relevant life history information, and avoidance of pertinent special-status species; identification and avoidance of sensitive natural communities and habitats with the potential to occur in the treatment area; impact minimization procedures; and reporting requirements. The training will instruct workers when it is appropriate to stop work and allow wildlife encountered during treatment activities to leave the area unharmed and when it is necessary to report encounters to a qualified RPF, biologist, or biological technician. The qualified RPF, biologist, or biological technician will immediately contact CDFW or USFWS, as appropriate, if any wildlife protected by the California Endangered Species Act (CESA) or Federal Endangered Species Act (ESA) is encountered and cannot leave the site on its own (without being handled). This SPR applies to all treatment activities and treatment types, including treatment maintenance.

#### Sensitive Natural Communities and Other Sensitive Habitats

* **SPR BIO-3: Survey Sensitive Natural Communities and Other Sensitive Habitats**. If SPR BIO-1 determines that sensitive natural communities or sensitive habitats may be present and adverse effects cannot be avoided,the project proponent will:
* require a qualified RPF or biologist to perform a protocol-level survey following the CDFW “Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities” (current version dated March 20, 2018) of the treatment area prior to the start of treatment activities for sensitive natural communities and sensitive habitats. Sensitive natural communities will be identified using the best means possible, including keying them out using the most current edition of *A Manual of California Vegetation* (including updated natural communities data at http://vegetation.cnps.org/)*,* or referring to relevant reports (e.g., reports found on the VegCAMP website).
* map and digitally record, using a Global Positioning System (GPS), the limits of any potential sensitive habitat and sensitive natural community identified in the treatment area.

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

* **SPR BIO-4: Design Treatment to Avoid Loss or Degradation of Riparian Habitat Function**. Project proponents, in consultation with a qualified RPF or qualified biologist, will design treatments in riparian habitats to retain or improve habitat functions by implementing the following within riparian habitats:
* Retain at least 75 percent of the overstory and 50 percent of the understory canopy of native riparian vegetation within the limits of riparian habitat identified and mapped during surveys conducted pursuant to SPR BIO-3. Native riparian vegetation will be retained in a well distributed multi-storied stand composed of a diversity of species similar to that found before the start of treatment activities.
* Treatments will be limited to removal of uncharacteristic fuel loads (e.g., removing dead or dying vegetation), trimming/limbing of woody species as necessary to reduce ladder fuels, and select thinning of vegetation to restore densities that are characteristic of healthy stands of the riparian vegetation types characteristic of the region. This includes hand removal (or mechanized removal where topography allows) of dead or dying riparian trees and shrubs, invasive plant removal, selective thinning, and removal of encroaching upland species.
* Removal of large, native riparian hardwood trees (e.g., willow, ash, maple, oak, alder, sycamore, cottonwood) will be minimized to the extent feasible and 75 percent of the pretreatment native riparian hardwood tree canopy will be retained. Because tree size varies depending on vegetation type present and site conditions, the tree size retention parameter will be determined on a site-specific basis depending on vegetation type present and setting; however, live, healthy, native trees that are considered large for that type of tree and large relative to other trees in that location will be retained. A scientifically-based, project-specific explanation substantiating the retention size parameter for native riparian hardwood tree removal will be provided in the Biological Resources Discussion of the PSA. Consideration of factors such as site hydrology, erosion potential, suitability of wildlife habitat, presence of sufficient seed trees, light availability, and changes in stream shading may inform the tree size retention requirements.
* Removed trees will be felled away from adjacent streams or waterbodies and piled outside of the riparian vegetation zone (unless there is an ecological reason to do otherwise that is approved by applicable regulatory agencies, such as adding large woody material to a stream to enhance fish habitat, e.g., see *Accelerated Wood Recruitment and Timber Operations: Process Guidance from the California Timber Harvest Review Team Agencies and National Marine Fisheries Service*).
* Vegetation removal that could reduce stream shading and increase stream temperatures will be avoided.
* Ground disturbance within riparian habitats will be limited to the minimum necessary to implement effective treatments. This will consist of the minimum disturbance area necessary to reduce hazardous fuels and return the riparian community to a natural fire regime (i.e., Condition Class 1) considering historic fire return intervals, climate change, and land use constraints.
* Only hand application of herbicides approved for use in aquatic environments will be allowed and only during low-flow periods or when seasonal streams are dry.
* The project proponent will notify CDFW pursuant to California Fish and Game Code Section 1602 prior to implementing any treatment activities in riparian habitats. Notification will identify the treatment activities, map the vegetation to be removed, identify the impact avoidance identification methods to be used (e.g., flagging), and appropriate protections for the retention of shaded riverine habitat, including buffers and other applicable measures to prevent erosion into the waterway.
* In consideration of spatial variability of riparian vegetation types and condition and consistent with California Forest Practice Rules Section 916.9(v) (February 2019 version), a different set of vegetation retention standards and protection measures from those specified in the above bullets may be implemented on a site-specific basis if the qualified RPF and the project proponent demonstrate through substantial evidence that alternative design measures provide a more effective means of achieving the treatment ~~goals~~ objectives and would result in effects to the Beneficial Functions of Riparian Zones equal or more favorable than those expected to result from application of the above measures. Deviation from the above design specifications, different protection measures and design standards will only be approved when the treatment plan incorporates an evaluation of beneficial functions of the riparian habitat and with written concurrence from CDFW.

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

* **SPR BIO-5**: **Avoid Environmental Effects of Type Conversion and Maintain Habitat Function in Chaparral and Coastal Sage Scrub.** The project proponent will design treatment activities to avoid type conversion where native coastal sage scrub and chaparral are present. An ecological definition of type conversion is used in the CalVTP PEIR for assessment of environmental effects: a change from a vegetation type dominated by native shrub species that are characteristic of chaparral and coastal sage scrub vegetation alliances to a vegetation type characterized predominantly by weedy herbaceous cover or annual grasslands. For the PEIR, type conversion is considered in terms of habitat function, which is defined here as the arrangement and capability of habitat features to provide refuge, food source, and reproduction habitat to plants and animals, and thereby contribute to the conservation of biological and genetic diversity and evolutionary processes (de Groot et al. 2002). Some modification of habitat characteristics may occur provided habitat function is maintained (i.e., the location, essential habitat features, and species supported are not substantially changed).

During the reconnaissance-level survey required in SPR BIO-1, a qualified RPF or biologist will identify chaparral and coastal sage scrub vegetation to the alliance level and determine the condition class and fire return interval departure of the chaparral and/or coastal sage scrub present in each treatment area.

For all treatment types in chaparral and coastal sage scrub, the project proponent, in consultation with a qualified RPF or qualified biologist will:

* Develop a treatment design that avoids environmental effects of type conversion in ~~coastal~~ chaparral and coastal sage scrub vegetation alliances, which will include evaluating and determining the appropriate spatial scale at which the proponent would consider type conversion, and substantiating its appropriateness. The project proponent will demonstrate with substantial evidence that the habitat function of chaparral and coastal sage scrub would be at least maintained within the identified spatial scale at which type conversion is evaluated for the specific treatment project. Consideration of factors such as site hydrology, erosion potential, suitability of wildlife habitat, spatial needs of sensitive species, presence of sufficient seed plants and nurse plants, light availability, and edge effects may inform the determination of an appropriate spatial scale.
* The treatment design will ~~seek to~~ maintain a minimum percent cover of mature native shrubs within the treatment area to maintain habitat function; the appropriate percent cover will be identified by the project proponent in the development of treatment design and be specific to the vegetation alliances that are present in the identified spatial scale used to evaluate type conversion. Mature native shrubs that are retained will be distributed contiguously or in patches within the stand. If the stand consists of multiple age classes, patches representing a range of middle to old age classes will be retained to maintain and improve heterogeneity, to the extent needed to avoid type conversion.

These SPR requirements apply to all treatment activities and all treatment types, including treatment maintenance.

Additional measures will be applied to ecological restoration treatment types:

* For ecological restoration treatment types, complete removal of the mature shrub layer will not occur in native ~~coastal~~ chaparral and coastal sage scrub vegetation types.
* Ecological restoration treatments will not be implemented in vegetation types that are within their natural fire return interval (i.e., time since last burn is less than the average time listed as the fire return interval range in Table 3.6-1) unless the project proponent demonstrates with substantial evidence that the habitat function of chaparral and coastal sage scrub would be improved.
* A minimum of 35 percent relative cover of existing shrubs and associated native vegetation will be retained at existing densities in patches distributed in a mosaic pattern within the treated area or the shrub canopy will be thinned by no more than 20 percent from baseline density (i.e., if baseline shrub canopy density is 60 percent, post treatment shrub canopy density will be no less than 40 percent). A different percent relative cover can be retained if the project proponent demonstrates with substantial evidence that alternative treatment design measures would result in effects on the habitat function of chaparral and coastal sage scrub that are equal or more favorable than those expected to result from application of the above measures. Biological considerations that may inform a deviation from the minimum 35 percent relative cover retention include but are not limited to soil moisture requirements, increased soil temperatures, changes in light/shading, presence of sufficient seed plants and nurse plants, erosion potential, and site hydrology.
* If the stand within the treatment area consists of multiple age classes, patches representing a range of middle to old age classes will be retained to maintain and improve heterogeneity.

These SPR requirements apply to all treatment activities and only the ecosystem restoration treatment type, including treatment maintenance.

A determination of compliance with the SB 1260 prohibition of type conversion in chaparral and coastal sage scrub is a statutory issue separate from CEQA compliance that may involve factors additional to the ecological definition and habitat functions presented in the PEIR, such as geographic context. It is beyond the legal scope of the PEIR to define SB 1260 type conversion and statutory compliance. The project proponent, acting as lead agency for the proposed later treatment project, will be responsible for defining type conversion in the context of the project and making the finding that type conversion would not occur, as required by SB 1260. The project proponent will determine its criteria for defining and avoiding type conversion and, in making its findings, may draw upon information presented in this PEIR.

* **SPR BIO-6: Prevent Spread of Plant Pathogens**. When working in sensitive natural communities, riparian habitats, or oak woodlands that are at risk from plant pathogens (e.g., Ione chaparral, blue oak woodland), the project proponent will implement the following best management practices to prevent the spread of *Phytopthora* and other plant pathogens (e.g., pitch canker (*Fusarium*), goldspotted oak borer, shot hole borer, bark beetle):
* clean and sanitize vehicles, equipment, tools, footwear, and clothes before arriving at a treatment site and when leaving a contaminated site, or a site in a county where contamination is a risk;
* include training on *Phytopthora* diseases and other plant pathogens in the worker awareness training;
* minimize soil disturbance as much as possible by limiting the number of vehicles, avoiding off-road travel as much as possible, and limiting use of mechanized equipment;
* minimize movement of soil and plant material within the site, especially between areas with high and low risk of contamination;
* clean soil and debris from equipment and sanitize hand tools, buckets, gloves, and footwear when moving from high risk to low risk areas or between widely separated portions of a treatment area; and
* follow the procedures listed in Guidance for plant pathogen prevention when working at contaminated restoration sites or with rare plants and sensitive habitat (Working Group for *Phytopthoras* in Native Habitats 2016).

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

#### Special-Status Plants

* **SPR BIO-7:** **Survey for Special-Status Plants.** If SPR BIO-1 determines that suitable habitat for special-status plant species is present and cannot be avoided, the project proponent will require a qualified RPF or botanist to conduct protocol-level surveys for special-status plant species with the potential to be affected by a treatment prior to initiation of the treatment. The survey will follow the methods in the current version of CDFW’s “Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities.”

Surveys to determine the presence or absence of special-status plant species will be conducted in suitable habitat that could be affected by the treatment and timed to coincide with the blooming or other appropriate phenological period of the target species (as determined by a qualified RPF or botanist), or all species in the same genus as the target species will be assumed to be special-status.

If potentially occurring special-status plants are listed under CESA or ESA, protocol-level surveys to determine presence/absence of the listed species will be conducted in all circumstances, unless determined otherwise by CDFW or USFWS.

For other special-status plants not listed under CESA or ESA, as defined in Section 3.6.1 of this PEIR, surveys will not be required under the following circumstances:

* If protocol-level surveys, consisting of at least two survey visits (e.g., early blooming season and later blooming season) during a normal weather year, have been completed in the ~~last~~ 5 years before implementation of the treatment project and no special-status plants were found, and no treatment activity has occurred following the protocol-level survey, treatment may proceed without additional plant surveys.
* If the target special-status plant species is an herbaceous annual, stump-sprouting, or geophyte species, the treatment may be carried out during the dormant season for that species or when the species has completed its annual lifecycle without conducting presence/absence surveys provided the treatment will not alter habitat or destroy seeds, stumps, or roots, rhizomes, bulbs and other underground parts in a way that would make it unsuitable for the target species to reestablish following treatment.

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

#### Environmentally Sensitive Habitat Areas

* **SPR BIO-8:** **Identify and Avoid or Minimize Impacts in Coastal Zone ESHAs.** When planning a treatment project within the Coastal Zone, the project proponent will, in consultation with the Coastal Commission or a local government with a certified Local Coastal Program (LCP) (as applicable), identify the habitat types and species present to determine if the area qualifies as an Environmentally Sensitive Habitat Area (ESHA). ~~All treatment projects in the coastal zone would require a coastal development permit (CDP) pursuant to the Coastal Act, regardless of whether it qualifies as an ESHA.~~ If the area is an ESHA, the ~~ecological restoration~~ treatment ~~type~~ project may be allowed pursuant to this PEIR, if it meets the following conditions. If a project requires a CDP by the Coastal Commission or a local government with a certified LCP (as applicable), the CDP approval may require modification to~~; however, a CDP may modify~~ these conditions to further avoid and minimize impacts:
* The treatment will be designed, in compliance with the Coastal Act ~~and~~ or ~~Local Coastal Program (~~LCP~~)~~ ~~where applicable,~~ if a site is within a certified ~~plan~~ LCP area, to ~~improve~~ protect the habitat function of the affected ESHA, ~~improve~~ protect habitat values, and prevent loss or type conversion of habitat and vegetation types that define the ESHA, or loss of special-status species that inhabit the ESHA.
* Treatment actions will be limited to eradication or control of invasive plants, removal of uncharacteristic fuel loads (e.g., removing dead, diseased, or dying vegetation), trimming/limbing of woody species as necessary to reduce ladder fuels, and select thinning of vegetation to restore densities that are characteristic of healthy stands of the vegetation types present in the ESHA.
* A qualified biologist or RPF familiar with the ecology of the treatment area will monitor all treatment activities in ESHAs.
* Appropriate no-disturbance buffers will be developed in compliance with the Coastal Act or relevant LCP policies for treatment activities in the vicinity of ESHAs to avoid adverse direct and indirect effects to ESHAs.

This SPR applies to all treatment activities and ~~only the ecosystem restoration~~ all treatment types, including treatment maintenance.

#### Invasive plants and Wildlife

* **SPR BIO-9:** **Prevent Spread of Invasive Plants,~~, and~~ Noxious Weeds, and Invasive Wildlife.** The project proponent will take the following actions to prevent the spread of invasive plants,  ~~and~~ noxious weeds, and invasive wildlife (e.g., New Zealand mudsnail):
* clean clothing, footwear, and equipment used during treatments of soil, seeds, vegetative matter,  ~~or~~ other debris or seed-bearing material, or water (e.g., rivers, streams, creeks, lakes) before entering the treatment area or when leaving an area with infestations of invasive plants, ~~and~~ noxious weeds, or invasive wildlife;
* for all heavy equipment and vehicles traveling off road, pressure wash, if feasible, or otherwise appropriately decontaminate equipment at a designated weed-cleaning station prior to entering the treatment area from an area with infestations of invasive plants,  ~~and~~ noxious weeds, or invasive wildlife. Anti-fungal wash agents will be specified if the equipment has been exposed to any pathogen that could affect native species;
* inspect all heavy equipment, vehicles, tools, or other treatment-related materials for sand, mud, or other signs that weed seeds or propagules could be present prior to use in the treatment area. If the equipment is not clean, the qualified RPF or biological technician will deny entry to the work areas;
* stage equipment in areas free of invasive plant infestations unless there are no uninfested areas present within a reasonable proximity to the treatment area;
* identify significant infestations of invasive plant species (i.e., those rated as invasive by Cal-IPC or designated as noxious weeds by California Department of Food and Agriculture) during reconnaissance-level surveys and target them for removal during treatment activities. Treatment methods will be selected based on the invasive species present and may include herbicide application, manual or mechanical treatments, prescribed burning, and/or herbivory, and will be designed to maximize success in killing or removing the invasive plants and preventing reestablishment based on the life history characteristics of the invasive plant species present. Treatments will be focused on removing invasive plant species that cause ecological harm to native vegetation types, especially those that can alter fire cycles;
* treat invasive plant biomass onsite to eliminate seeds and propagules and prevent reestablishment or dispose of invasive plant biomass offsite at an appropriate waste collection facility (if not kept on site); transport invasive plant materials in a closed container or bag to prevent the spread of propagules during transport; and
* implement Fire and Fuel Management BMPs outlined in the “Preventing the Spread of Invasive Plants: Best Management Practices for Land Mangers” (Cal-IPC 2012, or current version).

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

#### Wildlife

* **SPR BIO-10: Survey for Special-Status Wildlife and Nursery Sites.** If SPR BIO-1 determines that suitable habitat for special-status wildlife species or nurseries of any wildlife species is present and cannot be avoided, the project proponent will require a qualified RPF or biologist to conduct focused or protocol-level surveys for special-status wildlife species or nursery sites (e.g., bat maternity roosts, deer fawning areas, heron or egret rookeries, monarch overwintering sites) with potential to be directly or indirectly affected by a treatment activity. The survey area will be determined by a qualified RPF or biologist based on the species and habitats and any recommended buffer distances in agency protocols.

The qualified RPF or biologist will determine if following an established protocol is required, and the project proponent may consult with CDFW and/or USFWS for technical information regarding appropriate survey protocols. Unless otherwise specified in a protocol, the survey will be conducted no more than 14 days prior to the beginning of treatment activities. Focused or protocol surveys for a special-status species with potential to occur in the treatment area may not be required if presence of the species is assumed.

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

* **SPR BIO-11. Install Wildlife-Friendly Fencing (Prescribed Herbivory).** If temporary fencing is required for prescribed herbivory treatment, a wildlife-friendly fencing design will be used. The project proponent will require a qualified RPF or biologist to review and approve the design before installation to ~~ensure that~~ minimize the risk of wildlife entanglement ~~is low~~. The fencing design will meet the following standards:
* Minimize the chance of wildlife entanglement by avoiding barbed wire, loose or broken wires, or any material that could impale or snag a leaping animal; and, if feasible, keeping electric netting-type fencing electrified at all times or laid down while not in use.
* Charge temporary electric fencing with intermittent pulse energizers; continuous output fence chargers will not be permitted.
* Allow wildlife to jump over easily without injury by installing fencing that can flex as animals pass over it and installing the top wire low enough (no more than approximately 40 inches high on flat ground) to allow adult ungulates to jump over it. The determination of appropriate fence height will consider slope, as steep slopes are more difficult for wildlife to pass.
* Be highly visible to birds and mammals by using high-visibility tape or wire, flagging, or other markers.

This SPR applies only to prescribed herbivory and all treatment types, including treatment maintenance.

* **SPR BIO-12. Protect Common Nesting Birds, Including Raptors.** The project proponent will schedule treatment activities to avoid the active nesting season of common native bird species, including raptors, that could be present within or adjacent to the treatment site, if feasible. Common native birds are species not otherwise treated as special status in the CalVTP PEIR. The active nesting season will be defined by the qualified RPF or biologist.

If active nesting season avoidance is not feasible, a qualified RPF or biologist will conduct a survey for common nesting birds, including raptors. Existing records (e.g., CNDDB, eBird database, State Wildlife Action Plan) should be reviewed in advance of the survey to identity the common nesting birds, including raptors, that are known to occur in the vicinity of the treatment site. The survey area will encompass reasonably accessible areas of the treatment site and the immediately surrounding vicinity viewable from the treatment site. The survey area will be determined by a qualified RPF or biologist, based on the potential species in the area, location of suitable nesting habitat, and type of treatment. For vegetation removal or project activities that would occur during the nesting season, the survey will be conducted at a time that balances the effectiveness of detecting nests and the reasonable consideration of potential avoidance strategies. Typically, this timeframe would be up to 3 weeks before treatment. The survey will occur in a single survey period of sufficient duration to reasonably detect nesting birds, including raptors, typically one day for most treatment projects (depending on the size, configuration, and vegetation density in the treatment site), and conducted during the active time of day for target species, typically close to dawn and/or dusk. The survey may be conducted concurrently with other biological surveys, if they are required by other SPRs. Survey methods will be tailored by the qualified RPF or biologist to site and habitat conditions, typically involving walking throughout the survey area, visually searching for nests and birds exhibiting behavior that is typical of breeding (e.g., delivering food).

If an active nest is observed (i.e., presence of eggs and/or chicks) or determined to likely be present based on nesting bird behavior, the project proponent will implement a feasible strategy to avoid disturbance of active nests, which may include, but is not limited to, one or more of the following:

* **Establish Buffer.** The project proponent will establish a temporary, species-appropriate buffer around the nest sufficient to reasonably expect that breeding would not be disrupted. Treatment activities will be implemented outside of the buffer. The buffer location will be determined by a qualified RPF or biologist. Factors to be considered for determining buffer location will include: presence of natural buffers provided by vegetation or topography, nest height above ground, baseline levels of noise and human activity, species sensitivity, and expected treatment activities. Nests of common birds within the buffer need not be monitored during treatment. However, buffers will be maintained until young fledge or the nest becomes inactive, as determined by the qualified RPF, biologist, or biological technician.
* **Modify Treatment.** The project proponent will modify the treatment in the vicinity of an active nest to avoid disturbance of active nests (e.g., by implementing manual treatment methods, rather than mechanical treatment methods). Treatment modifications will be determined by the project proponent in coordination with the qualified RPF or biologist.
* **Defer Treatment.** The project proponent will defer the timing of treatment in the portion(s) of the treatment site that could disturb the active nest. If this avoidance strategy is implemented, treatment activity will not commence until young fledge or the nest becomes inactive, as determined by the qualified RPF, biologist, or biological technician.

Feasible actions will be taken by the project proponent to avoid loss of common native bird nests. The feasibility of implementing the avoidance strategies will be determined by the project proponent based on whether implementation of this SPR will preclude completing the treatment project within the reasonable period of time necessary to meet CalVTP program objectives, including, but not limited to, protection of vulnerable communities. Considerations may include limitations on the presence of environmental and atmospheric conditions necessary to execute treatment prescriptions (e.g., the limited seasonal windows during which prescribed burning can occur when vegetation moisture, weather, wind, and other physical conditions are suitable). If it is infeasible to avoid loss of common bird nests (not including raptor nests), the project proponent will document the reasons implementation of the avoidance strategies is infeasible in the PSA. After completion of the PSA and prior to or during treatment implementation, if there is any change in the feasibility of avoidance strategies from those explained in the PSA, this will be documented in the post-project implementation report (referred to by CAL FIRE as a Completion Report).

The following avoidance strategies may also be considered together with or in lieu of other actions for implementation by a project proponent to avoid disturbance to raptor nests:

* **Monitor Active Raptor Nest During Treatment**. A qualified RPF, biologist, or biological technician will monitor an active raptor nest during treatment activities to identify signs of agitation, nest defense, or other behaviors that signal disturbance of the active nest is likely (e.g., standing up from a brooding position, flying off the nest). If breeding raptors are showing signs of nest disturbance, one of the other avoidance strategies (establish buffer, modify treatment or defer treatment) will be implemented or a pause in the treatment activity will occur until the disturbance behavior ceases.
* **Retention of Raptor Nest Trees**. Trees with visible raptor nests, whether occupied or not, will be retained.

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

* **SPR GEO-1 Suspend Disturbance during Heavy Precipitation:** The project proponent will suspend mechanical, prescribed herbivory, and herbicide treatments if the National Weather Service forecast is a “chance” (30 percent or more) of rain within the next 24 hours. Activities that cause mechanical soil disturbance may resume when precipitation stops and soils are no longer saturated (i.e., when soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur). Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials. This SPR applies only to mechanical, prescribed herbivory, and herbicide treatment activities and all treatment types, including treatment maintenance.
* **SPR GEO-3 Stabilize Disturbed Soil Areas:** The project proponent will stabilize soil disturbed during mechanical ~~and~~ prescribed herbivory treatments, and prescribed burns that result in exposure of bare soil over 50 percent or more of the treatment area with mulch or equivalent immediately after treatment activities, to the maximum extent practicable, to minimize the potential for substantial sediment discharge. If mechanical,  ~~or~~ prescribed herbivory, or prescribed burn treatment activities could result in substantial sediment discharge from soil disturbed by machinery ~~or~~ animal hooves, or being bare, organic material from mastication or mulch will be incorporated onto at least 75 percent of the disturbed soil surface where the soil erosion hazard is moderate or high, and 50 percent of the disturbed soil surface where soil erosion hazard is low to help prevent erosion. Where slash mulch is used, it will be packed into the ground surface with heavy equipment so that it is sufficiently in contact with the soil surface. This SPR only applies to mechanical, ~~and~~ prescribed herbivory, and prescribed burns that result in exposure of bare soil over 50 percent of the project area treatment activities and all treatment types, including treatment maintenance.
* **SPR GEO-4 Erosion Monitoring:** The project proponentwill inspect treatment areas for the proper implementation of erosion control SPRs and mitigations prior to the rainy season. If erosion control measures are not properly implemented, they will be remediated prior to the first rainfall event per SPR GEO-3 and GEO-8. Additionally, the project proponent will inspect for evidence of erosion after the first large storm or rainfall event (i.e., ≥ 1.5 inches in 24 hours) as soon as is feasible after the event. Any area of erosion that will result in substantial sediment discharge will be remediated within 48 hours per the methods stated in SPRs GEO-3 and GEO-8. This SPR applies only to mechanical, prescribed herbivory, and prescribed burning treatment activities and all treatment types, including treatment maintenance.
* **SPR GEO-5 Drain Stormwater via Water Breaks:** The project proponent will drain compacted and/or bare linear treatment areas capable of generating storm runoff via water breaks using the spacing and erosion control guidelines contained in Sections 914.6, 934.6, and 954.6(c) of the California Forest Practice Rules (February 2019 version). Where waterbreaks cannot effectively disperse surface runoff, including where waterbreaks cause surface run-off to be concentrated on downslopes, other erosion controls will be installed as needed to maintain site productivity by minimizing soil loss. ~~comply with 14 CCR 914 [934, 954].~~ This SPR applies only to mechanical, manual, and prescribed burn treatment activities and all treatment types, including treatment maintenance.
* **SPR GEO-7 Minimize Erosion:** To minimize erosion, the project proponent will:
1. Prohibit use of heavy equipment where any of the following conditions are present:

(i) Slopes steeper than 65 percent.

(ii) Slopes steeper than 50 percent where the erosion hazard rating is high or extreme.

(iii) Slopes steeper than 50 percent that lead without flattening to sufficiently dissipate water flow and trap sediment before it reaches a watercourse or lake.

1. On slopes between 50 percent and 65 percent where the erosion hazard rating is moderate, and all slope percentages are for average slope steepness based on sample areas that are 20 acres, or less, heavy equipment will be limited to:

(i) Existing tractor roads that do not require reconstruction, or

(ii) New tractor roads flagged by the project proponent prior to the treatment activity.

1. Prescribed herbivory treatments will not be used in areas with over 50 percent slope.

This SPR applies to all treatment activities and all treatment types, including treatment maintenance.

* **SPR HAZ-5 Spill Prevention and Response Plan:** The project proponent or licensed Pest Control Advisor (PCA) will prepare a Spill Prevention and Response Plan (SPRP) prior to beginning any herbicide treatment activities to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of herbicides, adjuvants, or other potential contaminants. The SPRP will include (but not be limited to):
* a map that delineates staging areas, and storage, loading, and mixing areas for herbicides;
* a list of items required in an onsite spill kit that will be maintained throughout the life of the activity;
* procedures for the proper storage, use, and disposal of any herbicides, adjuvants, or other chemicals used in vegetation treatment.

This SPR applies only to herbicide treatment activities and all treatment types, including treatment maintenance.

* **SPR HAZ-6 Comply with Herbicide Application Regulations:** The project proponent will coordinate pesticide use with the applicable County Agricultural Commissioner(s), and all required licenses and permits will be obtained prior to herbicide application. The project proponent will prepare all herbicide applications to do the following:
* Be implemented consistent with recommendations prepared annually by a licensed PCA.
* Comply with all appropriate laws and regulations pertaining to the use of pesticides and safety standards for employees and the public, as governed by the EPA, DPR, and applicable local jurisdictions.
* Adhere to label directions for application rates and methods, storage, transportation, mixing, container disposal, and weather limitations to application such as wind speed, humidity, temperature, and precipitation.
* Be applied by an applicator appropriately licensed by the State.

This SPR applies only to herbicide treatment activities and all treatment types, including treatment maintenance.

* **SPR HYD-1 Comply with Water Quality Regulations:** Project proponents must also conduct proposed vegetation treatments in conformance with appropriate RWQCB timber, vegetation and land disturbance related Waste Discharge Requirements (WDRs) and/or related Conditional Waivers of Waste Discharge Requirements (Waivers), and appropriate Basin Plan Prohibitions. Where these regulatory requirements differ, the most restrictive will apply ~~The project proponent will comply with all applicable water quality requirements adopted by the appropriate Regional Water Quality Control Board and approved by the SWRCB (i.e., Basin Plan)~~. If applicable, this includes compliance with the conditions of general waste discharge requirements (~~G~~WDR) and waste discharge requirement waivers for timber or silviculture activities where these waivers are designed to apply to non-commercial fuel reduction and forest health projects. In general, ~~G~~WDR and Waivers ~~waivers~~ of waste discharge requirements for fuel reduction and forest health activities require that wastes, including but not limited to petroleum products, soil, silt, sand, clay, rock, felled trees, slash, sawdust, bark, ash, and pesticides must not be discharged to surface waters or placed where it may be carried into surface waters; and that Water Board staff must be allowed reasonable access to the property in order to determine compliance with the waiver conditions. The specifications for each ~~G~~WDR and Waiver vary by region. Regions 2 (San Francisco Bay), 4 (Los Angeles), 8 (Santa Ana), and 7 (Colorado River) are highly urban or minimally forested and do not offer ~~G~~WDRs or Waivers for fuel reduction or vegetation management activities. The current applicable ~~G~~WDRs and Waivers for timber and vegetation management activities are included in Appendix HYD-1. This SPR applies to all treatment activities and treatment types, including treatment maintenance.
* **SPR HYD-3 Water Quality Protections for Prescribed Herbivory:** The project proponent will include the following water quality protections for all prescribed herbivory treatments:
* Environmentally sensitive areas such as waterbodies, wetlands, or riparian areas will be identified in the treatment prescription and excluded from prescribed herbivory project areas using temporary fencing or active herding. A buffer of approximately 50 feet will be maintained between sensitive and actively grazed areas.
* Water will be provided for grazing animals in the form of an on-site stock pond or a portable water source located outside of environmentally sensitive areas.
* Treatment prescriptions will be designed to protect soil stability. Grazing animals will be herded out of an area if accelerated soil erosion is observed.

This SPR applies to prescribed herbivory treatment activities and all treatment types, including treatment maintenance.

* **SPR HYD-4 Identify and Protect Watercourse and Lake Protection Zones:** The project proponent will establish Watercourse and Lake Protection Zones (WLPZs) on either side of watercourses as defined in the table below, which is based on~~in~~ 14 CCR Section 916 .5 of the California Forest Practice Rules (February 2019 version)~~on either side of watercourses~~. WLPZ’s are classified based on the uses of the stream and the presence of aquatic life. Wider WLPZs are required for steep slopes.

Procedures for Determining Watercourse and Lake Protection Zone (WLPZ) widths

| Water Class | Class I | Class II | Class III | Class IV |
| --- | --- | --- | --- | --- |
| Water Class Characteristics or Key Indicator Beneficial Use | 1) Domestic supplies, including springs, on site and/or within 100 feet downstream of the operations area and/or 2) Fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning. | 1) Fish always or seasonally present offsite within 1000 feet downstream and/or 2) Aquatic habitat for nonfish aquatic species. 3) Excludes Class III waters that are tributary to Class I waters. | No aquatic life present, watercourse showing evidence of being capable of sediment transport to Class I and II waters under normal high-water flow conditions after completion of timber operations. | Man-made watercourses, usually downstream, established domestic, agricultural, hydroelectric supply or other beneficial use. |
| WLPZ Width (ft) – Distance from top of bank to the edge of the protection zone |
| < 30 % Slope | 75 | 50 | Sufficient to prevent the degradation of downstream beneficial uses of water. Determined on a site-specific basis.  |
| 30-50 % Slope | 100 | 75 |
| >50 % Slope | 150 | 100 |

Source: 14 CCR Section 916.5 [936.5, 956.5] (February 2019 version)

The following WLPZ protections will be applied for all treatments:

* Treatment activities with WLPZs will ~~meet the overstory and understory vegetation retention guidelines and ground disturbance limitations described in 14 CCR Section 916.4 [936.4, 956.4] Subsection (b) and Section 916.5, including retention of at least 75 percent surface cover and undisturbed area.~~ retain at least 75 percent surface cover and undisturbed area to act as a filter strip for raindrop energy dissipation and for wildlife habitat. If this percentage is reduced, a qualified RPF will provide the project proponent with a site- and/or treatment activity-specific explanation for the percent surface cover reduction, which will be included in the PSA. After completion of the PSA and prior to or during treatment implementation, if there is any deviation (e.g., further reduction) from the reduced percent as explained in the PSA, this will be documented in the post-project implementation report (referred to by CAL FIRE as a Completion Report). This requirement is based on 14 CCR Section 916.4 [936.4, 956.4] Subsection (b)(6) (February 2019 version) and 14 CCR Section 916.5 (February 2019 version).
* Equipment, including tractors and vehicles, must not be driven in wet areas or WLPZs, except over existing roads or watercourse crossings where vehicle tires or tracks remain dry.
* Equipment used in vegetation removal operations will not be serviced in WLPZs, within wet meadows or other wet areas, or in locations that would allow grease, oil, or fuel to pass into lakes, watercourses, or wet areas.
* WLPZs will be kept free of slash, debris, and other material that harm the beneficial uses of water. Accidental deposits will be removed immediately.
* Burn piles will be located outside of WLPZs.
* No fire ignition (nor use of associated accelerants) will occur within WLPZs however low intensity backing fires may be allowed to enter or spread into WLPZs.
* ~~Large areas of bare soil within WLPZs that are exposed by treatment activities will be stabilized with mulching, rip-rap, grass seeding, or soil stabilizers prior to the beginning of the rainy season, as described in 14 CCR 916.7.~~Within Class I and Class II WLPZs, locations where project operations expose a continuous area of mineral soil 800 square feet or larger shall be treated for reduction of soil loss. Treatment shall occur prior to October 15th and disturbances that are created after October 15th shall be treated within 10 days. Stabilization measures shall be selected that will prevent significant movement of soil into water bodies and may include but are not limited to mulching, rip-rap, grass seeding, or chemical soil stabilizers.

Where mineral soil has been exposed by project operations on approaches to watercourse crossings of Class I, II, or III within a WLPZ, the disturbed area shall be stabilized to the extent necessary to prevent the discharge of soil into watercourses or lakes in amounts that would adversely affect the quality and beneficial uses of the watercourse.

Where necessary to protect beneficial uses of water from project operations, protection measures such as seeding, mulching, or replanting shall be used to retain and improve the natural ability of the ground cover within the WLPZ to filter sediment, minimize soil erosion, and stabilize banks of watercourses and lakes.

* Equipment limitation zones (ELZs) will be designated adjacent to Class III and Class IV watercourses with minimum widths of 25 feet where side-slope is less than 30 percent and 50 feet where side-slope is 30 percent or greater. An RPF will describe the limitations of heavy equipment within the ELZ and, where appropriate, will include additional measures to protect the beneficial uses of water.

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

* **SPR HYD-5 Protect Non-Target Vegetation and Special-status Species from Herbicides:** The project proponent will implement the following measures when applying herbicides:
* Locate herbicide mixing sites in areas devoid of vegetation and where there is no potential of a spill reaching non-target vegetation or a waterway.
* Use only herbicides labeled for use in aquatic environments when working in riparian habitats or other areas where there is a possibility the herbicide could come into direct contact with water. Only hand application of herbicides will be allowed in riparian habitats and only during low-flow periods or when seasonal streams are dry.
* No terrestrial or aquatic herbicides will be applied within WLPZs of Class I and II watercourses, if feasible. If this is not feasible, hand application of herbicides labeled for use in aquatic environments may be used within the WLPZ provided that the project proponent notifies the applicable regional water quality control board no fewer than 15 days prior to herbicide application. The feasibility of avoiding herbicide application within WLPZ of Class I and II watercourses will be determined by the project proponent and may be based on whether doing so will preclude achieving CalVTP program objectives, including, but not limited to, protection of vulnerable communities. The reasons for infeasibility will be documented in the PSA.
* No herbicides will be applied within a 50-foot buffer of ESA or CESA listed plant species or within 50 feet of dry vernal pools.
* For spray applications in and adjacent to habitats suitable for special-status species, use herbicides containing dye (registered for aquatic use by DPR, if warranted) to prevent overspray.
* Application will cease when weather parameters exceed label specifications or when sustained winds at the site of application exceeds 7 miles per hour (whichever is more conservative);~~Spray application of herbicides will not be carried out when wind speeds are 7 miles per hour or greater.~~
* No herbicide will be applied during precipitation events or if precipitation is forecast 24 hours before or after project activities.

This SPR applies to herbicide treatment activities and all treatment types, including treatment maintenance.

#### Thresholds of Significance

The thresholds of significance used to evaluate impacts on biological resources incorporate the mandatory findings of significance, as listed in Section 15065 and Appendix G of the State CEQA Guidelines. The CalVTP would result in a significant impact related to biological resources if it would:

* have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special‑status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries;
* have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries;
* have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
* interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
* conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
* conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan; and
* substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

#### Issues not Evaluated Further

##### Special-status Wildlife Species Not Evaluated Further

Several marine mammals and seabird species were identified as having potential to occur within the treatable landscape. Marine mammal species include Guadalupe fur-seal (*Arctocephalus townsendi*), Steller sea lion (*Eumetopias jubatus*), and southern sea otter (*Enhydra lutris nereis*). Seabird species include tufted puffin (*Fratercula cirrhata*), fork-tailed storm-petrel (*Oceanodroma furcata*), ashy storm-petrel (*Oceanodroma homochroa*), black storm-petrel (*Oceanodroma melania*), brown pelican (*Pelecanus occidentalis*), Cassin’s auklet (*Ptychoramphus aleuticus*), and Scripp’s murrelet (*Synthliboramphus scrippsi*). While these species use non-marine habitat for breeding and resting, these habitats are predominately within intertidal and rocky shoreline habitats, or offshore rocks. While treatment activities may occur within the coastal zone, they would not occur within intertidal or rocky shoreline habitats. Therefore, there would be no impact and these species are not considered further.

Six special-status bird species are present within California only in the winter and breed elsewhere: Barrow’s goldeneye (*Bucephala islandica*), brant (*Branta bernicla*), common loon (*Gavia immer*), tule greater white-fronted goose (*Anser albifrons elgasi*), wood stork (*Mycteria americana*), and mountain plover (*Charadrius montanus*). Barrow’s goldeneye, brant, and common loon occur within aquatic habitat in California (e.g., bay, estuary, brackish lake, riverine). Treatment activities would not occur in these habitats. Tule greater white-fronted goose occurs within rice fields, flooded uplands and marshes, and open water habitat; particularly habitats with alkali bulrush (*Bolboschoenus maritimus*). Treatment activities would not occur within these habitats. Wood stork occurs in California only within the southern end of the Salton Sea and is closely associated with aquatic habitat, where treatment would not occur. Mountain plovers overwinter in California within chenopod scrub and valley and foothill grassland habitats, most frequently where vegetation is short (less than 3 inches) and cover is less than 65 percent (Hunting et al. 2001). Mountain plovers can be found in short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms, especially fallow, grazed or burned sites (Hunting et al. 2001). While these habitat types could occur within some portions of the treatable landscape, agricultural habitats will likely not be targeted for treatment, because they are generally outside of the SRA. Treatment activities would not result in direct or indirect adverse effects to these species; therefore, they are not discussed further.

#### Impact Analysis

Impact BIO-1: Substantially Affect Special-Status Plant Species Either Directly or Through Habitat Modifications

Vegetation treatment activities could result in direct removal or destruction, or indirect death or reduced vigor of special-status plants through habitat modifications. Implementation of SPRs BIO-1, BIO-2, BIO-7, and BIO-9 require special-status plants to be identified prior to treatment activities, Worker Environmental Awareness Program (WEAP) training for workers, and actions to prevent the spread of invasive plants that could threaten special-status plant populations. While SPRs would minimize impacts, treatment activities could inadvertently damage or destroy special-status plants and adversely modify their habitat resulting in reduced growth and reproduction or death and loss of special-status plant occurrences. This would be a **potentially significant** impact.

The proposed treatment activities could result in death, altered growth, or reduced seed set through physically breaking, crushing, burning, scorching, trampling, or uprooting special-status plants. Special-status plants that have potential to occur in each ecoregion of the treatable landscape are listed in Appendix BIO-2. Any of the treatment activities have the potential to kill or damage special-status plants, if present within a treatment area, and each of the treatment activities could be used in every treatment type. The likelihood of a given treatment activity being implemented for a particular treatment type and in a particular fuel type (i.e., tree, shrub, or grass) is shown in Table 2-3 of Chapter 2, “Program Description.”

Treatment activities could also alter growth and reproduction of special-status plants through habitat modifications. An indirect impact would occur if ground disturbance during treatment activities altered habitat or site conditions in a manner that later resulted in the death or lack of regeneration of special-status plants. Treatment activities could disrupt ecosystem, community, or population structure or processes in ways that reduce growth, survival, and reproduction of special-status plants. Habitat alteration could make the habitat conditions unsuitable to support special-status plants in the long term. Indirect beneficial effects could result from improved habitat conditions by restoring the normal fire return interval, removing invasive plant infestations and unnatural buildup of litter and debris, and thinning live trees and shrubs and removing dead or dying trees and shrubs. This would open up the canopy where tree or shrub densities are uncharacteristic of healthy or desired examples of the vegetation type and result in both immediate and long-term benefits to special-status plants.

In the ecological restoration treatment type, the objective is to restore degraded, damaged, or destroyed ecosystems and habitats in fire-adapted vegetation types by returning them to their natural fire regime and returning vegetation in Condition Classes 2 and 3 to Condition Class 1[[1]](#footnote-1). This would benefit special-status plants associated with these habitats in the long-term by restoring the historic vegetation composition, structure, and habitat values and function under which these species evolved. Removal of overgrown shrubs and thinning tree canopies could benefit special-status plant populations in the short term by allowing more light to reach them and by removing competition for water, light, and nutrients; however, removal of overstory vegetation could alter microhabitat conditions in a way that is detrimental to special-status plant species in the short term if they are adapted to growing in shade or if the loss of overstory vegetation results in adverse changes in soil moisture, or destabilizes soil resulting in erosion that limits sensitive plant establishment and growth or washes away sensitive plants or their seeds and propagules with eroding soil. While the ecological restoration treatment type is focused in the landscape outside the WUI, ecological enhancements would be included in WUI treatments and could have some of the same beneficial and adverse effects to special-status plants in the WUI. WUI fuel reduction treatments, however, are primarily focused on strategic reduction of vegetation density for direct protection of communities and assets at risk. WUI treatments also serve as emergency access points and staging areas for firefighters and equipment and reduce flammable vegetation along emergency evacuation routes for the community. Therefore, there is less focus on ecological enhancement and the risk of direct removal or eventual death of special-status plants is greater in the WUI treatment type than in the ecological restoration treatment type.

In comparison to the other treatment types, a non-shaded fuel break has the greatest potential to result in substantial adverse effects on special-status plants because it would remove most of the vegetation from the treatment area. This would not only result in direct removal of special-status plants present during treatment, but could also leave the habitat unsuitable for reestablishment of special-status plant populations; these areas would be maintained relatively free of understory vegetation, and microhabitat conditions, such as soil moisture, light intensity, and temperature, would be altered by vegetation removal. The non-shaded fuel break has greater potential for adverse modification of microhabitat conditions that could lead to death of special-status plants in the long term because the tree canopy would be completely removed in addition to understory vegetation affecting light intensity, soil moisture, and temperature. Herbaceous special-status plants that are disturbance adapted could survive within a shaded fuel break but for many species, the continued disturbance to maintain the understory free of vegetation would likely lead to their elimination. Therefore, this treatment type would typically not be suitable in areas occupied by special-status plants, especially species that are threatened with extinction (e.g., species listed as threatened or endangered under ESA or CESA) because there is a high probably that special-status plants would be eliminated from the fuel break either directly or over time as a result of long-term habitat modification.

SPRs AQ-3, AQ-4, GEO-1, GEO-3, GEO-4, GEO-5, and GEO-7 require implementation of measures to minimize soil erosion and fugitive dust thereby reducing potential indirect impacts on special-status plants from soil destabilization and dusting. SPR BIO-9 requires implementation of actions to prevent the spread of invasive plants and noxious weeds that could compete with special-status plants for water, light, and nutrients, so indirect impacts on special-status plants from invasive plants as a result of the program would be minimized.

As explained above, relevant SPRs would be integrated into the design of qualifying treatments under the CalVTP to avoid and minimize impacts. While SPRs would minimize impacts, treatment activities could still adversely affect special-status plant species. The following sections describe impact mechanisms that are unique to each treatment activity. Most treatment activities would be implemented in combination with other treatment activities to achieve the objectives of a treatment type (i.e., WUI fuel reduction, fuel breaks, ecological restoration). For example, mechanical and manual treatments could be used together to remove vegetation, which could then be piled and burned. Broadcast burning also involves establishing a containment line around the burn perimeter, typically using mechanical and manual treatment activities prior to burning. Prescribed herbivory or herbicide application may be used in combination with manual or mechanical treatments.

###### Prescribed Burning

Prescribed burning could result in directly burning up, scorching, or wilting special-status plants or their propagules if prescribed fire is close to special-status plant populations. Prescribed burns could consume special-status plants completely or could scorch, singe, or wilt parts of plants, adversely affecting their growth and reproduction but not immediately killing or consuming them. In addition, prescribed burning could destroy or reduce the viability of seedbanks of special-status plant species if they are not adapted to fire or if the fire burns too hot for the seedbank to tolerate. Residual chemicals from accelerants used to ignite prescribed burns have potential to reduce plant regeneration, survivorship, growth, and vigor; however, accelerants would be applied sparingly, in limited and carefully targeted locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and accelerant residuals are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), which further reduces their availability for plant uptake during and after vegetative growth (USFS 2002).

###### Mechanical Treatment

In comparison to other treatment activities, mechanical treatments have the highest potential to harm special-status plants. Masticating, tilling, grubbing, and raking can disturb soil several inches below the surface affecting roots, rhizomes, bulbs and other underground parts of special-status plants, as well as the seedbed, and affecting soil stability. In addition, the removal of vegetation using mechanical treatments is less precise (in comparison to manual treatments); therefore, this treatment activity is used at sites where precision removal is not necessary. Mechanical treatments in areas occupied by special-status plants would likely directly kill or damage these plants. This treatment activity would also have the highest potential to adversely modify habitat in a way that reduces survivorship, growth, and reestablishment of special-status plant populations because of the large-scale vegetation removal and soil disturbance.

###### Manual Treatment

Manual treatments typically result in less ground disturbance than mechanical treatments and therefore have a lower risk of damaging or removing special-status plants that may be present in treatment areas. Special-status plants may be trampled by workers, damaged if beneath debris piles, or inadvertently removed if not identified for avoidance prior to treatment.

###### Prescribed Herbivory

Special-status plants could be consumed or trampled by grazing livestock resulting in their death or reduced reproduction and growth. Special-status plants could also be inadvertently crushed, trampled, broken or otherwise damaged during installation or removal of fencing used to contain the ~~herbivores~~ animals. Prescribed herbivory is typically used on a relatively small scale to reduce a target plant population, such as an invasive plant infestation, thereby reducing fire fuels or competition with desirable plant species.

###### Herbicides

Application of herbicides during treatment could damage or kill special-status plants through inadvertent direct application or through herbicide drift. For example, some herbicides can drift up to 68 feet from the target when applied during wind speeds of 15 miles per hour (mph) (USFS 2015). Herbicides may drift to nontarget areas through spray particle drift or vapor drift to foliage of special-status plants, and herbicide-contaminated soil may affect underground roots, rhizomes, or bulbs of special-status plant species. The risk of herbicide damage to special-status plants depends on the plant species affected, which herbicide is used, and the application rate and treatment method used. For example, downward spray application and spot spraying methods have a greater risk of affecting nontarget species than stem injection or paint-on stem application. The CalVTP does not include aerial application as an herbicide application method. SPR HYD-5 would avoid and minimize potential impacts to special-status plants by requiring protective buffers for herbicide use near special-status plants and measures to prevent drift and other non-target application.

###### Conclusion

Adverse effects to special-status plant species as a result of program implementation could occur from direct removal or from habitat modification. For special-status plants that are already listed, or candidates for listing under ESA or CESA, loss of a single population or occurrence could reduce their population below self-sustaining numbers, or substantially reduce their numbers or restrict their range. A total of 218 plant taxa that are listed under ESA and/or CESA have potential to occur in the treatable landscape; 69 of these are CESA-listed only, 48 are ESA listed only, and 101 are dually listed (see Appendix BIO-3, “Special-Status Species Tables”).

There are 1,023 special-status plant taxa that are not listed, or candidates for listing under ESA or CESA, that have potential to occur in the treatable landscape. The threshold of significance may be higher for these taxa because they are generally not as rare as those protected under CESA and ESA. However, some of these plant taxa have narrow ranges or limited distribution, and loss of occurrences could substantially reduce regional population numbers or further reduce their range and contribute to a trend toward listing as threatened or endangered. Other special-status species have more widespread distributions but are not abundant anywhere they occur. For these species, loss of individual occurrences or populations could substantially reduce local or regional population numbers, thereby resulting in a reduction of species range and potentially contributing to a trend toward listing as threatened or endangered. Furthermore, because of the geographic scale of the CalVTP’s treatable landscape, it has potential to remove or reduce the size of multiple occurrences of special-status plant taxa.

SPR BIO-1 requires data review and reconnaissance surveys to identify potential habitat for and previously documented occurrences of special-status plants. SPR BIO-7 requires surveys for special-status plants be conducted if they have potential to occur in a treatment area. SPR BIO-2 requires biological resource training for workers to make them aware of the presence of special-status plants and the mitigation measures, work practices, and laws and regulations that protect these plants. SPR BIO-9 requires BMPs to be implemented to prevent the spread of invasive plants and noxious weeds that could have indirect adverse effects on special-status plants through competition for resources and habitat degradation. SPRs BIO-1 and BIO-7 would avoid and minimize impacts to special-status plants by identifying them before treatment activities are implemented so they can be avoided, and appropriate mitigation measures can be implemented to protect them. Implementation of these SPRs would avoid and minimize direct and indirect impacts to special-status plants from treatment and most qualifying treatments implemented under the CalVTP could implement SPRs to avoid substantial adverse effects to special-status plants. However, even with implementation of SPRs, some proposed treatments at specific sites where special-status plants occur could result in direct removal of special-status plants or habitat modifications that leads to reduced growth and reproduction or death and loss of special-status plant occurrences as a result of treatment activities. This would be a **potentially significant** impact.

##### Mitigation Measures

Mitigation Measure BIO-1a: Avoid Loss of Special-Status Plants Listed under ESA or CESA

If listed plants are determined to be present through application of SPR BIO-1 and SPR BIO-7, the project proponent will avoid and protect these species by establishing a no-disturbance buffer around the area occupied by listed plants and marking the buffer boundary with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway), exceptions to this requirement are listed later in this measure. The no-disturbance buffers will generally be a minimum of 50 feet from listed plants, but the size and shape of the buffer zone may be adjusted if a qualified RPF or botanist determines that a smaller buffer will be sufficient to avoid killing or damaging listed plants or that a larger buffer is necessary to sufficiently protect plants from the treatment activity. The appropriate buffer size will be determined based on plant phenology at the time of treatment (e.g., whether the plants are in a dormant, vegetative, or flowering state), the individual species’ vulnerability to the treatment method being used, and environmental conditions and terrain. For example, paint-on or wicking application of herbicides to invasive plants may be implemented within 50 feet of listed plant species without posing a risk, especially if the listed plants are dormant at the time of application. Consideration of factors such as site hydrology, changes in light, edge effects, and potential introduction of invasive plants and noxious weeds may inform the determination of buffer width. If a no-disturbance buffer is reduced below 50 feet from a listed plant, a qualified RPF or botanist will provide the project proponent with a site- and/or treatment activity-specific explanation for the buffer reduction, which will be included in the PSA. After completion of the PSA and prior to or during treatment implementation, if there is any deviation (e.g., further reduction) from the reduced buffer as explained in the PSA, this will be documented in the post-project implementation report (referred to by CAL FIRE as a Completion Report) with a science-based justification for the deviation. No fire ignition (and associated use of accelerants) will occur within 50 feet of listed plants.

For species listed under ESA or CESA, if the project proponent cannot avoid loss by implementing no-disturbance buffers, the project proponent will implement Mitigation Measure BIO-1c.

The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or botanist, in consultation with CDFW and USFWS, as appropriate depending on species status and location, that the listed plants would benefit from treatment in the occupied habitat area even though some of the listed plants may be lost during treatment activities. For a treatment to be considered beneficial to listed special-status plants, the qualified RPF or botanist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the PSA. If it is determined that treatment activities would be beneficial to listed plants, no compensatory mitigation for loss of individuals will be required.

Mitigation Measure BIO-1b: Avoid Loss of Special-Status Plants Not Listed Under ESA or CESA

If non-listed special-status plant species (i.e., species not listed under ESA or CESA, but meeting the definition of special-status as stated in Section 3.6.1 of the Program EIR) are determined to be present through application of SPR BIO-1 and SPR BIO-7, the project proponent will implement the following measures to avoid loss of individuals and maintain habitat function of occupied habitat:

* Physically avoid the area occupied by the special-status plants by establishing a no-disturbance buffer around the area occupied by species and marking the buffer boundary with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). The no-disturbance buffers will generally be a minimum of 50 feet from special-status plants, but the size and shape of the buffer zone may be adjusted if a qualified RPF or botanist determines that a smaller buffer will be sufficient to avoid loss of or damaging to special-status plants or that a larger buffer is necessary to sufficiently protect plants from the treatment activity. The appropriate size and shape of the buffer zone will be determined by a qualified RPF or botanist and will depend on plant phenology at the time of treatment (e.g., whether the plants are in a dormant, vegetative, or flowering state), the individual species’ vulnerability to the treatment method being used, and environmental conditions and terrain. Consideration of factors such as site hydrology, changes in light, edge effects, and potential introduction of invasive plants and noxious weeds may inform an appropriate buffer size and shape.
* Treatments may be conducted within this buffer if the potentially affected special-status plant species is a geophytic, stump-sprouting, or annual species, and the treatment can be conducted outside of the growing season (e.g., after it has completed its annual life cycle) or during the dormant season using only treatment activities that would not damage the stump, root system or other underground parts of special-status plants or destroy the seedbank.
* Treatments will be designed to maintain the function of special-status plant habitat. For example, for a fuel break proposed in treatment areas occupied by special-status plants, if the removal of shade cover would degrade the special-status plant habitat despite the requirement to physically or seasonally avoid the special-status plant itself, habitat function would be diminished and the treatment would need to be modified or precluded from implementation.
* No fire ignition (and associated use of accelerants) will occur within the special-status plant buffer.

A qualified RPF or botanist with knowledge of the special-status plant species habitat and life history will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA because implementation of the treatment would not maintain habitat function of the special-status plant habitat (i.e., the habitat would be rendered unsuitable) or because the loss of special-status plants would substantially reduce the number or restrict the range of a special-status plant species. If the project proponent determines the impact on special-status plants would be less than significant, no further mitigation will be required. If the project proponent determines that the loss of special-status plants or degradation of occupied habitat would be significant under CEQA after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure BIO-1c will be implemented.

The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or botanist that the special-status plants would benefit from treatment in the occupied habitat area even though some of the non-listed special-status plants may be killed during treatment activities. For a treatment to be considered beneficial to non-listed special-status plants, the qualified RPF or botanist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the PSA. If it is determined that treatment activities would be beneficial to special-status plants, no compensatory mitigation will be required.

Mitigation Measure BIO-1c: Compensate for Unavoidable Loss of Special-Status Plants

If significant impacts on listed or non-listed special-status plants cannot feasibly be avoided as specified under the circumstances described under Mitigation Measures BIO-1a and 1b, the project proponent will prepare a Compensatory Mitigation Plan that identifies the residual significant impacts that require compensatory mitigation and describes the compensatory mitigation strategy being implemented and how unavoidable losses of special-status plants will be compensated. The project proponent will consult with CDFW and/or any other applicable responsible agency prior to finalizing the Compensatory Mitigation Plan to satisfy that responsible agency’s requirements (e.g., permits, approvals) within the plan. If the special-status plant taxa are listed under ESA or CESA, the plan will be submitted to CDFW and/or USFWS (as appropriate) for review and comment.

The first priority for compensatory mitigation will be preserving and enhancing existing populations outside of the treatment area in perpetuity, or if that is not an option because existing populations that can be preserved in perpetuity are not available, one of the following mitigation options will be implemented by the project proponent instead:

* creating populations on mitigation sites outside of the treatment area through seed collection and dispersal (annual species) or transplantation (perennial species);
* purchasing mitigation credits from a CDFW- or USFWS-approved conservation or mitigation bank in sufficient quantities to offset the loss of occupied habitat; and
* if the affected special-status plants are not listed under ESA or CESA, compensatory mitigation may include restoring or enhancing degraded habitats so that they are made suitable to support special-status plant species in the future.

If relocation efforts are part of the Compensatory Mitigation Plan, the plan will include details on the methods to be used, including collection, storage, propagation, receptor site preparation, installation, long-term protection and management, monitoring and reporting requirements, success criteria, and remedial action responsibilities should the initial effort fail to meet long-term monitoring requirements. The following performance standards will be applied for relocation:

* the extent of occupied area will be substantially similar to the affected occupied habitat and will be suitable for self-producing populations. Re-located/re-established populations will be considered suitable for self-producing when:
* habitat conditions allow for plants to reestablish annually for a minimum of 5 years with no human intervention, such as supplemental seeding; and
* reestablished habitats contain an occupied area comparable to existing occupied habitat areas in similar habitat types in the region.

If preservation of existing populations or creation of new populations is part of the mitigation plan, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands and actions (e.g., the number and type of credits, location of mitigation bank or easement, restoration or enhancement actions), parties responsible for the long-term management of the land, and the legal and funding mechanisms (e.g., holder of conservation easement or fee title). The project proponent will submit evidence that the necessary mitigation has been implemented or that the project proponent has entered into a legal agreement to implement it and that compensatory plant populations will be preserved in perpetuity.

If mitigation includes dedication of conservation easements, purchase of mitigation credits, or other offsite conservation measures, the details of these measures will be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, funding assurances, and success criteria such as those listed above and other details, as appropriate to target the preservation of long term viable populations.

If mitigation includes restoring or enhancing habitat within the treatment area or outside of the treatment area, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored habitat.

If the loss of occupied habitat cannot be offset (e.g., if preservation of existing populations or creation of new populations through relocation efforts are not available for a certain species), and as a result treatment activities would substantially reduce the number or restrict the range of listed plant species, then the treatment will not qualify as within the scope of this PEIR.

Compensatory mitigation may be satisfied through compliance with permit conditions, or other authorizations obtained by the project proponent (e.g., incidental take permit for state-listed plants), if these requirements are equally or more effective than the mitigation identified above.

Significance after Mitigation

Implementing Mitigation Measures BIO-1a, BIO-1b, and BIO-1c would reduce potentially significant impacts on special-status plants because it would require avoidance of special-status plant occurrences, which would be identified and delineated under SPRs BIO-1 and BIO-7, with physical buffers or seasonal restrictions, and would require compensation for unavoidable losses of special-status plants. Mitigation Measures BIO-1a and BIO-1b would reduce significant impacts because placing a no-disturbance buffer around the area occupied by special-status plants would keep workers from implementing treatment activities that could damage or destroy special-status plants to be retained within the area where the special-status plants are living so these populations would be retained and their population numbers would not be reduced, they would not be eliminated from an area, and their range would not be reduced. In instances where treatments would be allowed in areas occupied by special-status plants, under the specific conditions described under BIO-1a and 1b, additional impact minimization and avoidance measures or design alternatives to reduce impacts to less than significant would be identified in consultation with the resource agencies, as appropriate. The project proponent would then determine if the impact on special-status plants has been reduced below the level of significance and if not, Mitigation Measure BIO-1c would compensate for unavoidable losses by creating, enhancing, or preserving populations to offset plants killed by treatment activities such that no special-status plant population would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. With implementation of mitigation, this impact would be **less than significant**.

There is a potential long-term benefit to special-status plants from implementation of the CalVTP because it would reduce the risk of catastrophic wildfires that can eliminate special-status plant populations. Given the unpredictability of wildfire, in terms of location and severity, evaluating the specific benefits to biological resources is not feasible and is not considered in determining the significance of this impact under CEQA. There could also be long-term benefits to fire-adapted special-status plants through the introduction of low-intensity prescribed fire.

Impact BIO-2: Substantially Affect Special-Status Wildlife Species Either Directly or Through Habitat Modifications

Treatment activities implemented under the proposed CalVTP, including prescribed burning, mechanical treatment, manual treatment, prescribed herbivory, and herbicide treatment, could result in direct or indirect adverse effects to special-status wildlife species. SPRs require pre-treatment surveys to identify special-status wildlife and habitats and avoidance and protection of certain sensitive habitats. While implementation of SPRs would minimize impacts, vegetation treatment activities would still remove vegetation and disturb the ground surface, which could result in the disturbance to or loss of individuals, reduced breeding productivity of affected species, or loss of habitat function. The loss of special-status wildlife species and habitat function would be a **potentially** **significant** impact.

Because of the large geographic scope of the treatable landscape and large number of special-status wildlife species considered in this analysis, species are grouped into life history categories (or guilds) that would respond similarly to the range of proposed treatment activities (Table 3.6-32). The following analysis is organized by these life history categories; the narrative provides examples or representative special-status wildlife species and discusses potential effects of the proposed treatment activities for each life history category. A list of the special-status wildlife species considered in this analysis is presented in Table 3.6-32. Appendix BIO-3, Tables 1a through 19 list the special-status wildlife species known or with potential to occur in the treatable landscape for each ecoregion. Table 3.6-33 presents the relevant SPRs, summarizes the potential residual impacts to special-status wildlife for each treatment activity after implementation of SPRs, and identifies relevant mitigation measures.

Table 3.6-32 Special-Status Species Considered in this PEIR Grouped by Life History Characteristics

| Life History Grouping | Federally/State Listed and Fully Protected Species | Non-Listed Special-Status Species |
| --- | --- | --- |
| Tree-nesting and Cavity-nesting Wildlife | * American peregrine falcon
* Bald eagle
* California condor
* California spotted owl
* Elf owl
* Gila woodpecker
* Gilded flicker
* Golden eagle
* Great gray owl
 | * Marbled murrelet
* Northern spotted owl
* Swainson’s hawk
* White-tailed kite
* Western yellow-billed cuckoo
* California wolverine
* Fisher - West Coast DPS
* Humboldt marten
 | * Black swift
* Long-eared owl
* Northern goshawk
* Olive-sided flycatcher
* Purple martin
* Short-eared owl
* Summer tanager
 | * Vaux’s swift
* Vermilion flycatcher
* San Bernardino flying squirrel
* Sonoma tree vole
 |
| Shrub-nesting Wildlife | * Arizona Bell’s vireo
* Coastal California gnatcatcher
* Inyo California towhee
* Least Bell’s vireo
* Little willow flycatcher
* Southwestern willow flycatcher
* Tricolored blackbird
* Valley elderberry longhorn beetle
* Willow flycatcher
 |  | * Alameda song sparrow
* Bendire’s thrasher
* Clark’s marsh wren
* Coastal cactus wren
* Crissal thrasher
* Gray vireo
* Kern red-winged blackbird
* Le Conte’s thrasher (San Joaquin population)
* Loggerhead shrike
* Lucy’s warbler
 | * Saltmarsh common yellowthroat/San Francisco common yellowthroat
* San Pablo (= Samuels) song sparrow
* Song sparrow (“Modesto” population)
* Sonoran yellow warbler
* Suisun song sparrow
* Yellow warbler
* Yellow-breasted chat
* Yellow-headed blackbird
 |
| Ground-nesting Wildlife | * Bryant’s savannah sparrow
* California black rail
* California least tern
* California Ridgway’s rail
* Greater sage grouse
* Greater sandhill crane
* Light-footed Ridgway’s rail
* Riparian woodrat
* Snowy plover
* Yuma Ridgway’s rail
 | * Buena Vista Lake ornate shrew
* Monterey shrew, Salinas ornate shrew
* Mount Lyell shrew
* Salt marsh wandering shrew
* Southern California salt marsh shrew
* Suisun shrew
 | * American white pelican
* Belding’s savannah sparrow
* Black skimmer
* Black tern
* Fulvous whistling-duck
* Grasshopper sparrow
* Gull-billed tern
* Harlequin duck
* Large-billed savannah sparrow
* Least bittern
* Lesser sandhill crane
* Mount Pinos sooty grouse
* Northern harrier
* Oregon vesper sparrow
* Redhead
 | * Yellow rail
* Colorado River cotton rat
* Monterey dusky-footed woodrat
* Oregon snowshoe hare
* San Diego black-tailed jackrabbit
* San Diego desert woodrat
* San Francisco dusky-footed woodrat
* Sierra Nevada snowshoe hare
* western white-tailed jackrabbit
* Yuma hispid cotton rat
 |
| Burrowing or Denning Wildlife | * Amargosa vole
* California wolverine
* Fresno kangaroo rat
* Giant kangaroo rat
* Gray wolf
* Morro Bay kangaroo rat
* Nelson’s antelope squirrel
* Pacific pocket mouse
* Palm Springs round-tailed ground squirrel
* Point Arena mountain beaver
* Riparian brush rabbit
 | * Salt-marsh harvest mouse
* San Bernardino kangaroo rat
* San Joaquin kit fox
* Sierra Nevada red fox
* Stephens’ kangaroo rat
* Tipton kangaroo rat
* Bank swallow
 | * American badger
* Big-eared kangaroo rat
* Dulzura pocket mouse
* Jacumba pocket mouse
* Los Angeles pocket mouse
* Marsh vole
* Marysville California kangaroo rat
* Mohave ground squirrel
* Mohave river vole
* Monterey vole
* Northwestern San Diego pocket mouse
* Owens Valley vole
* Pallid San Diego pocket mouse
* Palm Springs pocket mouse
* Piute ground squirrel
 | * Point Reyes jumping mouse
* Point Reyes mountain beaver
* Pygmy rabbit
* Salinas pocket mouse
* San Pablo vole
* Short-nosed kangaroo rat
* Sierra Nevada mountain beaver
* Southern grasshopper mouse
* Southwestern river otter
* Stephens’ California vole
* Tehachapi pocket mouse
* Tulare grasshopper mouse
* White-eared pocket mouse
* Burrowing owl
 |
| Insects and Other Terrestrial Invertebrates | * Casey’s June beetle
* Delhi Sands flower-loving fly
* Delta green ground beetle
* Morro shoulderband (=banded dune) snail
* Mount Hermon (=barbate) June beetle
* Ohlone tiger beetle
* Trinity bristle snail
* Zayante band-winged grasshopper
* Bay checkerspot butterfly
* Behren’s silverspot butterfly
* Callippe silverspot butterfly
* Carson wandering skipper
 | * El Segundo blue butterfly
* Kern primrose sphinx moth
* Hermes copper butterfly
* Laguna Mountains skipper
* Lange’s metalmark butterfly
* Lotis blue butterfly
* Mission blue butterfly
* Myrtle’s silverspot butterfly
* Oregon silverspot butterfly
* Palos Verdes blue butterfly
* Quino checkerspot butterfly
* San Bruno elfin butterfly
* Smith’s blue butterfly
* Crotch bumble bee
* Franklin’s bumble bee
* Western bumble bee
* Suckley cuckoo bumble bee
 | None |  |
| Bats | None |  | * Arizona myotis
* Big free-tailed bat
* California leaf-nosed bat
* Cave myotis
* Mexican long-tongued bat
* Pallid bat
 | * Pocketed free-tailed bat
* Spotted bat
* Townsend’s big-eared bat
* Western mastiff bat
* Western red bat
* Western yellow bat
 |
| Ungulates | * Desert bighorn sheep
* Peninsular bighorn sheep DPS
 | * Sierra Nevada bighorn sheep
 | * Pronghorn
 |  |
| Fish and Aquatic Invertebrates | * Bonytail
* Bull trout
* Chinook salmon - California coastal ESU
* Chinook salmon - Central Valley spring-run ESU
* Chinook salmon - Sacramento River winter-run ESU
* Chinook salmon - spring-run Klamath-Trinity Rivers pop.
* Clear Lake hitch
* Coho salmon - central California coast ESU
* Coho salmon - southern Oregon / northern California ESU
* Colorado pikeminnow
* Cottonball Marsh pupfish
* Delta smelt
* Desert pupfish
* Eulachon
* Green sturgeon
* Lahontan cutthroat trout
* Little Kern golden trout
* Longfin smelt
* Lost River sucker
* Modoc sucker
* Mohave tui chub
* Owens pupfish
* Owens tui chub
* Paiute cutthroat trout
 | * Razorback sucker
* Rough sculpin
* Santa Ana sucker
* Shortnose sucker
* Southern steelhead - southern California DPS
* Steelhead - central California coast DPS
* Steelhead - Central Valley DPS
* Steelhead - northern California DPS
* Steelhead - south/central California coast DPS
* Tidewater goby
* Unarmored threespine stickleback
* California freshwater shrimp
* Conservancy fairy shrimp
* Longhorn fairy shrimp
* Nevares Spring naucorid bug
* Riverside fairy shrimp
* San Diego fairy shrimp
* Shasta crayfish
* Vernal pool fairy shrimp
* Vernal pool tadpole shrimp
 | * Amargosa Canyon speckled dace
* Amargosa pupfish
* Arroyo chub
* Bigeye marbled sculpin
* Blue chub
* California golden trout
* Chinook salmon - Central Valley fall-run ESU
* Coastal cutthroat trout
* Cow Head tui chub
* Eagle Lake rainbow trout
* Eagle Lake tui chub
* Goose Lake lamprey
* Goose Lake redband trout
* Goose Lake sucker
* Goose Lake tui chub
* Gualala roach
* Hardhead
* Kern brook lamprey
* Klamath largescale sucker
* Klamath River lamprey
* Kern River rainbow trout
* Lahontan Lake tui chub
* Long Valley speckled dace
 | * McCloud River redband trout
* Monterey roach
* Mountain sucker
* Navarro roach
* northern California brook lamprey
* Owens speckled dace
* Owens sucker
* Pacific lamprey
* Pit roach
* Red Hills roach
* River lamprey
* Russian River tule perch
* Sacramento perch
* Sacramento splittail
* Salt Creek pupfish
* San Joaquin roach
* Santa Ana speckled dace
* Saratoga Springs pupfish
* Shoshone pupfish
* Steelhead - Klamath Mountains Province DPS
* Steelhead - northern California DPS (summer run)
* Summer-run steelhead trout
* Tomales roach
 |
| Amphibians and Reptiles | * Arroyo toad
* Black toad
* California red-legged frog
* California tiger salamander
* Cascades frog
* Desert slender salamander
* Foothill yellow-legged frog
* Limestone salamander
* Kern Canyon slender salamander
* Oregon spotted frog
* Santa Cruz long-toed salamander
* Scott Bar salamander
* Shasta salamander
* Sierra Nevada yellow-legged frog
 | * Siskiyou Mountains salamander
* Southern mountain yellow-legged frog
* Tehachapi slender salamander
* Yosemite toad
* Alameda striped racer (whipsnake)
* Blunt-nosed leopard lizard
* Coachella Valley fringe-toed lizard
* Giant garter snake
* Mohave Desert tortoise
* San Francisco garter snake
* Southern rubber boa
* Switak’s banded gecko
 | * California giant salamander
* California newt (Monterey County and South)
* Couch’s spadefoot
* coastal tailed frog
* Inyo Mountains salamander
* Lesser slender salamander
* Lowland leopard frog
* Northern leopard frog
* Northern red-legged frog
* Red-bellied newt
* Relictual slender salamander
* Santa Cruz black salamander
* Sonoran Desert toad
* Southern long-toed salamander
* Southern torrent salamander
* Western spadefoot
 | * Baja California coachwhip
* Banded gila monster
* Blainville’s horned lizard
* California glossy snake
* California legless lizard
* Coast patch-nosed snake
* Colorado Desert fringe-toed lizard
* Cope’s leopard lizard
* Flat-tailed horned lizard
* Panamint alligator lizard
* San Diegan tiger whiptail
* Mohave fringe-toed lizard
* Northwestern western pond turtle
* Regal ring-necked snake
* Red diamond rattlesnake
* San Diego banded gecko
* Sandstone night lizard
* Sierra night lizard
* San Joaquin coachwhip
* Sonora mud turtle
* South coast garter snake
* Two-striped garter snake
 |

Table 3.6-33 Applicable SPRs, Residual Potential Impacts to Special-Status Wildlife for Each Treatment Activity, and Mitigation Measures

| Applicable SPRs | Residual Impacts after Application of SPRs  | Mitigation Measures | Significance After Mitigation |
| --- | --- | --- | --- |
| Tree-Nesting and Cavity-Nesting Wildlife |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5SPR BIO-8 | SPR BIO-10SPR BIO-11SPR HAZ-5SPR HAZ-6SPR HYD-5 | Potentially Significant (All Treatment Activities) | BIO-2aBIO-2bBIO-2cBIO-3aBIO-3bBIO-3c | Less than Significant |
| Shrub-Nesting Wildlife |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5SPR BIO-8 | SPR BIO-10SPR BIO-11SPR HAZ-5SPR HAZ-6SPR HYD-5 | Potentially Significant (All Treatment Activities) | BIO-2aBIO-2bBIO-2cBIO-2dBIO-3aBIO-3bBIO-3c | Less than Significant |
| Ground-Nesting Wildlife |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5SPR BIO-8 | SPR BIO-10SPR BIO-11SPR HAZ-5SPR HAZ-6SPR HYD-5 | Potentially Significant (All Treatment Activities) | BIO-2aBIO-2bBIO-2cBIO-3aBIO-3bBIO-3c | Less than Significant |
| Burrowing o~~f~~r Denning Wildlife |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5SPR BIO-8 | SPR BIO-10SPR BIO-11SPR HAZ-5SPR HAZ-6SPR HYD-5 | Potentially Significant (All Treatment Activities) | BIO-2aBIO-2bBIO-2cBIO-3aBIO-3bBIO-3c | Less than Significant |
| Insects and Other Terrestrial Invertebrates |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5SPR BIO-8 | SPR BIO-10SPR BIO-11SPR HAZ-5SPR HAZ-6SPR HYD-5 | Potentially Significant (All Treatment Activities) | BIO-2aBIO-2bBIO-2cBIO-2eBIO-2fBIO-2gBIO-3aBIO-3bBIO-3c | Potentially Significant and Unavoidable(bumble bees)Less than Significant(other insects and terrestrial invertebrates) |
| Bats |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5SPR BIO-8 | SPR BIO-10SPR BIO-11SPR HAZ-5SPR HAZ-6SPR HYD-5 | Potentially Significant (All Treatment Activities) | BIO-2aBIO-2bBIO-2cBIO-3aBIO-3bBIO-3c | Less than Significant |
| Ungulates |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5 | SPR BIO-10SPR BIO-11SPR HAZ-5SPR HAZ-6 | Potentially Significant (Prescribed Burning, Mechanical Treatment, Manual Treatment, Prescribed Herbivory)Less than Significant (Herbicide Treatment) | BIO-2aBIO-2bBIO-2cBIO-2hBIO-3aBIO-3bBIO-3c | Less than Significant |
| Fish and Aquatic Invertebrates |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5SPR BIO-8SPR BIO-10 | SPR HAZ-5SPR HAZ-6SPR HYD-1SPR HYD-3SPR HYD-4SPR HYD-5 | Potentially Significant (All Treatment Activities) | BIO-2aBIO-2bBIO-2cBIO-3aBIO-3bBIO-3cBIO-4 | Less than Significant |
| Amphibians and Reptiles |  |  |  |
| SPR BIO-1SPR BIO-2SPR BIO-3SPR BIO-4SPR BIO-5SPR BIO-8SPR BIO-10 | SPR BIO-11SPR HAZ-5SPR HAZ-6SPR HYD-1SPR HYD-3SPR HYD-4SPR HYD-5 | Potentially Significant (All Treatment Activities) | BIO-2aBIO-2bBIO-2cBIO-3aBIO-3bBIO-3cBIO-4 | Less than Significant |

Source: Compiled by Ascent Environmental in 2019

##### Tree-Nesting and Cavity-Nesting Wildlife

The treatable landscape contains suitable habitat for several special-status tree-nesting and cavity-nesting species. Special-status tree-nesting species include raptors (e.g., bald eagle [*Haliaeetus leucocephalus*], northern spotted owl, Swainson’s hawk [*Buteo swainsoni*]), non-raptors (e.g., gilded flicker [*Colaptes chrysoides*], olive-sided flycatcher [*Contopus cooperi*]), and rodents (e.g., San Bernardino flying squirrel [*Glaucomys sabrinus californicus*], Sonoma tree vole [*Arborimus pomo*]). Table 3.6-32 provides a comprehensive list of special-status tree-nesting and cavity-nesting species known or with potential to occur in the treatable landscape and considered in this analysis. These species nest or den in a variety of habitat types; some species prefer mature or old-growth forest habitat with high canopy closure, some prefer forest edge habitats, and others prefer riparian forest habitat. Some species, like marbled murrelet, occur within a limited range, while others like bald eagle, occur in various ecoregions throughout the state.

Cavity-nesting species, which include special-status denning mammals like Humboldt marten (*Martes caurina humboldtensis*), fisher (*Pekania pennanti*), and California wolverine (*Gulo gulo*), typically prefer cavities within large, mature trees or snags. Additionally, species such as Humboldt marten and fisher have very specific habitat requirements that include high canopy closure and complex forest structure with snags and downed woody debris to provide refuge from predators while moving through the forest.

Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including tree- and cavity-nesting species, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to ~~ensure that these species are identified~~ identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) reduce the likelihood of impacts to tree- and cavity-nesting species within these habitats. However, many of these special-status species would be present outside of these habitats and therefore would not be protected by these SPRs. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on tree- and cavity-nesting special-status wildlife if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status tree- and cavity-nesting species are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities would include pile burning and broadcast burning. If prescribed burning occurs during the breeding season (varies by species), active nests or dens (in trees and cavities) present in the treatable landscape could be burned directly, removed or damaged by falling, or otherwise damaged by fire (e.g., heat scorch, smoke damage). This could result in the direct mortality of adults or young, if present. These potential adverse effects would be more likely due to broadcast burning than pile burning, because pile burning would occur in a discrete location rather than throughout the understory. Additionally, tree- and cavity-nesting species could be alarmed by the visual, auditory, and olfactory cues of prescribed burns (e.g., flames, smoke) and by the presence of associated personnel and equipment (e.g., vehicles, helicopters). This could result in nest or den abandonment, and potential mortality of young or loss of eggs. In addition to breeding-season impacts, several species may use cavity habitat during the non-breeding season (e.g., San Bernardino flying squirrel, fisher, Humboldt marten, California wolverine). Thus, potential adverse effects on these and other species as a result of prescribed burning treatment activities would not be limited to the breeding season.

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect tree- and cavity-nesting species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species. Additionally, although tree- and cavity-nesting predator species could consume prey species (e.g., terrestrial invertebrates) that were previously exposed to these residual chemicals, potentially constituting a partial exposure, substantial risk of exposure would not occur because the accelerant applications are not a substantial risk to prey species and would be limited in their application (USFS 2002).

Depending on severity, prescribed burning treatment activities could result in reduced understory complexity if understory trees, shrubs, and downed woody debris are burned. Removal of these understory features may benefit some species by facilitating movement in the forest floor (McIver et al. 2013). However, because these understory features provide refuge for species such as Humboldt marten, fisher, and California wolverine, changes to understory complexity may result in loss of habitat function and exclusion of these species from the treatment site.

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. If mechanical treatment occurs during the breeding season, these activities could result in the direct loss of tree nests or cavity nests and dens if present within trees that are subject to cutting or other removal methods. This could result in the direct mortality of adults or young, if present. Additionally, tree- and cavity-nesting species could be alarmed by the presence of personnel or heavy equipment (e.g., masticators, trucks) that may cause noise, vibration, and dust, which could result in nest or den abandonment, and potential mortality of young or loss of eggs. In addition to breeding-season impacts, several species may use cavity habitat during the non-breeding season (e.g., San Bernardino flying squirrel, fisher, Humboldt marten, California wolverine). Thus, potential adverse effects on these and other species as a result of mechanical treatment activities would not be limited to the breeding season.

Mechanical treatment activities could result in reduced canopy cover and reduced understory complexity if canopy trees, understory trees, shrubs, snags, and downed woody debris are removed (e.g., cut, uprooted, chopped). Overstory thinning may result in increased light penetration and increased growth of herbaceous plant species, which may benefit some wildlife species (McIver et al. 2013). However, because many special-status wildlife species have specific habitat requirements, including high canopy cover and complex understory structure, major changes to the character of these understory features could result in loss of habitat function and exclusion of these species from the treatment site.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. If manual treatment, including manual removal of trees or tree limbs, occurs during the breeding season, these activities could result in the direct loss of tree nests or cavity nests or dens if present within the trees that are subject to cutting or other removal methods. This could result in the direct mortality of adults or young, if present. Additionally, tree- and cavity-nesting species could be alarmed by the presence of personnel which could result in nest or den abandonment, and potential mortality of young or loss of eggs. In addition to breeding-season impacts, several species may use cavity habitat during the non-breeding season (e.g., San Bernardino flying squirrel, fisher, Humboldt marten, California wolverine). Thus, potential adverse effects on these and other species as a result of manual treatment activities would not be limited to the breeding season.

Manual treatment activities could result in reduced canopy cover and reduced understory complexity if canopy trees, understory trees, shrubs, snags, and downed woody debris are removed (e.g., cut, uprooted, chopped). Because many special-status wildlife species have specific habitat requirements, including high canopy cover and complex understory features, major changes to the character of forest these understory features could result in loss of habitat function and exclusion of these species from the treatment site.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population and/or biomass of a class of vegetation (herbaceous plants and/or shrubs). Prescribed herbivory would not be likely to result in the direct loss of nest trees or cavities, as herbivores ~~are only capable of~~ primarily remove~~ing~~ herbaceous or woody vegetation within the understory. Some special-status wildlife species may be acclimated to the presence of livestock. For example, golden eagle (*Aquila chrysaetos*) and Swainson’s hawk are known to nest within or adjacent to rangeland or agricultural habitat. However, the presence of herbivores in a confined area would generally be a novel presence for most special-status species. Consequently, if prescribed herbivory activities occur within the view of tree- or cavity-nesting species, it is ~~likely~~ possible that these species could be alarmed by the presence of many cows, goats, or sheep. Additionally, the presence of personnel and equipment (e.g., trucks) associated with installation and removal of fencing and other related infrastructure could also alarm nesting special-status species. The presence of herbivores, personnel, and equipment could potentially result in disruption of breeding behavior and nest or den abandonment. Temporary electric fences to control grazing animals would not result in injury or mortality of special-status wildlife due to electrocution. Temporary electric fences produce high voltage shocks with very low amperage, which ~~deters livestock from escaping without causing~~ do not cause injury or death in most species under normal circumstances.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. Herbicide treatment could result in adverse effects on tree- and cavity-nesting species if an animal ingested or came into direct contact with herbicides, as some herbicides may be toxic to these species. Additionally, tree- and cavity-nesting species could be alarmed by the presence of vehicles and personnel associated with herbicide treatment, which could result in nest or den abandonment, and potential mortality of young or loss of eggs.

###### Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status tree- and cavity-nesting species (listed in Table 3.6-33). SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. Several tree-nesting special-status wildlife species require specific protocol-level surveys to determine occupancy, including marbled murrelet and northern spotted owl. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3) and retain the habitat function of riparian habitat (SPR BIO-4) reduce the likelihood of impacts to tree- and cavity-nesting species within these habitats. SPR BIO-5 avoids environmental effects of type conversion within native coastal sage scrub and chaparral and would reduce the likelihood of impacts (e.g., habitat loss) to special-status species that nest and otherwise use these habitats. SPR BIO-8 limits treatments within ESHAs in the coastal zone, reducing likelihood of impacts to tree- and cavity-nesting species in these areas of the coastal zone. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-5 would reduce potential impacts to riparian tree-nesting species by limiting herbicide use within riparian habitat. While SPRs would minimize impacts, treatment activities could still result in the direct or indirect adverse effects described above on tree- and cavity-nesting special-status wildlife if these species occur within areas or habitats that are not avoided by implementation of the SPRs. As described above, potential direct adverse effects include mortality or injury of special-status species or their nests and dens. Indirect adverse effects would include disturbance to nests or dens due to the presence of crews or heavy machinery, or loss of habitat function as a result of treatment activities (e.g., prescribed burning, mechanical treatment). Substantial adverse effects on special-status tree- or cavity-nesting species due to direct injury or mortality or habitat modifications would be a **potentially** **significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

If California Fully Protected Species or species listed under ESA or CESA are observed during reconnaissance surveys (conducted pursuant to SPR BIO-1) or focused or protocol-level surveys (conducted pursuant to SPR BIO-10), the project proponent will avoid adverse effects to the species by implementing the following.

Avoid Mortality, Injury, or Disturbance of Individuals

* The project proponent will implement one of the following 2 measures to avoid mortality, injury, or disturbance of individuals:
1. Treatment will not be implemented within the occupied habitat. Any treatment activities outside occupied habitat will be a sufficient distance from the occupied habitat such that mortality, injury, or disturbance of the species will not occur, as determined by a qualified RPF or biologist using the most current and commonly-accepted science and considering published agency guidance; OR
2. Treatment will be implemented outside the sensitive period of the species’ life history (e.g., outside the breeding or nesting season) during which the species may be more susceptible to disturbance, or disturbance could result in loss of eggs or young. For species present year-round, CDFW and/or USFWS/NOAA Fisheries will be consulted to determine if there is a period of time within which treatment could occur that would avoid mortality, injury, or disturbance of the species.
* For species listed under ESA or CESA, if the project proponent cannot avoid mortality, injury or disturbance by implementing one of the two options listed above, the project proponent will implement Mitigation Measure BIO-2c.
* Injury or mortality of California Fully Protected Species is prohibited pursuant to Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code and will be avoided.

Maintain Habitat Function

* The project proponent will design treatment activities to maintain the habitat function, by implementing the following:
* While performing review and surveys for SPR BIO-1 and SPR BIO-10, a qualified RPF or biologist will identify any habitat features that are necessary for survival (e.g., habitat necessary for breeding, foraging, shelter, movement) of the affected wildlife species (e.g., trees with complex structure, trees with large cavities, trees with nesting platforms; dens; tree snags; large raptor nests [including inactive nests]; downed woody debris; food sources). These habitat features will be marked and treatments applied to the features will be designed to minimize or avoid the loss or degradation of suitable habitat for listed species during treatments. Identification and treatment of these features will be based on the life history and habitat requirements of the affected species and the most current, commonly accepted science.
* If it is determined during implementation of SPR BIO-1 and SPR BIO-10 that listed or fully protected wildlife with specific requirements for high canopy cover (e.g., Humboldt marten, fisher, spotted owl, coastal California gnatcatcher, riparian woodrat) are present within a treatment area, then tree or shrub canopy cover within existing suitable areas will be retained at the percentage preferred by the species (as determined by expert opinion, published habitat association information, or other documented standards that are commonly accepted [e.g., 50 percent for coastal California gnatcatcher]) such that habitat function is maintained.
* A qualified RPF or biologist will determine if, after implementation of the impact avoidance measures listed above, the habitat function will remain for the affected species after implementation of the treatment. Because this measure pertains to species listed under CESA or ESA or are fully protected, the qualified RPF or biologist will consult with CDFW and/or USFWS/NOAA Fisheries regarding the determination that habitat function is maintained. If consultation determines that the treatment will not maintain habitat function for the special-status species, the project proponent will implement Mitigation Measure BIO-2c.

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

If other special-status wildlife species (i.e., species not listed under CESA or ESA or California Fully Protected, but meeting the definition of special status as stated in Section 3.6.1 of the Program EIR) are observed during reconnaissance surveys (conducted pursuant to SPR BIO-1) or focused or protocol-level surveys (conducted pursuant to SPR BIO-10), the project proponent will avoid or minimize adverse effects to the species by implementing the following.

Avoid Mortality, Injury, or Disturbance of Individuals

* The project proponent will implement the following to avoid mortality, injury, or disturbance of individuals:

For all treatment activities except prescribed burning, the project proponent will establish a no-disturbance buffer around occupied sites (e.g., nests, dens, roosts, middens, burrows, nurseries). Buffer size will be determined by a qualified RPF or biologist using the most current, commonly accepted science and will consider published agency guidance; however, buffers will generally be a minimum of 100 feet, unless site conditions indicate a smaller buffer would be sufficient for protection or a larger buffer would be needed. Factors to be considered in determining buffer size will include, but not be limited to, the species’ tolerance to disturbance; the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; baseline levels of noise and human activity; and treatment activity. Buffer size may be adjusted if the qualified RPF or biologist determines that such an adjustment would not be likely to adversely affect (i.e., cause mortality, injury, or disturbance to) the species within the nest, den, burrow, or other occupied site. If a no-disturbance buffer is reduced below 100 feet from an occupied site, a qualified RPF or biologist will provide the project proponent with a site- and/or treatment activity-specific explanation for the buffer reduction, which will be included in the PSA. After completion of the PSA and prior to or during treatment implementation, if there is any deviation (e.g., further reduction) from the reduced buffer as explained in the PSA, this will be documented in the post-project implementation report (referred to by CAL FIRE as a Completion Report).

* No-disturbance buffers will be marked with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). No activity will occur within the buffer areas until the qualified RPF or biologist has determined that the young have fledged or dispersed; the nest, den, or other occurrence is no longer active; or reducing the buffer would not likely result in disturbance, mortality, or injury. A qualified RPF, biologist, or biological technician ~~may~~ will be required to monitor the effectiveness of the no-disturbance buffer around the nest, den, burrow, or other occurrence during treatment ~~if the treatment activity has the potential to result in mortality, injury, or disturbance~~. If treatment activities cause agitated behavior of the individual(s), the buffer distance will be increased, or treatment activities modified until the agitated behavior stops. The qualified RPF, biologist, or biological technician will have the authority to stop any treatment activities that could result in mortality, injury or disturbance to special-status species.
* For prescribed burning, the project proponent will implement the treatment outside the sensitive period of the species’ life history (e.g., outside the breeding or nesting season) during which the species may be more susceptible to disturbance, or disturbance could result in loss of eggs or young. For species present year-round, the qualified RPF or biologist will determine the period of time within which prescribed burning could occur that will avoid or minimize mortality, injury, or disturbance of the species. The project proponent may consult with CDFW and/or USFWS for technical information regarding appropriate limited operating periods.

Maintain Habitat Function

* For all treatment activities, the project proponent will design treatment activities to maintain the habitat function by implementing the following:
* While performing review and surveys for SPR BIO-1 and SPR BIO-10, a qualified RPF or biologist will identify any habitat features that are necessary for survival (e.g., habitat necessary for breeding, foraging, shelter, movement) of the affected wildlife species (e.g., trees with complex structure, trees with large cavities, trees with nesting platforms; tree snags; large raptor nests [including inactive nests]; downed woody debris). These habitat features will be marked and treatments applied to the features will be designed to minimize or avoid the loss or degradation of suitable habitat for listed species during treatments. Identification and treatment of these features will be based on the life history and habitat requirements of the affected species and the most current, commonly accepted science.
* If it is determined during implementation of SPR BIO-1 and SPR BIO-10 that special-status wildlife with specific requirements for high canopy cover (e.g., northern goshawk, Sierra Nevada snowshoe hare) are present within a treatment area, then tree or shrub canopy cover within existing suitable areas will be retained at the percentage preferred by the species (as determined by expert opinion, published habitat association information, or other documented standards that are commonly accepted) such that the habitat function is maintained.
* A qualified RPF or biologist will determine if, after implementation of the impact avoidance measures listed above, the habitat function will remain for the affected species after implementation of the treatment. The qualified RPF or biologist may consult with CDFW and/or USFWS for technical information regarding habitat function.

A qualified RPF or biologist with knowledge of the special-status wildlife species habitat and life history will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA because implementation of the treatment will not maintain habitat function of the special-status wildlife species’ habitat or because the loss of special-status wildlife would substantially reduce the number or restrict the range of a special-status wildlife species. If the project proponent determines the impact on special-status wildlife would be less than significant, no further mitigation will be required. If the project proponent determines that the loss of special-status wildlife or degradation of occupied habitat would be significant under CEQA after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure BIO-2c will be implemented.

The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or biologist that the non-listed special-status wildlife would benefit from treatment in the occupied habitat area even though some of the non-listed special-status wildlife may be killed, injured, or disturbed during treatment activities. For a treatment to be considered beneficial to non-listed special-status wildlife, the qualified RPF or biologist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the PSA. If it is determined that treatment activities would be beneficial to special-status wildlife, no compensatory mitigation will be required. The qualified RPF or biologist may consult with CDFW and/or USFWS for technical information regarding the determination that a non-listed special-status species would benefit from the treatment.

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

If the provisions of Mitigation Measure BIO-2a, BIO-2b, BIO-2d, BIO-2e, BIO-2f, or BIO-2g cannot be implemented and the project proponent determines that additional mitigation is necessary to reduce significant impacts, the project proponent will compensate for such impacts to species or habitat by acquiring and/or protecting land that provides (or will provide in the case of restoration) habitat function for affected species that is at least equivalent to the habitat function removed or degraded as a result of the treatment.

Compensation may include:

1. Preserving existing habitat outside of the treatment area in perpetuity; this may entail purchasing mitigation credits and/or lands from a CDFW- or USFWS-approved entity in sufficient quantity to offset the residual significant impacts, generally at a ratio of 1:1 for habitat; and

2. Restoring or enhancing existing habitat within the treatment area or outside of the treatment area (including decommissioning roads, adding ~~or removing~~ perching structures, removing existing perching structures, or removing existing movement barriers or other existing features that are adversely affecting the species).

The project proponent will prepare a Compensatory Mitigation Plan that identifies the residual significant effects that require compensatory mitigation and describes the compensatory mitigation strategy being implemented to reduce residual effects, and:

1. For preserving existing habitat outside of the treatment area in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanisms for long-term conservation (e.g., holder of conservation easement or fee title). The project proponent will submit evidence that the necessary mitigation has been implemented or that the project proponent has entered into a legal agreement to implement it and that compensatory habitat will be preserved in perpetuity.

2. For restoring or enhancing habitat within the treatment area or outside of the treatment area, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored habitat.

Review requirements are as follows:

* The project proponent will consult with CDFW and/or any other applicable responsible agency prior to finalizing the Compensatory Mitigation Plan in order to satisfy that responsible agency’s requirements (e.g., permits, approvals) within the plan.
* For species listed under ESA or CESA or a California Fully Protected Species, the project proponent will submit the mitigation plan to CDFW and/or USFWS/NOAA Fisheries for review and comment.
* For other special-status wildlife species the project proponent may consult with CDFW and/or USFWS regarding the availability and applicability of compensatory mitigation and other related technical information.

Compensatory mitigation may be satisfied through compliance with permit conditions, or other authorizations obtained by the project proponent (e.g., incidental take permit), if these requirements are equally or more effective than the mitigation identified above.

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

The project proponent will implement the following measures when working in treatment areas that contain sensitive natural communities identified during surveys conducted pursuant to SPR BIO-3:

* Reference the *Manual of California Vegetation*, Appendix 2, Table A2, *Fire Characteristics* (Sawyer et al. 2009 or current version, including updated natural communities data at http://vegetation.cnps.org/) or other best available information to determine the natural fire regime of the specific sensitive natural community type (i.e., alliance) present. The condition class and fire return interval departure of the vegetation alliances present will also be determined.
* Design treatments in sensitive natural communities and oak woodlands to restore the natural fire regime and return vegetation composition and structure to their natural condition to maintain or improve habitat function of the affected sensitive natural community. Treatments will be designed to replicate the fire regime attributes for the affected sensitive natural community or oak woodland type including seasonality, fire return interval, fire size, spatial complexity, fireline intensity, severity, and fire type as described in *Fire in California’s Ecosystems* (Van Wagtendonk et al. 2018) and the *Manual of California Vegetation* (Sawyer et al. 2009 or current version, including updated natural communities data at http://vegetation.cnps.org/). Treatments will not be implemented in sensitive natural communities that are within their natural fire return interval (i.e., time since last burn is less than the average time required for that vegetation type to recover from fire) or within Condition Class 1.
* To the extent feasible, no fuel breaks will be created in sensitive natural communities with rarity ranks of S1 (critically imperiled) and S2 (imperiled).
* To the extent feasible, fuel breaks will not remove more than 20 percent of the native vegetation relative cover from a stand of sensitive natural community vegetation in sensitive natural communities with a rarity rank of S3 (vulnerable) or in oak woodlands. In forest and woodland sensitive natural communities with a rarity rank of S3, and in oak woodlands, only shaded fuel breaks will be installed, and they will not be installed in more than 20 percent of the stand of sensitive natural community or oak woodland vegetation (i.e., if the sensitive natural community covers 100 acres, no more than 20 acres will be converted to create the fuel break).
* Use prescribed burning as the primary treatment activity in sensitive natural communities that are fire dependent (e.g., closed-cone forest and woodland alliances, chaparral alliances characterized by fire-stimulated, obligate seeders), to the extent feasible and appropriate based on the fire regime attributes as described in *Fire in California’s Ecosystems* (Van Wagtendonk et al. 2018) and the *Manual of California Vegetation* (Sawyer et al. 2009 or current version, including updated natural communities data at http://vegetation.cnps.org/).
* Time prescribed herbivory to occur when non-target vegetation is not susceptible to damage (e.g. non-target vegetation is dormant or has completed its reproductive cycle for the year). For example, use herbivores to control invasive plants growing in sensitive habitats or sensitive natural communities when sensitive vegetation is dormant but invasive plants are growing. Timing of herbivory to avoid non-target vegetation will be determined by a qualified botanist, RPF, or biologist based on the specific vegetation alliance being treated, the life forms and life conditions of its characteristic plant species, and the sensitivity of the non-target vegetation to the effects of herbivory.

The feasibility of implementing the avoidance measures will be determined by the project proponent based on whether implementation of this mitigation measure will preclude completing the treatment project within the reasonable period of time necessary to meet CalVTP program objectives, including, but not limited to, protection of vulnerable communities. If the avoidance measures are determined by the project proponent to be infeasible, the project proponent will document the reasons implementation of the avoidance strategies are infeasible in the PSA. After completion of the PSA and prior to or during treatment implementation, if there is any change in the feasibility of avoidance strategies from those explained in the PSA, this will be documented in the post-project implementation report (referred to by CAL FIRE as a Completion Report).

A qualified RPF or botanist with knowledge of the affected sensitive natural community will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA because implementation of the treatment will not maintain habitat functions of the sensitive natural community or oak woodland. If the project proponent determines the impact on sensitive natural communities or oak woodlands would be less than significant, no further mitigation will be required. If the project proponent determines that the loss or degradation of sensitive natural communities or oak woodlands would be significant under CEQA after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure BIO-3b will be implemented.

The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or botanist that the sensitive natural community or oak woodland would benefit from treatment in the occupied habitat area even though some loss may occur during treatment activities. For a treatment to be considered beneficial to a sensitive natural community or oak woodland, the qualified RPF or botanist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the community (or similar community) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the PSA. If it is determined that treatment activities would be beneficial to sensitive natural communities or oak woodlands, no compensatory mitigation will be required.

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

If significant impacts on sensitive natural communities or oak woodlands cannot feasibly be avoided or reduced as specified under Mitigation Measure BIO-3a, the project proponent will implement the following actions:

* Compensate for unavoidable losses of sensitive natural community and oak woodland acreage and function by:
* restoring sensitive natural community or oak woodland functions and acreage within the treatment area;
* restoring degraded sensitive natural communities or oak woodlands outside of the treatment area at a sufficient ratio to offset the loss of acreage and habitat function; or
* preserving existing sensitive natural communities or oak woodlands of equal or better value to the sensitive natural community lost through a conservation easement at a sufficient ratio to offset the loss of acreage and habitat function.
* The project proponent will prepare a Compensatory Mitigation Plan that identifies the residual significant effects on sensitive natural communities or oak woodlands that require compensatory mitigation and describes the compensatory mitigation strategy being implemented to reduce residual effects, and:

1. For preserving existing habitat outside of the treatment area in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanism for long-term conservation (e.g., holder of conservation easement or fee title). The project proponent will submit evidence that the necessary mitigation has been implemented or that the project proponent has entered into a legal agreement to implement it and that compensatory habitat will be preserved in perpetuity.

2. For restoring or enhancing habitat within the treatment area or outside of the treatment area, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored or enhanced habitat.

The project proponent will consult with CDFW and/or any other applicable responsible agency prior to finalizing the Compensatory Mitigation Plan in order to satisfy that responsible agency’s requirements (e.g., permits, approvals) within the plan.

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

If, after implementation of SPR BIO-4, impacts to riparian habitat remain significant under CEQA, the project proponent will implement the following:

* Compensate for unavoidable losses of riparian habitat acreage and function by:
* restoring riparian habitat functions and acreage within the treatment area;
* restoring degraded riparian habitat outside of the treatment area;
* purchasing riparian habitat credits at a CDFW-approved mitigation bank; or
* preserving existing riparian habitat of equal or better value to the riparian habitat lost through a conservation easement at a sufficient ratio to offset the loss of riparian habitat function and value.
* The project proponent will prepare a Compensatory Mitigation Plan that identifies the residual significant effects on riparian habitat that require compensatory mitigation and describes the compensatory mitigation strategy being implemented to reduce residual effects, and:

1. For preserving existing riparian habitat outside of the treatment area in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanism for long-term conservation (e.g., holder of conservation easement or fee title). The project proponent will submit evidence that the necessary mitigation has been implemented or that the project proponent has entered into a legal agreement to implement it and that compensatory plant populations will be preserved in perpetuity.

2. For restoring or enhancing riparian habitat within the treatment area or outside of the treatment area, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored or enhanced habitat.

The project proponent will consult with CDFW and/or any other applicable responsible agency prior to finalizing the Compensatory Mitigation Plan to satisfy that responsible agency’s requirements (e.g., permits, approvals) within the plan. Compensatory mitigation may be satisfied through compliance with permit conditions, or other authorizations obtained by the project proponent (e.g., Lake and Streambed Alteration Agreement), if these requirements are equally or more effective than the mitigation identified above.

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status tree- and cavity-nesting species by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or offset the loss of the habitat function of special-status wildlife habitat (i.e., sensitive natural communities, riparian habitat). Implementation of these mitigation measures would reduce impacts to special-status tree- and cavity-nesting species such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts would be reduced to **less than significant**.

##### Shrub-Nesting Wildlife

Shrub-nesting special-status species with potential to occur in the treatable landscape include species associated with riparian deciduous shrubs such as willows (*Salix* spp.), cottonwood (*Populus* spp.), blackberry (*Rubus* spp.) (e.g., southwestern willow flycatcher, yellow warbler [*Setophaga petechia*], tricolored blackbird [*Agelaius tricolor*]), or species associated with upland scrub or chaparral habitat (e.g., coastal California gnatcatcher, loggerhead shrike [*Lanius ludovicianus*]). Table 3.6-32 provides a comprehensive list of special-status shrub-nesting species known or with potential to occur in the treatable landscape and considered in this analysis. Some shrub-nesting species have very specific habitat requirements that include minimum shrub canopy cover percentages and shrub heights. For example, the preferred habitat of coastal California gnatcatcher contains at least 50 percent shrub canopy cover, and the species may be displaced from areas with significant reduction in canopy cover (Beyers and Wirtz II 1995). One special-status invertebrate species, valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), occurs exclusively within elderberry shrubs (*Sambucus nigra caerulea*) and spends most of its life cycle within the stems of these shrubs. Elderberry shrubs occur primarily within riparian habitat but may also occur either singly or in groups in valley oak and blue oak woodland and annual grasslands.

Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including shrub-nesting species, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to ~~ensure that these species are identified~~ identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) reduce the likelihood of impacts to shrub-nesting species within these habitats. However, many of these special-status species would be present outside of these habitats and would not be protected by these SPRs. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on shrub-nesting special-status wildlife if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status shrub-nesting species are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities within shrub-dominated habitats would include pile burning and broadcast burning. If prescribed burning occurs during the breeding seasons for special-status species, active nests present in treatment areas could be burned directly, removed or damaged by falling, or otherwise damaged by fire (e.g., heat scorch, smoke damage). This could result in the direct mortality of adults or young, if present. These potential adverse effects would be more likely due to broadcast burning than pile burning, because pile burning would occur in a discrete or concentrated location rather than throughout the understory. Additionally, shrub-nesting species could be alarmed by the visual, auditory, and olfactory cues of prescribed burns (e.g., flames, smoke) and by the presence of associated personnel and equipment (e.g., vehicles, helicopters). This could result in nest abandonment, and potential mortality of young or loss of eggs. Prescribed burning treatment activities could reduce shrub canopy cover, which may result in loss of habitat function and reduce or eliminate habitat suitability for certain shrub-nesting species and displace/exclude them from the treatment site.

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect shrub-nesting species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species. Additionally, although shrub-nesting predator species could consume prey species (e.g., terrestrial invertebrates) that were previously exposed to these residual chemicals, potentially constituting a partial exposure, substantial risk of exposure would not occur because the accelerant applications are not a substantial risk to prey species and would be limited in their application (USFS 2002).

Treatment activities within the range of valley elderberry longhorn beetle (i.e., Central California Coast, Great Valley, Klamath Mountains, Northern California Coast Ranges, Northern California Interior and Coast Ranges, Southern Cascades, Sierra Nevada, Sierra Nevada Foothills, and Central California Coast Ranges ecoregions) could result in mortality of valley elderberry longhorn beetles primarily from direct destruction of their elderberry shrub habitat or treatment activities directly adjacent to this habitat. Additionally, potential adverse effects as a result of prescribed burning treatment activities would not be limited to the breeding season because most of the life cycle of this species takes place within the elderberry shrub.

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. If mechanical treatment occurs during the breeding season, these activities could result in the direct loss of nests within shrub habitat, if present within shrubs that are subject to cutting or other removal methods. This could result in the direct mortality of adults or young, if present. Additionally, shrub-nesting species could be alarmed by the presence of personnel or heavy equipment (e.g., masticators, trucks) that may cause noise, vibration, and dust, which could result in nest abandonment, and potential mortality of young or loss of eggs. Mechanical treatment activities could result in reduced shrub canopy cover. Some chaparral bird species may respond positively to reduced shrub canopy cover, including granivores, or seed-eating birds (Newman et al. 2018). However, other wildlife species, including some birds, may respond negatively, and reduced shrub canopy cover may result in loss of habitat function and in exclusion of certain shrub-nesting species from the treatment site. These trends may apply to special-status shrub-nesting birds in the treatable landscape.

Treatment activities within the range of valley elderberry longhorn beetle could result in mortality of valley elderberry longhorn beetles primarily from direct destruction of their elderberry shrub habitat or treatment activities directly adjacent to this habitat. Additionally, potential adverse effects as a result of mechanical treatment activities would not be limited to the breeding season because most of the life cycle of this species takes place within the elderberry shrub.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. If manual treatment, including manual removal of trees or tree limbs, occurs during the breeding season, these activities could result in the direct loss of nest in shrub habitat if present within shrubs that are subject to cutting or other removal methods. This could result in the direct mortality of adults or young, if present. Additionally, shrub-nesting species could be alarmed by the presence of personnel which could result in nest abandonment, and potential mortality of young or loss of eggs. Manual treatment activities could result in reduced shrub canopy cover, which may result in loss of habitat function and in exclusion of certain shrub-nesting species from the treatment site.

Treatment activities within the range of valley elderberry longhorn beetle could result in mortality of valley elderberry longhorn beetles primarily from direct destruction of their elderberry shrub habitat or treatment activities directly adjacent to this habitat. Additionally, potential adverse effects as a result of manual treatment activities would not be limited to the breeding season because most of the life cycle of this species takes place within the elderberry shrub.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population and/or biomass of a class of vegetation (herbaceous plants and/or shrubs). Prescribed herbivory would not result in the direct loss of nest trees or cavities, as herbivores are only capable of removing herbivores in a confined area would likely be a novel presence for shrub-nesting special-status species. Consequently, if prescribed herbivory activities occur within the view of a nest, it is likely that these species could be alarmed by the presence of several cows, goats, or sheep. Additionally, the presence of personnel and equipment (e.g., trucks) associated with installation and removal of fencing and other related infrastructure could also alarm nesting special-status species. The novel presence of herbivores, personnel, and equipment could potentially result in disruption of breeding behavior and nest abandonment. Prescribed herbivory activities could also result in reduced shrub canopy cover, which may result in loss of habitat function and in exclusion of certain shrub-nesting species from the treatment site. Temporary electric fences to control grazing animals would not result in injury or mortality of special-status wildlife due to electrocution. Temporary electric fences produce high voltage shocks with very low amperage, which ~~deters livestock from escaping without causing~~ do not cause injury or death in most species under normal circumstances.

Treatment activities within the range of valley elderberry longhorn beetle could result in mortality of valley elderberry longhorn beetles primarily from direct destruction of their elderberry shrub habitat or treatment activities directly adjacent to this habitat. Additionally, potential adverse effects as a result of prescribed herbivory activities would not be limited to the breeding season because most of the life cycle of this species takes place within the elderberry shrub.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. Herbicide treatment could result in adverse effects on shrub-nesting wildlife if an animal ingested or came into direct contact with herbicides, as some herbicides may be toxic to these species. Additionally, shrub-nesting species could be alarmed by the presence of vehicles and personnel associated with herbicide treatment, which could result in nest abandonment, and potential mortality of young or loss of eggs.

Adverse effects on valley elderberry longhorn beetle could occur if herbicides are applied to elderberry shrubs. Loss of elderberry shrubs related to herbicide treatment would result in loss of suitable habitat or direct mortality of valley elderberry longhorn beetle if present within stems of the shrub during herbicide application.

###### Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status shrub-nesting species (listed in Table 3.6-33). SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. Several shrub-nesting special-status wildlife species require protocol-level surveys to determine occupancy, including valley elderberry longhorn beetle, coastal California gnatcatcher, and least Bell’s vireo (*Vireo bellii pusillus*). SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3) and retain the habitat function of riparian habitat (SPR BIO-4) reduce the likelihood of impacts to shrub-nesting species within these habitats. SPR BIO-5 avoids environmental effects of type conversion within native coastal sage scrub and chaparral and would likely reduce the likelihood of impacts (e.g., habitat loss) to special-status species that nest and otherwise use these habitats. SPR BIO-8 limits treatments within ESHAs in the coastal zone, reducing likelihood of impacts to shrub-nesting species in the coastal zone. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-5 would reduce potential impacts to riparian shrub-nesting species by limiting herbicide use within riparian habitat. While SPRs would minimize impacts, treatment activities could still result in the direct or indirect adverse effects described above on shrub-nesting special-status wildlife if these species occur within areas or habitats that are not avoided by implementation of the SPRs. As described above, potential direct adverse effects include mortality or injury of special-status species or their nests. Indirect adverse effects would include disturbance to nests due to the presence of crews or heavy machinery, or loss of habitat function as a result of treatment activities (e.g., prescribed burning, mechanical treatment). Substantial adverse effects on special-status shrub-nesting species due to direct injury or mortality or habitat modifications would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

Mitigation Measure BIO-2d: Implement Protective Measures for Valley Elderberry Longhorn Beetle (All Treatment Activities)

If elderberry shrubs within the documented range of valley elderberry longhorn beetle are identified during review and surveys for SPR BIO-1, and valley elderberry longhorn beetle or likely occupied suitable elderberry habitat (e.g., within riparian, within historic riparian, containing exit holes) is confirmed to be present during protocol-level surveys following the protocol outlined in USFWS *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017) per SPR BIO-10, the following protective measures will be implemented to avoid and minimize impacts to valley elderberry longhorn beetle:

* If elderberry shrubs are 165 feet or more from the treatment area, and treatment activities would not encroach within this distance, direct or indirect impacts are not expected and further mitigation is not required.
* If elderberry shrubs are located within 165 feet of the treatment area, the following measures will be implemented:
* A minimum avoidance area of at least 20 feet from the dripline of each elderberry plant will be fenced or flagged and maintained to avoid direct impacts (e.g., damage to root system) that could damage or kill the plant, with the exception of the following activities:
* Manual trimming of elderberry shrubs will only occur between November and February and will avoid removal of any branches or stems that are greater than or equal to 1 inch in diameter to avoid and minimize adverse effects on valley elderberry longhorn beetle.
* Manual or mechanical vegetation treatment within the drip-line of any elderberry shrub will be limited to the season when adults are not active (August – February), will be limited to methods that do not cause ground disturbance, and will avoid damaging the elderberry.
* A qualified RPF ~~or~~ biologist, or biological technician familiar with valley elderberry longhorn beetle and its life history will monitor the work area to ~~ensure~~ verify the avoidance and minimization measures are implemented. The qualified RPF, biologist, or biological technician will have the authority to stop any treatment activities that could result in potential adverse effects to valley elderberry longhorn beetle.

If the project proponent cannot implement the measures above to avoid mortality, injury, or disturbance of VELB or degradation of occupied habitat such that its function would not be maintained, the project proponent will implement Mitigation Measure BIO-2c.

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status shrub-nesting species by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measure BIO-2d would further reduce potential impacts on valley elderberry longhorn beetle by requiring avoidance and protection of elderberry shrubs within the treatment area or compensation if valley elderberry longhorn beetle cannot be avoided. Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or compensate for loss of the habitat function of special-status wildlife habitat (i.e., sensitive natural communities, riparian habitat,). Implementation of these mitigation measures would reduce impacts to special-status shrub-nesting species such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts would be reduced to **less than significant**.

##### Ground-Nesting Wildlife

The treatable landscape contains suitable habitat for several special-status ground-nesting species. Special-status ground-nesting species include wildlife species associated with marsh or wetland habitat (e.g., Buena Vista Lake ornate shrew [*Sorex ornatus relictus*], California black rail [*Laterallus jamaicensis coturniculus*], California Ridgway’s rail [*Rallus obsoletus obsoletus*], northern harrier [*Circus hudsonius*], redhead [*Aythya americana*]), riparian habitat (e.g., riparian woodrat [*Neotoma fuscipes riparia*], Sierra Nevada snowshoe hare [*Lepus americanus tahoensis*]), sagebrush habitat (e.g., greater sage-grouse [*Centrocercus urophasianus*], western white-tailed jackrabbit [*Lepus townsendii*]), and grassland habitat (e.g., grasshopper sparrow [*Ammodramus savannarum*]). Table 3.6-32 provides a comprehensive list of special-status ground-nesting species known or with potential to occur in the treatable landscape and considered in this analysis. The structure of ground nests vary for these species but may include cups or mounds made of grasses or other vegetation, simple scrapes on the ground, or in the case of woodrats, large middens made of leaves, twigs, and other debris. Some ground-nesting species prefer specific habitat characteristics depending on the stage of their life history. For example, greater sage-grouse prefer more open areas in the sagebrush-grassland matrix (e.g., burns) for lekking and denser stands of sagebrush for rearing chicks (McAdoo and Back 2001).

Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including ground-nesting species, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to ~~ensure that these species are identified~~ identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) reduce the likelihood of impacts to ground-nesting species within these habitats. However, many of these special-status species would be present outside of these habitats and would not be protected by these SPRs. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on ground-nesting special-status wildlife if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status ground-nesting species are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities would include pile burning and broadcast burning. If prescribed burning occurs during the breeding season, active ground nests present in treatment areas could be burned directly by broadcast fires or by pile burning if the piles are placed on top of or adjacent to ground nests. This could result in the direct mortality of adults or young, if present. Additionally, ground-nesting species could be alarmed by the visual, auditory, and olfactory cues of prescribed burns (e.g., flames, smoke) and by the presence of associated personnel and equipment (e.g., vehicles, helicopters). This could result in nest abandonment, and potential mortality of young or loss of eggs. In addition to breeding-season impacts, woodrat species use their middens year-round; thus, potential adverse effects on these species as a result of prescribed burning treatment activities would not be limited to the breeding season. Prescribed burning treatment activities could result in a reduction in vegetative cover, which may benefit some ground-dwelling species by facilitating movement in the forest floor (McIver et al. 2013). However, these activities may also reduce the habitat suitability for some ground-nesting species or result in their displacement from the treatment site.

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect ground-nesting species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species. Additionally, although ground-nesting species could consume prey species (e.g., terrestrial invertebrates) that were previously exposed to these residual chemicals, potentially constituting a partial exposure, substantial risk of exposure would not occur because the accelerant applications are not a substantial risk to prey species and would be limited in their application (USFS 2002).

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. If mechanical treatment occurs during the breeding season, these activities could result in the direct loss of ground nests, which could be crushed if present within the vicinity of mechanical treatment activities. This could result in the direct mortality of adults or young, if present. Additionally, ground-nesting species could be alarmed by the presence of heavy equipment (e.g., masticators, trucks) and personnel, which could result in nest abandonment, and potential mortality of young or loss of eggs. In addition to breeding-season impacts, some species use ground nests year-round (e.g. woodrat middens); thus, potential adverse effects on these species as a result of mechanical treatment activities would not be limited to the breeding season. Mechanical treatment activities could result in a reduction in vegetative cover, which may reduce the habitat function for some ground-nesting species or result in their exclusion from the treatment site.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. If manual treatment occurs during the breeding season, ground nests could be accidentally crushed by foot traffic from crews or otherwise damaged. This could result in the direct mortality of adults or young, if present. Additionally, ground-nesting species could be alarmed by the presence of personnel, which could result in nest abandonment, and potential mortality of young or loss of eggs. In addition to breeding-season impacts, woodrat species use their middens year-round; thus, potential adverse effects on these species as a result of manual treatment activities would not be limited to the breeding season. Manual treatment activities could result in a reduction in vegetative cover, which may reduce the habitat function for some ground-nesting species or result in their exclusion from the treatment site.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population and/or biomass of a class of vegetation (herbaceous plants and/or shrubs). Livestock used in prescribed herbivory treatments could crush or otherwise destroy ground nests, if present within the treatment area. The presence of herbivores in a confined area would also likely be a novel presence for ground-nesting special-status species. Consequently, if prescribed herbivory activities occur within the view of a nest, it is likely that these species could be alarmed by the presence of livestock. Additionally, the presence of personnel and equipment (e.g., trucks) associated with installation and removal of fencing and other related infrastructure could also alarm nesting special-status species. The novel presence of herbivores, personnel, and equipment could potentially result in disruption of breeding behavior and nest abandonment. In addition to breeding-season impacts, woodrat species use their middens year-round; thus, potential adverse effects on these species as a result of prescribed herbivory activities would not be limited to the breeding season. Prescribed herbivory activities could result in a reduction in vegetative cover, which may reduce the habitat function for some ground-nesting species or result in their exclusion from the treatment site.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. Herbicide treatment could result in adverse effects on ground-nesting wildlife if an animal ingested or came into direct contact with herbicides, as some herbicides may be toxic to these species. Additionally, ground-nesting species could be alarmed by the presence of vehicles and personnel associated with herbicide treatment, which could result in nest abandonment, and potential mortality of young or loss of eggs.

###### Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status ground-nesting species (listed in Table 3.6-33). SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion within native coastal sage scrub and chaparral (SPR BIO-5) reduce the likelihood of impacts (e.g., habitat loss) to ground-nesting species within these habitats. SPR BIO-8 limits treatments within ESHAs in the coastal zone, reducing likelihood of impacts to ground-nesting species in the coastal zone. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-5 would reduce potential impacts ground-nesting species that use riparian habitat by limiting herbicide use within riparian habitat. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects described above on ground-nesting special-status wildlife if these species occur within areas or habitats that are not avoided by implementation of the SPRs. As described above, direct adverse effects include mortality or injury of special-status species or their nests. Indirect adverse effects would include disturbance to nests due to the presence of crews or heavy machinery, or loss of habitat function as a result of treatment activities (e.g., prescribed burning, mechanical treatment). Substantial adverse effects on special-status ground-nesting species due to direct injury or mortality or habitat modifications would be a **potentially** **significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status ground-nesting species by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or offset the loss of the habitat function of special-status wildlife habitat (i.e., sensitive natural communities, riparian habitat). Implementation of these mitigation measures would reduce impacts to special-status ground-nesting species such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts would be reduced to **less than significant**.

##### Burrowing or Denning Wildlife

The treatable landscape contains suitable habitat for several special-status species that nest, den, or otherwise take refuge in burrows (Table 3.6-32). Special-status wildlife in this category include rodents such as kangaroo rats (e.g., Fresno kangaroo rat [*Dipodomys nitratoides exilis*], giant kangaroo rat [*Dipodomys ingens*], Tipton kangaroo rat [*Dipodomys nitratoides nitratoides*]), squirrels (e.g., Nelson’s antelope squirrel [*Ammospermophilus nelsoni*], Mohave ground squirrel [*Xerospermophilus mohavensis*]), and mice (e.g., Los Angeles pocket mouse [*Perognathus longimembris brevinasus*]). Several species of mesocarnivores and large carnivores use underground burrows or dens, including San Joaquin kit fox (*Vulpes macrotis mutica*), gray wolf (*Canis lupus*), California wolverine, and American badger (*Taxidea taxus*). Burrowing owl (*Athene cunicularia*) is one of the few bird species in California that use burrow habitat. Bank swallows (*Riparia riparia*) nest in colonies within cavities on sandy banks or cliffs near aquatic habitat. Table 3.6-32 provides a comprehensive list of special-status burrowing or denning species known or with potential to occur in the treatable landscape and considered in this analysis.

Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including burrowing or denning species, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to ~~ensure that these species are identified~~ identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) reduce the likelihood of impacts to burrowing or denning species within these habitats. However, many of these special-status species would be present outside of these habitats and would not be protected by these SPRs. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on burrowing or denning special-status wildlife if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status burrowing or denning species are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities would include pile burning and broadcast burning. It is possible that many individuals of burrowing or denning wildlife species would escape from the area of a broadcast burn, and that the broadcast burn would move through the area without permanent adverse effects on a burrow. However, depending on the speed and intensity of the fire, and the character of the habitat surrounding the burrow, broadcast burns could result in adverse effects on burrow habitat and adults or young within the burrows. If prescribed burning treatment activities occur during the breeding season, it is likely that young would not be able to escape the fire because they are not sufficiently mobile, or that eggs (e.g., for burrowing owl) could be destroyed. Pile burning could result in adverse effects on burrowing special-status wildlife if the piles are placed on top of or adjacent to burrow habitat. These activities could result in the direct mortality of adults or young, if present. Additionally, burrow-nesting species could be alarmed by the visual, auditory, and olfactory cues of prescribed burns (e.g., flames, smoke) and by the presence of associated personnel and equipment (e.g., vehicles, helicopters). This could result in nest abandonment, and potential mortality of young or loss of eggs (for special-status birds). In addition to breeding-season impacts, many special-status species use their burrows year-round; thus, potential adverse effects on these species as a result of prescribed burning treatment activities would not be limited to the breeding season.

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect burrowing or denning species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species. Additionally, although burrowing or denning predator species could consume prey species (e.g., terrestrial invertebrates) that were previously exposed to these residual chemicals, potentially constituting a partial exposure, substantial risk of exposure would not occur because the accelerant applications are not a substantial risk to prey species and would be limited in their application (USFS 2002).

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. If mechanical treatment occurs during the breeding season, these activities could result in the direct loss of burrows, which could be crushed or otherwise disturbed if present within the vicinity of mechanical treatment activities like uprooting, skidding, or other use of heavy machinery. This could result in the direct mortality of adults or young, if present. Additionally, burrowing special-status species could be alarmed by the presence of heavy equipment (e.g., masticators, trucks) and personnel, which could result in nest abandonment, and potential mortality of young or loss of eggs (for special-status birds). In addition to breeding-season impacts, several special-status species use their burrows year-round; thus, potential adverse effects on these species as a result of mechanical treatment activities would not be limited to the breeding season. Mechanical treatment may also result in compaction of the earth which could prevent recolonization of the treatment area. Depending on the treatment type and ongoing maintenance activities, this could result in loss of habitat function and long-term loss of habitat for burrowing or denning species.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. While this treatment activity would be less likely to result in adverse effects than prescribed burning and mechanical treatment, active burrows could be accidentally crushed or otherwise damaged by personnel or equipment (e.g., trucks). This could result in the direct mortality of adults or young, if present. Additionally, burrowing special-status species could be alarmed by the presence of personnel which could result in nest abandonment, and potential mortality of young or loss of eggs (for special-status birds). In addition to breeding-season impacts, many species use their burrows year-round; thus, potential adverse effects on these species as a result of manual treatment activities would not be limited to the breeding season.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population. Livestock used in prescribed herbivory treatments could crush or otherwise destroy active burrows, if present within the treatment area. ~~The threat of burrow crushing is greater for cattle than for sheep and goats because cows are larger and heavier.~~ Additionally, installation of temporary fencing to contain livestock could also result in burrow crushing if fence posts or other infrastructure are installed on or near burrows. The presence of herbivores in a confined area would also likely be a novel presence for burrowing special-status species. Consequently, if prescribed herbivory activities occur within the view of a burrow, it is likely that these species could be alarmed by the presence of livestock. Additionally, the presence of personnel and equipment (e.g., trucks) associated with installation and removal of fencing and other related infrastructure could also alarm special-status species. The novel presence of herbivores, personnel, and equipment could potentially result in disruption of breeding behavior and nest abandonment. In addition to breeding-season impacts, many species use their burrows year-round; thus, potential adverse effects on these species as a result of prescribed herbivory activities would not be limited to the breeding season. Temporary electric fences to control grazing animals would not result in injury or mortality of special-status wildlife due to electrocution. Temporary electric fences produce high voltage shocks with very low amperage, which ~~deters livestock from escaping without causing~~ do not cause injury or death in most species under normal circumstances.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. Herbicide treatment could result in adverse effects on burrowing or denning wildlife if an animal ingested or came into direct contact with herbicides, as some herbicides may be toxic to these species. Additionally, burrowing or denning wildlife species could be alarmed by the presence of vehicles and personnel associated with herbicide treatment, which could result in nest or den abandonment, and potential mortality of young or loss of eggs (for special-status birds).

###### Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status burrowing or denning wildlife species (listed in Table 3.6-33). SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. Several burrowing special-status wildlife species require protocol-level surveys to determine occupancy, including several species of kangaroo rat and burrowing owl. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion within native coastal sage scrub and chaparral (SPR BIO-5) reduce the likelihood of impacts (e.g., habitat loss) to burrowing or denning wildlife species within these habitats. SPR BIO-8 limits treatments within ESHAs in the coastal zone, reducing likelihood of impacts to burrowing or denning wildlife species in the coastal zone. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-5 would reduce potential impacts to burrowing species that use riparian habitat by limiting herbicide use within riparian habitat. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects described above on burrowing or denning special-status wildlife if these species occur within areas or habitats that are not avoided by implementation of the SPRs. As described above, potential direct adverse effects include mortality or injury of special-status species or their burrows and dens. Indirect adverse effects would include disturbance to burrows or dens due to the presence of crews or heavy machinery, or loss of habitat function as a result of treatment activities (e.g., prescribed burning, mechanical treatment). Substantial adverse effects on special-status burrowing or denning species due to direct injury or mortality or habitat modifications would be a **potentially** **significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status burrowing or denning wildlife species by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or offset loss of the habitat function of special-status wildlife habitat (i.e., sensitive natural communities, riparian habitat,). Implementation of these mitigation measures would reduce impacts to special-status burrowing-nesting species such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts would be reduced to **less than significant**.

##### Insects and Other Terrestrial Invertebrates

The treatable landscape contains suitable habitat for several special-status invertebrate species, including insects (i.e., butterflies, flies, beetles, bumble bees) and snails. Table 3.6-32 provides a comprehensive list of special-status insects or other terrestrial invertebrates known or with potential to occur in the treatable landscape and considered in this analysis. Many of these species occur only within an extremely limited range, and in many cases, the range of these species is poorly understood. For example, callippe silverspot butterfly (*Speyeria callippe callippe*) is only known to occur in two locations: one in San Mateo County and one in Alameda County. Franklin’s bumble bee (*Bombus franklini*) is only known to occur within a limited area in the Klamath Mountains. Other species are limited to very specific habitat, specific host plants, and particular soil characteristics. Bay checkerspot butterfly (*Euphydryas editha bayensis*) occurs only on shallow serpentine soil. Mount Hermon June beetle (*Polyphylla barbata*) and Zayante band-winged grasshopper (*Trimerotropis infantilis*) occur only within “Sandhills” habitat (i.e., certain habitats containing Zayante soils, which are excessively drained sandy soils that formed in weakly consolidated marine sediments) in Santa Cruz County. Mount Hermon June beetle larvae live underground feeding on the roots of plants. Zayante band-winged grasshopper occur within open sandy habitat and use shrub habitat for refuge during hot weather. Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including insects and other terrestrial invertebrates, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to ~~ensure that these species are identified~~ identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), prevent herbicide drift and other non-target application (SPR HYD-5), avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) reduce the likelihood of impacts to special-status insects and other terrestrial invertebrates within these habitats. However, many of these special-status species would be present outside of these habitats and would not be protected by these SPRs. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on special-status insects and other terrestrial invertebrates if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status insects and other terrestrial invertebrates are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities would include pile burning and broadcast burning. It is likely that special-status invertebrates that fly (e.g., butterflies, flies, beetles, bumble bees) would successfully flee from fires, possibly using smoke as a cue. However, the larvae of these species may be present on host plants or underground and could be killed by the fires (broadcast and piles). In addition, invertebrate species that cannot fly, namely Morro shoulderband snail (*Helminthoglypta walkeriana*) and Trinity bristle snail (*Monadenia infumata setosa*), would not be able to escape and would likely be killed by prescribed fires burning leaf litter if present within the treatment site. In addition, while there is still much to be learned about the nesting and overwintering biology of special-status bumble bees, any near-surface or subsurface disturbance of the ground, including prescribed burning, could kill bumble bees in colonies, including overwintering queens. Prescribed burning within occupied or suitable habitat could result in the complete removal of habitat and loss of habitat function for special-status invertebrates within the area being treated, including removal of leaf litter, removal of special-status butterfly host plants, and removal of floral resources for special-status bumble bees.

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect insects and other terrestrial invertebrate species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species.

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. It is likely that special-status invertebrates that fly would successfully flee from mechanical treatment activities. However, the larvae of these species may be present (e.g., on host plants or underground) and could be killed if present within the vicinity of mechanical treatment activities like uprooting, skidding, or other use of heavy machinery. Morro shoulderband snail and Trinity bristle snail would not be able to escape these activities and would likely be killed by ground disturbance if present within the treatment site. In addition, while there is still much to be learned about the nesting and overwintering biology of special-status bumble bees, mechanical treatment activities could kill bumble bees in nesting or overwintering colonies (e.g., in underground rodent holes, loose soil, leaf litter, log/tree cavities, surface vegetation). Mechanical treatment activities that involve ground disturbance could also result in the complete removal of habitat and loss of habitat function for special-status invertebrates within the area being treated, including removal of leaf litter, removal of special-status butterfly host plants, and removal of floral resources for special-status bumble bees.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. It is likely that special-status invertebrates with the capability of flying would flee from the presence of personnel or equipment associated with manual treatment and would not be directly affected by manual treatment activities. However, the larvae of these species may be present on host plants or underground and could be killed if present within the vicinity of manual treatment activities including vegetation removal, ground disturbance, or other use of equipment (e.g., trucks). Morro shoulderband snail and Trinty bristle snail would not be able to escape these activities and could be inadvertently crushed underfoot, or killed during ground disturbance activities (e.g., pulling of plants) if present within the treatment site. In addition, while there is still much to be learned about the nesting and overwintering biology of special-status bumble bees, any near-surface or subsurface disturbance of the ground, including from manual treatment, could kill bumble bees in nesting or overwintering colonies. Manual treatment activities could also result in the complete removal of habitat and loss of habitat function for special-status invertebrates within the area being treated, including removal of leaf litter, removal of special-status butterfly host plants, and removal of floral resources for special-status bumble bees.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population and/or biomass of a class of vegetation (herbaceous plants and/or shrubs). It is likely that special-status invertebrates with the capability of flying would flee from the presence of livestock associated with prescribed herbivory, if threatened, and would not be directly affected by these activities. However, the larvae of these species may be killed if present on host plants that are consumed by livestock or present underground and crushed underfoot. Morro shoulderband snail, Trinity bristle snail, and some special-status bumble bees within colonies would likely not be able to escape these activities and could be inadvertently crushed underfoot by livestock if present within the treatment site. Additionally, installation of temporary fencing to contain livestock could also result in inadvertent crushing of invertebrate species during the installation of fence posts or other infrastructure. Prescribed herbivory could also result in the complete removal of habitat and loss of habitat function for special-status invertebrates within the area being treated, including removal of leaf litter, removal of special-status butterfly host plants, and removal of floral resources for special-status bumble bees.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. Herbicide treatment could result in adverse effects on insects and other terrestrial invertebrates if an animal ingested or came into direct contact with herbicides, as some herbicides may be toxic to these species. Additionally, if herbicides are applied on or in the vicinity of host plants for special-status butterflies or floral resources for special-status bumble bees, suitable habitat and habitat function for these species could be reduced or eliminated.

###### Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status insects and other terrestrial invertebrates (listed in Table 3.6-33). SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion within native coastal sage scrub and chaparral (SPR BIO-5) reduce the likelihood of impacts (e.g., habitat loss) to special-status insects and other terrestrial invertebrates within these habitats. SPR BIO-8 limits treatments within ESHAs in the coastal zone, reducing likelihood of impacts to special-status insects and other terrestrial invertebrates in the coastal zone. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-5 would reduce potential impacts to special-status insects and other terrestrial invertebrates that use riparian habitat by limiting herbicide use within riparian habitat. SPR HYD-5 would also avoid and minimize potential impacts to special-status insects and other terrestrial invertebrates by requiring measures to prevent herbicide drift and other non-target application. While SPRs would minimize impacts, implementation of treatment activities could still result in direct or indirect adverse effects described above on special-status insects and other terrestrial invertebrates, including mortality, injury, disturbance, or loss of habitat, if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Because of the limited range and rarity of some of these special-status insects and other terrestrial invertebrate species, loss of individuals or habitat function of suitable habitat could substantially reduce the number or restrict the range of these species or threaten to eliminate populations of these species, or the species itself (in the case of special-status butterflies with extremely limited ranges), entirely. Substantial adverse effects on special-status insects and other terrestrial invertebrates due to direct injury or mortality or habitat modifications could threaten to eliminate or substantially reduce the number or restrict the range of these species. This would be a **potentially** **significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

Mitigation Measure BIO-2d: Implement Protective Measures for Valley Elderberry Longhorn Beetle (All Treatment Activities)

Mitigation Measure BIO-2e: Design Treatment to Retain Special-Status Butterfly Host Plants (All Treatment Activities)

If federally listed butterflies are identified as occurring or having potential to occur during review and surveys for SPR BIO-1 and confirmed during protocol-level surveys per SPR BIO-10, then the following measures will be implemented:

* Treatment areas within the range of these species will be surveyed for the host plant for each species (Table 3.6-34).
* Host plants for federally listed butterflies within the occupied habitat will be marked with high-visibility flagging, fencing, or stakes, and no treatment activities will occur within 10 feet of these plants.
* Because prescribed herbivory could result in the indiscriminate removal of the host plants for federally listed butterflies, this treatment type will not be used within occupied habitat of any federally listed butterfly species, unless it is known that the host plant is unpalatable to the herbivore.
* Treatment areas that are not occupied but are within the range of the federally listed butterfly will be divided into as many treatment units as feasible such that the entirety of the habitat is not treated within the same year.
* Treatments will be conducted in a patchy pattern to the extent feasible in areas that are not occupied but are within the range of the federally listed butterfly, such that the entirety of the habitat is not burned or removed and untreated portions of suitable habitat are retained.

If the project proponent cannot implement the measures above to avoid mortality, injury, or disturbance of federally listed butterflies or degradation of occupied habitat (host plants) such that its function would not be maintained, the project proponent will implement Mitigation Measure BIO-2c.

**CESA and ESA Listed Species**. A qualified RPF or biologist will determine if, after implementation of any feasible impact avoidance measures (potentially including others not listed above), the treatment will result in mortality, injury, or disturbance, or if after implementation of the treatment, habitat function will remain for the affected species. For species listed under CESA or ESA or that are fully protected, the qualified RPF or biologist will consult with CDFW and/or USFWS regarding this determination. If consultation determines that mortality, injury, or disturbance of listed butterflies or degradation of occupied habitat such that its function would not be maintained would occur, the project proponent will implement Mitigation Measure BIO-2c.

**Other Special-status Species.** A qualified RPF or biologist with knowledge of the special-status species’ habitat and life history will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA, because implementation of the treatment will not maintain habitat function of the special-status species’ habitat or because the loss of special-status individuals would substantially reduce the number or restrict the range of a special-status species. If the project proponent determines the impact on special-status butterflies would be less than significant, no further mitigation will be required. If the project proponent determines that the loss of special-status butterflies or degradation of occupied habitat would be significant under CEQA after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure BIO-2c will be implemented.

The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or biologist that the special-status butterfly species would benefit from treatment in the occupied habitat area even though some may be killed, injured or disturbed during treatment activities. For a treatment to be considered beneficial to special-status butterfly species, the qualified RPF or biologist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the PSA. If it is determined that treatment activities would be beneficial to special-status butterflies, no compensatory mitigation will be required.

Table 3.6-34 Special-status Butterflies and Associated Host Plants

| Butterfly Species | Host Plants |
| --- | --- |
| bay checkerspot butterfly | dwarf plantain (*Plantago virginica*), purple owl’s clover (*Castilleja exserta*) |
| Behren’s silverspot butterfly | blue violet (*Viola adunca*) |
| callippe silverspot butterfly | California golden violet (*Viola pedunculata*) |
| Carson wandering skipper | salt grass (*Distichlis spicata*) |
| El Segundo blue butterfly | seacliff buckwheat (*Eriogonum parvifolium*) |
| Hermes copper butterfly | spiny redberry (*Rhamnus crocea*) |
| Kern primrose sphinx moth | plains evening-primrose (*Camissonia contorta*), field primrose (*Camissonia campestris*) |
| Laguna Mountains skipper | Cleveland’s horkelia (*Horkelia clevelandii*), sticky cinquefoil (*Drymocallis glandulosa*) |
| Lange’s metalmark butterfly | naked-stemmed buckwheat (*Eriogonum nudum*) |
| lotis blue butterfly | seaside bird’s foot trefoil (*Hosackia gracilis*) |
| Mission blue butterfly | lupine (*Lupinus* spp.) |
| Myrtle’s silverspot butterfly | blue violet |
| Oregon silverspot butterfly | blue violet |
| Palos Verdes blue butterfly | Santa Barbara milkvetch (*Astragalus trichopodus*), common deerweed (*Acmispon glaber*) |
| San Bruno elfin butterfly | broadleaf stonecrop (*Sedum spathulifolium*), manzanita (*Arctostaphylos* spp.), huckleberry (*Vaccinuum* spp.) |
| Smith’s blue butterfly | seacliff buckwheat, seaside buckwheat (*Eriogonum latifolium*) |
| Quino checkerspot butterfly | dwarf plantain, purple owl’s clover |

Mitigation Measure BIO-2f: Avoid Habitat for Special-Status Beetles, Flies, Grasshoppers, and Snails (All Treatment Activities)

If treatment activities would occur within the limited range of any state or federally listed beetle, fly, grasshopper, or snail, and these species are identified as occurring or having potential to occur due to the presence of potentially suitable habitat during review and surveys for SPR BIO-1 and surveys for SPR BIO-10, then the following measures will be implemented:

* To avoid and minimize impacts to Mount Hermon June beetle and Zayante band-winged grasshopper, treatment activities will not occur within ”Sandhills” habitat in Santa Cruz County, the only suitable habitat for these species.
* To avoid and minimize impacts to Casey’s June beetle, Delhi Sands flower-loving fly (*Rhaphiomidas terminates abdominalis*), Delta green ground beetle (*Elaphrus virisis*), Morro shoulderband snail, Ohlone tiger beetle (*Cicindela ohlone*), and Trinity bristle snail, treatment activities will not occur within habitat in the range of these species that is deemed suitable by a qualified RPF or biologist with familiarity of the species.

If the project proponent cannot implement the measures above to avoid mortality, injury or disturbance to listed beetles, flies, grasshoppers, and snails, or degradation of suitable habitat such that its function would not be maintained, the project proponent will implement Mitigation Measure BIO-2c.

Mitigation Measure BIO-2g: Design Treatment to Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Special-Status Bumble Bees (All Treatment Activities)

If special-status bumble bees are identified as occurring during review and surveys under SPR BIO-1 and confirmed during protocol-level surveys per SPR BIO-10, or if suitable habitat for special-status bumble bees is identified during review and surveys under SPR BIO-1 (e.g., wet meadow, forest meadow, riparian, grassland, or coastal scrub habitat containing sufficient floral resources within the range of the species), then the project proponent will implement the following measures, as feasible:

* Prescribed burning within occupied or suitable habitat for special-status bumble bees will occur from October through February to avoid the bumble bee flight season.
* Treatment areas in occupied or suitable habitat will be divided into a sufficient number of treatment units such that the entirety of the habitat is not treated within the same year; the objective of this measure is to provide refuge for special-status bumble bees during treatment activities and temporary retention of suitable floral resources proximate to the treatment area.
* Treatments will be conducted in a patchy pattern to the extent feasible in occupied or suitable habitat, such that the entirety of the habitat is not burned or removed and untreated portions of occupied or suitable habitat are retained (e.g., fire breaks will be aligned to allow for areas of unburned floral resources for special-status bumble bees within the treatment area).
* Herbicides will not be applied to flowering native plants within occupied or suitable habitat to the extent feasible during the flight season (March through September).

**CESA and ESA Listed Species**. A qualified RPF or biologist will determine if, after implementation of feasible avoidance measures (potentially including others not listed above), the treatment will result in mortality, injury, or disturbance to the species, or if after implementation of the treatment, habitat function will remain for the affected species. For species listed under CESA or ESA or that are fully protected, the qualified RPF or biologist will consult with CDFW and/or USFWS regarding this determination. If consultation determines that mortality, injury, or disturbance of listed bumble bees (in the event the Candidate listing is confirmed) or degradation of occupied (or assumed to be occupied) habitat such that its function would not be maintained would occur, the project proponent will implement Mitigation Measure BIO-2c.

**Other Special-status Species.** A qualified RPF or biologist with knowledge of the special-status species’ habitat and life history will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA because implementation of the treatment will not maintain habitat function of the special-status species’ habitat or because the loss of special-status individuals would substantially reduce the number or restrict the range of a special-status species. If the project proponent determines the impact on special-status bumble bees would be less than significant, no further mitigation will be required. If the project proponent determines that the loss of special-status bumble bees or degradation of occupied (or assumed to be occupied) habitat would be significant under CEQA after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure BIO-2c will be implemented.

The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or biologist that the special-status bumble bee species would benefit from treatment in the occupied (or assumed to be occupied) habitat area even though some of the non-listed special-status bumble bees may be killed, injured, or disturbed during treatment activities. For a treatment to be considered beneficial to special-status bumble bee species, the qualified RPF or biologist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the PSA. If it is determined that treatment activities would be beneficial to special-status bumble bees, no compensatory mitigation will be required.

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status insects and other terrestrial invertebrates by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measures BIO-2d would reduce potential impacts on valley elderberry longhorn beetle by requiring avoidance and protection of elderberry shrubs within the range of the species or compensation for unavoidable loss of valley elderberry longhorn beetle. Mitigation Measure BIO-2e would reduce potential impacts on special-status butterflies by requiring retention and protection of host plants in the range of these species or compensation for unavoidable loss of special-status butterflies. Mitigation Measure BIO-2f would reduce potential impacts on special-status beetles, flies, grasshoppers, and snails by requiring avoidance of potentially occupied habitat within the range of these species or compensation for unavoidable loss of special-status beetles, flies, grasshoppers, or snails. Mitigation Measure BIO-2g would reduce potential impacts on special-status bumble bees by requiring avoidance of prescribed burning and herbicide treatment within the flight season and retention of suitable habitat in the range of these species or compensation for unavoidable loss of special-status bumble bees or habitat function. Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or offset loss of habitat function of special-status wildlife habitat (i.e., sensitive natural communities, riparian habitat). Implementation of these mitigation measures would reduce impacts to special-status insects and other terrestrial invertebrates, except special-status bumble bees, such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts to special-status insects and other terrestrial invertebrates, except special-status bumble bees, would be reduced to **less than significant**.

Regarding special-status bumble bees, there is little known about the life history characteristics and behaviors of the species. Additionally, their presence is difficult to detect. While there is much to be learned about the special-status bumble bee colonies, they are generally believed to overwinter near the ground surface in loose soil or under leaf litter or other debris. Nests for special-status bumble bees typically occur in abandoned rodent burrows or other animal nests, but may also occur in above-ground cavities. There is no established methodology for detecting overwintering or nesting colonies of these species. The sizes of the colonies for these species are not well documented; however, western bumble bee colonies can contain over 1,600 workers and produce up to 360 new queens (Xerces Society et al. 2018).

There is evidence of widespread population declines, which led in part to the recent determination by CDFW to designate four bumble bees as Candidate species for listing under CESA. Primary threats to the survival of special-status bumble bees include habitat loss or modification due to development, agriculture, high-intensity fire, fire suppression, and herbicide use (Xerces Society et al. 2018). As described above, herbicide use under the CalVTP may exacerbate threats to special-status bumble bees. Pursuant to its objectives, implementation of the CalVTP is intended to reduce the occurrence of high-intensity wildfire and modify past practices of fire suppression, which could beneficially decrease an existing threat to special-status bumble bees. Although Mitigation Measure BIO-2g would reduce impacts to foraging special-status bumble bees and their floral resources, substantial adverse effects could still occur to special-status bumble bee species during nesting and overwintering, because vegetation treatment activities, such as prescribed burning, soil disturbance, or use of heavy equipment, could kill individuals or crush or disturb overwintering or nesting colonies. Because little is known about the potential nesting and overwintering behavior and habitat for these species, many habitat types within the species range may be suitable with the presence of nesting or overwintering substrate (e.g., loose soil or under leaf litter or other debris). Additionally, there is no established methodology for detecting overwintering or nesting colonies of these species. Because these species have not yet been well studied and colonies are likely difficult to detect, there is little evidence to guide effective impact avoidance or minimization strategies to protect nesting or overwintering colonies. Mitigation Measure BIO-2g presents feasible impact avoidance and minimization measures that are based on emerging, early understanding of species protection; as their candidacy for listing is reviewed by CDFW, additional guidance may emerge and could be implemented by project proponents to reduce impacts. Project proponents can and should stay abreast of new information, as research and scientific understanding evolve. However, with the current state of the science and species knowledge, if underground colonies cannot be detected, they cannot be avoided and, in this case, the extent and severity of impacts to special-status bumble bees from vegetation treatment cannot be predicted with meaningful certainty. Therefore, given the rarity of these candidate species, if colonies were to be destroyed, it is possible that populations of these species would be reduced below self-sustaining levels, and treatment activities could substantially reduce the number or restrict the range of species. Over time, as avoidance strategies are developed with research and improved scientific understanding, adequate protection of the species may become feasible. However, at this time, recognizing the difficulty in detecting overwintering and nesting bumble bees and determining the occurrence and severity of impacts, for purposes of good faith, full disclosure under CEQA, this impact is designated in the PEIR to be **potentially** **significant and unavoidable**.

##### Bats

Several special-status bat species are known to occur within the treatable landscape. Table 3.6-32 provides a comprehensive list of special-status bats known or with potential to occur in the treatable landscape and considered in this analysis. These species use a variety of habitats for roosting, including rock crevices, buildings, caves, mines, bridges, sloughing bark, tree cavities, and broad-leaf vegetation. Some bat species known to occur in the treatable landscape have limited ranges in California (e.g., Mexican long-tongued bat [*Choeronycteris mexicana*]) while other species have potential to occur in suitable habitat throughout the state (e.g., pallid bat [*Antrozous pallidus*]). Many bat species aggregate in colonies; hibernating colonies or roosts in the winter and maternity colonies (composed of adult females and their young) from spring to early fall. The size of these colonies varies based on species and roost substrate used, but most species are highly sensitive to disturbance.

Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including special-status bats, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to ~~ensure that these species are identified~~ identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) reduce the likelihood of impacts to special-status bats within these habitats. However, many of these special-status species would be present outside of these habitats and would not be protected by these SPRs. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on special-status bats if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status bats are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities would include pile burning and broadcast burning. These activities are not anticipated to directly remove suitable roost or colony sites for special-status bats such as rock crevices, buildings, caves, mines, or bridges. However, if prescribed burning occurs within the vicinity of special-status bat roosts in trees (e.g., sloughing tree bark, tree cavities, leaves), these activities could result in the direct mortality or injury of special-status bats within roosts or maternity colonies. These potential adverse effects would be more likely due to broadcast burning than pile burning, because pile burning would occur in a discrete location rather than throughout the understory. In rare instances, tree foliage-roosting bats such as the western red bat (*Lasiurus blosevillii*) may roost in leaf litter on the forest floor and would be at risk for injury or death from broadcast burning. Further, prescribed burning treatment activities during the spring to early fall may have greater potential to adversely affect special-status bats, because female bats and their young are present within maternity colonies during this time and young bats may be unable to fly, thus unable to escape. Additionally, special-status bats within tree habitat and other habitats (e.g., bridges, caves, mines, rock crevices) could be alarmed by the visual, auditory, and olfactory cues of prescribed burns (e.g., flames, smoke) and by the presence of associated personnel and equipment (e.g., vehicles, helicopters) if these activities are in the vicinity of the roost or maternity colony. This could result in abandonment of the colony and potential mortality of young.

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect special-status bat species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species. Additionally, although special-status bat species could consume prey species (e.g., terrestrial invertebrates) that were previously exposed to these residual chemicals, potentially constituting a partial exposure, substantial risk of exposure would not occur because the accelerant applications are not a substantial risk to prey species and would be limited in their application (USFS 2002).

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. It is not anticipated that these activities would result in direct impacts to special-status bat habitat such as rock crevices, buildings, caves, mines, or bridges. However, mechanical treatment could result in the direct removal of trees potentially being used by special-status bat species as roosts or maternity colonies. Removal of this habitat could result in mortality of special-status bats if present within the trees. Further, mechanical treatment activities during the spring to early fall may have greater potential to adversely affect special-status bats, because female bats and their young are present within maternity colonies during this time and young bats may be unable to fly, thus unable to escape. Additionally, special-status bats within tree habitat and other habitats (e.g., bridges, caves, mines, rock crevices) could be alarmed by the presence of heavy equipment (e.g., masticators, trucks) and personnel, which could result in abandonment of the colony, and potential mortality of young.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. It is not anticipated that these activities would result in direct impacts to special-status bat habitat such as rock crevices, buildings, caves, mines, or bridges. However, manual treatment could result in the direct removal of trees potentially being used by special-status bat species as roosts or maternity colonies. Removal of this habitat could result in mortality of special-status bats if present within the trees. Further, manual treatment activities during the spring to early fall may have greater potential to adversely affect special-status bats, because female bats and their young are present within maternity colonies during this time and young bats may be unable to fly, thus unable to escape. Additionally, special-status bats within tree habitat and other habitats (e.g., bridges, caves, mines, rock crevices) could be alarmed by the presence of personnel which could result in abandonment of the colony, and potential mortality of young.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population. Prescribed herbivory would not result in the direct loss of roost habitat for special-status bats, as herbivores are only capable of removing herbaceous or woody vegetation within the understory. The presence of herbivores in a confined area would likely be a novel presence for special-status bat colonies. Consequently, if prescribed herbivory activities occur within the view of roosts or maternity colonies, it is possible that these species could be alarmed by the presence of many cows, goats, or sheep. Additionally, the presence of personnel and equipment (e.g., trucks) associated with installation and removal of fencing and other related infrastructure could also alarm special-status bats, potentially resulting in disruption of breeding behavior and colony abandonment. Adverse effects to bat colonies as a result of prescribed herbivory may be pronounced during the spring to early fall, because female bats and their young are present within maternity colonies during this time and young bats may be unable to fly, thus unable to escape. Temporary electric fences to control grazing animals would not result in injury or mortality of special-status wildlife due to electrocution. Temporary electric fences produce high voltage shocks with very low amperage, which ~~deters livestock from escaping without causing~~ do not cause injury or death in most species under normal circumstances.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. Herbicide treatment could result in adverse effects on bats if the bat ingested or came into direct contact with herbicides, as some herbicides may be toxic to these species. Additionally, bats could be alarmed by the presence of vehicles and personnel associated with herbicide treatment, which could result in colony abandonment, and potential mortality of young.

###### Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status bats (listed in Table 3.6-33). SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey (e.g., visual inspection of habitat features that may provide roosting habitat for special-status bats, acoustic surveys) of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion within native coastal sage scrub and chaparral (SPR BIO-5) reduce the likelihood of impacts (e.g., habitat loss) to special-status bats within these habitats. SPR BIO-8 limits treatments within ESHAs in the coastal zone, reducing likelihood of impacts to special-status bats in the coastal zone. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-5 would reduce potential impacts to special-status bats that use riparian habitat by limiting herbicide use within riparian habitat. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects described above on special-status bats if these species occur within areas or habitats that are not avoided by implementation of the SPRs. As described above, direct adverse effects include mortality or injury to special-status bats. Indirect adverse effects would include disturbance to roosts due to the presence of crews or heavy machinery, or loss of habitat function as a result of treatment activities (e.g., prescribed burning, mechanical treatment). Substantial adverse effects on special-status bats due to direct injury or mortality or habitat modifications would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status bats by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or offset loss of habitat function of special-status wildlife habitat (i.e., sensitive natural communities, riparian habitat). Implementation of these mitigation measures would reduce impacts to special-status bats such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts would be reduced to **less than significant**.

##### Ungulates

Four special-status ungulate species occur within the treatable landscape: desert bighorn sheep (*Ovis canadensis nelsoni*), peninsular bighorn sheep, Sierra Nevada bighorn sheep, and pronghorn (*Antilocapra americana*; Table 3.6-32). Ungulates are primary prey species for large predators in their range (e.g., mountain lions [*Puma concolor*]), and as a result their behavior and habitat selection are driven strongly by predator avoidance. For example, bighorn sheep and pronghorn favor open terrain and generally avoid heavily forested areas and other dense vegetation. These special-status ungulate species have fairly limited ranges in California. Bighorn sheep and pronghorn make seasonal migrations between summer and winter ranges; pronghorn traveling greater distances in general than bighorn sheep.

Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including special-status ungulates, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to identify species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), reduce the likelihood of impacts to ungulates within these habitats. However, these special-status species may be present outside of these habitats and would not be protected by these SPRs. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects special-status ungulates if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status ungulates are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities would include pile burning and broadcast burning. These activities would not result in substantial direct adverse effects on special-status ungulate species because bighorn sheep and pronghorn are highly mobile and would leave the area. Bighorn sheep and pronghorn have large home ranges; the mean home range size for male bighorn sheep is approximately 38 square miles (USFWS 2007) and pronghorn may move up to 93 mi between ranges in California (CDFW 2005). Some studies have suggested that prescribed burning treatment activities may actually result in improved habitat quality for bighorn sheep by increasing nutrient availability and open terrain (Holl et al. 2012). Prescribed burning treatment activities may include the use of a helicopter with a helitorch in areas of terrain with limited accessibility, which could possibly overlap with the steep terrain occupied by bighorn sheep species. Helicopter overflights may result in disturbance to special-status ungulates, if present during these operations. Helicopter overflights have been shown to adversely affect foraging efficiency in bighorn sheep (Stockwell et al. 1991).

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect special-status ungulate species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species. Additionally, although ungulate species could consume vegetation growing in areas that were previously exposed to these residual chemicals, substantial risk of exposure would not occur because the risk of residual uptake during and after vegetative regrowth is not substantial (USFS 2002).

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. These activities would not result in direct adverse effects on special-status ungulate species because bighorn sheep and pronghorn are highly mobile and would leave the area. Bighorn sheep and pronghorn have large home ranges, and mechanical treatment activities would not result in exclusion of these species from suitable habitat.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. These activities would not result in direct adverse effects on special-status ungulate species because bighorn sheep and pronghorn are highly mobile and would leave the area. Bighorn sheep and pronghorn have large home ranges, and manual treatment activities would not result in exclusion of these species from suitable habitat.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population. Bighorn sheep are extremely susceptible to respiratory disease caused by pathogens carried by domestic sheep and goats, and impacts resulting from the transmission of disease from domestic sheep and goats have been well-documented. Pneumonia is the most significant disease threat for bighorn sheep and is thought to have been responsible for large die-offs in the past (USFWS 2000, USFWS 2007). Transmission of disease between domestic livestock and pronghorn has not been as well-documented. If prescribed herbivory activities are initiated within the range of bighorn sheep or pronghorn, it is possible that these species could come into contact with livestock and that livestock could transmit diseases to these species. Disease transmission from livestock to bighorn sheep or pronghorn could cause impaired health, reduced reproductive success, or mortality of individuals. Temporary electric fences would not result in injury or mortality of special-status ungulates due to electrocution. Temporary electric fences produce high voltage shocks with very low amperage, which ~~is intended to deter livestock from escaping without causing~~ do not cause injury or death in most species under normal circumstances.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. Herbicide treatment is not expected to result in direct effects on special-status ungulates, because their large home ranges would reduce the likelihood of prolonged contact with herbicides applied locally in a relatively small treatment area.

###### Conclusion

Several SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status ungulates (listed in Table 3.6-33). SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion within native coastal sage scrub and chaparral (SPR BIO-5) reduce the likelihood of impacts (e.g., habitat loss) to special-status ungulates within these habitats. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). Fencing in general would reduce the likelihood of escape of livestock used for prescribed herbivory, thus reducing the risk for interactions between domestic livestock and special-status ungulates. SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. While SPRs would minimize impacts, treatment activities could still result in the direct or indirect adverse effects described above on special-status ungulates if these species occur within areas or habitats that are not avoided by implementation of the SPRs. While substantial direct adverse effects on special-status ungulates due to treatment activities are not expected, indirect adverse effects would include transmission of disease from domestic livestock used during prescribed herbivory treatment. Substantial adverse effects on special-status ungulates due to direct injury or mortality or habitat modifications would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

Mitigation Measure BIO-2h: Avoid Potential Disease Transmission Between Domestic Livestock and Special-Status Ungulates (Prescribed Herbivory)

The project proponent will implement the following measure if treatment activities are planned within the range of desert bighorn sheep, peninsular bighorn sheep, Sierra Nevada bighorn sheep, or pronghorn:

* Prescribed herbivory activities will be prohibited within a 14-mile buffer around suitable habitat for any species of bighorn sheep within the range of these species consistent with the more stringent recommendations in the Recovery Plan for Sierra Nevada bighorn sheep (USFWS 2007).
* Prescribed herbivory activities will be avoided within the range of pronghorn where feasible (where this range does not overlap with the range of any species of bighorn sheep).

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands Mitigation

Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status ungulates by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measure BIO-2h would reduce potential impacts due to the transmission of disease from domestic livestock to special-status ungulates by prohibiting prescribed herbivory within a buffer around bighorn sheep habitat to prevent interaction between bighorn sheep and domestic livestock and avoiding prescribed herbivory within the range of pronghorn, where feasible. Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or offset loss of habitat function of habitat (i.e., sensitive natural communities, riparian habitat), some of which may provide habitat for special-status ungulates. Implementation of these mitigation measures would reduce impacts on special-status ungulates such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts would be reduced to **less than significant**.

##### Fish and Aquatic Invertebrates

Many special-status aquatic species are known to occur within or adjacent to the treatable landscape, including fish and aquatic invertebrates (e.g., fairy shrimp, tadpole shrimp, crayfish). Table 3.6-32 provides a comprehensive list of special-status fish and aquatic invertebrates known or with potential to occur in the treatable landscape and considered in this analysis. Special-status aquatic species occur within rivers, smaller tributary streams, human-made aquatic features (e.g., stock ponds, irrigation canals), springs, vernal pools, lakes, and wetlands. The CalVTP does not propose treatment activities of any kind in state and federally protected wetlands, or other aquatic habitats, and wetland and aquatic habitats that have been mapped at a statewide level and are included in the FRAP vegetation data were excluded from the treatable landscape. However, many wetlands are defined at a finer scale than is available in the FRAP vegetation layer or in the NWI. Wetland habitats that may occur within the treatable landscape of each ecoregion but would not necessarily have been included in the FRAP vegetation data are discussed in the setting section of this PEIR for each ecoregion.

Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including fish and aquatic invertebrates, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to ~~ensure that these species are identified~~ identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) would reduce the likelihood of impacts to special-status fish and aquatic invertebrates within these habitats. However, many of these special-status species would be present outside of these habitats and would not be protected by these SPRs. SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-1, SPR HYD-3, and SPR HYD-4 provide protection of aquatic habitat by requiring compliance with applicable water quality requirements, prohibiting prescribed herbivory treatments within aquatic and riparian habitat, and implementation of WLPZs on each side of watercourses identified within treatment areas. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on special-status fish and aquatic invertebrates if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status fish and aquatic invertebrates are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities would include pile burning and broadcast burning. Major aquatic habitat types that were identified and mapped at a coarse scale are excluded from the treatable landscape; however, it is expected that smaller aquatic features (e.g., wetlands, vernal pools) could be present at the site level. Broadcast burning and pile burning would not result in substantial adverse effects on special-status aquatic species within the aquatic habitat that has been identified and excluded from the treatable landscape because fire is inherently low. However, these activities could result in adverse effects on smaller aquatic features within the treatable landscape. Additionally, prescribed burning treatment activities would remove vegetation, which could result in instability or erosion in areas adjacent or upstream of aquatic habitat. Erosion could result in inadvertent discharge of silt into watersheds, which could result in indirect adverse effects on aquatic species.

Prescribed burning treatment activities would include limited use of accelerants, which consist of gasoline or diesel fuel and associated compounds, such as gelling agents, that form the basis for the targeted ignition process. A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that the managed use of accelerants did not result in a substantial risk to terrestrial wildlife and most aquatic wildlife, including sensitive species. Adverse effects on special-status fish and aquatic invertebrate species would be minimized because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil and water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil, dilution), further reducing their potential for exposure to wildlife (USFS 2002). However, a small risk to sensitive fish from the aluminum oxide residues of one accelerant (i.e., launcher pistol flares) was predicted in small watersheds (USFS 2012). No risks were predicted for sensitive species in larger rivers, which offer greater dilution potential as a result of the water volume. Therefore, the use of accelerants in small watersheds could result in adverse effects on special-status fish and potentially aquatic invertebrates within smaller streams and other aquatic features in the treatable landscape.

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. Mechanical treatment would not result in substantial adverse effects on special-status aquatic species within the aquatic habitat that has been identified and excluded from the treatable landscape. However, if these activities occurred within or adjacent to smaller aquatic features, the activities could result in inadvertent fill of these features, potentially having an adverse effect on special-status wildlife if present. Additionally, mechanical treatment activities would remove vegetation, which could result in instability or erosion in areas adjacent or upstream of aquatic habitat. Erosion could result in inadvertent discharge of silt into watersheds, which could result in indirect adverse effects on aquatic species.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. If manual treatment activities occurred within or adjacent to smaller aquatic features in the treatable landscape, the activities could result in inadvertent fill of these features, potentially having an adverse effect on special-status wildlife if present. Additionally, manual treatment activities would remove vegetation which could result in instability or erosion in areas adjacent or upstream of aquatic habitat. Erosion could result in inadvertent discharge of silt into watersheds, which could result in indirect adverse effects on aquatic species.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population. If prescribed herbivory occurred within or adjacent to smaller aquatic features in the treatable landscape, the activities could result in trampling of aquatic species or inadvertent fill of these features, potentially having an adverse effect on special-status wildlife if present.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. If herbicide application occurred within or adjacent to smaller aquatic features in the treatable landscape, herbicide treatment could result in adverse effects on special-status fish and aquatic invertebrates, if these species were to come into direct contact with herbicides, as some herbicides may be toxic to aquatic species. The water quality effects addressed in Impact HYD-4 in Section 3.11, “Hydrology and Water Quality” also pertain to special-status fish and aquatic invertebrates.

###### Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status fish and aquatic invertebrates (listed in Table 3.6-33). SPR BIO-1 requires a data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status aquatic wildlife and sensitive habitat (including wetlands and aquatic habitat) to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion within native coastal sage scrub and chaparral (SPR BIO-5) reduce the likelihood of impacts (e.g., habitat loss, inadvertent fill of aquatic habitat) to special-status fish and aquatic invertebrates within these habitats. SPR BIO-8 limits treatments within ESHAs in the coastal zone, reducing the likelihood of impacts to special-status fish and aquatic invertebrates in the coastal zone. SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-1 requires treatments to comply with applicable water quality requirements adopted by the appropriate Regional Water Quality Control Board and approved by the SWRCB. SPR HYD-3 prohibits prescribed herbivory treatments within sensitive waterbodies, wetlands, or riparian areas. SPR HYD-4 requires implementation of WLPZs on each side of watercourses identified within treatment areas and prohibits fire ignitions (and associated accelerants) within WLPZs. SPR HYD-5 would reduce potential impacts to special-status aquatic species by limiting herbicide use within riparian habitat. Implementation of these SPRs reduces the likelihood of impacts to special-status fish species, and other special-status aquatic wildlife within river, stream, and lake habitats, including those that have been identified and excluded from the treatable landscape, to **less than significant**.

While implementation of SPRs would minimize impacts, treatment activities could still result in the adverse effects described above on special-status aquatic wildlife within smaller aquatic features such as wetlands and vernal pools (e.g., fairy shrimp, tadpole shrimp). These aquatic features likely have not been fully identified and excluded from the treatable landscape, and implementation of treatment activities within or adjacent to these features could result in inadvertent fill, potentially resulting in direct mortality of special-status aquatic species or loss of aquatic habitat function. Substantial adverse effects on special-status fish and aquatic invertebrates due to direct injury or mortality or habitat modifications would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Mitigation Measure BIO-4: Avoid State and Federally Protected Wetlands

Impacts to wetlands will be avoided using the following measures:

* The qualified RPF or biologist will delineate the boundaries of federally protected wetlands according to methods established in the USACE wetlands delineation manual (Environmental Laboratory 1987) and the appropriate regional supplement for the ecoregion in which the treatment is being implemented.
* The qualified RPF or biologist will delineate the boundaries of wetlands that may not meet the definition of waters of the United States, but would qualify as waters of the state, according to the state wetland procedures (California Water Boards 2019 or current procedures).
* A qualified RPF or biologist will establish a buffer around wetlands and mark the buffer boundary with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). The buffer will be a minimum width of 25 feet but may be larger if deemed necessary. The appropriate size and shape of the buffer zone will be determined in coordination with the qualified RPF or biologist and will depend on the type of wetland present (e.g., seasonal wetland, wet meadow, freshwater marsh, vernal pool), the timing of treatment (e.g., wet or dry time of year), whether any special-status species may occupy the wetland and the species’ vulnerability to the treatment activities, environmental conditions and terrain, and the treatment activity being implemented.
* A qualified RPF or biological technician will periodically inspect the materials demarcating the buffer to confirm that they are intact and visible, and wetland impacts are being avoided.
* Within this buffer, herbicide application is prohibited.
* Within this buffer, soil disturbance is prohibited. Accordingly, the following activities are not allowed within the buffer zone: mechanical treatments, prescribed herbivory, equipment and vehicle access or staging.
* Only prescribed (broadcast) burning may be implemented in wetland habitats if it is determined by a qualified RPF or biologist that:
* No special-status species are present in the wetland habitat
* The wetland habitat function would be maintained
* The prescribed burn is within the normal fire return interval for the wetland vegetation types present
* Fire containment lines and pile burning are prohibited within the buffer
* No fire ignition (and associated use of accelerants) will occur within the wetland buffer

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status fish and aquatic invertebrates by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measure BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or offset loss of habitat, such as sensitive natural communities and riparian habitat, some of which may provide habitat for special-status fish and aquatic invertebrates. Mitigation Measure BIO-4 would further reduce potential impacts by requiring protection of state and federally protected wetlands, including vernal pools, which may provide habitat for special-status aquatic invertebrates. Implementation of these mitigation measures would reduce impacts on special-status fish and aquatic invertebrates such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts would be reduced to **less than significant**.

##### Amphibians and Reptiles

Many special-status amphibian and reptile species are known to occur within the treatable landscape. Special-status amphibians known to occur in the treatable landscape include frogs (e.g., California red-legged frog, foothill yellow-legged frog [*Rana boylii*]), toads (e.g., arroyo toad [*Anaxyrus californicus*], western spadefoot [*Spea hammondii*]), newts (e.g., red-bellied newt [*Taricha rivularis*]), and salamanders (e.g., California tiger salamander, Santa Cruz long-toed salamander [*Aneides flavipunctatus niger*], southern torrent salamander [*Rhyacotriton variegatus*]). Special-status reptiles known to occur in the treatable landscape include snakes (e.g., Alameda striped racer, giant garter snake [*Thamnophis gigas*], red diamond rattlesnake [*Crotalus ruber*]), lizards (e.g., blunt-nosed leopard lizard [*Gambelia sila*], banded gila monster [*Heloderma suspectum cinctum*]), and tortoises and turtles (Mohave desert tortoise [*Gopherus agassizii*], northwestern western pond turtle [*Actinemys marmorata*]). Table 3.6-32 provides a comprehensive list of special-status amphibians and reptiles known or with potential to occur in the treatable landscape and considered in this analysis. Special-status amphibians, and some special-status reptiles (e.g., giant garter snake, northwestern western pond turtle) in the treatable landscape are closely associated with aquatic habitat, including wetlands, vernal pools, streams, and irrigation canals. Special-status reptiles in the treatable landscape are associated with a variety of habitats, including desert, riparian habitat, and coastal scrub. Most special-status amphibians and reptiles use underground burrow habitat for egg-laying and estivation.

The CalVTP does not propose treatment activities of any kind in state and federally protected wetlands, or other aquatic habitats, and wetland and aquatic habitats that have been mapped at a statewide level and are included in the FRAP vegetation data were excluded from the treatable landscape. However, many wetlands are defined at a finer scale than is available in the FRAP vegetation layer or in the NWI. Wetland habitats that may occur within the treatable landscape of each ecoregion but would not necessarily have been included in the FRAP vegetation data are discussed in the setting section of this PEIR for each ecoregion.

Treatment design of qualifying projects under the CalVTP would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including amphibians and reptiles, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to ~~ensure that these species are identified~~ identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), avoid environmental effects of type conversion within chaparral and coastal sage scrub habitats (SPR BIO-5), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) would reduce the likelihood of impacts to special-status amphibians and reptiles within these habitats. However, many of these special-status species would be present outside of these habitats and would not be protected by these SPRs. SPR BIO-11 requires the use of wildlife-friendly fencing during prescribed herbivory treatments, which reduces the likelihood of adverse interactions between special-status wildlife and fencing (e.g., entanglement, collision). SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-1, SPR HYD-3, and SPR HYD-4 provide protection of aquatic habitat which could be used by some special-status amphibians and reptiles, by requiring compliance with applicable water quality requirements, prohibiting prescribed herbivory treatments within aquatic and riparian habitat, and requiring implementation of WLPZs on each side of watercourses identified within treatment areas. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on special-status amphibians and reptiles if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status amphibians and reptiles are described for each treatment activity below.

###### Prescribed Burning

Prescribed burning treatment activities would include pile burning and broadcast burning. It is possible that special-status amphibians and reptiles could escape from the area of a broadcast burn, and that the broadcast burn would move through the area without permanent adverse effects on burrows occupied by these species. However, depending on the speed and intensity of the fire, and the character of the habitat broadcast burns could result in mortality of these species if they were unable to escape. Pile burning could result in adverse effects on special-status amphibians and reptiles if the piles are placed on top of or adjacent to burrows occupied by these species. These activities could result in the direct mortality of these species, if present. Broadcast burning and pile burning would not result in substantial adverse effects on aquatic amphibians and reptiles within the aquatic habitat that has been identified and excluded from the treatable landscape. However, these activities could result in adverse effects (e.g., inadvertent fill) on smaller aquatic features (e.g., wetlands, vernal pools) and special-status amphibians that may occupy these habitats.

Prescribed burning treatment activities would include limited use of accelerants, which consist of gasoline or diesel fuel and associated compounds, such as gelling agents, that form the basis for the targeted ignition process. A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that the managed use of accelerants did not result in a substantial risk to terrestrial wildlife and most aquatic wildlife, including sensitive species. Adverse effects on special-status amphibian and reptile species would be minimized because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and remaining accelerant residuals, located primarily in the soil and water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil, dilution), further reducing their potential for exposure to wildlife (USFS 2002). However, a small risk to the aquatic stage of sensitive amphibians from aluminum oxide residues of one accelerant (i.e., launcher pistol flares) was predicted for small watersheds (USFS 2012). No risks were predicted for sensitive species in larger rivers, which offer greater dilution potential as a result of the water volume. Therefore, the use of accelerants in small watersheds could result in adverse effects on special-status amphibians and potentially reptiles within smaller streams and other aquatic features in the treatable landscape.

###### Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. If mechanical treatment occurs during the breeding season, these activities could result in the direct loss of special-status amphibians or reptiles and their burrows, which could be crushed or otherwise disturbed if present within the vicinity of mechanical treatment activities like uprooting, skidding, or other use of heavy machinery. This could result in the direct mortality of these species, if present. Mechanical treatment would not result in substantial adverse effects on aquatic amphibians and reptiles within the aquatic habitat that has been identified and excluded from the treatable landscape. However, these activities could result in adverse effects (e.g., inadvertent fill) on smaller aquatic features (e.g., wetlands, vernal pools) and special-status amphibians that may occupy these habitats.

###### Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. While this treatment activity would be less likely to result in adverse effects than prescribed burning and mechanical treatment, special-status amphibians or reptiles and their burrows could be accidentally crushed or otherwise damaged by personnel or equipment (e.g., trucks). This could result in the direct mortality of these species, if present. Manual treatment would not result in substantial adverse effects on aquatic amphibians and reptiles within the aquatic habitat that has been identified and excluded from the treatable landscape. However, these activities could result in adverse effects (e.g., inadvertent fill) on smaller aquatic features (e.g., wetlands, vernal pools) and special-status amphibians that may occupy these habitats.

###### Prescribed Herbivory

Prescribed herbivory would include the use of domestic livestock (e.g., cows, goats, sheep) to reduce a target plant population. Livestock used in prescribed herbivory treatments could crush special-status amphibians or reptiles if present within underground burrow habitat, or otherwise destroy active burrows, if present within the treatment area. ~~The threat of burrow crushing is greater for cattle than for sheep and goats because cows are larger and heavier.~~ Additionally, installation of temporary fencing to contain livestock could also result in crushing of active burrow habitat if fence posts or other infrastructure are installed on or near burrows. Prescribed herbivory would not result in substantial adverse effects on aquatic amphibians and reptiles within the aquatic habitat that has been identified and excluded from the treatable landscape. However, these activities could result in adverse effects (e.g., inadvertent fill) on smaller aquatic features (e.g., wetlands, vernal pools) and special-status amphibians that may occupy these habitats. Temporary electric fences to control grazing animals would not result in injury or mortality of special-status wildlife due to electrocution. Temporary electric fences produce high voltage shocks with very low amperage, which ~~deters livestock from escaping without causing~~ do not cause injury or death in most species under normal circumstances.

###### Herbicides

Herbicide treatment would include ground-level application (e.g., paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, hand placement of pellets) and potential downward spray application using a boom applicator attached to an all-terrain vehicle or tractor. Herbicide treatment within terrestrial and aquatic habitat could result in adverse effects on amphibians and reptiles, if an animal ingested or came into direct contact with herbicides, as some herbicides may be toxic to these species.

###### Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status amphibians and reptiles (listed in Table 3.6-33). SPR BIO-1 requires a data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status aquatic wildlife and sensitive habitat (including wetlands and aquatic habitat) to occur. If it is determined that special-status wildlife may occur, then SPR BIO-10 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion within native coastal sage scrub and chaparral (SPR BIO-5) reduce the likelihood of impacts (e.g., habitat loss) to special-status amphibians and reptiles within these habitats. SPR BIO-8 limits treatments within ESHAs in the coastal zone, reducing likelihood of impacts to special-status amphibians and reptiles in the coastal zone. SPR HAZ-5 and SPR HAZ-6 require safe handling of herbicides (e.g., spill prevention, spill response) and compliance with current regulations for the application of herbicides. SPR HYD-1 requires treatments to comply with applicable water quality requirements adopted by the appropriate Regional Water Quality Control Board and approved by the SWRCB. SPR HYD-3 prohibits prescribed herbivory treatments within sensitive waterbodies, wetlands, or riparian areas. SPR HYD-4 requires implementation of WLPZs on each side of watercourses identified within treatment areas and prohibits fire ignitions (and associated use of accelerants) within WLPZs. SPR HYD-5 would reduce potential impacts to special-status amphibians and reptiles by limiting herbicide use within riparian habitat. Implementation of these SPRs reduce the likelihood of the impacts described above to special-status amphibians and reptiles within river, stream, and lake habitats, including those that have been identified and excluded from the treatable landscape, to **less than significant**.

While implementation of SPRs would minimize impacts, treatment activities could still result in the adverse effects described above on special-status amphibians within smaller aquatic features such as wetlands and vernal pools (e.g., salamanders, frogs) or associated riparian habitat. These aquatic features likely have not been fully identified and excluded from the treatable landscape, and implementation of treatment activities within or adjacent to these features could result in inadvertent fill, potentially resulting in direct mortality of special-status amphibians or destruction of habitat. Additionally, treatment activities could result in adverse effects on special-status amphibians and reptiles within non-aquatic (upland) habitats if these habitats that are not avoided with implementation of the SPRs. As described above, direct adverse effects include mortality or injury of special-status amphibians or reptiles or destruction of burrows, and loss of habitat function within these habitats. Substantial adverse effects on special-status amphibians and reptiles due to direct injury or mortality or upland habitat modifications would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure BIO-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Listed Wildlife Species and California Fully Protected Species (All Treatment Activities)

Mitigation Measure BIO-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species (All Treatment Activities)

Mitigation Measure BIO-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable (All Treatment Activities)

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands (All Treatment Activities)

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Mitigation Measure BIO-4: Avoid State and Federally Protected Wetlands

Significance after Mitigation

Mitigation Measures BIO-2a, BIO-2b, and BIO-2c would reduce potential impacts on special-status amphibians and reptiles by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would require project proponents to avoid or offset loss of special-status wildlife habitat (i.e., sensitive natural communities, riparian habitat). Mitigation Measure BIO-4 would further reduce potential impacts by requiring protection of state and federally protected wetlands, including vernal pools, which may provide habitat for some special-status reptiles and amphibians. Implementation of these mitigation measures would reduce impacts on special-status reptiles and amphibians such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Impacts would be reduced to **less than significant**.

##### Long-Term Effects of Treatment Types

Fuel treatment activities typically reduce surface and ladder fuels and increase tree crown spacing with the goal of modifying wildland fire behavior and thereby the probability of uncharacteristically severe fire effects (Agee and Skinner 2005, Stephens et al. 2009). A reduction in hazardous wildland fire effects typically provides increased ecosystem resilience (i.e., the ability of an ecosystem to maintain characteristic structure and function in the face of external disturbance; (Folke et al. 2004) to ecosystems. For example, in forest ecosystems, multiple studies on the impacts of fuel reduction in western U.S. forests indicate that fuel treatments effectively lead to reduced wildfire severity and to conditions consistent with the restoration of natural fire behavior (Fule’ et al. 2012). Few negative consequences for forest ecosystem components were observed (e.g., soils, small mammals, songbirds) (Fontaine and Kennedy 2012, Stephens et al. 2012). These studies suggest that treated forests are generally more resilient than untreated forests in the short term. However, fuel treatments can result in other ancillary positive, neutral, or negative effects on ecosystems and special-status species, depending on the elements examined and timing, intensity, and type of treatment. Furthermore, the long-term effects of fuel reduction treatments on special-status wildlife species and habitat are not fully understood (Collins et al. 2014).

Fuel treatment activities under the proposed CalVTP have the potential to modify habitat by removing trees, shrubs, and coarse woody debris on the ground. Some special-status wildlife species are closely associated with these habitat features (McIver et al. 2013). Features such as large mature trees, snags with large cavities, and large diameter coarse woody debris on the ground often take decades, if not a century to grow or accumulate (Shaffer et al. 2018). Removal of trees can result in increased light penetration, which in turn can lead to changes in understory herbaceous cover (McIver et al. 2013). In instances where trees are not removed, prescribed burning activities can weaken large trees, or attract bark beetles which can weaken trees potentially leading to their eventual death (McIver et al. 2013).

While fuel treatment activities would remove vegetation and modify habitat locally, these activities are not expected to cause permanent habitat degradation or conversion to a different habitat type on a landscape scale that would substantially reduce habitat for special-status wildlife over the long term. Indirect beneficial effects from improved habitat conditions could result from implementation of treatment types that restore ecosystem processes, conditions, and resiliency by moderating uncharacteristic wildland fuel conditions. This is a central tenant of the ecological restoration treatment type that would be implemented under the CalVTP. WUI fuel reduction and fuel breaks may also integrate fire resiliency and ecosystem restoration goals if compatible with treatment area conditions and treatment objectives. Many treated areas would retain some pre-treatment vegetation (e.g., up to 70 percent for prescribed fire) that provides habitat for wildlife. In forested environments, fuel breaks would be shaded and large trees and other vegetation would remain. Non-shaded fuel breaks, established outside of forest settings, would typically occur in areas where some level of fragmentation already occurs (e.g., adjacent to roads, where there is a natural change in vegetation types) or in areas with a low percentage of vegetation cover (e.g., rocky outcrops or ridgelines).

As described in the discussion of impacts above, special-status wildlife species could be directly or indirectly adversely affected (e.g., killed, injured, or disturbed) by treatment activities, if present within the treatment area. Although large-scale long-term wildlife habitat degradation is not expected, special-status wildlife species could be affected indirectly by local habitat modifications and loss of habitat function. Where habitat function is lost in essential wildlife habitat, special-status wildlife species that depend on this habitat may be displaced until the features and functions return (Shaffer et al. 2018). Many special-status wildlife species require specific habitat characteristics, including high canopy cover or complex understory features. For example, suitable habitat for coastal California gnatcatcher typically contains at least 50 percent scrub cover (Beyers and Wirtz 1995). If treatment activities were to reduce scrub cover within the range of this species, coastal California gnatcatcher could be displaced from the habitat until the scrub cover returned to at least 50 percent, which would typically take up to five years (Beyers and Wirtz 1995). Conversely, special-status wildlife species that prefer habitat with a more open canopy or food sources enhanced by fire (e.g., insects) may benefit from these treatment activities, in particular for ecological restoration treatment types (Shaffer et al. 2018). Reduction in understory leaf litter may benefit special-status snakes and lizards which prefer bare soil for basking and movement (McIver et al. 2013). Northern goshawks forage within openings in otherwise intact forest habitat (Shaffer et al. 2018). Additionally, some wildlife habitat types are specifically adapted to fire and could benefit substantially from prescribed burning if they are outside of their natural fire regime (i.e., Condition Classes 1 and 2).

Fire suppression activities in California have led to uncharacteristically dense vegetation (e.g., forest, shrub), and large wildfires, especially within these dense vegetation conditions, can result in catastrophic loss to wildlife or wildlife habitat. Small or isolated populations of special-status species and populations near the edge of their species’ distribution would likely be disproportionately affected by wildfires (Shaffer and Hedwall 2018). There is a potential long-term benefit to special-status wildlife from implementation of the CalVTP because it is intended to reduce the risk of wildfires that can eliminate special-status wildlife individuals and populations. Balancing the potential short-term adverse effects to special-status species and habitats from fuel reduction with the potential for long-term benefits is a subject of current discussion and a goal for fuel reduction programs and some species recovery programs (Shaffer and Hedwall 2018, Kelsey 2019). For example, wildfire is a major threat to the recovery of mountain yellow-legged frog (*Rana muscosa*), which is listed as endangered under ESA. Implementation of vegetation management to reduce the risk of wildfire in the range of this species is an essential component in the species’ recovery plan (USFWS 2018). Wildfire has historically affected the federally-threatened coastal California gnatcatcher, burning large expanses of coastal sage scrub habitat and killing nesting gnatcatchers (Beyers and Wirtz 1995). Coastal California gnatcatchers do not use recently burned coastal sage scrub habitat unless it is adjacent to unburned patches of habitat, whether the habitat was burned in a wildfire or by prescribed burning activities (Beyers and Wirtz 1995). It is possible that carefully implemented vegetation treatment activities, including prescribed burning, could reduce the likelihood of these catastrophic fires, and be implemented in such a way that habitat is still suitable for sensitive species (e.g., leaving intact habitat in a matrix). The threat of high severity wildfire versus fire suppression on the California spotted owl, as well as the potential effects from fuel treatment, have been considered in multiple studies. Although uncertainty remains, spotted owls generally prefer a larger landscape mosaic of habitats, including unburned refugia and burned open areas, where they can nest and roost in high canopy cover while foraging in recently burned areas with improved prey habitat (Shaffer et al. 2018). Prescribed fire and other fuel treatments may aid in reducing habitat loss by high-severity megafires (Ganey et al. 2017). Wildfire is unpredictable in terms of frequency, location, and severity, and the long-term response of each special-status species to wildfire, fire suppression, and fuel treatment are not well understood for many species. Although fuel treatment is intended to restore ecosystem resiliency under the CalVTP in many areas, the potential benefits to special-status wildlife species are uncertain and therefore not considered in determining the significance of this impact under CEQA. The adverse effects of vegetation treatment activities on special-status wildlife species and habitat are discussed above for each species group and under Impact BIO-3 for sensitive habitat types.

Impact BIO-3: Substantially Affect Riparian Habitat or Other Sensitive Natural Community Through Direct Loss or Degradation that Leads to Loss of Habitat Function

Vegetation treatment activities could result in loss or degradation of sensitive habitats, including designated sensitive natural communities, riparian habitats, and oak woodlands. Implementation of SPRs BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-9, and HYD-4 require that potential sensitive natural communities and other sensitive habitats be identified and protected prior to implementing treatments. Implementation of SPR BIO-5 would avoid environmental effects of type conversion in chaparral and coastal sage scrub habitats. While SPRs would minimize impacts, treatment activities could still result in a loss of acreage of sensitive natural communities and habitats, eliminate sensitive natural communities or habitats from a treatment area, or reduce the habitat value or function of sensitive natural communities and habitats. Many riparian, chaparral, and coastal sage scrub habitats are also designated sensitive natural communities and are considered ESHAs in the coastal zone. Sensitive natural communities (vegetation alliances with state or global rarity ranks 1, 2, or 3) are also considered ESHAs in the coastal zone. Loss or degradation of sensitive natural communities and sensitive habitats would be a **potentially significant** impact.

SPR BIO-1 requires data review and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for sensitive natural communities or sensitive habitats to occur or be affected by treatment activities. If they may occur, SPR BIO-1 requires those resources to be avoided if possible. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist so crews are aware of potential sensitive natural communities and sensitive habitats in the treatment area and measures to reduce adverse effects. If treatment in areas that may support sensitive natural communities and sensitive habitats cannot be avoided, SPR BIO-3 requires a protocol-level survey for sensitive natural communities and sensitive habitats to ~~ensure that these are identified~~ identify these species prior to treatment so that appropriate avoidance and minimization measures can be implemented. SPR BIO-4 requires that treatments in riparian habitat be designed to avoid loss or degradation of riparian habitat function. SPR BIO-5 requires that chaparral and coastal sage scrub be identified to the alliance level and that treatments be designed to maintain or enhance habitat function of said alliance and avoid environmental effects of type conversion. SPR BIO-6 requires that best management practices be used to avoid spreading plant pathogens, such as *Phytopthora*, that could kill oak trees or other characteristic vegetation that comprises sensitive natural communities and sensitive habitats. SPRs designed to identify sensitive natural communities (SPR BIO-3), retain the habitat function of riparian habitat and limit herbicide use within riparian habitat (SPR BIO-4 and SPR HYD-5, respectively), and limit treatments within ESHAs in the coastal zone (SPR BIO-8) would ~~all work to~~ minimize impacts on sensitive natural communities and sensitive habitats. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on sensitive natural communities, riparian habitat, and oak woodlands. These potential residual impacts are discussed for each sensitive natural community/sensitive habitat category in the sections that follow.

###### Sensitive Natural Communities

Sensitive natural communities are identified at the alliance level using the *Manual of California Vegetation* (Sawyer et al. 2009 or current version, including updated natural communities data at http://vegetation.cnps.org/). Sensitive natural communities are defined by unique assemblages of vegetation that may include, or even be dominated by, relatively common species, but it is the assemblage of species that is rare. For example, Sargent cypress is not a rare plant species, but Sargent cypress woodland is an assemblage of vegetation where Sargent cypress is dominant (comprises greater than 50 percent relative cover) in the tree canopy with McNab cypress, scrub pine, foothill pine, Douglas fir, live oak, and California bay. This particular assemblage of species (alliance) is uncommon, has a state rarity rank of 3 (vulnerable), and is therefore designated by CDFW as a sensitive natural community. The proposed treatment activities could result in loss or degradation of designated sensitive natural communities, if present in treatment areas, through physically removing the dominant and characteristic vegetation that defines the community or through modifications to species composition, growth form, and vegetation structure in a way that causes a transition from a vegetation alliance meeting the parameters that define the sensitive natural community to one meeting the characteristics of a common vegetation type or to one dominated nonnative vegetation. Removal of understory vegetation to create a shaded fuel break could result in a loss of sensitive natural communities if the understory shrub vegetation is characteristic of the vegetation assemblage that defines the sensitive natural community. For example, western azalea patches are a shrub-dominated sensitive natural community that can occur as small patches interspersed within redwood forests. If clearing the shrub layer to create a shaded fuel break within these forests, western azalea patches could be eliminated. In addition, because fuel breaks need to be maintained free of vegetation, or free of understory vegetation in the case of shaded fuel breaks in woodland and forest communities, the vegetation that characterizes these alliances would not be allowed to regenerate and this would result in a permanent loss of sensitive natural communities.

Indirect impacts could occur if ground disturbances during treatment activities alter habitat or site conditions in a manner that later results in the death or lack of regeneration of vegetation that typifies the sensitive natural community at the alliance level. Mechanical treatments and fuel breaks in or adjacent to sensitive natural communities can increase invasion risk by creating bare ground and tilled soil that is ideal for invasive plant species establishment; however, SPR BIO-9 requires actions to prevent the spread of invasive plants. SPR BIO-6 requires BMPs to minimize the spread of plant pathogens from treatment activities, which can kill dominant plant species that characterize sensitive natural communities. For example, Ione chaparral, a sensitive natural community dominated by Ione manzanita (*Arctostaphylos myrtifolia*), is threatened by two fungal pathogens: a branch-canker disease (caused by a species of *Fusicoccum*) and a root and crown rot disease (caused by *Phytophthora cinnamomi*). The spread of these diseases is exacerbated by soil disturbances that mobilize the fungal spores.

Many sensitive natural communities, like other native vegetation types, are currently degraded by fire suppression policies and other vegetation management practices that have altered ecosystem processes and changed species composition. Treatment activities may introduce disturbance regimes that are incompatible with the ecology of the specific sensitive natural communities present in a treatment area. Conversely, indirect beneficial effects from improved habitat conditions could result from implementation of the treatment types that restore ecosystem processes, conditions, and resiliency by moderating uncharacteristic wildland fuel conditions to reflect historic vegetative composition and structure that is characteristic of the sensitive natural community type, which is identified at the alliance level. This is a central tenet of the ecological restoration treatment type that would be implemented under the CalVTP, but WUI fuel reduction and shaded fuel breaks may also integrate fire resiliency and ecosystem restoration goals if compatible with treatment area conditions and treatment objectives.

Some sensitive natural communities are specifically adapted to fire and could benefit substantially from prescribed burning if they are outside of their natural fire regime (i.e., Condition Classes 1 and 2). The responses of plants to fire can be divided into two broad categories – stimulated by fire or not stimulated by fire. Fire-stimulated plants are further divided into fire-dependent and fire-enhanced categories, while plants not stimulated by fire are either fire-neutral or fire-inhibited. Fire dependent responses occur only with fire, such as seed germination requiring heat, smoke, or chemicals from charcoal. Fire-enhanced responses (e.g., sprouting) are those that are increased by fire but that also occur from other types of damage to the plant (Sugihara et al. 2006).

While mechanical treatments can mimic some aspects of fire disturbance in terms of altering vegetation composition and structure and reducing fuel loads, they cannot reproduce all of the ecological benefits of fire in fire-dependent or fire-enhanced communities. For example, mechanical thinning in fire-dependent sensitive natural communities such as Baker cypress stand, Mendocino pygmy cypress woodland, Piute cypress woodland, and Bishop pine-Monterey pine forest will not trigger the opening of serotinous cones that release their seeds in response to fire, or create the favorable seedbed conditions that fire creates for these species to regenerate. Mechanical treatments also will not stimulate germination of fire-following native annuals that respond to chemical cues in ash (Underwood et al. 2018). Therefore, mechanical treatments can reduce regeneration and recruitment in these communities even if implemented within the appropriate fire return interval and would generally not provide an ecological benefit. For fire-dependent closed cone communities, fire return intervals need to be long enough to allow new cone crops to develop but short enough to ensure seed crops are still viable when released (Sawyer et al. 2009). Any fire or other disturbance (e.g., mechanical treatment) outside of the normal fire return interval can have adverse effects on these communities that reduces successful regeneration and recruitment of the characteristic species that define sensitive natural communities.

Sensitive natural communities that have potential to occur in the treatable landscape are listed in the setting description of each ecoregion. Any of the treatment activities have the potential to remove, kill, or damage vegetation that defines sensitive natural communities and each of the treatment activities could be used in every treatment type. Sensitive natural communities often occur in relatively small stands and are therefore easily eliminated. Even if only a portion of the stand is removed, it could reduce the stand size below a self-sustaining level. Additionally, ground disturbances during treatment activities could alter habitat or site conditions in a manner that later results in the death or lack of regeneration of vegetation that typifies the sensitive natural community at the alliance level.

###### Riparian Habitat

Implementing treatment activities under the CalVTP may result in direct removal of native riparian vegetation resulting in a loss of riparian habitat acreage or function. While treatments in riparian habitats are primarily focused on removal of uncharacteristic fuel loads, it is sometimes necessary to remove native riparian shrubs and even mature native riparian hardwood trees to reduce fire hazard risks to human lives and property. Additionally, when prescribed fire is used, a burn perimeter will be established around the treatment area, including in riparian areas. Removal of native understory vegetation could reduce habitat functions for wildlife species that use the shrub layer or require structural complexity, and removal of woody vegetation could leave stream banks more susceptible to erosion and reduce stormwater filtration. SPR BIO-4 would reduce some of the potential indirect impacts on riparian habitat, such as avoiding removing vegetation that shades streams or contributes large woody debris for salmonids, but indirect impacts would still occur from removal of native riparian vegetation. Not all species benefit from an open understory free of shrubs. Many species that use riparian habitats for cover, nesting, denning, and roosting are dependent on a well-developed shrub layer. Riparian habitats that are diverse in both the composition of vegetation species and physical habitat structure are likely to accommodate a wider variety of wildlife and reducing structural complexity and species diversity can reduce habitat functions for many species. Removal of dead and dying trees, encroaching upland species, invasive plants, and excess understory vegetation growth can also have beneficial effects because it would leave more water and nutrients available for native riparian hardwood trees and can improve riparian habitat health. While both beneficial and adverse impacts could occur, the removal of native riparian vegetation has the potential to substantially reduce habitat functions and there could be a net loss of riparian habitat in treatment areas.

###### Oak Woodlands

Treatments in oak woodland habitat, under the CalVTP, would primarily be focused on treating the herbaceous understory, but would also include removing uncharacteristic fuel loads in the shrub layer and reducing ladder fuels. To the extent that CalVTP treatment activities mimic natural disturbance patterns in oak woodlands, it is reasonable to expect long-term beneficial effects may result. For example, removal of dead and dying trees, invasive plants, and excess understory vegetation growth can improve oak woodland habitat quality by removing vegetation that competes with oak seedlings and saplings for light, water, and nutrients. Removal of mature native oak trees is not an objective of the CalVTP. Nonetheless, oak woodland vegetation could be removed to create fuel breaks and oak tree roots could be damaged during mechanical treatments resulting in ultimate tree mortality. Other detrimental effects on ecological processes could result from soil compaction and erosion and introduction of invasive plants. SPR BIO-6 requires BMPs to minimize the spread of oak pathogens from treatment activities into currently uninfected areas, which could result in loss of oak woodland acreage and habitat function. SPR BIO-9 requires BMPs to minimize the spread of invasive plants and noxious weeds into currently uninfested areas to avoid habitat degradation. Removal of native understory vegetation could reduce habitat functions for wildlife species that utilize the shrub layer or require structural complexity.

###### Chaparral and Coastal Sage Scrub

Shortened fire return interval has been identified as a primary driver of type conversion from chaparral and coastal sage scrub vegetation types to vegetation types dominated by nonnative herbaceous vegetation in Southern California (Syphard et al. 2019, Cox et al. 2014, Talluto and Suding 2008, Underwood et al. 2018). Even though chaparral vegetation is fire adapted, and some chaparral species are even fire dependent (e.g., have seeds that are stimulated to germinate by fire), most chaparral types require a minimum of 10 years to recover from fire and chaparral types dominated by obligate seeder shrubs that are fire-stimulated generally require a minimum of 15 years to accumulate enough seed in the soil seedbank to recover (Syphard et al. 2019). Chaparral vegetation types that are characterized by facultative seeders (i.e., regenerate by resprouting and from seed) are more resilient to fire than those characterized primarily by obligate seeders, but these too can be degraded by repeated short-interval fires. Therefore, vegetation treatment activities implemented under the CalVTP, including prescribed burning, could potentially result in type conversion of chaparral vegetation if the treatment does not replicate the natural fire regime of the vegetation type present. SPR BIO-5 avoids environmental effects of type conversion of chaparral and coastal sage scrub by designing treatment activities to replicate the natural fire regime, return the vegetation type to its natural condition class, and maintain or improve the natural habitat function of those alliances.

###### Summary of Impacts by Treatment Activity

The following sections describe impact mechanisms that are unique to each treatment activity. Most treatment activities would be implemented in combination with other treatment activities to achieve the objectives of a treatment type (i.e., WUI fuel reduction, fuel breaks, ecological restoration). For example, mechanical and manual treatments could be used together to remove vegetation, which could then be piled and burned. Broadcast burning also involves establishing a containment line around the burn perimeter, typically using mechanical and manual treatment activities prior to burning. Prescribed herbivory or herbicide application may be used in combination with manual or mechanical treatments.

Prescribed Burning

Prescribed burning could result in directly burning up vegetation that characterizes sensitive natural communities or sensitive habitats. Prescribed burns could consume vegetation completely or could reduce the viability of seedbanks of dominant vegetation if they are not adapted to fire or if the fire burns too hot. Prescribed burning has potential to reduce regeneration of sensitive natural communities and sensitive habitats that are not adapted to fire. Residual chemicals from accelerants used to ignite prescribed burns have potential to reduce plant regeneration, survivorship, growth, and vigor; however, accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and accelerant residuals are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), which further reduces their availability for plant uptake during and after vegetative growth (USFS 2002).

Mechanical Treatment

Mechanical treatments such as masticating, tilling, grubbing, and raking can disturb soil several inches below the surface affecting roots, rhizomes, bulbs and other underground parts of non-target vegetation, as well as the seedbed, and affecting soil stability. In addition, the removal of vegetation using mechanical treatments is less precise (in comparison to manual treatments); therefore, this treatment activity is used at sites where precision removal is not necessary. This treatment type could adversely modify habitat in a way that reduces survivorship, growth, and reestablishment of dominant or characteristic plant species or directly remove, crush, break, or otherwise destroy plants that make up sensitive natural communities and sensitive habitat. As noted previously, mechanical treatments cannot reproduce all of the ecological benefits of prescribed burning in fire-dependent or fire-enhanced communities, such as opening serotinous cones and facilitating germination of fire-stimulated seeds.

Manual Treatment

Manual treatments typically result in less ground disturbance than mechanical treatments; nonetheless, there is still a risk of trampling, breaking, cutting nontarget vegetation, including species that characterize sensitive natural communities or habitats. Temporary ground disturbance could occur during treatment implementation, including turning soil where roots of invasive plants are pulled out; driving motorized vehicles, such as ATVs and mowers, to access treatment sites and haul treated material off-site; and ground crews walking over vegetation. However, because manual treatments are implemented on a relatively small scale by trained individuals selectively treating targeted vegetation by hand, there is limited risk of removing non-targeted vegetation and this treatment type would generally not substantially alter sensitive habitat or result in a loss of sensitive natural communities unless designed to do so.

Prescribed Herbivory

Non-target ~~S~~sensitive or special-status plant species may~~vegetation can~~ be consumed or trampled by grazing livestock, potentially resulting in death or reduced reproduction and growth. Prescribed herbivory is typically used on a relatively small scale to reduce a target plant population, such as an invasive plant infestation, thereby reducing fire fuels or competition with desirable plant species.

Herbicides

Application of herbicides during treatment could damage or kill non-target vegetation through inadvertent direct application or through herbicide drift. Therefore, herbicide treatment has potential to kill vegetation that comprises sensitive natural communities and sensitive habitats. Downward boom spray application and spot spraying methods have a greater risk of affecting nontarget species than stem injection or paint-on stem application. The CalVTP does not include aerial spray application as an herbicide application method.

Conclusion

SPR BIO-1 requires data review and reconnaissance surveys to identify potential riparian or other sensitive habitats and sensitive natural communities and SPR BIO-2 requires biological resource training for workers so they would learn to recognize sensitive natural communities and habitats and the SPRs, mitigation measures, BMPs, and laws and regulations that protect these resources. SPR BIO-3 requires site-specific surveys to identify and map the limits of sensitive natural communities and other sensitive habitats using standard field protocols. SPR BIO-4 requires treatments be designed to avoid loss or degradation of riparian habitat functions and values. SPR BIO-5 requires treatments be designed to avoid environmental effects of type conversion of chaparral and coastal sage scrub habitats. SPR BIO-6 requires BMPs be implemented to prevent the spread of plant pathogens. SPR BIO-8 requires that ESHAs be identified for treatment activities in the coastal zone and that treatments be designed to minimize impacts to ESHAs. SPR BIO‑9 requires BMPs be implemented to prevent the spread of invasive plants and noxious weeds that could degrade the quality of sensitive habitats and sensitive natural communities. SPR HYD-4 requires identification and protection of WLPZs. These SPRs would substantially reduce potential direct and indirect impacts to sensitive habitats and sensitive natural communities; however, there would still be potential for direct removal of sensitive vegetation or habitat modifications that degrade the quality of sensitive habitats or sensitive natural communities and that lead to a loss of acreage of these habitat types, eliminate sensitive natural communities or habitat from a treatment area, or reduce the habitat value or function of these habitats. Loss or substantial degradation of sensitive natural communities and sensitive habitats would be a **potentially** **significant** impact.

Mitigation Measures

Mitigation Measure BIO-3a: Design Treatments to Avoid Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3b: Compensate for Loss of Sensitive Natural Communities and Oak Woodlands

Mitigation Measure BIO-3c: Compensate for Unavoidable Loss of Riparian Habitat

Significance after Mitigation

Implementing Mitigation Measure BIO-3a would reduce potentially significant impacts on sensitive natural communities and oak woodlands by requiring treatment activities be designed to avoid loss of sensitive natural communities, to the extent feasible, by identifying vegetation type to the alliance level and determining their rarity rank, designing treatments to restore the natural fire regime and return vegetation composition and structure to their natural condition to maintain or improve habitat function of the affected sensitive natural community or oak woodland, prohibiting fuel breaks in sensitive natural communities with rarity ranks S1 and S2, avoiding non-shaded fuels breaks in oak woodlands or sensitive natural communities with rarity rank S3 and requiring that no more than 20 percent of the stand be removed, using prescribed burning as the primary treatment activity in fire-dependent sensitive natural communities to the extent feasible, timing prescribed herbivory to occur when non-target vegetation is not susceptible to damage, and requiring that unavoidable losses of sensitive natural communities or oak woodlands be offset by restoring oak woodlands or sensitive natural communities onsite, restoring degraded oak woodlands or sensitive natural communities offsite, or preserving, through a conservation easement, existing oak woodlands or sensitive natural communities of equal or better value to those lost at a sufficient ratio to offset losses of acreage and habitat function.

Measure BIO-3c would minimize impacts to riparian vegetation by requiring that unavoidable losses of riparian habitat be offset by restoring riparian habitat values onsite, restoring degraded riparian habitat offsite, purchasing riparian habitat credits at a CDFW-approved mitigation bank, preserving existing riparian habitat of equal or better value to the riparian habitat lost through a conservation easement at a sufficient ratio to offset the loss of riparian habitat function and value in the treatment area.

As described above, implementation of mitigation measures would reduce impacts of treatments such that loss or degradation of Riparian Habitat or Other Sensitive Natural Community would be avoided or compensated at an adequate ratio to offset the loss of riparian habitat functions. This impact would be **less than significant**.

Impact BIO-4: Substantially Affect State or Federally Protected Wetlands

Treatment activities proposed under the CalVTP could occur on lands that contain state or federally protected wetlands; these activities could remove wetland vegetation and alter wetland hydrology or topography resulting in loss or degradation of wetland function. Implementation of SPRs BIO-1 and HYD-4 require that potential wetlands be identified and protected prior to implementing treatments. While implementation of SPRs would minimize impacts, treatment activities could inadvertently destroy or adversely modify protected wetlands resulting in loss of these resources. Additionally, prescribed burning would result in direct removal of wetland vegetation that could adversely modify wetland functions and reduce wetland values. If this occurred, it would be a **potentially** **significant** impact.

The CalVTP does not propose treatment activities, except prescribed burning, in state and federally protected wetlands, or other aquatic habitats, and wetland and aquatic habitats that have been mapped at a statewide level and are included in the FRAP vegetation data were excluded from the treatable landscape. However, many wetlands are defined at a finer scale than is available in the FRAP vegetation layer or in the NWI. Wetland habitats that may occur within the treatable landscape of each ecoregion but would not necessarily have been included in the FRAP vegetation data are discussed in the setting section of this PEIR for each ecoregion. Furthermore, prescribed burning may be implemented in wetland habitats under this program. SPR BIO-1 requires data review and reconnaissance surveys to identify potential sensitive biological resources, SPRs HYD-1 and HYD-3 require water quality protections, and SPR HYD-4 requires identification and protection of WLPZs. These SPRs would substantially reduce potential direct and indirect impacts to wetlands and aquatic habitats; however, some treatment activities could inadvertently destroy or adversely modify protected wetlands resulting in loss of wetland habitat functions and values from ground disturbance or upland vegetation removal that alters hydrology, direct removal of wetland vegetation, or fill of wetlands or dredging through wetlands (e.g., for containment line construction). If this occurred, it would be a **potentially** **significant** impact.

Mitigation Measures

Mitigation Measure BIO-4: Avoid State and Federally Protected Wetlands

Significance after Mitigation

Implementing Mitigation Measure BIO-4 would reduce potentially significant impacts on state and federally protected wetlands because it would require delineation and avoidance of these wetlands with no-disturbance buffers clearly marked so that no inadvertent damage or destruction to these habits would occur during treatment activities or would require that prescribed burns be designed to avoid loss of wetland functions and values. With implementation of mitigation, adverse effects to wetlands would not be substantial. This impact would be **less than significant**.

Impact BIO-5: Interfere Substantially with Wildlife Movement Corridors or Impede Use of Nurseries

Vegetation treatment activities implemented under the CalVTP could be located in areas used as wildlife movement corridors or nurseries. Treatment-related noise and disturbance could lead to temporary changes in migration or movement patterns, and fencing for prescribed herbivory could potentially injure or impede moving wildlife. Wildlife nursery sites could be disturbed or essential nursery habitat components could be degraded by vegetation treatment activities. SPRs BIO-1, BIO-4, BIO-5, BIO-10, BIO-11, HYD-1, and HYD-4 require identification of nursery sites prior to treatment activities, actions to prevent degradation of aquatic and riparian corridors, and installation of wildlife-friendly fencing to avoid entanglement during wildlife movement. Temporary shifts in wildlife movements to avoid or navigate around active treatment sites and associated disturbances would not substantially interfere with movement requirements or migration patterns; and project implementation would not create long-term barriers to local or landscape-level movements. While implementation of SPRs would minimize impacts, nursery sites could still be removed, degraded, or disturbed during treatment activities. This would be a **potentially significant** impact.

Fish passage in rivers and tributaries occurs within the treatable landscape. Many anadromous fish species, including steelhead, Coho salmon, and Chinook salmon, have runs within river systems in California. The function of these movement corridors throughout the state is threatened by sedimentation due to inadvertent fill as a result of activities including urban development, agricultural development, and timber harvest.

Terrestrial wildlife movement corridors in California, or essential connectivity areas, include much of the relatively intact natural landscape blocks in wildland areas and some developed areas of the state. Several ungulate species occur within the treatable landscape and these species exhibit several different movement and migration strategies. Elk, including Roosevelt elk (*Cervus canadensis roosevelti*) and tule elk (*Cervus canadensis nannodes*), are largely resident, and do not undergo large migrations. Elk movements are typically related to search for foraging opportunities. Bighorn sheep also do not undergo large migrations but rather migrate seasonally between high mountain slopes in the summer to foothill slopes in winter when high elevation areas are inundated with snow. Pronghorn can exhibit long distance migration behavior or resident behavior (Yoakum et al. 2014). Mule deer, the most common ungulate species in California, occurs throughout most of California including large portions of the treatable landscape. One of the objectives of the CDFW California Deer Conservation and Management Plan is to update and maintain range maps for this species including migration routes in order to better manage the species (CDFW 2015b). Additionally, resident mountain lions range includes most of the wildland areas of the treatable landscape. Mountain lions occupy a variety of habitats but are most abundant in riparian habitats. Habitat use is typically associated with prey availability. Mule deer make up a large percentage of mountain lion diet. Mountain lion home ranges can be greater than 200 square miles, though home ranges typically range from 5 to 100 square miles (Allen et al. 2015). The treatable landscape overlaps with migratory deer winter ranges and thus also overlap with mountain lion home ranges. Deer migration areas, and thus mountain lion occurrences, are largely associated with waterways and riparian areas within the treatable landscape.

The Pacific Flyway comprises most of the western United States and represents the major north-south migration pathway for migratory birds in the region. California contains some of the most important wintering areas or other migratory stopovers for migratory waterfowl, shorebirds, and other species. These areas include the Sacramento Valley, San Francisco Bay, the Klamath Basin, Mono Lake, the Salton Sea, other wetland habitat throughout the state, and agricultural habitat, particularly rice fields.

While smaller wildlife species typically do not migrate distances as large as ungulates and mountain lions, these species exhibit movement patterns throughout their habitats in search of foraging opportunities, mates, aquatic breeding sites (e.g., reptiles, amphibians) or cover (e.g., nests, dens), as well as in response to stressors (e.g., weather, predators, other disturbance). Forest species such as fisher and marten require large contiguous blocks of forest habitat with a high degree of canopy cover, large structural features (e.g., logs, rock piles, snags), and a dense shrub layer (Sauder and Rachlow 2014 and Zielinski et al. 2001). Martens will avoid forest habitats without complex understory structure, which can result in decreased foraging success and increased vulnerability to predation (Moriarty 2016). Other smaller wildlife species (e.g., rodents, amphibians, reptiles) migrate much smaller distances than larger wildlife species. Amphibians typically migrate no more than 1 mile; some only several feet (Russell et al. 2005) although distances greater than 2 miles have been recorded (Bulger et al. 2003).

Prescribed fire, mechanical treatment, manual treatment, herbicide application, and prescribed herbivory could occur within areas used by wildlife for movement corridors or nurseries. Examples of wildlife nurseries potentially present in the treatable landscape include bat maternity roosts, deer fawning areas, heron or egret rookeries, and monarch overwintering sites. The following discussion considers the potential for short-term disturbance to wildlife movement and nurseries during vegetation treatment activities and for longer-term effects following treatment due to habitat modification and reduced habitat function. This analysis primarily considers impacts on native species that do not meet the definition of special-status species (refer to Impact BIO-2 for further discussion of impacts on special-status wildlife species).

###### Short-Term Effects during Treatment Activities

Noise or visual disturbance due to the presence of equipment, personnel, or fire could cause resident or migratory wildlife to temporarily avoid or move out of the areas immediately surrounding treatment areas. These disturbances could temporarily disrupt the movement patterns of some wildlife species that may use treatment areas or adjacent lands for regular movements locally or for seasonal migrations. Additionally, access or use of any wildlife nursery sites (e.g., ~~bird nesting colonies,~~ bat maternity roosts, deer fawning areas, heron or egret rookeries, monarch overwintering sites) present within or adjacent to active treatment areas could be disturbed or impeded temporarily by treatment activities, as explained further below. Implementation of treatment activities would typically occur over 1 day and up to 1 week for a controlled burn to several months for some manual treatments. Various heavy equipment (e.g., engines, dozers, masticators, water trucks, chippers) could be used and up to approximately 20-45 personnel could be present in a treatment area from dawn to dusk, depending on the treatment activity being implemented.

Some treatment activities would occur in close proximity to human development, such as the creation of fuel breaks adjacent to existing roads. The general types and levels of disturbances (e.g., equipment noise, visual disturbance, human activity) from treatment activities near developed areas (e.g., communities, existing structures, and public roads with consistent traffic) would likely be similar to existing disturbance levels in these areas. Wildlife near human development is likely accustomed to human presence and motorized vehicles (e.g., mule deer); therefore, any temporary incremental increases in noise and human disturbances from treatment activities in these areas are unlikely to disrupt current movement patterns substantially above existing levels.

In areas further from human development, such as locations where ecological restoration treatments outside the WUI and fuel breaks along ridgelines may be implemented, the treatment areas would typically be surrounded by natural open space accessible to terrestrial wildlife; and, individuals would likely move out of active treatment areas and into adjacent habitats temporarily to avoid fire, noise, and personnel (Monteith et al. 2018, Shaffer et al. 2018). Treatment sites containing historic migratory corridors (i.e., routes established long ago that continue to be used by each new generation) or other important movement routes (e.g., for mule deer, bighorn sheep, pronghorn) would likely not span entire core areas available for movement, thereby allowing migratory or mobile species to move around areas of treatment activities through adjacent open space temporarily. Additionally, treatment activities would not create any temporary barriers to movement that would redirect migration during non-working hours (or for more than a few days in the case of prescribed herbivory, see next paragraph). Therefore, treatment-related disturbances to local or regional wildlife movements would be temporary and relatively minor.

Prescribed herbivory treatments may use fencing, typically low-voltage temporary electric fencing, for containing herbivores (e.g., sheep and goats). Electric fencing systems typically consist of two or three horizontal strands of electric wire or electric netting, posts staked in the ground, a solar panel, and a battery. Prescribed herbivory typically consists of fencing small areas (e.g., fewer than 5 acres) and moving fencing to a new area frequently (e.g., every few days), instead of fencing larger areas for longer periods. Most wildlife is likely to circumvent the fenced areas which could temporarily displace wildlife from the area and cause minor shifts in movement patterns while navigating around the treatment area. Migrating ungulates could attempt to jump over fences while moving (e.g., adult deer and elk) (Paige 2012). SPR BIO-11 requires use of “wildlife-friendly” fencing during prescribed herbivory which would avoid potential injury or mortality to wildlife moving in the area and allow wildlife to safely move around or over fencing, thereby minimizing potential impediments to migration or seasonal movement. SPR BIO-11 requires that fencing avoids materials that could impale or entangle wildlife (e.g., barbed, loose, or broken wires); remains electrified at all times, if it is the electric netting-type, to deter wildlife from attempting to push through the netting; and is a height that allows ungulates to easily jump over such that ungulates could identify the fence and avoid snaring their legs or antlers and resultant injury or death. This SPR would also avoid collision or entanglement by migrating birds during foraging or other movements near the ground by requiring that the fencing is marked with materials that are visible to birds, such as flagging or high-visibility tape. Smaller wildlife would be able to move through or around the fencing.

Treatments would not occur within aquatic habitat types (refer to Chapter 2, “Program Description”), but treatment could occur adjacent to aquatic wildlife movement corridors and nursery sites. Treatments could occur within riparian corridors and other terrestrial movement corridors, such as ridgelines or valleys. SPR HYD-1 requires compliance with water quality regulations and SPR HYD-4 requires WLPZs to be established on each side of watercourses which would: minimize disturbance to wildlife movement and nursery sites within aquatic and riparian habitat by limiting treatment activities within WLPZs; and protect aquatic and riparian habitat by avoiding erosion and associated sedimentation that could degrade aquatic nursery sites or sensitive riparian habitat. In addition, SPR BIO-4 would prevent riparian vegetation removal that could reduce stream shading and result in increased temperatures that could be harmful to some nurseries (e.g., developing salmonid eggs). SPR BIO-1 requires data review and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for wildlife nurseries to occur. If it is determined that wildlife nurseries may occur, then SPR BIO-10 would require surveys for nursery sites. SPR BIO-10 would minimize impacts to nursery sites by ensuring they are identified before treatment activities are implemented so they can be avoided under further measures. If nursery sites identified in surveys conducted pursuant to SPR BIO-10 occur within areas or habitats that are not avoided or protected in implementation of the SPRs, treatment of vegetation containing an active nursery site could potentially cause the removal or abandonment of a wildlife nursery. For example, treatment activities could remove or burn trees containing a bat maternity roost or a bird nesting colony. In addition, treatment-related noise and human disturbance near nursery sites could result in temporary avoidance, changes in behavior, separation of adults and young, or, if the disturbance is severe, abandonment of the nursery site. These disturbances and behavioral responses could decrease the reproductive success of the affected population.

###### Long-Term Effects of Treatment Types

Treatments would remove vegetation and change habitat structure (e.g., cover, size-class distribution) locally but would not cause substantial permanent habitat loss or degradation that would interfere substantially with movement corridors over the long term. Although the long-term effects of fuel reduction treatments on wildlife species and habitat are not fully understood (Collins et al. 2014), a large experimental study designed to evaluate how fuel treatments influenced a multitude of ecological variables in numerous forests found that wildlife and wildlife habitats were not substantially affected several years post-treatment and included variables such as species abundance, community structure, and diversity (McIver et al. 2013). Furthermore, for some species, habitat quality is likely to improve with treatment (e.g., treatment for ecological restoration purposes).

Fuel breaks, which will serve primarily as staging areas and ingress/egress areas, will be located predominately in habitats that are already fragmented or low in fuels, such as adjacent to roads, habitat edges, rocky outcrops, transition areas (e.g., from forest to shrub communities), and ridgelines. In areas such as forested environments, fuel breaks would be shaded and large trees and some other vegetation available for wildlife foraging and cover would remain. Additionally, vegetation changes resulting from non-shaded treatments would generally have minor effects on wildlife movement over the long term because non-shaded fuel breaks would be limited to a few hundred feet wide or less, which is a distance many migratory wildlife could cross without adverse effects. Predation risk for small wildlife, including reptiles, amphibians, and small mammals (e.g., rodents) may increase in fuel breaks due to reduced cover. However, this increased risk is not expected to be substantial and would not result in significant adverse effects to these wildlife species. Moreover, species like snakes and lizards are expected to favor an open understory which would facilitate in movement and basking opportunities (McIver et al. 2013).

Vegetation treatments, including fuel breaks, would not create substantial barriers to the movement of resident or migrating wildlife that utilize native habitats because treated areas would remain permeable to wildlife. Additionally, although treatment could result in some gaps in vegetation, treated areas would generally retain some of the pre-treatment vegetation that provides protection and foraging during movement. During prescribed fire treatments some existing vegetation would be retained in a mosaic pattern in forest or shrub communities (refer to Chapter 2, “Program Description”). Overall, treated areas would typically be small compared to migration corridors and likely span only a portion of a corridor or movement area such that wildlife could move through or near treated areas without substantially changing migration patterns. Although individual responses to vegetation treatment would vary, some species could benefit from treatment; for example, openings in post-fire forests were found to allow pronghorn different routes to foraging areas (Franke 2000, Shaffer et al. 2018). For example, ungulates including mule deer and bighorn sheep would be expected to benefit from a mosaic of burned and unburned habitat due to increased foraging opportunities, easier movement, and enhanced ability to detect predators within these environments (CDFW 2015b, Holl et al. 2012). SPR BIO-4 would require that treatments are designed to avoid loss or degradation of riparian habitat function, such as preventing the removal of trees and large woody debris that provide stream shading, cover, and bank stability. SPR BIO-5 requires that vegetation treatment does not result in environmental effects of type conversion from chaparral and coastal sage scrub and requires the retention of some mature native shrubs. Through these requirements, SPR BIO-4 would avoid long-term increases in stream temperature and minimize loss of riparian vegetation cover, erosion, and sedimentation that could degrade movement corridors or nursery sites within aquatic and riparian habitat. SPR BIO-5 would avoid environmental effects of type conversion of chaparral and coastal sage scrub habitats and therefore would avoid long-term loss of these habitats, which may be used for movement or nursery sites.

Treatment activities could modify, degrade, or remove important habitat features of a nursery site. Examples of important habitat requirements for nursery sites that could be affected include large trees for heron and egret rookeries, hollow trees for bat maternity roosts, ~~and~~ meadow and riparian areas that provide hiding cover and forage for mule deer fawning, and eucalyptus groves or other native trees for overwintering monarch butterflies. Some wildlife populations return to the same nursery site every year (e.g., some bats, egrets) and degradation or loss of important habitat features at these locations could impede the use of the nursery site for multiple breeding seasons.

###### Conclusion

SPR HYD-1 would require compliance with water quality regulations and SPR HYD-4 would require WLPZs to be established on each side of watercourses. In addition, SPR BIO-4 would prevent vegetation removal that could reduce stream shading and require that treatments are designed to avoid loss of riparian habitat function. SPR BIO-1 would require data review and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for wildlife nurseries to occur. If it is determined that wildlife nurseries may occur, then SPR BIO-10 would require surveys for nursery sites. For prescribed herbivory treatments, SPR BIO-11 would require wildlife-friendly fencing to prevent wildlife from becoming entangled during movement. With the implementation of SPRs, treatment activities would not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors. However, while implementation of SPRs would minimize impacts, treatment activities could still result in adverse effects on wildlife nurseries if these sites occur within areas or habitats that are not avoided or retained in implementation of the SPRs. Important nursery sites could be removed, degraded, or disturbed by treatment activities. Some nursery sites contain a large number of individuals and disturbance or loss of these nurseries could have a substantial effect on reproductive success and the local or regional population. This would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure BIO-5: Retain Nursery Habitat and Implement Buffers to Avoid Nursery Sites

The project proponent will implement the following measures while working in treatment areas that contain nursery sites identified in surveys conducted pursuant to SPR BIO-10:

* **Retain Known Nursery Sites.** A qualified RPF or biologist will identify the important habitat features of the wildlife nursery and, prior to treatment activities, will mark these features for avoidance and retention during treatment.
* **Establish Avoidance Buffers.** The project proponent will establish a non-disturbance buffer around the nursery site if activities are required while the nursery site is active/occupied. The appropriate size and shape of the buffer will be determined by a qualified RPF or biologist, based on potential effects of project-related habitat disturbance, noise, visual disturbance, and other factors. No treatment activity will commence within the buffer area until a qualified RPF or biologist confirms that the nursery site is no longer active/occupied. Monitoring of the effectiveness of the non-disturbance buffer around the nursery site by a qualified RPF, biologist, or biological technician during and after treatment activities will be required. If treatment activities cause agitated behavior of the individual(s), the buffer distance will be increased, or treatment activities modified until the agitated behavior stops. The qualified RPF, biologist, or biological technician will have the authority to stop any treatment activities that could result in potential adverse effects to special-status species.

Significance after Mitigation

Implementation of Mitigation Measure BIO-5 would reduce potentially significant impacts to wildlife nursery sites because it would avoid removal of important habitat features and avoid or minimize disturbance from noise and human presence. This would retain the value and function of the nursery site such that its use by native wildlife would not be substantially impeded, thereby reducing this impact to **less than significant**.

Impact BIO-6: Substantially Reduce Habitat or Abundance of Common Wildlife, Including Nesting Birds

Vegetation treatments conducted under the CalVTP would occur in habitats that support common native bird, mammal, reptile, amphibian, and invertebrate species. Treatment activities could disturb breeding; remove or damage active nests, dens, and other breeding sites; kill or injure individuals; and temporarily reduce breeding productivity of these species. Because treatments would be implemented within relatively small proportions of the extensive ranges of common species, and suitable habitat would remain available to these species across the broader landscape surrounding treatment areas, the magnitude of these potential losses would not substantially reduce the overall abundance of any common wildlife species. Additionally, implementation of SPRs BIO-1, BIO-2, BIO-3, BIO-4, and BIO-5 would limit the loss or degradation of ~~some~~ high-quality breeding habitats for special-status wildlife that would also benefit common species, and implementation of SPR BIO-12 would protect common nesting birds, including raptors. Therefore, treatment activities would not substantially reduce the population size of or availability of suitable breeding habitat for any common wildlife species, including nesting birds. This impact would be **less than significant**.

Suitable foraging, breeding, and sheltering habitat for common native bird, mammal, amphibian, reptile, and other animal species is ubiquitous throughout the treatable landscape. These common species do not meet the criteria for special-status species as defined in this PEIR; however, mandatory findings of significance pursuant to the CEQA Guidelines require consideration of whether a project would “substantially degrade the quality of the environment, reduce habitat of wildlife species, cause wildlife populations to drop below self-sustaining levels, or threaten to eliminate a plant or animal community.” Because of the large geographic scope of the treatable landscape and numerous common wildlife species distributed throughout the state, vegetation treatments implemented under the program could disturb or otherwise affect many common native species.

The impact mechanisms, effects on individual animals, and short- and long-term effects on habitat composition, function, and structure associated with prescribed burning, mechanical treatment, manual treatment, prescribed herbivory, and herbicides described previously for Impact BIO-2 (for special-status wildlife) and Impact BIO-5 (for wildlife movement and nursery sites of common species) would also generally apply to common wildlife species. Temporary disturbances to foraging patterns, local movements, and reproductive activities of common bird, mammal, reptile, and amphibian species resulting from treatment activities would occur in some locations. However, common wildlife species are generally well-distributed, abundant, and adapted to varying levels of natural and anthropogenic disturbances. Temporary disturbances and displacement of animals associated with treatment activities would occur locally (and, in some cases, over short periods of time in a given area) and are not expected to affect significant portions of an individual’s foraging or breeding range, or the overall distribution of a common species.

If treatments are implemented during the breeding season (which varies by species), active nests, dens, or other breeding sites present in the treatable landscape could be removed or damaged during manual and mechanical treatment activities, or burned directly or otherwise damaged by prescribed burning (e.g., heat scorch, smoke). These disturbances could result in reproductive failure and the direct mortality or injury of adults or young, if present. For example, common birds use essentially all terrestrial habitats and a wide variety of substrates for nesting in the treatable landscape, including trees, tree and snag cavities, shrubs, burrows, ground substrate, and grasses/herbaceous vegetation. Treatment activities that occur outside the nesting season for common birds and raptors would not remove or disturb active nests. Additionally, some common wildlife species are subject to state or federal regulatory protections. For example, native nesting birds are protected under California Fish and Game Code sections 3503 and 3503.5 and the federal MBTA. As discussed in Section 3.6.2, “Regulatory Setting”, compliance with these statutes is typically achieved by implementing avoidance and minimization measures to prevent project-related loss of active nests (e.g., conducting activities outside of the nesting bird season; identifying and avoiding disturbance by limiting project activities near an active nest; or monitoring active nests and delaying project activities near the nest until after young have fledged or the nest otherwise becomes inactive). If implementation of prescribed burning or other treatment activities during the nesting season resulted in the removal, damage, and disturbance of nests such that nest abandonment and injury or mortality of adults, young, or eggs occurred, the magnitude of potential treatment-related reproductive failure or mortality of common birds and other wildlife taxa would depend on several factors. These factors include the types and quality of habitats affected, the timing of vegetation removal relative to the most sensitive or vulnerable periods of a species breeding chronology (e.g., when fidelity to a breeding site is highest due to the presence of developing or immobile young), and the density of common species breeding within a treatment site.

As discussed previously, treatment activities would remove vegetation and alter habitat structure (e.g., amount of cover, size-class distribution) locally, but would not cause permanent habitat degradation or conversion to a different habitat type that would substantially reduce habitat for common wildlife species over the long term. During prescribed burning treatments, some existing vegetation would be retained in a mosaic pattern in forest or shrub communities (refer to Chapter 2, “Program Description”). In many cases, habitat quality, particularly within ecological restoration treatment areas, may improve over the long term with treatment. Although responses to vegetation changes are likely to vary and some changes to species composition could occur locally, overall abundance and diversity of common birds and other wildlife are not expected to substantially change post-treatment, based on several large experimental studies and meta-analyses (Verschuyl et al. 2011, Stephens et al. 2012, McIver et al. 2013, Newman et al. 2018). Furthermore, suitable breeding and foraging habitats for common wildlife species in the treatable landscape are generally abundant, widely distributed, and would remain available to these species across the broader landscape surrounding treatment areas.

Implementation of SPRs would reduce potential treatment-related disturbances or loss of common wildlife and would limit the loss or degradation of some high-quality habitats. SPR BIO-2 would require crew members and contractors to receive training regarding minimizing disturbances to wildlife. Additionally, SPRs designed to identify special-status species habitat (SPR BIO-1) and sensitive natural communities (SPR BIO-3), retain the habitat function and value of riparian habitat (SPR BIO-4), and avoid environmental effects of type conversion of chaparral and coastal sage scrub (SPR BIO-5), as well as compliance with protective statutes (e.g., California Fish and Game Code sections 3503 and 3503.5 and the federal MBTA), would reduce the likelihood of impacts to common species using these important habitats. If a treatment must occur during the nesting season of common native bird species, including raptors, SPR BIO-12 would require nesting bird surveys prior to treatment activities and implementation of feasible impact avoidance strategies (e.g., protective buffers, treatment modifications, raptor nest monitoring).

###### Conclusion

Common wildlife species in the treatable landscape are relatively abundant locally and regionally, and habitat subject to vegetation treatments is not considered critical or limiting to the presence or viability of common wildlife populations. Vegetation treatments implemented during the breeding season could cause reproductive failure and the direct mortality or injury of adults or young present within active treatment areas. However, because treatments would be implemented within relatively small proportions of the extensive ranges of common species, and suitable habitat would remain available to these species across the broader landscape surrounding treatment areas, the magnitude of these potential losses is not expected to substantially reduce the overall abundance of any common wildlife species. Therefore, implementation of the CalVTP would not substantially reduce the habitat, population abundance, or viability of common wildlife species, including nesting birds. This impact would be **less than significant**.

##### Mitigation Measures

No mitigation is required for this impact.

Impact BIO-7: Conflict with Local Policies or Ordinances Protecting Biological Resources

Vegetation treatment projects implemented under the CalVTP that are subject to local policies or ordinances would be required to comply with any applicable county, city, or other local policies, ordinances, and permitting procedures related to protection of biological resources. Additionally, SPR AD-3 (Consistency with Local Plans, Policies, and Ordinances) requires that the project proponent design and implement the treatment in a manner that is consistent with applicable local plans (e.g., general plans), policies, and ordinances to the extent the project is subject to them. Therefore, the CalVTP would result in **no impact** related to potential conflict with local policies or ordinances protecting biological resources.

Most counties and cities within the treatable landscape have adopted local ordinances and policies that protect various biological resources including native trees, wetland habitats, open space corridors, and other locally significant natural resources. These ordinances and policies vary in their definitions of protected trees (e.g., certain species, minimum diameter at breast height [dbh], trees that form riparian corridors) and other resources, and in the requirements for ordinance or policy compliance.

All treatment projects implemented under the CalVTP that are subject to local policies or ordinances would be required to comply with any applicable county, city, or other local policies, ordinances, and permitting procedures related to protection of biological resources. Additionally, SPR AD-3 (Consistency with Local Plans, Policies, and Ordinances) specifically requires that the project proponent design and implement the treatment in a manner that is consistent with applicable local plans (e.g., general plans), policies, and ordinances to the extent the project is subject to them. Therefore, the CalVTP would result in **no impact** related to potential conflict with local policies or ordinances protecting biological resources.

Mitigation Measures

No mitigation is required for this impact.

Impact BIO-8: Conflict with the Provisions of an Adopted Natural Community Conservation Plan, Habitat Conservation Plan, or Other Approved Habitat Plan

Several HCPs and NCCPs have been adopted or are being planned for areas within the treatable landscape. Consistency of discretionary projects with an adopted HCP, NCCP, or other conservation plan is a legal requirement; and, the design, approval, and permitting of vegetation treatment projects under the CalVTP within an area covered by an adopted conservation plan would comply with that requirement. Therefore, approved treatment activities would result in **no impact** related to potential conflict with the provisions of adopted HCPs, NCCPs, or other approved local, regional, or state habitat conservation plans.

Nearly 100 HCPs and NCCPs (or joint HCPs/NCCPs) have been adopted or are being planned for areas within the treatable landscape across 15 ecoregions. HCPs and NCCPs provide the basis for issuance of long-term species “take” permits under Section 10 of ESA and the NCCPA, respectively. The purpose of developing an HCP or NCCP is to facilitate a permittee or project applicant in obtaining an ITP from the USFWS and/or an NCCPA permit from CDFW, and to develop a long-term conservation plan to protect and contribute to the conservation of covered species and natural communities in a plan area while allowing for covered activities that are compatible with other local policies and regulations.

For projects within the plan area of an adopted HCP or NCCP that covers multiple projects and permittees (e.g., a regional or countywide multi-species HCP/NCCP), and for activities specifically covered by the plan (i.e., covered activities) that may result in take of a species covered by the plan (i.e., covered species), an eligible applicant may obtain an ITP through voluntary participation in the HCP or NCCP if plan coverage/permit issuance is available. For activities that may result in take of a listed species but are not covered under an adopted HCP or NCCP, an applicant would pursue individual project permitting. Under the CalVTP, project-related take of any state or federally listed species would be minimized and avoided through implementation of applicable SPRs and mitigation measures (see Impacts BIO-1 and BIO-2); and, any potential instances of unavoidable take of a listed species and associated permit triggers are expected to be rare. For treatment projects that may result in take of a listed species within the plan area of an adopted HCP or NCCP available for permit coverage, whether the proposed treatments would qualify as covered activities under that plan and whether voluntary participation by the proponent would be pursued are unknown. If permitting through the plan is pursued, the eligible proponent would be required to meet the permit conditions and other requirements established in the plan’s Implementing Agreement, which often includes (depending on the plan) submitting a complete application package, paying required fees, fulfilling any appropriate survey requirements, and complying with all applicable conservation measures.

Regardless of whether take of a listed species may occur and permitting is needed, treatment activities implemented within plan areas of adopted HCPs or NCCPs will be consistent with the plans. Because consistency with an adopted HCP, NCCP, or other conservation plan is a legal requirement, and because the design, approval, and permitting of vegetation treatment projects are intended and reasonably expected to comply with that requirement where applicable, approved treatment activities under the CalVTP would result in **no impact** related to potential conflict with the provisions of adopted HCPs, NCCPs, or other approved local, regional, or state habitat conservation plans.

Mitigation Measures

No mitigation is required for this impact.

1. Condition class categories are described in Table 2-1 of Chapter 2, “Program Description.” [↑](#footnote-ref-1)