

## 4.5 TERRESTRIAL BIOLOGY

### 4.5.1 INTRODUCTION TO TERRESTRIAL BIOLOGY

The Terrestrial Biology section identifies the existing biological conditions on the project site and addresses impacts to special-status plant and terrestrial animal species, and on the habitats that support these species. This section also examines biological issues related to the many deer herds that have migratory corridors on lands within the project boundary and concerns regarding habitat fragmentation, erosion, and human encroachment.

Development is an important issue in this analysis. The watershed lands associated with Pacific Gas and Electric Company's facilities have potential to undergo residential, commercial, and/or recreational development. Likewise, future land management changes, primarily timber and mineral extraction concerns, are discussed in detail in this section.

From a hydrology standpoint, special-status species that live in or around rivers, creeks, streams, and reservoirs have special consideration in this section because the project itself is hydrologic in nature. Effects to wildlife resulting from rising or falling reservoir and river levels have been analyzed, as well as deviation of daily and seasonal releases. Impacts that result from an operational change have also been identified in this section.

There are many informal agreements that Pacific Gas and Electric Company honors. These agreements have been examined for relevance and value to terrestrial resources within each bundle. Those informal agreements that are valuable to wildlife species are outlined and discussed under each applicable bundle. Likewise, Pacific Gas and Electric Company voluntarily implements Best Management Practices (BMPs) that benefit not only the operations of the facilities but also sensitive plant and animal species that may be found there. Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the BMPs. Because these BMPs are implemented on a Statewide basis, the BMPs for State or Federally listed species used in one project are the same as those used for other bundles within the project boundary. In addition, this section discusses the applicable Federal, State and local regulations and agencies that have jurisdiction in each bundle.

The focus of the Terrestrial Biology section is on the terrestrial plant and wildlife resources, as well as habitats that have been identified in each bundle. The habitats found in each bundle have the potential to support related special-status plant and wildlife species, and are therefore considered a valuable resource. A comprehensive list of all special-status plant species with the potential to occur in the project can be found in Appendix E. Life histories for special-status wildlife species with the potential to occur in the project can be found in Appendix F.

### 4.5.2 SYSTEM-WIDE REGULATORY CONTEXT

The Pacific Gas and Electric Company Divestiture of Hydroelectric Generation Assets project encompasses facilities throughout northern and central California. From Shasta County in the northernmost region to Kern County in the southernmost region, there are a number of Federal, State, and local statutes that provide a regulatory structure for the protection of biological resources.

#### 4.5.2.1 Regulatory Agencies

The following is a brief summary of the regulatory agencies under which biological resources are managed at the Federal, State, and local level. Primary agencies with responsibility for protection of biological resources during implementation of the project are discussed below.

##### **United States Fish and Wildlife Service (USFWS)**

Implements the Migratory Bird Treaty Act (16 USC Section 703-711), the Bald and Golden Eagle Protection Act (16 United States Code (USC) Section 668), and the Federal Endangered Species Act (FESA; 16 USC 153 *et seq.*). Projects that would result in "take" of any Federally listed threatened or endangered species are required to obtain permits from the USFWS through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on the involvement by the Federal government in permitting or funding the project. The permitting process is used to determine if a project would jeopardize the continued existence a listed species and what mitigation measures would be required to avoid jeopardizing the species.

##### **United States Army Corps of Engineers (USCOE)**

USCOE is responsible for wetlands and "other" waters of the United States. Under Section 404 of the Clean Water Act (CWA) (1972), the USCOE has the authority to regulate activity that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the United States. The USCOE implements the Federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or acres.

##### **United States Forest Service (USFS)**

Many of Pacific Gas and Electric Company's facilities are located within National Forests across California, from the Lassen National Forest to the Sierra National Forest. Each forest has its own Land and Resource Management Plan (LRMP) that outlines specific management of its forestlands. In accordance with USFS objectives, forestland is managed under a multiple-use principle. Recreation, timber, grazing, and sensitive species management all coincide within each forest under the guidelines of its LRMP.

**California Department of Fish and Game (CDFG)**

CDFG implements the California Environmental Quality Act (CEQA), California Fish and Game Code, and the California Endangered Species Act (CESA), in addition to many other regulations, CEQA Guidelines Section 15380 defines "rare" in a broad sense that includes species other than those listed as State or Federally threatened or endangered. On this basis, animals or plants which may not be formally listed, but for which evidence exists that they may meet the standards for listing, may be considered rare for the purpose of impact assessment.

CESA is similar to the Federal ESA, but it pertains to State-listed endangered and threatened plant and wildlife species. CESA requires State agencies to consult with CDFG when preparing CEQA documents in order to ensure that lead agency actions do not jeopardize listed species

**County General Plans and City Tree Ordinances**

Each county has a general plan with adopted policies to preserve the value of biological resources in the community. These policies are specific to vegetation and wildlife; however, other policies intended to preserve water quality, air quality and other features also benefit and protect biological resources. General plans set guidelines, expressing the desires of the local population, for development in relation to many elements associated with development

Following is a more in-depth discussion that provides a summary of those laws most relevant to terrestrial biological resources found within the project boundary.

**4.5.2.2 Federal Regulations and Policies****Fish and Wildlife Service**

Projects that would result in adverse affects on any Federally listed threatened or endangered species are required to consult with and mitigate through consultation with the USFWS. This consultation can be pursuant to either Section 7 or Section 10 of the Endangered Species Act, depending on the magnitude of involvement by the Federal government. The objective of consultation under the Endangered Species Act is to determine whether the project would jeopardize a protected species, and what mitigation measures would be required to avoid jeopardizing the species.

Under the Federal definition, "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any animal which is Federally-listed as threatened or endangered, or to attempt to engage in any such conduct. Candidate species do not have the full protection of FESA. However, the USFWS advises project. applicants that it is prudent to address these species since they could be elevated to listed status prior to completion of projects with long planning or development schedules. For this reason, Federal candidate species are addressed in this analysis.

##### ***Federal Endangered Species Act - 1973***

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any Federally listed threatened or endangered species may be present within the project boundary and determine whether the proposed project will have a potentially significant impact on such species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered “significant” and would require mitigation.

##### ***Species Proposed and Candidates for Listing As Endangered or Threatened***

Proposed species are granted limited protection under the Act and must be addressed in Biological Assessments (under Section 7 of the Act). Candidate species are afforded no protection under the Act. USFWS typically reviews project plans and species information to determine the effects of Federal actions on a proposed or candidate species. Any recommendations to modify or abandon the project and/or undertake protective measures for proposed or candidate species are not mandatory for the Federal agency conferring with the USFWS. The USFWS recommends that candidate species and species proposed for listing also be considered in informal consultation during a project's environmental review. This is recommended because, in the event that a species were to be listed during the design or construction phases of a project (i.e., before occupancy), new studies and restrictions might be imposed.

The USFWS recently changed its policy on candidate species. The term candidate now strictly refers to species for which the USFWS has on file enough information to propose listing as endangered or threatened. Former category 2 candidate species - species for which listing is possibly appropriate but for which the USFWS lacks sufficient information to support a listing proposal - are now called species of concern. They are no longer monitored by USFWS and receive no protection under the Federal Endangered Species Act. USFWS encourages consideration of species of concern in project planning, as they may become candidate species in the future

##### ***Bald Eagle Protection Act - 1940***

No person within the United States, or any place subject to the jurisdiction thereof, shall possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or in any manner, any bald eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof.



The Secretary of the Interior, if determined to be compatible with the preservation of the bald eagle or golden eagle, can permit the taking, possession, and transportation of specimens thereof for scientific or exhibition purposes or for the religious purposes of Native American Tribes.

### ***Migratory Bird Treaty Act - 1936***

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 Code of Federal Regulations (CFR) Section 10.13. This Act is an international treaty for the conservation and management of bird species which may migrate through more than one country and is enforced in the United States by the USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50 CFR 20. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors). Six families of raptors occurring in North America were included in the amendment:

- Accipitridae (kites, hawks, and eagles)
- Cathartidae (New World vultures)
- Falconidae (falcons and caracaras)
- Pandionidae (ospreys)
- Strigidae (typical owls), and
- Tytonidae (barn owls)

All species and subspecies of the families listed are protected under the amendment. The bald eagle and the golden eagle are also protected by the Bald Eagle Protection Act of 1940.

### **United States Army Corps of Engineers**

#### ***Section 404 of the Clean Water Act***

The objective of the Clean Water Act (CWA, 1977, as amended) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 301 prohibits the discharge of any pollutant into the Nation's waters without a permit, and Section 402 sets up the permit program. Section 404 of the Act regulates activities that result in discharge of dredged or fill material into waters of the United States. The term "waters of the United States" as defined in Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) includes:

- All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands. (Wetlands are defined by the Federal government [CFR, Section 328.3(b), 1991] as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.);
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:

- Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
- From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
- Which are used or could be used for industrial purposes by industries in interstate commerce;
- All impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified in bullets 1 through 4;
- Territorial seas; and,
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in bullets one through six.

In 1987, the USCOE published a manual which standardized the manner in which waters, including wetlands, were to be delineated nationwide. To determine whether areas that appear to be wetlands are subject to USCOE jurisdiction (i.e., are "jurisdictional" wetlands), a wetlands delineation must be performed. Under normal circumstances, positive indicators from three parameters (1) wetland hydrology, (2) hydrophytic vegetation, and (3) hydric soils must be present to be classified as a jurisdictional wetland. Wetlands generally include swamps, marshes, bogs, and similar areas.

#### ***Section 10 of the Rivers and Harbors Act***

Section 10 of the Rivers and Harbors Act regulates activities in navigable waters of the United States. The term "navigable waters of the United States" as defined in Code of Federal Regulations (33 CFR 329.4) includes those areas subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the water body, and is not extinguished by later actions or events which impede or destroy navigable capacity including filled, drained, diked, or developed lands that at one time were navigable.

A water body which was navigable in its natural or improved state, or which was susceptible to reasonable improvement, retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions. Non-use in the past does not prevent recognition of the potential for future use. Once having attained the character "navigable in law," the Federal authority remains in existence, and cannot be abandoned by administrative officers or court action. Any change to navigable waters, or changes to the surrounding environment that may alter the navigability of these waters (including aerial transmission lines over waterways) are regulated by the USCOE.

#### **U.S. Environmental Protection Agency**

Under the CWA, the USEPA shares authority with the USCOE over the regulation of fill in waters of the United States. The USEPA is authorized to: (1) make jurisdictional determinations; (2) issue compliance orders; (3) impose "administrative" penalties; and (4) bring judicial enforcement actions.

The USEPA responsibilities are to comment on Section 404 applications. The USCOE gives considerable weight to the USEPA's comments. If the USCOE decides to grant a permit over the objection of the USEPA, the USEPA can elevate the permit decision so it is made by someone higher in the USCOE hierarchy. If the USCOE still grants a permit, notwithstanding the USEPA's objection, the USEPA may resort to a rarely-used administrative process to prohibit the use of the project site as a *disposal site* and thereby effectively veto the USCOE permit decision.

#### **4.5.2.3 State Regulations and Policies**

##### **California Department of Fish and Game**

The CDFG derives its authority from the Fish and Game Code of California. Species listed under the California Endangered Species Act (Fish and Game Code Section 2050 et seq) cannot be "taken" without adequate mitigation and compensation. At present, "take" means to hunt, pursue, catch, capture, or kill, or to attempt to do so. CDFG may implement endangered species protection by entering management agreements ("Section 2081 management agreements") with project proponents.

Fish and Game Code Section 3511 describes bird species, primarily raptors, which are "fully protected." Fully protected birds may not be taken or possessed except under specific permit. Section 3503.5 of the code protects all birds-of prey and their eggs and nests.

##### ***California Endangered Species Act***

Under the California Endangered Species Act (CESA), CDFG has the responsibility for maintaining a list of threatened species and endangered species (California Fish and Game Code 2070). The CDFG also has authority to maintain a list of "candidate species"; these are species that the CDFG has formally provided notice as being reviewed for addition to the list of endangered or threatened species. The CDFG also maintains lists of "species of special concern" which serve as "watch lists." Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present within the project boundary and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project which may impact a candidate species. Project-related impacts to species on the State endangered or threatened list would be considered "significant" and would require avoidance. For this project, it is assumed that the endangered species review will occur within CDFG during the Section 1601 Streambed Authorization Agreement Process. Extensive documentation for the consultation is provided in the Pre-Construction Notification and Streambed Alteration Agreement Package.

##### ***California Environmental Quality Act***

Although threatened and endangered species are protected by specific Federal and State statutes, the California Environmental Quality Act (CEQA) Guidelines Section 15380(b) provides that a species not listed on the Federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after definitions in the FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. Section 15380(b) requires public agencies to undertake reviews to determine if projects would result in significant effects on species that are not listed by either the USFWS or CDFG (i.e., candidate species). Thus CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

##### ***Native Plant Protection Act***

The Native Plant Protection Act (California Fish and Game Code Sec. 1900-1913) prohibits the taking, possessing, or sale within the State of any rare, threatened or endangered plants as defined by the California Department of Fish and Game. This protection would apply to any plants with a State designation of rare, threatened or endangered. Project impacts to these species would be considered "significant" if the species are known to occur within the area of disturbance associated with construction of the project, or "potentially significant" if the species has a high potential to occur within the area of disturbance.

##### ***Species of Special Concern***

CDFG recently changed its policy concerning California species of special concern. Originally, CDFG defined species of special concern as those animal species whose California breeding populations may face extirpation in the near future. CDFG has redefined species of special concern as a management designation used to track population trends of certain animal species. Species of special concern do not receive protection under the California Endangered Species Act or any section of the California Fish and Game Code and do not necessarily meet CEQA Guidelines Section 15380 criteria as rare, threatened or endangered or those of other public concern. Like Federal species of concern, the determination of significance for California species of special concern must be made on a case-by-case basis.

##### ***Fully Protected Species***

Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code designate certain species as "fully protected". Fully protected species, or parts thereof, may not be taken or possessed at any time, and no provision of the Fish and Game Code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species, and no such permits or licenses heretofore issued shall have any force or effect for any such purpose, except that the Fish and Game Commission may authorize the

collecting of such species for necessary scientific research. Section 3511 of the Fish and Game Code may authorize the live capture and relocation of fully protected birds pursuant to a permit for the protection of livestock. Legally imported and fully protected species or parts thereof may be possessed under a permit issued by CDFG.

The following are designated as fully protected species in the California Fish and Game Code:

#### Birds - Section 3511

- American peregrine falcon
- Brown pelican
- California black rail
- California condor
- California clapper rail
- California least tern
- Golden eagle
- Greater sandhill crane
- Light-footed clapper rail
- Southern bald eagle
- Trumpeter swan
- White-tailed kite
- Yuma clapper rail
- Birds of Prey

#### Mammals - Section 4700

- Ring-tailed cat
- Northern elephant seal
- Guadalupe fur seal
- Pacific right whale
- Salt marsh harvest mouse
- Southern sea otter
- Wolverine

#### Reptiles and Amphibians - Section 5050

- Blunt-nosed leopard lizard
- San Francisco garter snake
- Santa Cruz long-toed salamander
- Limestone salamander
- Black toad

Under Section 3503.5 of the California Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

#### ***Unlawful Destruction of Nest or Eggs***

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

#### ***Wetlands***

The CDFG derives its authority to oversee work in wetlands from a number of pieces of legislation. These include Sections 1600-1607 of the Fish and Game Code (stream and lake bed alteration agreements - see below), the Fish and Wildlife Coordination Act (see discussion above), Section 30411 of the California Coastal Act (CDFG becomes the lead agency for the study and identification of degraded wetlands within the Coastal Zone, the California Endangered Species Act (protection of State listed species and their habitats - which may include wetlands), and the Keene-

Nejedly California Wetlands Preservation Act (1976 - states a need for an affirmative and sustained public policy and program directed at wetlands preservation, restoration, and enhancement).

In general, CDFG asserts authority over wetlands within the State either through review and comment on Corps Section 404 permits, review and comment on CEQA documents, preservation of State listed species, or through stream and lake bed alteration agreements.

#### ***Sections 1600-1607 of the Fish and Game Code***

Under Sections 1600-1607 of the California Fish and Game Code, CDFG regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFG jurisdiction are defined in the code as the..."bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit..." (Section 1601).

This broad definition gives CDFG great flexibility in deciding what constitutes a river, stream, or lake. The CDFG defines streams under the jurisdiction of Sections 1600-1607 as follows:

The term stream can include intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams (United States Geological Survey [USGS] quadrangle), and watercourses with subsurface flows. Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife.

Biological components of any stream may include aquatic and riparian vegetation, all aquatic animals including fish, amphibians, reptiles, invertebrates, and terrestrial species, which derive benefits from the stream system.

As a physical system, a stream not only includes water (at least on an intermittent or ephemeral basis), but also a bed or channel, a bank and/or levee, instream features such as logs or snags, and various flood plains, depending on the return frequency of the flood event being considered.

The lateral extent of a stream can be measured in several ways depending on a particular situation and the type of fish or wildlife resource at risk. The following criteria are presented in order from the most inclusive to the least inclusive.

The flood plain of a stream can be the broadest measurement of a stream's lateral extent depending on the return frequency of the flood event used. For most flood control purposes, the 100-year event is the standard measurement. However, because it may include significant amounts of upland or urban habitat, in many cases the 100-year floodplain may not be appropriate.

The outer edge of riparian vegetation is generally used as the line of demarcation between riparian and upland habitats and is, therefore, a reasonable and identifiable boundary for the lateral extent of

a stream. In most cases, the use of this criterion should result in protecting the fish and wildlife resources at risk.

Most streams have a natural bank which confines flows to the bed or channel, except during flooding. In some instances, particularly on smaller streams or dry washes with little or no riparian habitat, the bank should be used to mark the lateral extent of a stream.

A levee or other artificial stream bank could also be used to mark the lateral extent of a stream. However, in many instances, there can be extensive areas of valuable riparian habitat located behind a levee (CDFG, 1992).

In practice, CDFG usually marks its jurisdictional limit at the top of the stream or bank or at the outer edge of the riparian vegetation, whichever is wider.

### ***The California Wetlands Conservation Policy***

The California Wetlands Conservation Policy (1993 - Senate Concurrent Resolution No. 28) created an interagency task force headed by the State Resources Agency and Cal-EPA to: (1) ensure no overall net loss and a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values; (2) reduce procedural complexity in the administration of State and Federal wetlands conservation programs; and (3) encourage partnerships that make restoration, landowner incentives, and cooperative planning the primary focus of wetlands conservation.

This resolution directed CDFG to prepare and submit to the legislature a plan identifying means to protect existing wetlands and restore former wetlands, including identification of sufficient potential wetlands sites to increase the amount of wetlands in California by 50 percent by the year 2000 and a program for public and private acquisition of such lands. While the resolution does not have the force and effect of law, CDFG and other State agencies frequently point to it as an expression of State policy.

### **State Water Resources Control Board**

The State Water Resources Control Board has authority over wetlands through the Clean Water Act, Porter-Cologne Act, California Code of Regulations Section 3831(k)<sup>1</sup>, and the California Wetlands Conservation Policy (see discussion above under CDFG).

The Clean Water Act requires that an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) to first obtain a certificate from the appropriate State agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is

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<sup>1</sup> Defines "Water Quality Certification" as a certification that there is a reasonable assurance that an activity which may result in a discharge to navigable waters of the United States will not violate water quality standards where the activity requires a Federal license or permit.

delegated by the State Water Resources Control Board to the nine regional boards. A request for certification or waiver will be submitted to the regional board at the same time that an application is filed with the Corps. The regional board has 60 days to review the application and act. Because no Corps permit is valid under the CWA unless "certified" by the State, these boards may effectively veto or add conditions to any Corps permit.

Pursuant to the Porter-Cologne Act, each of California's nine regional boards must prepare and periodically update basin plans that set forth water quality standards for surface and groundwater, as well as actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to achieve wetlands protection through enforcement of water quality standards.

#### **4.5.2.4 Regional Regulations and Policies**

##### **Local Tree Ordinances**

There are several cities and counties that have tree ordinances within the project boundary. Tree ordinances protect certain types of mature trees. The ordinances can range in protection from native species only to all tree species over a certain diameter at breast height (dbh). In the future, new owners would be subject to these ordinances.

#### **4.5.3 SYSTEM-WIDE SETTING**

There are three primary geographic subdivisions or bioregions, occurring within the Pacific Gas and Electric Company Hydrodivestiture Project.

##### **4.5.3.1 Northwestern California**

Northwestern California is the northern most bioregion and is characterized by having the most predictable climate in California. The region is composed of three sub-regions. The only sub-region within the project boundary is North Coast Ranges. This sub-region is defined as not supporting strictly coastal communities. This sub-region is further divided into three districts. The district that occurs within the project boundary is Inner North Coast Ranges and is characterized by chaparral and pine/oak woodlands. The rainfall is low and the summer is hot and dry. The Potter Valley facilities associated with the Drum Regional Bundle are found within this bioregion.

##### **4.5.3.2 Cascade Range**

The Cascade Range bioregion is a predominately volcanic region. Vegetation within this region is not substantially different from the adjacent bioregions. Chaparral/pine woodlands and montane fir/pine forests predominate. The Cascade Range bioregion consists of two sub-regions. The sub-region found within the project boundary is High Cascade Range. This sub-region is generally above 500 meters and is characterized by ponderosa pine, montane fir/pine and lodgepole pine



forests, with treeless alpine communities at the highest elevations. The DeSabra and Shasta Regional Bundles are found within the Cascade Range bioregion.

#### 4.5.3.3 Sierra Nevada

Sierra Nevada is a primarily metamorphic bioregion abutting the volcanic Cascade Range to the north and the Great Valley to the east. It is divided into three sub-regions. One of the sub-regions, Sierra Nevada Foothills, occurs within the project boundary. This sub-region is a narrow strip of the Western Sierra bounded by the Great Valley on the west and the High Sierra on the east and is found between 500-800 meters. The predominate vegetative community is blue-oak woodland dotted with serpentine. This sub-region is further divided into three districts, two of which occur within the project boundary. The districts are Northern Sierra Nevada and Central Sierra Nevada. The Motherlode and Drum Regional Bundles (with the exception of the Potter Valley facilities as mentioned above) are found in this district. The primary vegetation is blue-oak woodland. The arbitrary boundary between the northern and central districts is the Tuolumne-Calaveras county line. The Central Sierra Nevada district contains the Kings Crane-Helms Regional Bundle and is also dominated by blue oak woodland.

#### 4.5.3.4 Habitat Community Descriptions

There is a diversity of vegetation communities that occur within the lands associated with the project. The following descriptions reflect the general nature of each of these communities. Specific composition of each community may vary throughout the system depending on location, elevation, climate, current land use and other physical variables. Unique elements of regional bundles will be discussed within the Regional Bundle sections.

##### Annual Grassland (AGS)

Annual grassland habitats are open grasslands composed primarily of annual plant species. Many of these species also occur as understory plants in Valley Oak Woodland and other habitats. Dramatic differences in physiognomy, both between seasons, and between years, are characteristic of this habitat. Introduced annual grasses are the dominant plant species in this habitat. These include wild oats (*Avena* sp.), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), red brome (*Bromus rubens*), wild barley (*Hordeum* sp.), and foxtail fescue (*Festuca megalura*). Common forbs include broadleaf filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), turkey mullein (*Eremocarpus setigerus*), true clovers (*Trifolium* sp.), bur clover (*Medicago polymorpha*), and popcorn flower (*Plagiobothrys nothofulvus*).

##### Barren (BAR)

Barren habitats are composed primarily of open areas that are devoid of vegetation and are characterized by substrates such as rock, pavement, sand, and areas such as those occupied by

mills, shopping centers, industrial and commercial complexes, and institutions that may, in some instances, be isolated from urban areas.

##### **Blue Oak Woodland (BOW)**

These woodlands have an overstory of scattered trees, although on better quality sites, the canopy can be nearly closed. The canopy is dominated by broad-leafed trees 16 to 50 feet tall, commonly forming open savannah-like stands on dry ridges and gentle slopes. Shrubs are often present but rarely extensive, often occurring on rock outcrops. Typical understory is composed of an extension of Annual Grassland vegetation. Blue oak (*Quercus douglasii*) is the dominant species, comprising 85 to 100 percent of the trees present. Common associates in the canopy are coast live oak (*Quercus agrifolia*) in the Coast Range, interior live oak (*Quercus wislizenii*) in the Sierra Nevada, valley oak (*Quercus lobata*) where deep soil has formed, and western juniper (*Juniperus occidentalis*) in the Cascade Range. Associated shrub species include poison oak (*Rhus diversiloba*), California coffeeberry (*Rhamnus californica*), buckbrush (*Ceanothus cuneatus*), redberry (*Rhamnus crocea*), California buckeye (*Aesculus californica*), and manzanita (*Arctostaphylos* sp.). The ground cover is comprised mostly of annuals, such as brome grass (*Bromus* sp.), wild oats, needlegrass (*Stipa* sp.), and others.

##### **Blue Oak-Foothill Pine (BOP)**

This habitat is typically diverse in structure both vertically and horizontally, with a mix of hardwoods, conifers, and shrubs. The shrub component is typically composed of several species that tend to be clumped, with interspersed patches of annual grassland. Blue oak (*Quercus douglasii*) and foothill pine (*Pinus sabiniana*) typically comprise the overstory of this habitat, with blue oak usually the most abundant species. In the foothills of the Sierra Nevada, tree species typically associated with this habitat are interior live oak and California buckeye. In the Coast Range, associated species are the coast live oak, valley oak, and California buckeye. At lower elevations, the understory tends to be primarily annual grasses and forbs. At higher elevations, the understory usually includes patches of shrubs along with the annual grasses and forbs. Typical associated shrub species include *Ceanothus* sp., mariposa manzanita (*Arctostaphylos mariposa*), whiteleaf manzanita (*Arctostaphylos viscida*), redberry, California coffeeberry, poison oak, and California redbud (*Cercis occidentalis*).

##### **Chamise-Redshank Chaparral (CRC)**

Mature CRC is single-layered, generally lacking well-developed herbaceous ground cover and overstory trees. Shrub canopies frequently overlap, producing a nearly impenetrable canopy of interwoven branches. CRC may consist of nearly pure stands of chamise (*Adenostoma fasciculatum*) or redshank (*Adenostoma sparsifolium*), a mixture of both, or with other shrubs. The purest stands of chamise occur on xeric south-facing slopes. Toyon (*Heteromeles arbutifolia*), sugar sumac (*Rhus ovata*), poison oak, redberry, and California buckthorn (*Rhamnus californica*) are commonly found in drainage channels and on other relatively mesic sites. At upper elevations,

chamise mixes with *Ceanothus* sp., manzanita, scrub oak (*Quercus dumosa*), and laurel sumac (*Rhus laurina*). *Ceanothus* and sugar sumac are common associates of redshank. Distinguishing CRC from mixed chaparral (MCH) and coastal scrub (CSC) is a subjective interpretation based on percent cover by chamise and redshank and time since last burn.

### **Close-Cone Pine-Cypress (CPC)**

This habitat includes a number of different series of evergreen, needle-leaved trees. The height and canopy closure of these series are variable and depend upon site characteristics, soil type, the age of the stand, and the floristic composition. Most pine series have a shrub layer of chaparral species with high relative cover, and a sparse herbaceous layer. The understory of the cypress series is typically a well-developed shrub layer of chaparral species on open, well drained sites and a low dense cover of shrubs and herbs on poorly drained soils. After fire, both cypress and pine habitats form dense, even-aged stands. CPC is typically dominated by a single species of one of the closed-cone pines or cypress. Few stands contain both pine and cypress. In northern California, Macnab cypress (*Cupressus macnabiana*) and Sargent cypress (*Cupressus sargentii*) are both associated with foothill pine, scrub oak, and *Ceanothus* sp., while the herbaceous layer may support a number of grasses and forbs. Along the coast in central California, Monterey cypress (*Cupressus macrocarpa*) occurs in nearly pure stands with some salal (*Gaultheria shallon*) and rhododendron (*Rhododendron macrophyllum*) in the understory. Other cypress species along the coast include Santa Cruz cypress (*Cupressus abramsiana*), and Mendocino cypress (*Cupressus pygmaea*).

The pines which dominate closed cone habitats are knobcone pine (*Pinus attenuata*), Monterey pine (*Pinus radiata*), Bishop pine (*Pinus muricata*), Torrey pine (*Pinus torreyana*), and beach pine (*Pinus contorta* spp. *contorta*). These species frequently grow in association with chamise, *Ceanothus*, manzanita, California buckthorn, poison oak, California huckleberry (*Vaccinium ovatum*), and toyon.

### **Coastal Oak Woodland (COW)**

Coastal oak woodlands are extremely variable. The overstory consists of deciduous and evergreen hardwoods that are sometimes mixed with scattered conifers. In mesic sites, the trees are dense and form a closed canopy. In drier sites, the trees are widely spaced, forming an open woodland or savannah. The understory is also variable. In some instances, it is composed of shrubs from adjacent chaparral or coastal scrub, which forms a dense understory. More commonly, shrubs are scattered under and between the trees. When the trees form a closed canopy, the understory varies from a lush cover of shade-tolerant shrubs, ferns, and herbs to sparse cover with a thick carpet of litter. When trees are scattered, the understory is usually grassland. From Sonoma County south, the COW are usually dominated by coast live oak. In mesic sites, trees characteristic of mixed evergreen forests mix with coast live oak, such as California bay (*Umbellularia californica*), madrone (*Arbutus menziesii*), and canyon live oak (*Quercus chrysolepis*). On drier sites, coast live oak trees mix with valley oaks, foothill pines, and blue oaks. Typical understory plants in dense

coast live oak woodlands are shade tolerant shrubs such as California blackberry (*Rubus ursinus*), creeping snowberry (*Symphoricarpos mollis*), toyon, brackenfern (*Pteridium aquilinum*), and miner's lettuce (*Montia perfoliata*). In drier areas where oaks are more widely spaced, the understory may consist almost entirely of grassland species with few shrubs.

#### **Cropland (CRP)**

Vegetation in this habitat includes a variety of sizes, shapes, and growing patterns. Although most crops are planted in rows, alfalfa hay and small grains form dense stands with up to 100 percent canopy closure. Most croplands support annuals, planted in spring and harvested during summer or fall. In many areas, second crops are commonly planted after harvesting the first.

#### **Fresh Emergent Wetland (FEW)**

Fresh emergent wetlands are characterized by erect, rooted herbaceous hydrophytes. Dominant vegetation is generally perennial monocots. All emergent wetlands are frequently flooded so that the roots of the vegetation prosper in an anaerobic environment. On the upper margins of FEW, saturated soils support several moist soil plant species including big leaf sedge (*Carex amplifolia*), baltic rush (*Juncus balticus*), and redroot nutgrass (*Cyperus eragrostis*). On wetter sites, common cattail (*Typha latifolia*), tule bulrush (*Scirpus acutus*), river bulrush (*Scirpus fluviatilis*), and arrowhead (*Sagittaria latifolia*) are potential dominant species.

#### **Jeffrey Pine (JPN)**

The structure of the Jeffrey pine forest varies over its distribution. A single-tree layer is characteristic of Jeffrey pine stands on moderately dry sites. On moist and mesic sites, a second tree layer exists which is composed of deciduous hardwood species. On dry sites, evergreen hardwood species form the second tree layer. A sclerophyllous shrub layer is common to most Jeffrey pine stands except on serpentine soils, extremely xeric sites, and where the krummholz form exists. Jeffrey pine (*Pinus monophylla*) is the dominant species found in the upper tree layer. It usually forms pure stands, but may have ponderosa pine (*Pinus ponderosa*), Coulter pine (*Pinus coulteri*), sugar pine (*Pinus lambertiana*), lodgepole pine (*Pinus contorta* var. *murrayana*), and others as its associates. Dominant species composition of the second tree layer consists of aspen (*Populus* sp.) on moist sites, California black oak (*Quercus kelloggii*) on mesic sites, and pinyon pine (*Pinus edulis*) and western juniper on dry sites. Shrubs common to the Jeffrey pine type on the western slope of the Sierra Nevada include huckleberry oak (*Quercus vaccinifolia*), manzanita, and mountain misery (*Chamaebatia foliosa*). East of the Sierra-Cascade crest, the dominant shrub layer species include squaw currant (*Ribes cereum*), whitethorn (*Ceanothus cordulatus*), manzanita, rabbitbrush (*Chrysothamnus* sp.), and sagebrush (*Artemisia* sp.). Herbaceous species common to the Jeffrey pine type include squirreltail (*Elymus elymoides* sp.), blue wildrye (*Elymus glaucus*), and pennyroyal (*Monardella odoratissima*).

### **Lacustrine (LAC)**

Lacustrine habitats are inland depressions or dammed riverine channels containing standing water. They may vary from small ponds to large areas covering several square kilometers. Typical lacustrine habitats include permanently flooded lakes and reservoirs, intermittent lakes, and ponds. Suspended organisms such as plankton are found in the open water of lacustrine habitats. Phytoplankton comprise the majority of the species, including diatoms, desmids, and filamentous green algae. The plants and animals found in the littoral zone vary with water depth. A blanket of duckweed may cover the surface of shallow water. Submerged plants such as algae and pondweeds serve as supports for smaller algae and as cover for aquatic animals.

### **Lodgepole Pine (LPN)**

Lodgepole pines (*Pinus contorta* ssp. *murrayana*) typically form dense forests of slender trees up to 40m tall, often in nearly pure stands of *Pinus contorta* ssp. *murrayana*. More open stands up to 60 feet tall occur on dry sites or near timberline. Lodgepole pines may form krummholz at timberline. The trees in the moister, denser stands are relatively short-lived, and if the stand has not burned for a long time, fallen trees, branches and needles cover the ground. The understory is normally sparse in these dense stands, but low shrubs and perennial herbs occur abundantly in forest openings. There is much less litter in the drier, more open stands; other tree species occur occasionally and understory plants are scattered throughout the stand. Flowering of most plants is concentrated in the early summer; growth of at least the smaller plants may be limited by drought in late summer. Most plants are dormant from fall through spring.

Lodgepole pines typically occur at elevations with long, snowy winters and cool, dry summers. At its lower limit it occupies cold, moist sites within the Upper Montane Coniferous Forest; at its upper limit it occupies dry, exposed sites at timberline, especially in the southern Sierra Nevada and in southern California. Lodgepole pines apparently tolerate large variations in soil and moisture factors, but most commonly occur on rocky, well-drained soils. Occasional associates with lodgepole pines include aspen and mountain hemlock (*Tsuga mertensiana*). The understory may be virtually absent, consisting of scattered shrubs and herbs. Many lodgepole stands are associated with meadow edges and streams where the understory consists of grasses, forbs, and sedges.

### **Low Sage (LSG)**

Broad-leaved, evergreen shrubs generally dominate this habitat. Deciduous shrubs and small trees are sometimes sparsely scattered along with a ground cover of grasses and forbs. LSG may be dominated by either low sagebrush (*Artemisia arbuscula*), or black sagebrush (*Artemisia nova*), in association with Douglas rabbitbrush (*Chrysothamnus viscidiflorus*), antelope bitterbrush (*Purshia tridentata*), or big sagebrush (*Artemisia tridentata*). Western juniper may be sparsely scattered in stands that are dominated by low sagebrush. Common grass species include Sandberg's bluegrass

(*Poa sandbergii*), bottlebrush squirreltail (*Elymus hystrix*), Thurber needlegrass (*Stipa thurberiana*), and Idaho fescue. A rich variety of forbs is usually present.

#### **Mixed Chaparral (MCH)**

MCH is a structurally homogeneous brushland type dominated by shrubs with thick, heavily cutinized evergreen leaves. MCH is a floristically rich type that supports approximately 240 species of woody plants. Composition changes between northern and southern California, and with precipitation regime, aspect, and soil type. Dominant species in cismontane MCH include scrub oak, chaparral oak (*Quercus wislizenii frutescens*), and several species of *Ceanothus* and manzanita. Commonly associated shrubs include chamise, birchleaf mountain mahogany (*Cercocarpus betuloides*), silk tassel (*Garrya* sp.), toyon, poison oak, California buckthorn, and California buckeye.

#### **Montane Chaparral (MCP)**

The growth form of montane chaparral species can vary from treelike to prostrate. Its structure is affected by site quality, history of disturbance, and the influence of browsing animals. Montane chaparral is characterized by evergreen species; however, deciduous species may also be present. Understory vegetation in the mature chaparral is largely absent. The species composition of MCP varies throughout California. One or more of the following species usually characterize montane chaparral communities: whitethorn ceanothus (*Ceanothus cordulatus*), snowbrush ceanothus (*Ceanothus velutinus*), greenleaf manzanita (*Arctostaphylos patula*), pinemat manzanita (*Arctostaphylos nevadensis*), hoary manzanita (*Arctostaphylos canescens*), bitter cherry (*Prunus emarginata*), huckleberry oak, sierra chinquapin (*Castanopsis sempervirens*), juneberry (*Amelanchier pallicla*), mountain mahogany (*Chrysalepis montanus*), toyon, sumac, and California buckthorn.

#### **Montane Hardwood (MHW)**

A typical montane hardwood habitat is composed of a pronounced hardwood tree layer, with a poorly developed shrub layer, and a sparse herbaceous layer. In the southern Cascade and Sierra Nevada ranges, steep, rocky south slopes of major river canyons are often dominated by canyon live oak and scattered old growth Douglas fir (*Pseudotsuga menziesii*). Elsewhere, higher elevation overstory associates include foothill pine, knobcone pine, tanoak (*Lithocarpus densiflorus*), Pacific madrone, and scrubby California laurel. Associated understory vegetation includes Oregon grape (*Berberis nervosa*), currant, wood rose, snowberry, manzanita, poison oak, and scattered forbs and grasses.

#### **Montane Hardwood-Conifer (MHC)**

MHC habitat includes both conifers and hardwoods, often as a closed forest. To be considered MHC, at least one-third of the trees must be conifer and at least one-third must be broadleaf.

Relatively little understory occurs under the dense, bi-layered canopy of MHC. However, considerable ground and shrub cover can occur in ecotones or following disturbance such as fire or logging. Steeper slopes are normally devoid of litter. However, gentle slopes often contain considerable accumulations of leaf and branch litter. Common associates in MHC are ponderosa pine, Douglas fir, incense cedar (*Calocedrus decurrens*), California black oak, tanoak, Pacific madrone, and Oregon white oak (*Quercus garryana*).

### **Montane Riparian (MRI)**

The vegetation of montane riparian zones is variable and often structurally diverse. The MRI zone usually occurs as a narrow, often dense grove of broadleaved, winter deciduous trees with a sparse understory. At high elevations, MRI may not be well developed or may occur in the shrub stage only. In the Sierra Nevada, characteristic species associations include thinleaf alder (*Alnus viridis* ssp. *sinuata*) aspen, black cottonwood (*Populus trichocarpa*), dogwood (*Cornus nuttallii*), wild azalea (*Rhododendron occidentale*), and willow (*Salix* sp.). MRI habitats can occur as alder or willow stringers along streams or seeps. In other situations, an overstory of Fremont cottonwood (*Populus fremontii*), black cottonwood, and white alder (*Alnus rhombifolia*) may be present.

### **Lodgepole Pine Riparian (Holland's Montane Riparian Scrub)**

Montane riparian scrub habitats are open to dense, broad-leaved, winter-deciduous shrubby riparian thickets usually dominated by any of several *Salix* species, *Alnus*, or *Cornus*. This catch-all community includes a bewildering array of cover types that require substantial study.

This habitat occurs on relatively fine-textured alluvium along fairly low-gradient reaches of snowmelt-fed streams. In addition, it often occurs as a thin scrubby corridor through Montane or Subalpine and Alpine Meadows.

Montane riparian scrub is widely scattered above 5,000 to 7,000 feet throughout montane parts of the Klamath, Sierra Nevada, and southern California mountains. Most of these habitats have been ravaged by past livestock grazing, and today are threatened by dewatering from small hydro projects.

### **Mountain Alder Riparian (Holland's Montane Riparian Scrub)**

See description for lodgepole pine riparian.

### **Red Fir Riparian (Holland's Montane Riparian Scrub)**

See description for lodgepole pine riparian.

### **White Fir Riparian (Holland's Montane Riparian Scrub)**

See description for lodgepole pine riparian.

##### **Pasture (PAS)**

Pasture vegetation is a mix of irrigated perennial grasses and legumes that normally provide 100 percent canopy closure. The mix of grasses and legumes varies according to management practices such as seed mixture, fertilization, soil type, irrigation, weed control, and the type of livestock on the pasture. Pastures are planted on flat to gently rolling terrain. This type occurs throughout California but is most widespread in the Great Central Valley and to a lesser extent in coastal plains and valleys.

##### **Ponderosa Pine (PPN)**

The ponderosa pine habitat includes pure stands of ponderosa pine (*Pinus ponderosa*) as well as stands of mixed species in which at least 50 percent of the canopy area is ponderosa pine. Associated tree species vary depending on location in the State and site conditions. However, typical tree associates include white fir (*Abies concolor*), incense cedar, Coulter pine, Jeffrey pine, sugar pine, Douglas fir, bigcone Douglas fir (*Pseudotsuga macrocarpa*), canyon live oak, California black oak, Oregon white oak, Pacific madrone, and tanoak. Associated shrubs include manzanita, ceanothus, mountain misery, dogwood, bitter cherry, California buckthorn, and poison oak. Grasses and forbs include slimleaf brome (*Bromus breviaristatus*), carex (*Carex* sp.), bluegrass (*Poa* sp.), bedstraw (*Galium* sp.), bush morning glory (*Calystegia occidentalis*), Sierra iris (*Iris hartwegii*), and purple nightshade (*Solanum xanthii*).

##### **Red Fir (RFR)**

RFR forms dense forests with narrow crowns often overlapping and casting a deep shade. RFR typically consists of essentially pure stands of red fir (*Abies magnifica*) which grow to about 60m tall. Red fir grades into the closely related *Abies procera* in the northwestern Klamath Ranges. The latter forms similar forests which have not been distinguished here from those of red fir. The understory is very nearly absent, but needle litter and downed branches are abundant. Growth is probably limited by low temperature most of the year, and summer drought is probably less limiting than in most other Sierran forests. RFR is similar to, and probably the higher elevation equivalent of Sierran White Fir Forest, but cooler and moister, and often occurring on north-facing slopes. The heavy precipitation at this elevation, the north slope localities and the densely growing trees combine to make this forest the area of greatest winter snow accumulation in the Sierra Nevada, often reaching 3m and occasionally 6m. The snow usually remains until June.

##### **Redwood (RDW)**

Second growth redwood habitats are characterized by even-aged structure with an open park-like appearance. Over time, trees become uniform in size and height, suppressing understory vegetation. The RDW habitat is a composite name for a variety or mix of conifer species that grow within the coastal influence zone. In the north coast region, RDW consists of Sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*), redwood (*Sequoia sempervirens*), red alder (*Alnus rubra*),



and Douglas fir. Redwood becomes the dominant associate along coastal areas, approximately two to ten miles from the ocean. Further inland, Douglas fir becomes the dominant species. The understory composition is diverse. Important species include sword fern (*Polystichum munitum*), deer fern (*Blechnum spicant*), California huckleberry, coast fireweed, creambush oceanspray (*Holodiscus discolor*), poison oak, coyotebush (*Baccharis pilularis*), Idaho fescue (*Festuca idahoensis*), and western fescue (*Festuca occidentalis*).

#### **Riverine (RIV)**

RIV habitats are distinguished by intermittent or continually running water. A stream originates at some elevated source, such as a spring or a lake, and flows downward at a rate relative to the slope or gradient and the volume of surface runoff. Over this transition from a rapid, surging stream to a slow river, water temperature and turbidity will tend to increase, dissolved oxygen will decrease, and the bottom will change from rocky to muddy. The majority of fast stream inhabitants live in riffles. Characteristic of the riffle insects are the nymphs of mayflies, caddisflies, alderflies, and stoneflies. Water moss and heavily branched filamentous algae are held to rocks by strong holdfasts. In slower water, mollusks and crustaceans replace the riffle-dwelling insect larvae. Emergent vegetation grows along river banks. Abundant decaying matter on the river bottom promotes the growth of plankton populations.

#### **Sierran Mixed Conifer (SMC)**

The SMC habitat is an assemblage of conifer and hardwood species that forms a multilayered forest. Virgin old-growth stands where fire has been excluded are often two-storied with the overstory comprised of mixed conifer and the understory containing white fir and incense cedar. Forested stands form closed multilayered canopies with nearly 100 percent overlapping cover. When openings occur, shrubs are common in the understory. Five conifers and one hardwood typify the mixed conifer forest: white fir, Douglas fir, ponderosa pine, sugar pine, incense cedar, and California black oak. White fir tends to be the most ubiquitous species. Red fir is a minor associate at the highest elevations. In the central and southern Sierra Nevada, giant sequoia (*Sequoiadendron giganteum*) is a striking associate of the mixed conifer type. White fir, incense cedar, and sugar pine are associated with the mesic giant sequoia sites. Common understory shrubs include manzanita, chinquapin, tan oak, bitter cherry, and mountain misery. Grasses and forbs include mountain brome (*Bromus marginatus*), *Carex* sp., bull thistle (*Cirsium* sp.), and *Juncus* sp.

#### **Subalpine Conifer (SCN)**

Typical SCN habitats are open forests with needle-leaved evergreen trees of low to medium stature. Shrubby vegetation and herbaceous ground cover are generally sparse or lacking. Litter accumulation is typically scanty, but fallen woody material persists for long periods in the cold climate. Several species dominate canopies of this type in different localities, either singly or in mixtures of two or more species. These include Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), mountain hemlock, western white pine (*Pinus monticola*), lodgepole pine,

whitebark pine (*Pinus albicaulis*), foxtail pine (*Pinus balfouriana*), bristlecone pine (*Pinus aristata*), and limber pine (*Pinus flexilis*). A shrub understory may include Parry manzanita (*Arctostaphylos parryana*), squaw currant, purple mountain heather (*Phyllodoce breweri*), oceanspray (*Holodiscus microphyllus*), and big sagebrush (*Artemisia tridentata*). California brome (*Bromus carinatus*), several species of lupines, and a variety of flowering annuals are common within the sparse ground cover.

#### **Valley Foothill Riparian (VRI)**

Most trees in this habitat are winter deciduous. There is a subcanopy tree layer and an understory shrub layer. Generally, the understory is impenetrable and includes fallen limbs and other debris. Dominant species in the canopy layer are cottonwood, California sycamore (*Plantanus racemosa*), and valley oak. Subcanopy trees are white alder, boxelder (*Acer negundo*), and Oregon ash (*Fraxinus latifolia*). Typical understory shrub layer plants include wild grape (*Vitus californica*), wild rose (*Rosa californica*), California blackberry, blue elderberry (*Sambucus mexicana*), poison oak, and willows. The herbaceous layer consists of sedges, rushes, grasses, miner's lettuce, Douglas sagewort (*Artemisia douglasiana*), poison-hemlock (*Conium maculatum*), and hoary nettle (*Urtica holosericea*).

#### **Black Cottonwood Riparian (Holland's Montane Black Cottonwood Riparian Forest)**

Black cottonwood riparian habitats consist of a fairly dense, mixed riparian forest dominated by deciduous black cottonwood (*Populus balsmaifera* ssp. *trichocarpa*) with emergent evergreen Jeffrey pine (*Pinus jefferyi*) towering to as much as 150 feet. The shrub canopy is well developed, averaging around 25 percent cover. Herb cover also is high, in some cases reaching 100 percent.

Black cottonwood riparian habitat is well developed on large flow-rate streams, typically in areas constrained by steep canyon walls and usually below about 6,000 feet in the north and 8,500 feet in the south.

Black cottonwood riparian habitats are scattered widely through the Sierra Nevada and more sporadically in the higher parts of the Transverse and Peninsular ranges.

#### **Oregon Ash Riparian (Holland's White Alder Riparian Forest)**

The white alder riparian habitat type is composed of medium-tall broad-leaved deciduous streamside forests dominated by white alder (*Alnus rhombifolia*), with a shrubby, deciduous understory. Stands in Coast Ranges have abundant *Salix*, mulefat (*Baccharis salicifolia*), snowberry (*Symphoricarpos* spp.), wild rose (*Rosa californica*), and poison oak (*Rhus diversilobum*), while Sierran stands have understories rich in red-osier dogwood (*Cornus stolonifera*), Oregon ash (*Fraxinus latifolia*), and western azalea (*Rhododendron occidentale*).

These habitats are best developed along rapidly flowing, well-aerated perennial streams with coarse bed-loads that reflect high stream power during spring runoff. These streams typically flow in bedrock-constrained, steep-sided canyons, so the riparian corridor typically is rather narrow.

White alder riparian habitats occur along perennial streams in incised canyons of the lower Sierra Nevada, Coast, Transverse, and Peninsular ranges, usually below about 6,000 feet.

#### **White Alder Riparian (Holland's White Alder Riparian Forest)**

See description for Oregon ash riparian.

#### **Valley Oak Woodland (VOW)**

This habitat varies from savannah-like to forest-like stands with partially closed canopies, comprised mostly of winter-deciduous, broad leaved species. Denser stands typically grow in valley soils along natural drainages. Similarly, the shrub layer is best developed along natural drainages, becoming insignificant in the uplands with more open stands of oaks. Canopies of these woodlands are dominated almost exclusively by valley oaks. Tree associations in the Central Valley include California sycamore, Hinds black walnut (*Juglans hindsii*), interior live oak, boxelder, and blue oak. The shrub understory consists of poison-oak, blue elderberry (*Sambucus mexicana*), California wild grape, toyon, California coffeeberry, and California blackberry. Various sorts of brome, wild oats, barley, ryegrass, and needlegrass dominate the ground cover. Foothill pine and coast live oak are associated with VOW along the coast range.

#### **Wet Meadow (WTM)**

Wet meadows at all elevations generally have a simple structure consisting of a layer of herbaceous plants. Shrub or tree layers are usually absent or very sparse. Wet meadows occur with a great variety of plant species. Species may differ, but several genera are common to Wet Meadows throughout the State. They include *Agrostis*, *Carex*, *Danthonia*, *Juncus*, *Salix*, and *Scirpus*. Important grass species include thingrass (*Agrostis diegoensis*), abruptbeak sedge (*Carex abrupta*), beaked sedge (*Carex rostrata*), Nebraska sedge (*Carex nebraskensis*), tufted hairgrass (*Deschampsia caespitosa*), needle spikerush (*Eleocharis acicularis*), and panicked bulrush (*Scirpus microcarpus*). Important forbs include Anderson aster (*Aster alpigenus*), Jeffrey shootingstar (*Dodecatheon jeffreyi*), trailing Saint-Johnswort (*Hypericum anagalloides*), hairy pepperwort (*Marsilea vestita*), primrose monkeyflower (*Mimulus primuloides*), and small white violet (*Viola macloskeyi*). Willow and bilberry (*Vaccinium* sp.) are the only shrubs found in much abundance.

#### **White Fir (WFR)**

The white fir habitat is characterized by nearly monotypic even-aged overstory. Although open stands are common, overlapping crowns that cast deep shade are more typical for WFR habitat. The understory may consist of sparsely scattered grasses, forbs, and shrubs, or white fir seedlings

and saplings. Mature white fir stands, normally monotypic, with more than 80 percent occurring as white fir, are found throughout California. Shade and downed woody material tend to inhibit understory species. In the Sierra Nevada, sugar pine, incense-cedar, and red fir are common tree associates with princess pine (*Chimaphila* sp.), wintergreen (*Gaultheria* sp.), and snowplant (*Sarcodes sanguinea*) in the understory.

#### **Urban (URB)**

The structure of urban vegetation varies, with five types of vegetative structures defined: tree grove (variety of tree species with a continuous canopy, found in city parks and green belts), street strip (variety of tree species, along with various spacing and canopy densities), shade/lawn tree (variety of tree species -reminiscent of natural savannahs), lawn (variety of grass species), and shrub cover (hedges). Species composition in urban habitats varies with planting design and climate. Monoculture is commonly observed in tree groves and street tree strips. Common urban trees in California include eucalyptus (*Eucalyptus* sp.), Monterey cypress, and Monterey pine. A distinguishing feature of the urban wildlife habitat is the mixture of native and exotic species.

#### **4.5.4 REGIONAL AND LOCAL SETTING AND REGULATORY CONTEXT**

##### **4.5.4.1 Shasta Regional Bundle**

#### **Regional Setting**

The Shasta Region (i.e., Pacific Gas and Electric Company facilities and associated FERC and watershed lands) is located within the California (cismontane) Floristic Province, which encompasses the majority of the State. At a more specific level, the Shasta assets are within the Cascade Range region. This region is derived from volcanic formations and is bounded to the north by Oregon, to the west of Interstate 5 and the Sacramento River (between Redding and Red Bluff), to the southwest by the agricultural lands of the Central Valley, and to the southeast by the Sierra Nevada and Great Basin (Hickman, 1993).

The Cascade Range is comprised of two subregions: Cascade Range Foothills and High Cascade Range. The Cascade Range Foothills makes up the southwestern area of the Cascade Range and includes chaparral and blue oak-foothill plant communities at elevations ranging from 300 to 1,650 feet. The High Cascade subregion, generally located above 1,650 feet in elevation, is characterized by the following plant communities: ponderosa pine, montane fir/pine, and lodgepole-pine. Forests at the higher elevations of Mount Shasta are treeless alpine communities.

The Shasta Region contains a variety of habitats that support a diverse assemblage of wildlife species. Habitat types (based on the classification system described in Mayer and Laudenslayer, Jr. [1988] A Guide to Wildlife Habitats) found within the region include Sierran mixed conifer, montane hardwood conifer, ponderosa pine, juniper, montane riparian, wet meadow, fresh emergent wetland, riverine, and lacustrine (i.e., ponds, lakes, reservoirs).

## Local Regulations and Policies

Applicable local plans for the Shasta Region are the Shasta County and Tehama County General Plans. Additionally, portions of the Shasta assets are located directly adjacent to Lassen National Forest and Shasta-Trinity National Forest lands. Project facilities and watershed lands adjacent to Lassen National Forest lands are specifically located near the Britton, Hat Creek, Logan, and Red Management Areas, as defined in the Lassen National Forest Plan. Project facilities and watershed lands associated with Bundle 2 (Pit 3, 4, and 5; McCloud-Pit) are located adjacent to Shasta-Trinity National Forest lands. The McCloud-Pit project is proximal to the McCloud River Management Area and the Pit, 3, 4 and 5 project is proximal to the Pit Management Area, as defined in the Shasta-Trinity National Forest Plan. Table 4.5-1 identifies the goals, objectives, and policies contained within local planning documents that provide guidance for development in the region, specific to biological resources.

Specific to the McCloud-Pit Project (FERC 2106), Pacific Gas and Electric Company is signatory to a Coordinated Resource Management Plan (CRMP), which provides measures to protect the McCloud River. Signatories to the plan agreed that the CRMP could be used as an acceptable alternative to designating McCloud River as a Wild and Scenic River.

### Bundle 1: Hat Creek

#### *Hat Creek 1 and 2 (FERC 2661)*

**Vegetation Communities.** The Hat Creek 1 and 2 project boundary is within the Cascade Region - High Cascade Range Subregion, with elevations ranging from 2,980 feet above mean sea level (amsl) at Baum Lake to 3,191 feet amsl at Cassel Pond. Vegetation is comprised of a mix of Sierran, Cascade, and Great Basin habitats. Major plant communities in the vicinity of the project include ponderosa pine forest, northern juniper woodland, cismontane woodland, montane riparian scrub, sagebrush scrub, montane grassland, and freshwater marsh (Table 4.5-2) (PG&E Co., 1998a).

The Ponderosa pine forest community is a relatively open forest of coniferous trees dominated by Ponderosa pine (*Pinus ponderosa*), with incense cedar (*Calocedrus decurrens*), a common associate species. Sparse understory vegetation is comprised of buck brush (*Ceanothus cuneatus*), rabbit brush (*Chrysothamnus* spp.), and manzanita (*Arctostaphylos* spp.).

Within the drier portions of the Hat Creek 1 and 2 project boundary, northern juniper woodland vegetation is prevalent. This open woodland community is dominated by western juniper (*Juniperus occidentalis*), with foothill pine (*Pinus sabiniana*) occurring as a common associate. Typical understory species include big sagebrush (*Artemisia tridentata tridentata*) and squawbush (*Rhus trilobata*).

**Table 4.5-1 Local Policies Associated with the Shasta Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Shasta County General Plan	Fish & Wildlife Habitat Element	Objective FW-1	Protection of significant fish, wildlife, and vegetation resources	1, 2, 3, 4
Shasta County General Plan	Fish & Wildlife Habitat Element	Objective FW-2	Provide for a balance between wildlife habitat protection and enhancement and the need to manage and use agricultural, mineral extraction, and timberland resources.	1, 2, 3, 4
Shasta County General Plan	Fish & Wildlife Habitat Element	Policy FW-a	Significant wildlife habitat resources, when not otherwise classified as Timberland (T), Cropland (A-C), or Grazing (A-G) shall be classified on the General Plan maps as Natural Resources Protection-Habitat (N-H).	1, 2, 3, 4
Shasta County General Plan	Fish & Wildlife Habitat Element	Policy FW-b	Recognition that classification of some fish, wildlife, and vegetation resources designated and used as Timberlands, Mineral Resources, Croplands, or Grazing lands does, in most cases, protect habitat resources. If there is a conflict, timber, mineral excavation, or agricultural land use classifications mentioned above shall prevail in a manner consistent with State and Federal laws.	1, 2, 3, 4
Shasta County General Plan	Fish & Wildlife Habitat Element	Policy FW-c	Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or the U.S. Fish and Wildlife Service, shall be designed or conditioned to avoid any net adverse project impacts on those species.	1, 2, 3, 4
Shasta County General Plan	Fish & Wildlife Habitat Element	Policy FW-d	The significant river and creekside corridors of Shasta County shall be designated on the General Plan maps. The primary purpose of this designation is to protect the riparian habitats from development and from adverse impacts from conflicting resources uses. The purpose is also to encourage open space and recreation. Riparian habitat protection along the significant river and creekside corridors, as designated on the plan maps shall be achieved, where appropriate, by regulating vegetation removal, proper design of grading and road construction, establishment of development set-back, and proper siting of structures.	1, 2, 3, 4
Shasta County General Plan	Fish & Wildlife Habitat Element	Policy FW-e	Salmon spawning gravel in portions of the following rivers and creeks shall be protected: Sacramento River, Battle Creek, Cow Creek, Cottonwood Creek, Bear Creek, Clear Creek, Churn Creek, Stillwater Creek, Olney Creek, and Anderson Creek.	1, 2, 3, 4
Shasta County General Plan	Fish & Wildlife Habitat Element	Policy FW-h	The County shall encourage efforts to develop tree protection standards which focus on the County's differing land use types, namely: lowland urban, upland urban, rural residential, and resource lands.	1, 2, 3, 4
Shasta County General Plan	Fish & Wildlife Habitat Element	Policy FW-j	Efforts to restore the Middle Creek drainage basin, Clear Creek watershed basin, Battle Creek, Cow Creek, and other Sacramento River tributary watersheds shall be supported by the County.	1, 2, 3, 4

**Table 4.5-1 Local Policies Associated with the Shasta Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Tehama County General Plan	Wildlife Resources Element	Objective WR-1	Preserve environmentally sensitive and significant lands and water valuable for their plant and wildlife habitat, natural appearance, and character.	4
Tehama County General Plan	Wildlife Resources Element	Objective WR-2	Afford, to the extent feasible, adequate protection to areas identified by the California Department of Fish and Game and the California Natural Diversity Data Base as critical riparian zones.	4
Tehama County General Plan	Wildlife Resources Element	Objective WR-3	Support and coordinate County plan with interjurisdictional programs for the proper management of riparian resources in the County.	4
Tehama County General Plan	Wildlife Resources Element	Policy WR-a	Significant wildlife and wildlife habitats shall be protected through designations under the Natural Resource Conservation Land Use Classifications.	4
Tehama County General Plan	Wildlife Resources Element	Policy WR-b	Future land division applications located within lands subject to the Natural Resource Conservation land use designations or within one mile of a rare or endangered plant or wildlife habitat shall be referred to the Department of Fish & Game for review and comment.	4
Tehama County General Plan	Wildlife Resources Element	Policy WR-c	Significant river and creekside corridors shall be designated on zoning maps.	4
Tehama County General Plan	Wildlife Resources Element	Policy WR-e	Water diversions/dams constructed along anadromous fish streams shall be designed to protect fish populations and to ensure adequate flow levels for spawning activity during migratory seasons in accordance with State and Federal regulations.	4
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Britton Management Area)	Sensitive Plants	Monitor and protect populations of slender Orcutt grass and Mathias' coyote thistle. Inventory for Boggs Lake hedge-hyssop, Bellinger's meadow foam, and additional slender Orcutt grass and Mathias' coyote thistle populations in vernal pools and other seasonally wet areas. Inventory for Salmon Mountains wakerobin in moist drainages.	2
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Britton Management Area)	Water and Riparian Areas	Rehabilitate Screwdriver and Rock Creeks. Apply special management practices to protect the sensitive nature of these watersheds. Do not approve mining operating plans without measures to protect the water quality of Lake Britton and the Pit River.	2

**Table 4.5-1 Local Policies Associated with the Shasta Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Britton Management Area)	Wildlife	Maintain year-long road closure in the North Shore Bald Eagle territory. Maintain seasonal road closure in the Warner Grade/Dry Lakes Bald Eagle Management Unit. Apply special silvicultural prescriptions to enhance bald eagle habitat. Emphasize hardwood retention; prohibit firewood use of standing hardwoods. When manipulating vegetation, emphasize wild turkey habitat where appropriate. Give mule deer priority by allocating forage in winter range areas. Continue regenerating decadent brushfields to improve winter range. Provide bank swallow nesting habitat during mining reclamation if habitat potential exists. Manage the Northern Spotted Owl Habitat Conservation Area in a manner not inconsistent with the Interagency Spotted Owl Committee's recommendation.	2
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Hat Creek Management Area)	Sensitive Plants	Monitor and protect populations of Boggs Lake hedge-hyssop and other rare vernal pool species, on Murken Bench. Inventory for additional populations in vernal pool habitat types.	2
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Hat Creek Management Area)	Water and Riparian Areas	Maintain and improve riparian habitat along Hat Creek. The extent of Forest Service authority, no development of hydroelectric power facilities would be permitted on Hat Creek.	2
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Hat Creek Management Area)	Wildlife	Protect lava tubes and caves as necessary to provide for bat roosting and maternity colonies. Protect and enhance foraging and nesting habitat for osprey.	2
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Logan Management Area)	Sensitive Plants	Inventory for long-haired star tulip in meadow areas.	3
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Logan Management Area)	Wildlife	Regenerate decadent brushfields to improve summer range for the Cow Creek deer herd. Where feasible, develop wetlands to increase waterfowl production and provide habitat for fall migrants.	3
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Red Management Area)	Sensitive Plants	Inventory for talus collomia populations in alpine or subalpine areas. Monitor and protect populations of northern spleenwort and inventory for additional populations on rocky outcrops. Inventory for possible short-petalled campion in red fir stands.	4
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Red Management Area)	Wildlife	Regenerate decadent brushfields to improve summer range for black-tailed deer. Enhance critical fawning habitat in the Manzanita Chutes area. Apply special silvicultural prescriptions to enhance potential nesting habitat for bald eagles at the North Battle Creek Reservoir. Monitor cliff sites in Blue Lake Canyon for peregrine falcon.	4



**Table 4.5-1 Local Policies Associated with the Shasta Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Shasta-Trinity National Forests Land and Resource Management Plan	Chapter 4 – Management Direction	McCloud River Management Area	Manage bitterbrush in selected areas mapped as Prescription VI (Wildlife Management). Cooperate with the DFG in developing a Wild Trout Management Plan for the Lower McCloud River. In cooperation with private landowners, Pacific Gas and Electric Company, and the DFG, manage the Upper and Lower McCloud River and Squaw Valley Creek under a Coordinated Resources Management Plan (CRMP). Maintain or improve selected habitats for black bear, spotted owls, deer, elk, and turkey.	2
Shasta-Trinity National Forests Land and Resource Management Plan	Chapter 4 – Management Direction	Pit River Management Area	Utilize natural fuels reduction to protect special habitat areas and forest investments. Maintain or improve selected habitats for coldwater and warmwater resident fisheries. Search for McNab cypress stand that meets the criteria for a Research Natural Area candidate. Maintain or improve selected habitats for deer, elk, turkey, bear, bald eagle, peregrine falcon, and spotted owl.	1, 2

**Table 4.5-2 Bundle 1 – Hat Creek Vegetation Communities Associated With Hat 1 and 2 Project (FERC 2661)**

Project Features	Foothill Communities	Transition Communities				Water Elements		
	AGS	LSG	MRI	PPN	JPN	RIV	LAC	FEW
<b>Generation Facilities</b>								
Hat Creek 1 Complex	X		X	X	X	X	X	X
Hat Creek 2 Complex	X	X	X	X		X	X	X
<b>Transmission Lines and Access Roads</b>								
Hat Creek 1 Complex	X			X	X			
Hat Creek 2 Complex	X	X		X				
<b>FERC Licensed Lands</b>								
Hat Creek 1 Complex	X		X	X	X	X	X	X
Hat Creek 2 Complex	X	X	X	X		X	X	X
<b>Project Waterways</b>								
Hat Creek			X			X		
Rising River			X			X		
Rising River Lake							X	X
Crystal Lake							X	X
Baum Lake							X	X

**Table 4.5-2 Bundle 1 – Hat Creek Vegetation Communities Associated With Hat 1 and 2 Project (FERC 2661)**

Project Features	Foothill Communities	Transition Communities				Water Elements		
	AGS	LSG	MRI	PPN	JPN	RIV	LAC	FEW
Watershed Lands								
Hat Creek 1 Complex	X		X	X	X	X	X	X
Hat Creek 2 Complex	X	X	X	X		X	X	X

Notes:

Generation Facilities = Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc.

Transmission Lines and Access Roads = Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer.

FERC Licensed Lands = Pacific Gas and Electric Company owned lands that are regulated by FERC, contiguous to a generation facility or project waterway and are part of the proposed project.

Project Waterways = Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations.

Watershed Lands = Pacific Gas and Electric Company lands that are not regulated by FERC.

Habitats

AGS = Annual Grassland  
 BOP = Blue Oak-Foothill Pine  
 BOW = Blue Oak Woodland  
 CRC = Chamise-Redshank Chaparral  
 DFR = Douglas-Fir  
 FEW = Fresh Emergent Wetland  
 JPN = Jeffrey Pine  
 LAC = Lacustrine  
 LPN = Lodgepole Pine  
 LSG = Low Sagebrush  
 MCP = Montane Chaparral  
 MCH = Mixed Chaparral  
 MHC = Montane Hardwood-Conifer  
 MHW = Montane Hardwood  
 MRI = Montane Riparian  
 PPN = Ponderosa Pine  
 RFR = Red Fir  
 RIV = Riverine  
 SCN = Subalpine Conifer  
 SGB = Sagebrush  
 SMC = Sierra Mixed Conifer  
 VOW = Valley Oak Woodland  
 VRI = Valley Foothill Riparian  
 WFR = White Fir  
 WTM = Wet Meadow

Cismontane woodland is comprised of broad-leaved trees and ranges from closed forests on mesic soils to open savannas in drier areas. Oregon white oak (*Quercus garryana*) is the dominant

species found in this plant community within the Hat Creek 1 and 2 project boundary. Understory vegetation ranges from non-native annual grassland to shrubland consisting of buck brush and green-leaf manzanita.

Montane riparian forest and montane riparian scrub plant communities occur as narrow, dense stringers of vegetation adjacent to stream corridors. Riparian forests are comprised of trees up to 100 feet in height, while riparian scrub vegetation consists of trees under 50 feet in height. Common plant species found in riparian forests include white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), with an understory of squawbush, mugwort (*Artemisia douglasiana*), and snowberry (*Symphoricarpos albus* var. *laevigatus*). Riparian scrub vegetation is dominated by several willow species including red willow (*Salix laevigata*) and arroyo willow (*Salix lasiolepis*), with common associate species such as mountain alder (*Alnus incana* ssp. *tenuifolia*) and dogwood (*Cornus* spp.). Understory plant species common to riparian scrub communities include sedge (*Carex* spp.), monkeyflower (*Mimulus guttatus*), and wild rose (*Rosa californica*).

Sagebrush scrub vegetation within the project boundary is dominated by big sagebrush. This community was once common throughout the Hat Creek Valley but has been converted to irrigated grazing land over the years.

Montane grassland within the project boundary is comprised of a mixture of annual and perennial herbaceous species. Most of the grasslands have been grazed within the Hat Creek 1 and 2 project boundary. Common species occurring in montane grassland communities include California brome (*Bromus carinatus*), Idaho fescue (*Festuca idahoensis*), and bulbous bluegrass (*Poa bulbosa*).

Freshwater marsh vegetation within the project boundary occurs adjacent to lakes and ponds as a completely closed canopy. Perennial, emergent plant species include tule (*Scirpus acutus*), cattail (*Typha latifolia*), and several species of sedge. Baum Lake, Cassel Pond, and Crystal Lake all support freshwater marsh vegetation.

The CDFG has identified several areas within the Hat Creek 1 and 2 project vicinity as Significant Natural Areas of California. CDFG designates Significant Natural Areas according to the following criteria: (1) locations of extremely rare species populations or natural communities; (2) locations where three or more rare species populations or natural communities occur together; (3) locations of the best examples known for natural communities; or (4) centers of high species diversity. These areas include Ahjumawi Lava Springs/Fall River, Mouth of Hat Creek, Lake Britton, Fall River Mills, and Pit 1 Forebay.

**Wildlife Resources.** Several major wildlife habitats, corresponding to distinct vegetative communities, are found in the Hat Creek 1 and 2 project boundary, as listed in Table 4.5-3. In addition, the project boundary supports significant freshwater emergent wetland habitat used extensively for nesting, wintering, and staging by waterfowl and other birds. The most significant of these habitats is found at Crystal Lake, but Cassel Pond and Baum Lake also have important wetland habitats (PG&E Co., 1998a).

The project lies adjacent to the winter range for the Lake Britton deer herd, which includes California mule deer (*Odocoileus hemionus californicus*) and black-tailed deer (*Odocoileus hemionus hemionus*). This herd is part of the McCloud Flats deer population, a CDFG management unit that includes the summer range of at least nine deer herds<sup>2</sup>. The 1983 CDFG McCloud Flats Deer Herd Plan has a goal of increasing the herd count five percent from an estimated population of 3,000 animals in 1983 via improvement of existing summer range habitat.

Existing documentation and a query of the California Natural Density Database (CNDDDB) for the project, covering the area within the project boundary and a one-mile buffer around it, found several special-status species. Special-status wildlife species that may occur in the vicinity of the project are included in Table 4.5-3.

Of particular note is a Hat Creek bald eagle (*Haliaeetus leucocephalus*) breeding territory that is located within the FERC project boundary, approximately one kilometer (km) east of Baum Lake. Surveys conducted in 1996 and 1997 revealed that these birds also forage within the Hat Creek 1 and 2 project boundary and that the breeding territory encompasses Baum Lake, Crystal Lake, and the Pit 1 reach downstream of the Pit 1 Powerhouse. Pacific Gas and Electric Company prepared the Hat Creek Bald Eagle Nesting Territory Management Plan in 1998 and is currently implementing the goals and objectives of this plan.

Surveys for special-status bird species within the Hat Creek 1 and 2 project boundary were conducted by Pacific Gas and Electric Company in 1997. Specific areas in which focused surveys were conducted included aquatic and wetland habitats associated with Baum and Crystal lakes, Hat Creek from Cassel Pond to Lake Britton, Hat Creek No. 1 Canal, Rock Creek and pond, lower Pit No. 1 reach, Cinder Flats State Wildlife Area, cliffs within the project boundary and in the Pit No. 1 canyon from Pit No. 1 Powerhouse up to Pit River Falls, all cutbank areas adjacent to waterways, and all tule and cattail marshes. The results of these surveys are described below by species.

Common loons (*Gavia immer*) were not observed within the project boundary during Pacific Gas and Electric Company surveys, but a single loon was observed in April 1997 at Baum Lake. Common loons have been observed on occasion at Lake Britton during spring migration.

American white pelicans (*Pelecanus erythrorhynchos*) were regularly observed on Baum Lake throughout the spring and summer, with fewer individuals observed on Crystal Lake. A few white pelicans which were observed had breeding platts on their upper mandibles; however, no evidence of breeding was observed on either Baum or Crystal lakes.

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2 Pacific Gas and Electric Company. 1998. Hat Creek Project, Application for New License, Volume I: Exhibit E.

**Table 4.5-3 Special-Status Wildlife Species That Are Known To Occur Or Potentially Occur In Bundle 1 (FERC 2661)**

Common Name	Status USFWS/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/-/FSS	MRI, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands associated with Hat Creek 1 and Hat Creek 2 complexes
<b>Crustaceans</b>			
Shasta crayfish <i>Pacifastacus fortis</i>	FE/SE/-	RIV, MRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek
<b>Amphibians</b>			
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP/ FSS, BLM	BOP, AGS, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/ FSS	BOP, AGS, FEW, VRI, MRI, RIV, LAC, MHC, PPN, SMC, MCP, MCH, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
<b>Birds</b>			
American white pelican <i>Pelecanus erythrorhynchos</i>	--/SSC/--	LAC, RIV	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE/CDF	BOP, AGS, FEW, JUN, RIV, LAC, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG,	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Bank swallow <i>Riparia riparia</i>	--/ST/--	AGS, FEW, LAC, RIV, LSG, MRI, VRI, MCH, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Barrow's goldeneye <i>Bucephala islandica</i>	--/SSC/-	LAC, RIV	Baum Lake, Crystal Lake, Rising River Lake, Rising River, Hat Creek, Hat Creek 1 Complex, Hat Creek 2 Complex
Black swift <i>Cypseloides niger</i>	--/SSC/--	BOP, AGS, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LAC, RIV, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes, Baum Lake, Crystal Lake, Rising River Lake, Hat Creek, Rising River
Black tern <i>Chlidonius niger</i>	SOC/SSC/--	FEW, WTM, LAC	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes, Baum Lake, Crystal Lake, Rising River Lake
Black-capped chickadee <i>Parus atricapillus</i>	--/SSC/--	MRI, PPN, WTM, SMC, MHC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes

**Table 4.5-3 Special-Status Wildlife Species That Are Known To Occur Or Potentially Occur In Bundle 1 (FERC 2661)**

Common Name	Status USFWS/State/ Other	Habitat	Facilities
Burrowing owl <i>Athene cunicularia</i>	SOC/SSC/BLM	AGS, JUN, LSG	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
California gull <i>Larus californicus</i>	--/SSC/--	AGS, FEW, WTM, RIV, LAC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
California horned lark <i>Eremophila alpestris actia</i>	--/SSC/--	AGS, JUN, MCP	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Baum Lake, Crystal Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLM	SMC, MHC, MHW	Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Common loon <i>Gavia immer</i>	--/SSC/-	LAC, RIV, FEW	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, c associated with Hat Creek 1 and Hat Creek 2 complexes
Cooper's hawk <i>Accipiter cooperi</i>	--/SSC/	BOP, AGS, JUN, MCH, MCP, VRI, SMC, PPN, MRI, MHC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	FEW, LAC, RIV, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Ferruginous hawk <i>Buteo regalis</i>	SOC/SSC/--	BOP, AGS, FEW, JUN, WTM, VRI, LSG	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP/BLM	BOP, AGS, FEW, JUN, WTM, LSG, MHC, MRI, PPN, SMC, VRI, MCP, MCH	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Great blue heron <i>Ardea herodias</i>	--/--/CDF	BOP, FEW, JUN, WTM, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Great egret <i>Casmerodius albus</i>	--/--/CDF	FEW, LAC, MHC, MRI, RIV, VRI, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Greater sandhill crane <i>Grus canadensis tabida</i>	--/ST/--	AGS, FEW, WTM, LAC, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes

**Table 4.5-3 Special-Status Wildlife Species That Are Known To Occur Or Potentially Occur In Bundle 1 (FERC 2661)**

Common Name	Status USFWS/State/ Other	Habitat	Facilities
Harlequin duck <i>Histrionicus histrionicus</i>	--/SSC/BLM	LAC, RIV, FEW	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Least bittern <i>Ixobrychus exilis</i>	--/SSC/BLM	LAC, FEW	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Long-billed curlew <i>Numenius americanus</i>	SOC/SSC/--	AGS, FEW, WTM, RIV, LAC, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Long-eared owl <i>Asio otus</i>	--/SSC/-	BOP, AGS, FEW, JUN, MCH, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Mountain plover <i>Charadrius montanus</i>	SOC/SSC/--	AGS	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC/FSS, CDF	BOP, JUN, SMC, MCH, MCP, VRI, PPN, MRI, MHC, LSG	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Northern harrier <i>Circus cyaneus</i>	--/SSC/--	BOP, AGS, FEW, JUN, LAC, LSG, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Northern spotted owl <i>Strix occidentalis caurina</i>	FT/--/FSS	BOP, VRI, SMC, PPN, MRI, MHC	Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Osprey <i>Pandion haliaetus</i>	--/SSC/CDF	BOP, AGS, FEW, JUN, WTM, MCH, MCP, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/CDF	BOP, AGS, FEW, JUN, SMC, MHC, WTM, RIV, LAC, LSG, MRI, PPN, VRI, MCP, MCH	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	BOP, AGS, FEW, JUN, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes

**Table 4.5-3 Special-Status Wildlife Species That Are Known To Occur Or Potentially Occur In Bundle 1 (FERC 2661)**

Common Name	Status USFWS/State/ Other	Habitat	Facilities
Purple martin <i>Progne subis</i>	--/SSC/--	BOP, AGS, FEW, RIV, LAC, MRI, PPN, SMC, WTM, VRI, MHC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/-	BOP, AGS, JUN, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Short-eared owl <i>Asio flammeus</i>	--/SSC/-	BOP, AGS, FEW, JUN, MCH, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Snowy egret <i>Egretta thula</i>	--/--/CDF	FEW, RIV, MRI, VRI, WTM, LAC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--	AGS, VRI, JUN, LSG	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/BLM	AGS, FEW, WTM, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Rising River Lake, Baum Lake, Crystal Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
White-faced ibis <i>Plegadis chihi</i>	SOC/SSC/--	LAC, FEW, AGS, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Rising River Lake, Crystal Lake, Baum Lake, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	WTM, MRI, RIV, WTM, VRI, MRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes, Hat Creek, Rising River
Yellow breasted-chat <i>Icteria virens</i>	--/SSC/--	MRI, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes, Hat Creek, Rising River
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC/--	BOP, MHC, RIV, MRI, PPN, SMC, MCH, MCP, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes, Hat Creek, Rising River
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP /FSS	MHC, SMC, WTM, MRI, MCP	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Little brown myotis <i>Myotis lucifugus</i>	--/SSC/--	BOP, AGS, FEW, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, LAC, MHC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes, Baum Lake, Crystal Lake, Rising River Lake



**Table 4.5-3 Special-Status Wildlife Species That Are Known To Occur Or Potentially Occur In Bundle 1 (FERC 2661)**

Common Name	Status USFWS/State/ Other	Habitat	Facilities
Lodgepole chipmunk <i>Tamias speciosus speciosus</i>	SOC/--/FSS	MCP, SMC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/FSS, BLM	MHC, SMC, MRI, PPN	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Pale big-eared bat <i>Corynorhinus townsendii pallascens</i>	SOC/SSC/FSS, BLM	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Pine marten <i>Martes americana</i>	--/--/FSS	MHC, PPN, MRI, WTM, SMC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Ringtail <i>Bassariscus astutus</i>	--/CFP/--	BOP, AGS, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, MHC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	--/SSC/--	MHC, PPN, SMC, MRI, WTM	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	SOC/ST/FSS	MHC, PPN, MCP, MRI, WTM, SMC	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Townsend's big-eared bat <i>Plecotus townsendii townsendii</i>	SOC/SSC/FSS, BLM	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
White-tailed hare <i>Lepus townsendii</i>	--/SSC/--	JUN, SMC, LSG, WTM, MRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLM	BOP, AGS, JUN, MHC, LAC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Hat Creek 1 Complex, Hat Creek 2 Complex, Hat Creek, Rising River, Watershed lands and FERC Licensed Lands associated with Hat Creek 1 and Hat Creek 2 complexes, Baum Lake, Crystal Lake, Rising River Lake

Notes:

Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

Special-Status Species:Federal:

FE = Federally listed as endangered

FT = Federally listed as threatened

#### 4.5 Terrestrial Biology

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SOC = Federal species of concern

FC = Federal Candidate species

State:

SE = State listed as endangered

ST = State listed as threatened

SSC = State species of special concern

CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species

BLM = Bureau of Land Management sensitive species

CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

DFR = Douglas-Fir

FEW = Fresh Emergent Wetland

JPN = Jeffrey Pine

LAC = Lacustrine

LPN = Lodgepole Pine

LSG = Low Sagebrush

MCP = Montane Chaparral

MCH = Mixed Chaparral

MHC = Montane Hardwood-Conifer

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

SCN = Subalpine Conifer

SGB = Sagebrush

SMC = Sierra Mixed Conifer

VOW = Valley Oak Woodland

VRI = Valley Foothill Riparian

WFR = White Fir

WTM = Wet Meadow

Double-crested cormorants (*Phalacrocorax auritus*) occur within the Hat Creek 1 and 2 project boundary throughout the year, with the highest density observed on Baum Lake in July 1997. Several of the cormorants observed had immature plumage which would suggest that nesting colonies are present within the project boundary; however, no evidence of breeding was documented. Cormorants were also observed roosting in snags and pine trees adjacent to the western shore of Baum Lake. No other special-status aquatic bird species were observed or reported within the Hat Creek 1 and 2 project boundary.

Potential habitat for northern goshawk (*Accipiter gentilis*), Cooper's hawk (*Accipiter cooperii*), and sharp-shinned hawk (*Accipiter striatus*) is present within the Hat Creek 1 and 2 project boundary. Surveys did not reveal the presence of nesting individuals of any of the three accipiter species along the Hat Creek drainage from Cassel to Lake Britton. A Cooper's hawk was observed at the Hat Creek No. 1 Powerhouse. The habitat present along Hat Creek appears to be most suitable for Cooper's hawk. Since mature stands of ponderosa pine are sparse within the project boundary, habitat conditions for northern goshawk are not optimal.

A new golden eagle (*Aquila chrysaetos*) nesting site adjacent to Hat Creek and occupancy of a known nesting location in Pit 1 canyon were observed during 1997 surveys conducted by Pacific Gas and Electric Company. The new nest site is located two km west of Hat Creek No. 2 Powerhouse on a rocky cliff. Open, flat land between Hat Creek and the Pit River was extensively

used as foraging habitat by the Hat Creek eagles. The second golden nesting territory is located approximately two km upstream of the Pit No. 1 Powerhouse, along the Pit No. 1 Reach.

Osprey (*Pandion haliaetus*) are relatively common within the Hat Creek 1 and 2 project boundary. Trout ponds at the CDFG Crystal Lake Fish Hatchery were a primary foraging area until CDFG constructed exclusionary fencing to prevent osprey foraging activities in 1995. Osprey have recently been observed foraging at Baum Lake, Crystal Lake, and the Hat Creek No. 1 Canal. Nesting sites have also been observed within the project boundary in snag trees adjacent to Baum Lake, Crystal Lake, Rock Creek Pond near Cassel, along Hat Creek below Baum Lake, powerline towers near the intersection of Cassel Road (1.6 km north of Crystal Lake), and powerline towers east of the Hat Creek to Pit No. 1 Powerhouse.

The only other special-status raptor species observed during the 1997 survey effort was northern harrier (*Circus cyaneus*). A northern harrier was observed foraging in an open field adjacent to the eastern shore of Baum Lake on March 21, 1997, and another observation was made in the same location on November 21, 1997. No Swainson's hawks (*Buteo swainsoni*) were observed within or adjacent to the project boundary, including the Hat Creek Valley from Highway 89 to Cassel. No other special-status raptor or owl species ferruginous hawk (*Buteo regalis*), short-eared owl (*Asio flammeus*), long-eared owl (*Asio otus*), or burrowing owl (*Athene cunicularia*) were observed within the project boundary during the survey effort.

The Fall River Valley supports several pairs of greater sandhill cranes (*Grus canadensis luteus*), including nesting pairs, during the spring and summer months. A total of five sandhill cranes were observed on March 26, 1997, in a meadow adjacent to the north shore of Crystal Lake. A single crane was observed foraging in an open field along the eastern shore of Baum Lake on May 21, 1997. No other special-status wetland bird species [mountain plover (*Charadrius montanus*), California gull (*Larus californicus*), long-billed curlew (*Numenius americanus*)] were found during the Pacific Gas and Electric Company surveys. Two great blue heron (*Ardea herodias*) rookeries, one active and one inactive, were observed within the Hat Creek 1 and 2 project boundary. The inactive rookery, containing 16 nests in two ponderosa pines in 1996, was found along the northeast shore of Crystal Lake. The active rookery is on an island with two deciduous trees, along the lower Pit No. 1 reach, approximately 400 meters east of Hat Creek. This active rookery supported 22 active nests in 1997.

The following four areas within the Hat Creek 1 and 2 project boundary support active bank swallow (*Riparia riparia*) nesting colonies: Site #1 - along Hat Creek No. 2 just north of Hat Creek No. 2 Dam; Site #2 - sandy cliffs above the sand borrow pits located 0.7 km west of Hat Creek Park near Highway 299; Site #3 - sand cliffs above sand borrow pits 0.9 km northwest of Site #2; and chalky (diatomaceous earth) cliffs on Highway 299 at Hat Creek.

No willow flycatchers (*Empidonax traillii*) were observed during the 1997 riparian passerine surveys conducted by Pacific Gas and Electric Company. The portion of lands within the project

boundary with the best available habitat for the species occurred along Rock Creek above Baum Lake. Breeding yellow warblers (*Dendroica petechia*) (i.e., evidenced by territorial male calls) were observed in riparian habitat and lakeshore habitats within the Hat Creek 1 and 2 project boundary. Specific areas where yellow warblers were observed included Cassel area, Rock Creek, Baum Lake, Crystal Lake, lower Pit 1 reach, and lower Hat Creek. A single yellow-breasted chat (*Loteria virens*) was observed calling from a willow thicket along the lower Hat Creek, above Lake Britton. No other special-status passerine species [black swift (*Cypseloides niger*), purple martin (*Progne subis*), or tricolored blackbird (*Agelaius tricolor*)] were observed during the survey effort.

Surveys for special-status furbearers [California wolverine (*Gulo gulo luteus*), Sierra Nevada red fox (*Vulpes vulpes necator*), Pacific fisher (*Martes pennanti pacifica*)] were conducted in 1997. The results of these surveys, which used camera stations, did not confirm the presence of any of these four species. There have been historic occurrences for each of these species within the vicinity of the project boundary. A single wolverine was reported from the vicinity of the Pit No. 1 Forebay, west of Fall River Mills, in 1973. A Sierra Nevada red fox was photographed at a camera station in Lassen County in 1993 during a CDFG study. Museum records indicate that Pacific fishers are known to occur at Burney Mountain, west of the project boundary. Ringtail cats (*Bassariscus astutus*) were photographed within the Hat Creek No. 1 reach and the Hat Creek No. 2 reach. Small groups of northern river otters (*Lutra canadensis*) were observed foraging and swimming in several project waters including Baum Lake, Crystal Lake, and lower Hat Creek.

Surveys for northwestern pond turtles (*Clemmys marmorata marmorata*) were conducted by Pacific Gas and Electric Company during June and July 1997 at Baum Lake, Crystal Lake, and lower Hat Creek from the Hat Creek No. 1 Powerhouse to Lake Britton. During these surveys, turtles were found basking in most of the slow-water habitats present within the project boundary. These habitat areas included Baum Lake, Crystal Lake, lower Hat Creek from Hat Creek No. 2 Powerhouse to Highway 299, and Hat Creek below Highway 299.

The FERC license includes terms and conditions proposed by the USFWS regarding wildlife. They include maintaining deer crossings and escapement ramps at diversion canals and regulating future development within the project boundary so as to minimize possible adverse effects on existing waterfowl nesting habitat. In addition, FERC License Articles 15 and 16 address the conservation and development of fish and wildlife resources within the project boundary (FPC, 1975a), and FERC License Article 33 calls for consultation with appropriate agencies regarding the protection and development of the natural resources (FPC, 1975b).

**Botanical Resources.** Table 4.5-4 lists special-status plant species with potential to occur within the Bundle 1 project boundary. A query of the California Natural Diversity Database (CNDDB) for the project, covering the area within the project boundary and a one-mile buffer around it, produced only one rare plant sighting record. Eel-grass pondweed (*Potamogeton zosteriformis*), classified as List 2 (plants rare, threatened, or endangered in California but more common elsewhere) by the California Native Plant Society (CNPS), was documented at the junction of the

Pit River and Hat Creek in 1949 (PG&E Co., 1998a). However, this site is not within the project boundary. No additional records for this plant were produced by the CNDDDB query. A 1996 plant survey conducted in April, May, June, and July within the project boundaries did not locate any sensitive plant species (PG&E Co., 1998a).

**Table 4.5-4 Bundle 1 Special-Status Plant Species That Occur Or Potentially Could Occur On the Hat Creek 1 and 2 Project (FERC 2661)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Achnatherum lemmonii</i> var. <i>pubescens</i> pubescent needle grass	--/--/3/--	Chprl, LCFrs/Serpentinite	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Arctostaphylos canescens</i> ssp. <i>sonomensis</i> Sonoma manzanita	--/--/1B/--	Chprl, LCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Arctostaphylos</i> <i>klamathensis</i> Klamath manzanita	SOC/--/1B/BLM	Chprl, SCFrS, UCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Asplenium septentrionale</i> northern spleenwort	--/--/2/--	Chprl, LCFrs, SCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> Suksdorf's milk-vetch	SOC/--/1B/FSS, BLM	GBScr, LCFrs, PJWld	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Botrychium ascendens</i> upswept moonwort	SOC/--/2/FSS	LCFrS (mesic)	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Botrychium crenulatum</i> scalloped moonwort	SOC/--/2/FSS, BLM	BGFrS, LCFrs, Medws, MshSw (freshwater)	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Botrychium minganense</i> Mingan moonwort	--/--/2/--	LCFrS (mesic)	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Botrychium montanum</i> western goblin	--/--/2/FSS	LCFrS (mesic)	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Calochortus</i> <i>longebarbatus</i> var. <i>longebarbatus</i> long-haired star-tulip	SOC/--/1B/BLM	LCFrS (openings and drainages), Medws	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i> Butte County morning- glory	SOC/--/3/FSS	LCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Campanula shetleri</i> Castle Crag harebell	--/--/1B/FSS	LCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands

**Table 4.5-4 Bundle 1 Special-Status Plant Species That Occur Or Potentially Could Occur On the Hat Creek 1 and 2 Project (FERC 2661)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Cardamine pachystigma</i> var. <i>dissectifolia</i> dissected-leaved toothwort	--/--/3/FSS	Chprl (serpentinite)	Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Carex comosa</i> bristly sedge	--/--/2/--	MshSw lake margins	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Carex vulpinoidea</i> fox sedge	--/--/2/--	MshSw, RpWld	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed Lines, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake
<i>Collomia larsenii</i> talus collomia	--/--/2/--	AlpBR, CCFrs, UCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Drosera anglica</i> English sundew	--/--/2/--	BgFns, Meadws	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake
<i>Epilobium oreganum</i> Oregon fireweed	SOC/--/1B/FSS, BLM	BgFns, LCFrs (mesic)	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Fritillaria eastwoodiae</i> Butte County fritillary	SOC/--/1B/FSS, BLM	Chprl, CmWld, LCFrs (Openings)/sometimes serpentinite	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	--/E/1B/FSS	MshSw (lake margins), VnPls/clay	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Hierochloe odorata</i> vanilla-grass	--/--/2/--	CoPrr, VFGrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Ivesia longibracteata</i> Castle Crag's ivesia	SOC/--/1B/BLM	LCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed Lines
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff dwarf rush	--/--/1B/BLM	Chprl, CmWld, VFGrs, VnPls / vernaly mesic	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/--/1B/FSS, BLM	BUFRs, Chprl, CmWld, LCFrs / mesic, granite	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Lewisia cotyledon</i> var. <i>howellii</i> Howell's lewisia	SOC/--/3/--	BUFRs, Chprl, CmWld, LCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Limnanthes floccosa</i> ssp. <i>bellingiana</i> Belling's meadowfoam	--/SOC/1B/FSS	CmWld (mesic), Medws	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River

**Table 4.5-4 Bundle 1 Special-Status Plant Species That Occur Or Potentially Could Occur On the Hat Creek 1 and 2 Project (FERC 2661)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i> woolly meadowfoam	--/--/2/--	CmWld, VFGrS/vernally mesic	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Linanthus nuttallii</i> ssp. <i>howellii</i> Mt. Tedoc linanthus	SOC/--/1B/BLM	LCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Lupinus antoninus</i> Anthony Peak lupine	SOC/--/1B/BLM	LCFrS, UCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Madia stebbinsii</i> Stebbins' madia	--/--/1B/BLM	Chprl, LCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Mimulus pygmaeus</i> Egg Lake monkeyflower	SOC/--/4/BLM	GBScr (clay), LCFrS, Medws/vernally mesic	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	--/--/1B/BLM	CmWld, LCFrS, Medws (mesic), VFGrS, VnPlS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River
<i>Orcuttia tenuis</i> slender orcutt grass	T/E/1B/--	VnPlS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Penstemon filiformis</i> thread-leaved beardtongue	SOC/--/1B/FSS, BLM	CmWld, LCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Phacelia dalesiana</i> Scott Mountain phacelia	SOC/--/4/BLM	LCFrS, Medws, SCFrS, UCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River
<i>Picea engelmannii</i> Engelmann spruce	--/--/2/--	UCFrS	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Potamogeton praelongus</i> white-stemmed pondweed	--/--/2/--	MshSw	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Potamogeton zosteriformis</i> eel-grass pondweed	--/--/2/--	MshSw (assorted freshwater)	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Rupertia hallii</i> Hall's rupertia	--/--/1B/FSS, BLM	CmWld	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Sanicula tracyi</i> Tracy's sanicle	SOC/--/4/BLM	CmWld, LCFrS, UCFrS/Openings	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands

**Table 4.5-4 Bundle 1 Special-Status Plant Species That Occur Or Potentially Could Occur On the Hat Creek 1 and 2 Project (FERC 2661)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Scirpus heterochaetus</i> slender bulrush	--/--/2/--	MshSw, LCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Scirpus subterminalis</i> water bulrush	--/--/2/--	MshSw (montane lake margins)	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Scutellaria galericulata</i> marsh skullcap	--/--/2/FSS	LCFrs, Medws (mesic), MshSw	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River, Rising River Lake, Crystal Lake, Baum Lake
<i>Sedum paradisum</i> Canyon Creek stonecrop	SOC/--/1B/BLM	BUFrs, Chprl, LCFrs, SCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Silene campanulata</i> ssp. <i>campanulata</i> Red Mtn. catchfly	C/E/4/BLM	Chprl, LCFrs/serpentine	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> western campion	SOC/--/1B/--	Chprl, LCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands
<i>Silene suksdorfii</i> Cascade alpine campion	--/--/2/--	AlpBR	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River
<i>Smilax jamesii</i> English Peak greenbriar	--/--/1B/FSS, BLM	BUFrs, LCFrs, MshSw	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Rising River Lake, Crystal Lake, Baum Lake
<i>Stellaria longifolia</i> long-leaved starwort	--/--/2/--	Medws, freshwater seeps	Hat Creek 1 Complex, Hat Creek 2 Complex, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River
<i>Trimorpha acris</i> var. <i>debilis</i> northern daisy	--/--/2/--	AlpBR, Medws, SCFrs	Hat Creek 1 Complex, Hat Creek 2 Complex, Transmission Lines and Access Roads, Watershed lands and FERC Licensed Lands, Hat Creek, Rising River

**NOTES:**

Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.



SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

State: Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

CNPS: California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLM = Bureau of Land Management Special Status Plants

Habitats:

AlpBR =	Alpine Boulder and Rock Field	LCFrS =	Lower Montane Conifer Forest
BgFns =	Bogs and Fens	Medws =	Meadows and Seeps
BUFrS =	Broadleaved Upland Forest	MshSw =	Marshes and Swamps
CCFrS =	Closed-Cone Conifer Forest	PJWld =	Pinyon and Juniper Woodland
Chprl =	Chaparral	Plyas =	Playas
ChScr =	Chenopod Scrub	RpFrS =	Riparian Forest
Cmwld =	Cismontane Woodland	RpScr =	Riparian Scrub
CoDns =	Coastal dunes	RpWld =	Riparian Woodland
CoPrr =	Coastal Prairie	SCFrS =	Subalpine Conifer Forest
CoScr =	Coastal Scrub	UCFrS =	Upper Montane Conifer Forest
GBGrS =	Great Basin grassland	VFGrs =	Valley and Foothill Grassland
GBScr =	Great Basin Scrub	VnPls =	Vernal Pools

## **Bundle 2: Pit River**

### ***Pit 1 (FERC 2687)***

***Vegetation Communities.*** The Pit 1 project boundary includes the Cascade Region - High Cascade Range Subregion, with an elevation of 3,312 feet amsl at the Pit 1 Forebay. Ten vegetation communities were identified in the Pit 1 project vicinity: montane riparian, juniper, montane hardwood-conifer, blue oak-foothill pine, montane chaparral, mixed chaparral, low sage, annual grassland, wet meadow and fresh emergent wetland (Table 4.5-5). A total of 14 tree species, 31 shrubs or vines, and 122 herbaceous species were observed in the vicinity of the project (PG&E Co., 1993).

Montane hardwood-conifer woodland is comprised of a mixture of hardwood and coniferous species, with the dominant tree species including California black oak (*Quercus kelloggii*), ponderosa pine, and incense cedar. Common shrub species include manzanita and Oregon white oak. Scattered annual grasses, both native and non-native, comprise the herbaceous layer of this

#### 4.5 Terrestrial Biology

vegetation community. This is the most common and widely-spread vegetation community within the project boundary.

Blue oak-foothill pine vegetation is a structurally-diverse community which supports a mixture of hardwood, coniferous, and shrub species. Within the Pit 1 project boundary, Oregon white oak is actually more abundant than blue oak (*Quercus douglasii*), which may be attributed to the fact the Oregon white oak is more tolerant of cold temperatures than blue oak. The dominant coniferous species in this vegetation community is foothill pine and the most common shrub species is buck brush. The Pit River drainage is the northern limit of this vegetation type in Northern California.

**Table 4.5-5 Bundle 2 – Pit River Vegetation Communities Associated With the Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Project Features	Foothill Communities			Mid Elevation and Transition Communities							Water Elements			
	AGS	MCH	BOP	MCP	LSG	MRI	MHC	PPN	JPN	SMC	RIV	LAC	FEW	WTM
<b>Generation Facilities</b>														
Pit 1 Complex	X			X	X	X			X	X	X	X		
Pit 3, 4, and 5 Complex	X	X				X	X	X		X	X	X		
McCloud-Pit Complex				X		X	X	X		X	X	X		
<b>Transmission Lines and Access Roads</b>														
Pit 1 Complex				X		X	X		X	X	X	X		
Pit 3, 4, and 5 Complex		X				X	X	X		X	X	X		
McCloud-Pit Complex			X	X		X	X	X		X	X	X		
<b>FERC Licensed Lands</b>														
Pit 1 Complex				X		X			X	X	X	X	X	X
Pit 3, 4, and 5 Complex		X				X		X		X	X	X	X	X
McCloud-Pit Complex				X		X		X		X	X	X	X	X
<b>Project Waterways</b>														
Trout Lake (Big Lake, Horr Pond)												X	X	
Pit River						X					X			
Tule River						X					X			
Fall Creek						X					X			
Lake Britton												X	X	
Rock Creek						X					X			

**Table 4.5-5 Bundle 2 – Pit River Vegetation Communities Associated With the Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Project Features	Foothill Communities			Mid Elevation and Transition Communities							Water Elements			
	AGS	MCH	BOP	MCP	LSG	MRI	MHC	PPN	JPN	SMC	RIV	LAC	FEW	WTM
Screwdriver Creek						X					X			
Nelson Creek						X					X			
Kosk Creek						X					X			
McCloud Reservoir												X	X	
McCloud River						X					X			
Iron Canyon Reservoir												X	X	
Hawkins Creek						X					X			
Squaw Creek						X					X			
Iron Canyon Creek						X					X			
Marble Creek						X					X			
Roaring Creek						X					X			
Hatchet Creek						X					X			
Montgomery Creek						X					X			
<b>Watershed Lands</b>														
Pit 1 Complex	X			X	X	X	X		X	X	X	X	X	X
Pit 3, 4, and 5 Complex	X					X	X	X		X	X	X	X	X
McCloud-Pit Complex			X	X		X	X	X		X	X	X	X	X

**NOTES:**

**Generation Facilities:** Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc.

**Transmission Lines and Access Roads:** Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer.

**FERC Licensed Lands:** Pacific Gas and Electric Company owned lands that are regulated by FERC, contiguous to a generation facility or project waterway and are part of the proposed project.

**Project Waterways:** Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations.

**Watershed Lands:** Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

DFR = Douglas-Fir

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

FEW	=	Fresh Emergent Wetland	SCN	=	Subalpine Conifer
JPN	=	Jeffrey Pine	SGB	=	Sagebrush
LAC	=	Lacustrine	SMC	=	Sierra Mixed Conifer
LPN	=	Lodgepole Pine	VOW	=	Valley Oak Woodland
LSG	=	Low Sagebrush	VRI	=	Valley Foothill Riparian
MCP	=	Montane Chaparral	WFR	=	White Fir
MCH	=	Mixed Chaparral	WTM	=	Wet Meadow
MHC	=	Montane Hardwood-Conifer			

Juniper woodland is characterized by open to dense assemblages of junipers in the form of tall shrubs or small trees. The dominant species in the tree stratum is western juniper, with low sagebrush (*Artemisia arbuscula*), antelope bush (*Purshia tridentata*), and rabbit brush being the most common shrub species.

Montane riparian vegetation within the Pit 1 project boundary occurs as long, narrow strips adjacent to waterways, primarily the Pit River. White alder and Oregon ash are the dominant tree species, with squawbush the most common shrub species. Sedge, wormwood (*Iva* spp.), and woolly mullein (*Verbascum thapsus*) are typical herbaceous species found in this community.

Low sage habitat within the Pit 1 project boundary is comprised primarily of low sagebrush. A variety of non-native annual grasses make up the herbaceous layer. Low sage habitat is found adjacent to the Pit 1 Forebay.

Montane chaparral is characterized predominantly by evergreen species with an occasional deciduous species. Mature stands of montane chaparral rarely support understory vegetation. Within the Pit 1 project boundary, the dominant plant species found in this community include buck brush, mountain mahogany (*Cercocarpus betuloides*), and Oregon white oak. Annual grasses and herbs comprise the herb stratum. Within the project boundary, montane chaparral is most prevalent on the north-facing slopes of Haney Mountain.

Mixed chaparral is a structurally homogeneous community dominated by evergreen shrub species. Mature stands of mixed chaparral are almost impenetrable, with over 80 percent absolute shrub cover. Dominant shrub species found in this community include buck brush and mountain mahogany. This community occurs on rocky hillsides within the project boundary and is most common as a post-fire successional stage.

Annual grassland within the Pit 1 project boundary is primarily comprised of non-native annual grass species. Dominant species include quack grass (*Elytrigia repens*), cheat grass (*Bromus tectorum*), yellow star thistle (*Centaurea solstitialis*), and rye grass (*Lolium* spp.). Common forb species include tarweed (*Madia* spp.) and turkey mullein (*Eremocarpus* spp.). Annual grassland habitat is most common in the Fall River Valley and open areas upstream of the confluence of the Pit River and Hat Creek.

Wet meadow within the project boundary may occur at any elevation. This community typically occurs as a transitional habitat between annual grassland and fresh emergent wetland or riverine habitats and is generally dominated by herbaceous plants, with shrub and tree layers sparse or absent. Dominant species include Nebraska sedge (*Carex nebrascensis*), clustered field sedge (*Carex praegracilis*), and Baltic rush (*Juncus balticus*).

Fresh emergent wetland habitat is characterized by herbaceous hydrophytic vegetation. Dominant plant species are generally perennial monocots including clustered field sedge, tule, and cattail. Emergent wetlands are often flooded and roots are adapted to anaerobic conditions. The size of the habitat ranges from small patches to large areas up to several acres.

Pacific Gas and Electric Company is proposing to donate a portion of the McArthur Swamp property to the California Waterfowl Association. Portions of the property proposed for donation are currently within the Pit 1 project boundaries. Inasmuch as the Pit 1 project is currently in the process of relicensing, in its relicensing application, Pacific Gas and Electric Company is proposing to remove the portions of the land subject to donation from the project boundaries. The application is currently pending before FERC and CPUC. Sale of the Pit 1 project to the new generator will be subject to this proposed donation if not consummated prior to closing of the sale.

**Wildlife Resources.** Multiple habitat types are found within the vicinity of the Pit 1 project boundary. These habitat types support a wide variety of wildlife species.

The Fall River Valley is a natural waterfowl area, particularly in the marshes surrounding Big Lake. In addition to waterfowl, some of the game species found within the project boundary include ring-necked pheasant (*Phasianus colchicus*), quail (*Callipepla* spp.), and furbearers. The project is also located within a major winter range for California mule deer and Columbian black-tailed deer. Another big game species known to occur in the vicinity of the project is pronghorn antelope (*Antilocapra americana*).

Of the numerous wildlife species found within the project boundary, some are designated as threatened or endangered. Existing documentation and a query of the CNDDDB for the project, covering the area within the project boundary and a one-mile buffer around it, provided information on special-status species. Table 4.5-6 lists special-status wildlife species that may occur in the vicinity of the project. There are no Forest Service lands within the vicinity of the Pit 1 project. Therefore, Forest Service Sensitive species are not addressed.

As identified in the botanical discussion, several vegetative communities and associated wildlife habitat types are found in the Pit 1 project vicinity. These habitat types support a wide variety of wildlife species. In addition to these vegetative community-habitat associations, there are four other habitat types, which do not correspond to a vegetation type. These include two human-modified habitats (cropland and urban) and two aquatic habitats (lacustrine and riverine).

Croplands within the Pit 1 project boundary are confined to the Fall River Valley, mainly along the Pit River. Dominant crop types include wild rice, alfalfa, potatoes, strawberries, and cereal grains. Urban habitat within the Pit 1 project boundary is concentrated around the community of Fall River Mills, in the Fall River Valley. The urban environment is comprised of commercial development adjacent to Highway 299 and peripheral residential areas.

Lacustrine habitats are comprised of natural lakes and ponds, as well as human-made reservoirs and stockponds. The Pit 1 Forebay is an example of lacustrine habitat within the Pit 1 project boundary. Riverine systems occur in association with terrestrial habitats such as montane riparian. The primary riverine systems within the Pit 1 project boundary are the Fall River, Pit River, and Hat Creek. Segments of both the Fall River and Pit River provide lacustrine habitat due to detected during surveys, nor were individuals observed as migrants during spring and fall general bird surveys. The willow scrub habitat within the Pit 1 project boundary is considered marginal due to cattle grazing activities.

The Pit 1 project supports both Rocky Mountain mule deer and Columbian black-tailed deer, as well as hybrids of both species. The McCloud Flats deer herd range, which broadly encompasses Siskiyou, Modoc, Lassen, and Shasta counties, overlaps the project boundary. The Lake Britton herd is part of the McCloud Flats deer herd, and its winter range is within the project boundary. The summer range for the Lake Britton herd is generally to the north and west of the Pit 1 project boundary. Another herd found within the project boundary is the West Lassen herd. Both herds appear to use the Pit River drainage as wintering habitat. The summer range for the West Lassen herd is located to the south and east of the project boundary.

Six active bank swallow nesting colonies were observed within the Pit 1 project boundary during focused surveys conducted during the summer of 1991 and spring 1992 by Pacific Gas and Electric Company. One colony is located on an earthen bank adjacent to Highway 299 approximately 400 northeast of the Fall River in the town of Fall River Mills on CDFG owned property. Three separate colonies were observed on west and south-facing cut banks adjacent to the Pit 1 Forebay which is northeast of Fall River Mills. The other two colonies were observed on cut faces of excavated hillsides near an active sand pit, approximately 0.75 mile south of the Hat Creek/Pit River confluence. Approximately 2,300 adult bank swallows were observed within the six active nesting colonies.

The ranges for both Northern spotted owl (*Strix occidentalis caurina*) and California spotted owl (*Strix occidentalis occidentalis*) overlap within the project boundary and hybridization between the two species is known to occur. Spotted owl surveys, following the 1991 USFWS protocol, were conducted during June 1991 and May 1992 within montane hardwood-conifer and montane riparian habitats present within the Pit 1 project boundary. Neither species of spotted owl were observed during this survey effort. During the 1992 survey effort, the study was expanded to include long-eared owl (*Asio otus*) and short-eared owl (*Asio flammeus*); however, neither species was observed. Although portions of lands within the project boundary appear to be suitable habitat for the

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/FSS	MRI, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC and Pacific Gas and Electric Company Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
<b>Crustaceans</b>			
Shasta crayfish <i>Pacifastacus fortis</i>	FE/SE/--	RIV, MRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
<b>Amphibians</b>			
Cascades frog <i>Rana cascadae</i>	SOC/SSC, CFP/FSS	FEW, LAC, RIV, SMC, WTM, MRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP/FSS, BLM	BOP, AGS, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Shasta salamander <i>Hydromantes shastae</i>	--/ST, CFP/-	BOP, PPN, SMC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
Tailed frog <i>Ascaphus truei</i>	SOC/SSC/-	MHC, MRI, PPN, RIV	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/FSS, BLM	BOP, AGS, FEW, VRI, MRI, RIV, LAC, MHC, PPN, SMC, MCP, MCH, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
<b>Birds</b>			
American white pelican <i>Pelecanus erythrorhynchos</i>	--/SSC/-	LAC, RIV	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE/CDF	BOP, AGS, FEW, JUN, RIV, LAC, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Bank swallow <i>Riparia riparia</i>	--/ST/-	AGS, FEW, LAC, RIV, LSG, MRI, VRI, MCH, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)



**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
Barrow's goldeneye <i>Bucephala islandica</i>	--/SSC/--	LAC, RIV	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Black swift <i>Cypseloides niger</i>	--/SSC/-	BOP, AGS, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LAC, RIV, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Black tern <i>Chlidonius niger</i>	SOC/SSC/-	FEW, WTM, LAC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Black-capped chickadee <i>Parus atricapillus</i>	--/SSC/-	MRI, PPN, WTM, SMC, MHC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Burrowing owl <i>Athene cunicularia</i>	SOC/SSC/BLM	AGS, JUN, LSG	Pit 1 Complex, Pit 3, 4, & 5 Complex, Watershed Lands (Pit 1 and Pit 3, 4, & 5 complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, and McCloud-Pit complexes)
California gull <i>Larus californicus</i>	--/SSC/-	AGS, FEW, WTM, RIV, LAC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLM	SMC, MHC, MHW	Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Common loon <i>Gavia immer</i>	--/SSC/-	LAC, RIV, FEW	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Cooper's hawk <i>Accipiter cooperi</i>	--/SSC/--	BOP, AGS, JUN, MCH, MCP, VRI, SMC, PPN, MRI, MHC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/-	FEW, LAC, RIV, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Ferruginous hawk <i>Buteo regalis</i>	SOC/SSC/--	BOP, AGS, FEW, JUN, WTM, VRI, LSG	Pit 1 Complex, Pit 3, 4, & 5 Complex, Watershed Lands (Pit 1 and Pit 3, 4, & 5 complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, and McCloud-Pit complexes), Big Lake, Horr Lake, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP /BLM	BOP, AGS, FEW, JUN, WTM, LSG, MHC, MRI, PPN, SMC, VRI, MCP, MCH	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
Great blue heron <i>Ardea herodias</i>	--/--/CDF	BOP, FEW, JUN, WTM, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Great egret <i>Casmerodius albus</i>	--/--/CDF	FEW, LAC, MHC, MRI, RIV, VRI, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Greater sandhill crane <i>Grus canadensis tabida</i>	--/ST/--	AGS, FEW, WTM, LAC, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, Watershed Lands (Pit 1 and Pit 3, 4, & 5 complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, and McCloud-Pit complexes), Big Lake, Horr Lake, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
Harlequin duck <i>Histrionicus histrionicus</i>	--/SSC/BLM	LAC, RIV, FEW	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Least bittern <i>Ixobrychus exilis</i>	--/SSC/BLM	LAC, FEW	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Long-billed curlew <i>Numenius americanus</i>	SOC/SSC/-	AGS, FEW, WTM, RIV, LAC, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
Long-eared owl <i>Asio otus</i>	--/SSC/--	BOP, AGS, FEW, JUN, MCH, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Mountain plover <i>Charadrius montanus</i>	SOC/SSC/--	AGS	Pit 1 Complex, Pit 3, 4, & 5 Complex, Watershed Lands (Pit 1 and Pit 3, 4, & complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, and McCloud-Pit complexes)
Northern goshawk <i>Accipiter gentilis</i>	SOC/ SSC /FSS, CDF	BOP, JUN, SMC, MCH, MCP, VRI, PPN, MRI, MHC, LSG	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Northern harrier <i>Circus cyaneus</i>	--/SSC/--	BOP, AGS, FEW, JUN, LAC, LSG, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3,4,&5, McCloud-Pit complexes)
Northern spotted owl <i>Strix occidentalis caurina</i>	FT/--/FSS	BOP, VRI, SMC, PPN, MRI, MHC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Osprey <i>Pandion haliaetus</i>	--/SSC/CPF	BOP, AGS, FEW, JUN, WTM, MCH, MCP, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3,4,&5, McCloud-Pit complexes)

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP /CDF	BOP, AGS, FEW, JUN, SMC, MHC, WTM, RIV, LAC, LSG, MRI, PPN, VRI, MCP, MCH	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	BOP, AGS, FEW, JUN, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Purple martin <i>Progne subis</i>	--/SSC/-	BOP, AGS, FEW, RIV, LAC, MRI, PPN, SMC, WTM, VRI, MHC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	BOP, AGS, JUN, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Short-eared owl <i>Asio flammeus</i>	--/SSC/--	BOP, AGS, FEW, JUN, MCH, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
Snowy egret <i>Egretta thula</i>	--/--/CDF	FEW, RIV, MRI, VRI, WTM, LAC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--	AGS, VRI, JUN, LSG	Pit 1 Complex, Pit 3, 4, & 5 Complex, Watershed Lands (Pit 1 and Pit 3, 4, & complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, and McCloud-Pit complexes)
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/BLM	AGS, FEW, WTM, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, Watershed Lands (Pit 1 and Pit 3, 4, & complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, and McCloud-Pit complexes), Big Lake, Horr Lake, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
White-faced ibis <i>Plegadis chihi</i>	SOC/SSC/-	LAC, FEW, AGS, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	WTM, MRI, RIV, WTM, VRI, MRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Yellow breasted-chat <i>Icteria virens</i>	--/SSC/-	MRI, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC/--	BOP, MHC, RIV, MRI, PPN, SMC, MCH, MCP, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP/ FSS	MHC, SMC, WTM, MRI, MCP	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Little brown myotis <i>Myotis lucifugus</i>	--/SSC/-	BOP, AGS, FEW, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, LAC, MHC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/ FSS, BLM	MHC, SMC, MRI, PPN	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Pale big-eared bat <i>Corynorhinus townsendii pallescens</i>	SOC/SSC/FSS, BLM	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)

**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLM	BOP, AGS, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, MHC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Pine marten <i>Martes americana</i>	--/-/FSS	MHC, PPN, MRI, WTM, SMC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Ringtail <i>Bassariscus astutus</i>	--/CFP/-	BOP, AGS, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, MHC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	--/SSC/-	MHC, PPN, SMC, MRI, WTM	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	SOC/ST/FSS	MHC, PPN, MCP, MRI, WTM, SMC	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)
Townsend's big-eared bat <i>Plecotus townsendii townsendii</i>	SOC/SSC/FSS, BLM	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Watershed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes)



**Table 4.5-6 Bundle 2 – Pit River Special-Status Wildlife Species That Occur Or Potentially Could Occur On Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and McCloud-Pit Project (FERC 2106)**

Common Name and Scientific Name	Status: Fed/State/ Other	Habitat	Facilities
White-tailed hare <i>Lepus townsendii</i>	--/SSC/-	JUN, SMC, LSG, WTM, MRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3,4,&5, McCloud-Pit complexes)
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLM	BOP, AGS, JUN, MHC, LAC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Pit 1 Complex, Pit 3, 4, & 5 Complex, McCloud-Pit Complex, Transmission Lines and Access Roads (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), FERC Licensed Lands (Pit 1, Pit 3, 4, & 5, McCloud-Pit complexes), Pit River, Tule River, Fall Creek, Rock Creek, Screwdriver Creek, Nelson Creek, Kosk Creek, McCloud River, Hawkins Creek, Squaw Creek, Iron Canyon Creek, Marble Creek, Roaring Creek, Hatchet Creek, Montgomery Creek, Big Lake, Horr Pond, Lake Britton, McCloud Reservoir, Iron Canyon Reservoir, Watershed Lands (Pit 1, Pit 3,4,&5, McCloud-Pit complexes)

**Notes:**

Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

**Special-Status Species:**

**Federal:**

FE Federally listed as endangered

FT Federally listed as threatened

SOC Federal species of concern

FC Federal candidate species

**State:**

SE State listed as endangered

ST State listed as threatened

SSC State species of special concern

CFP California Fully Protected species

**Other:**

FSS Forest Service sensitive species

BLM Bureau of Land Management sensitive species

CDF California Department of Forestry and Fire Protection sensitive species

**Habitats:**

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

DFR = Douglas-Fir

FEW = Fresh Emergent Wetland

JPN = Jeffrey Pine

LAC = Lacustrine

LPN = Lodgepole Pine

LSG = Low Sagebrush

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

SCN = Subalpine Conifer

SGB = Sagebrush

SMC = Sierra Mixed Conifer

VOW = Valley Oak Woodland

VRI = Valley Foothill Riparian

MCP = Montane Chaparral  
MCH = Mixed Chaparral  
MHC = Montane Hardwood-Conifer

WFR = White Fir  
WTM = Wet Meadow

burrowing owl (*Athene cunicularia hypugea*), a focused survey of ground squirrel (*Spermophilus beecheyi*) burrows in the area did not reveal the presence of the species. Owl species observed within the project boundary were great horned owl (*Bubo virginianus*), flammulated owl (*Otus flammeolus*), and barn owl (*Tyto alba*).

In the late spring of 1992, focused surveys for willow flycatcher according to CDFG protocol were conducted in the vicinity of the Pit 1 Forebay and Powerhouse facilities, as well as other project lands which supported suitable willow scrub habitat. No willow flycatchers were observed or detected during surveys, nor were individuals observed as migrants during spring and fall general bird surveys. The willow scrub habitat within the Pit 1 project boundary is considered marginal due to cattle grazing activities.

An active great blue heron rookery was observed on the Pit River in 1992. This rookery was located on an island within the Pit River channel near Highway 299 and Hat Creek Park. A total of eight active nests were found at this colony, but the exact number of offspring fledged was not determined.

During raptor surveys conducted in the summer of 1992, 11 active osprey nests were observed within the Pit 1 project vicinity. Five of these nests (five percent) were located on transmission line towers. Ospreys were observed foraging in riverine and lacustrine habitat within the project boundary. Raptor surveys were also conducted in the summer of 1992 along the Pit River Gorge in areas with steep canyon walls. Active golden eagle and prairie falcon (*Falco mexicanus*) nests were both observed. A single, inactive black swift nest was located on a rock shelf behind the Pit River Falls. No black swifts were observed within the Pit project boundary during the 1991-1992 study. The Pit 1 project supports both Rocky Mountain mule deer and Columbian black-tailed deer, as well as hybrids of both species. The McCloud Flats deer herd range, which broadly encompasses Siskiyou, Modoc, Lassen, and Shasta counties, overlaps the project boundary. The Lake Britton herd is part of the McCloud Flats deer herd, and its winter range is within the project boundary. The summer range for the Lake Britton herd is generally to the north and west of the Pit 1 project boundary. Another herd found within the project boundary is the West Lassen herd. Both herds appear to use the Pit River drainage as wintering habitat. The summer range for the West Lassen herd is located to the south and east of the project boundary.

Six active bank swallow nesting colonies were observed within the Pit 1 project boundary during focused surveys conducted during the summer of 1991 and spring 1992 by Pacific Gas and Electric Company. One colony is located on an earthen bank adjacent to Highway 299 approximately 400 northeast of the Fall River in the town of Fall River Mills on CDFG owned property. Three

separate colonies were observed on west and south-facing cut banks adjacent to the Pit 1 Forebay which is northeast of Fall River Mills. The other two colonies were observed on cut faces of excavated hillsides near an active sand pit, approximately 0.75 mile south of the Hat Creek/Pit River confluence. Approximately 2,300 adult bank swallows were observed within the six active nesting colonies.

The ranges for both Northern spotted owl (*Strix occidentalis caurina*) and California spotted owl (*Strix occidentalis occidentalis*) overlap within the project boundary and hybridization between the two species is known to occur. Spotted owl surveys, following the 1991 USFWS protocol, were conducted during June 1991 and May 1992 within montane hardwood-conifer and montane riparian habitats present within the Pit 1 project boundary. Neither species of spotted owl were observed during this survey effort. During the 1992 survey effort, the study was expanded to include long-eared owl (*Asio otus*) and short-eared owl (*Asio flammeus*); however, neither species was observed. Although portions of lands within the project boundary appear to be suitable habitat for the burrowing owl (*Athene cunicularia hypugea*), a focused survey of ground squirrel (*Spermophilus beecheyi*) burrows in the area did not reveal the presence of the species. Owl species observed within the project boundary were great horned owl (*Bubo virginianus*), flammulated owl (*Otus flammeolus*), and barn owl (*Tyto alba*).

In the late spring of 1992, focused surveys for willow flycatcher according to CDFG protocol were conducted in the vicinity of the Pit 1 Forebay and Powerhouse facilities, as well as other project lands which supported suitable willow scrub habitat. No willow flycatchers were observed or

Ringtail cat was the only special-status mammal observed during surveys. Ringtail tracks were observed on several occasions during track-plate surveys within montane riparian habitat along the Pit River. Evidence of badger (*Taxidea taxus*) activity (i.e., excavated squirrel burrows) was observed throughout the Fall River Valley, although no badger sign was observed at the track-plate stations. Nocturnal surveys within dense underbrush vegetation within riparian areas were conducted using hand-held lamps to determine if snowshoe hare (*Lepus americanus*) and white-tailed hare (*Lepus townsendii*) were present. In addition, lagomorph tracks collected at track-plate stations were examined in an effort to distinguish the characteristic large hind prints of these species from other hare and rabbit species. Neither species of hare nor sign of these species was observed during the survey effort.

The Pit 1 project provides suitable habitat for bats, and large numbers of foraging bats are commonly observed at night, especially near lacustrine and riverine habitats. Surveys for special-status bat species, specifically western mastiff bat (*Eumops perotis ssp. californicus*), pallid bat (*Antrozous pallidus*), and spotted bat (*Euderma maculatum*), were conducted on January 14, 1992, at the Pit 1 powerhouse/intake and the storage and housing facilities at the Pit 1 Powerhouse compound. Additional spring and summer surveys were conducted in May and August of 1992 at some of these facilities, as well as at local caves, undersides of bridges, and public and private structures in the project vicinity (i.e., grain mill in Fall River Mills).

Northwestern pond turtles (*Clemmys marmorata marmorata*) were observed basking along the shorelines of riverine and lacustrine habitat throughout the Pit 1 project lands. Pond turtles were most common at the Pit 1 Forebay, along the Pit River, and in Hat Creek.

**Botanical Resources.** Existing documentation and a query of the CNDDDB for the Pit 1 project, covering the area within the project boundary and a one-mile buffer around it, provided information on special-status plant species that may occur. Special-status plant species that may occur in the vicinity of the project are listed in Table 4.5-7. No individuals of these species were identified within the Pit 1 project boundary during surveys conducted in 1992. Bristly sedge (*Carex comosa*) and marsh skullcap (*Scutellaria galericulata*) were both mapped along the shore of Big Lake in 1949.

#### **Pit 3, 4 and 5 (FERC 0233)**

**Vegetation Communities.** The Pit 3, 4, and 5 project lands are within the Cascade Region - High Cascade Range Subregion, with elevations ranging from 2,045 feet amsl at the Pit 5 conduit to 2,750.5 feet amsl at Lake Britton. Vegetation occurring on these lands includes a mixture of Sierran and Cascade vegetation communities. A total of seven distinct plant communities, as defined in Preliminary Descriptions of Terrestrial Plant Communities (Holland, 1986) are included in this specific project: Sierran mixed conifer forest; ponderosa pine forest; cismontane woodland; montane riparian forest; annual grassland; and montane meadow (Table 4.5-5). These plant communities frequently intergrade, forming broad ecotones rather than distinct boundaries. Additionally, there are pockets of land within the project boundary that have been developed or disturbed for recreational and residential purposes.

Sierran mixed conifer is the most common plant community found within the Pit 3, 4, and 5 project boundary. This partially-open forest of coniferous evergreen trees is characterized by Douglas fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), ponderosa pine, Jeffrey pine (*Pinus jeffreyi*), and incense cedar. Common understory species include small trees and shrubs such as mountain dogwood (*Cornus nuttallii*), mountain whitethorn (*Ceanothus cordulatus*), deerbrush (*Ceanothus integerrimus*), and Sierra gooseberry (*Ribes roezlii*).

Ponderosa pine forest vegetation on lands within the project boundary consists of open stands of coniferous trees dominated by ponderosa pine. Incense cedar is a common associate tree species in this community. Understory vegetation is relatively sparse and typically includes scattered shrubs including buck brush, greenleaf manzanita, and rabbit brush.

Cismontane woodland is composed of broad-leaved trees and ranges from predominantly closed-canopy forests in mesic areas to open savannahs in more xeric areas. Common tree species found in this community type within the project boundary include Oregon oak, black oak, canyon live oak (*Quercus kelloggii*), and foothill pine. Understory vegetation ranges from open annual grassland to denser shrubland, generally comprised of buck brush and greenleaf manzanita.

**Table 4.5-7 Bundle 2 – Pit River Special-Status Plant Species That Occur Or Potentially Could Occur On the Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and the McCloud-Pit Project (FERC 2106)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Arctostaphylos klamathensis</i> Klamath manzanita	SOC/--/1B/BLM	Chprl, SCFrS, UCFrS	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Asplenium septentrionale</i> northern spleenwort	--/--/2/--	Chprl, LCFrS, SCFrS	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> Suksdorf's milk-vetch	SOC/--/1B/FSS, BLM	GBScr, LCFrS/volcanic, often rocky	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> long-haired star-tulip	--/--/1B/BLM	LCFrS (openings and drainages), Medws	Watershed lands associated with; Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Calystegia atriplicifolia</i> ssp. <i>butteensis</i> Butte County morning-glory	SOC/--/1B/FSS	LCFrS	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Campanula shetleri</i> Castle Crag harebell	--/--/1B/FSS	LCFrS	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Carex comosa</i> bristly sedge	--/--/2	MshSw lake margins	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Carex vulpinoidea</i> fox sedge	--/--/2/--	MshSw, RpWld	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Drosera anglica</i> English sundew	--/--/2/--	BgFrS, Medws	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Epilobium oreganum</i> Oregon fireweed	SOC/--/1B/FSS, BLM	BgFrS, LCFrS (mesic)	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Fritillaria eastwoodiae</i> Butte County fritillary	SOC/--/1B/FSS, BLM	Chprl, CmWld, LCFrS (openings)/sometimes serpentinite	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	SOC/E/1B/--	MshSw (lake margins) VnPls/Clay	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Hierochloe odorata</i> vanilla-grass	--/--/2/--	CoPrr, VFGrS	Pit 1 Complex, Pit 3, 4, and 5 Complex
<i>Ivesia longibracteata</i> Castle Crag ivesia	SOC/--/1B/BLM	LCFrS	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff dwarf rush	--/--/1B/BLM	Chprl, CmWld, VFGrS, VnPls/vernally mesic	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/--/1B/FSS, BLM	BUFrS, Chprl, CmWld, LCFrS/mesic granite	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex

**Table 4.5-7 Bundle 2 – Pit River Special-Status Plant Species That Occur Or Potentially Could Occur On the Pit 1 Project (FERC 2687); Pit 3, 4, and 5 Project (FERC 0233); and the McCloud-Pit Project (FERC 2106)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Lewisia cotyledon</i> var. <i>howellii</i> Howell's lewisia	SOC/-/3/-	BUFRs, Chprl, CmWld, LCFRs	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Limnanthes loquax</i> ssp. <i>bellingiana</i> Belling's meadowfoam	-/SOC/1B/FSS	CmWld (mesic), Medws	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Madia stebbinsii</i> Stebbins' madia	-/-/1B/BLM	Chprl, LCFRs	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Mimulus pygmaeus</i> Egg Lake monkeyflower	SOC/-/4/BLM	GBScr (cla7), LCFRs, Medws/vernally mesic	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Orcuttia tenuis</i> slender orcutt grass	T/E/1B/-	VNPIs	Pit 1 Complex, Pit 3, 4, and 5 Complex
<i>Penstemon filiformis</i> thread-leaved beardtongue	SOC/-/1B/FSS, BLM	CmWld, LCFRs	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Phacelia dalesiana</i> Scott Mountain phacelia	SOC/-/4/BLM	LCFRs, Medws, SCFRs, UCFRs	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Pogogyne floribunda</i> profuse flowered pogogyne	-/-/1B/BLM	VnPIs	Pit 1 Complex, Pit 3, 4, and 5 Complex
<i>Potamogeton praelongus</i> white-stemmed pondweed	-/-/2/-	MshSw	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Potamogeton zosteriformis</i> eel-grass pondweed	-/-/2/-	MshSw (assorted freshwater)	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Scirpus subterminalis</i> water bulrush	-/-/2/-	MshSw (montane lake margins)	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Scutellaria galericulata</i> marsh skullcap	-/-/2/-	LCFRs, Medws (mesic) MshSw	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Sedum paradisum</i> Canyon Creek stonecrop	SOC/-/1B/BLM	BUFRs, Chprl, LCFRs, SCFRs	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> western campion	-/-/1B/-	Chprl, LCFRs	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Smilax jamesii</i> English Peak greenbrier	-/-/1B/FSS, BLM	BUFRs, LCFRs, MshSw	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex, Trout Lake (Big Lake, Horr Pond), Lake Britton, McCloud Reservoir, Iron Canyon Reservoir
<i>Stellaria longifolia</i> long-leaved starwort	-/-/2/-	Medws, Freshwater seeps	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex
<i>Trimorpha acris</i> var. <i>debilis</i> northern daisy	-/-/2/-	AlpBR, Medws, SCFRs	Pit 1 Complex, Pit 3, 4, and 5 Complex, McCloud-Pit Complex

NOTES:

Scientific names are based on the following sources: Hickman 1993.

Status: Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

USFWS: United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

State: Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

CNPS: California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLM = Bureau of Land Management Special Status Plants

Habitats:

AlpBR = Alpine Boulder and Rock Field      LCFrs = Lower Montane Conifer Forest

BgFns = Bogs and Fens      Medws = Meadows and Seeps

BUFrS = Broadleaved Upland Forest      MshSw = Marshes and Swamps

CCFrS = Closed-Cone Conifer Forest      PJWld = Pinyon and Juniper Woodland

Chprl = Chaparral      Plyas = Playas

ChScr = Chenopod Scrub      RpFrS = Riparian Forest

Cmwld = Cismontane Woodland      RpScr = Riparian Scrub

CoDns = Coastal dunes      RpWld = Riparian Woodland

CoPrr = Coastal Prairie      SCFrS = Subalpine Conifer Forest

CoScr = Coastal Scrub      UCFrs = Upper Montane Conifer Forest

GBGrS = Great Basin grassland      VFGrS = Valley and Foothill Grassland

GBScr = Great Basin Scrub      VnPls = Vernal Pools

Montane riparian forest vegetation often occurs as dense streamside bands of deciduous trees with a shrubby understory. Dominant tree species include white alder, Oregon ash, and several species of willow (*Salix* sp.). American dogwood (*Cornus sericea* ssp. *sericea*), squawbush, mugwort, western azalea (*Rhododendron occidentale*), and snowberry are common understory species in the montane riparian plant community.

Montane chaparral vegetation is comprised of dense shrubby species dominated by mountain whitethorn, mountain mahogany, greenleaf manzanita, and California sagebrush (*Artemisia californica*). This community often intergrades with drier areas of cismontane woodland.

Annual grassland within the project boundary is comprised primarily of non-native, annual grasses and range from sparse to fairly dense cover. A variety of annual and perennial herbaceous species are also common to annual grasslands. Plant species common to this community within the project lands include California brome, Idaho fescue, bulbous bluegrass, California poppy (*Eschscholzia californica*), and yellow star-thistle. Several grassland areas are currently devoted to livestock grazing.

Mesic areas supporting fine-textured soils within the project boundary, specifically the upper end of Lake Britton, support montane meadow vegetation. This plant community is characterized by dense growths of sedges and other perennial herbaceous species. Species common to montane meadows include Bolander sedge (*Carex bolanderi*), beaked sedge (*Carex utriculata*), needle spikerush (*Eleocharis acicularis*), Nevada rush (*Juncus nevadensis*), yarrow (*Achillea lanulosa*), and cinquefoil (*Potentilla* spp.).

At the upper end of Lake Britton, vegetation is comprised of pure stands of ponderosa pine interspersed with open meadows, manzanita brush, whitethorn and deerbrush, and patches of black oak. Vegetation around the lower end of the lake consists of stands of mixed conifer that include Douglas fir, white fir, incense cedar, and ponderosa pine. The banks of the Pit River are lined with willow, big-leaf maple (*Acer macrophyllum*), alder, grasses, and forbs. Towards the lower end of the Pit 3, 4, and 5 project area, the density of the timber decreases and the amount of brush increases (PG&E Co., 1970).

The CDFG has identified five areas in the Pit 3, 4, and 5 project vicinity as Significant Natural Areas of California. These Significant Natural Areas include: Ahjumawi Lava Springs/Fall River; Mouth of Hat Creek; Lake Britton; Fall River Mills; and Pit 1 Forebay.

**Wildlife Resources.** Pit 3, 4 and 5 project lands fall within the range of the Rocky Mountain mule deer and the Columbian black-tailed deer. Some deer are resident and found throughout the project year round. The upper project boundaries are in the center of the winter range for the Lake Britton deer herd that migrates from its summer range in the Thousand Lakes Wilderness to the south while the Pit River deer herd ranges throughout the project area. The Lake Britton herd is part of the McCloud Flats deer population, a management-planning unit that includes the summer range of at least nine separate deer herds. The lower boundary of the project is within the intermediate winter range of the McCloud deer herd. A population of Rocky Mountain elk (*Cervus elaphus nelsoni*) lives throughout the rugged terrain of the Pit 4 and Pit 5 projects. Black bear (*Ursus americanus*) and mountain lion (*Felis concolor*) are also found within the project boundary. Other species of interest found in the project include California quail (*Calipepla californica*), mountain quail (*Oreortyx pictus*), mink (*Mustela vison*), and northern river otter (PG&E Co., 1970).



Several raptors and waterfowl inhabit project lands. Bald eagles use land within the project boundary for nesting, foraging, and wintering (FERC, 1992b). Other species include osprey, widgeon (*Anas* spp.), mallards (*Anas platyrhynchos*), redheads (*Aythya americana*), scaup (*Aythya* spp.), ruddy (*Oxyura jamaicensis*) and ring necked ducks (*Aythya collaris*), common mergansers (*Mergus merganser*), Canada geese (*Branta canadensis*), and swans (*Eygnus* spp.) (PG&E Co., 1970).

Reservoirs associated with the Pit 3, 4 and 5 project support historically supported 10 occupied bald eagle nesting territories: six at Lake Britton, two at Pit 4 Reservoir, and one each at the Pit 5 and Pit 6 reservoirs. Since 1983, the resident bald eagle population of this project has been the subject of intensive study and monitoring as part of the FERC relicensing effort. FERC approved project operation and land management consistent with the Pit River Interagency Bald Eagle Management Plan which was developed by Pacific Gas and Electric Company, CDFG, BLM, USFWS, and the Lassen and Shasta-Trinity National Forests. A 1998 FERC Order requires bald eagle monitoring, with conditions for minimum flows that will facilitate bald eagle foraging (FERC, 1998), and a 1987 FERC Order specifies that a continuation of minimum flows of 150 cubic feet per second (cfs) from Pit 3 Dam be maintained (FERC, 1987). Pacific Gas and Electric Company has implemented a flow regime that has supported bald eagle foraging in the area.

An active peregrine falcon (*Falco peregrinus*) eyrie is known to exist in the vicinity of the Pit 3, 4 and 5 project, near the Pit 4 powerhouse. In addition, migrant or vagrant individuals are known to fly through the project vicinity. Nesting individuals of Swainson's hawk (*Buteo swainsoni*) are not known to occur within the project boundary. Lassen National Forest Service personnel have conducted a number of northern spotted owl surveys in the Pit River Canyon below Lake Britton and several nesting territories were identified in the vicinity of project lands. At least seven known bank swallow nesting colonies occur in the vicinity of the Pit River drainage, with three colonies on or near Lake Britton, three on the Pit 1 Forebay, and one at the town of Fall River Mills. Greater sandhill cranes currently nest in Lassen, Modoc, Plumas, Sierra, Siskiyou, and Shasta counties. In 1981, two nesting pairs were identified in the vicinity of McArthur in Shasta County, and in May 1990, a nesting pair was observed in the vicinity of Big Lake. During biological surveys conducted during the relicensing of the Pit 1 Hydroelectric Project in 1991, two nesting pairs were observed near Big Lake.

**Botanical Resources.** Existing documentation and a query of the CNDDDB for the Pit 3, 4, and 5 project, covering the area within the project boundary and a one-mile buffer around it, provided information on special-status plant species that may occur. Special-status plant species that may occur in the vicinity of the project are listed in Table 4.5-7. For the Pit 3, 4, and 5 project boundary and a one-mile buffer around it, four special-status plants were identified. These species included Red Bluff dwarf rush (*Juncus leiospermus* var. *lerospermus*), Bellinger's meadowfoam (*Limnanthes floccosa* spp. *bellingeriana*) and eel-grass pondweed, which was documented in 1949 at the junction of Hat Creek and the Pit River. In addition, five Significant Natural Areas occur in

the vicinity of the Pit 3, 4, and 5 project: Ahjumawi Lava Springs/Fall River; Mouth of Hat Creek; Lake Britton; Fall River Mills; and Pit 1 Forebay.

##### ***McCloud-Pit (FERC 2106)***

***Vegetation Communities.*** The McCloud-Pit project is within the Cascade Region and, more specifically, the High Cascade Range (elevations above 1,650 feet) and Cascade Range Foothills (elevations between 300 and 1,650 feet) subregions. McCloud Reservoir (2,690 feet amsl) and Iron Canyon Reservoir (2,675 feet amsl) are located at higher elevations, while Pit 6 Forebay (1,433 feet amsl), Pit 7 Forebay (1,278 feet amsl), and Pit 7 Afterbay (1,064 feet amsl) are located at the lowest elevations within the project boundary.

There are broad ranges of vegetation in the Lower and Upper McCloud River areas, especially in the lower river/Squaw Valley drainages where types vary from riparian vegetation to the chinquapin brush fields. Live oak and black oak stands are found throughout the area. Commercial species of Douglas fir, white fir, ponderosa pine, incense cedar, and sugar pine are found in the virgin and managed stands throughout the area (Table 4.5-5). The upper river area, except for the inner gorge and from Lower Falls to Lake McCloud, has been logged extensively. The riparian vegetation is much the same as the lower river except it is generally wider, extensive, and there are more meadows (PG&E Co., 1990).

***Wildlife Resources.*** Several wildlife habitat types are represented in the McCloud-Pit project including Sierran mixed conifer, wet meadow, montane riparian, and montane chaparral (Table 4.5-6).

There is a variety of wildlife throughout the Upper and Lower McCloud River areas including black bear, Columbian black tailed deer and California mule deer, bobcat (*Lynx rufus*), mountain lion, coyote (*Canis latrans*), northern river otter, wolverine and gray squirrel (*Spermophilus saturatus*). There are several species of upland game such as blue grouse (*Dendragapus odscurus*), mountain quail, wild turkey (*Meleagris gallopavo*) and bandtail pigeon (*Columbia fasciata*). Waterfowl species include wood duck (*Aix sponsa*), mergansers, mallards and Canada geese. Numerous species of raptors are found in this area (PG&E Co., 1990).

Existing documentation and a query of the CNDDDB for the project, covering the area within the project boundary and a one-mile buffer around it, provided information on special-status species wildlife. Special-status wildlife species that may occur in the vicinity of the project are included in Table 4.5-6. The Pit River Interagency Bald Eagle Management Plan applies to Pit 6 and Pit 7 and provides for the management of the project to improve bald eagle success.

***Botanical Resources.*** Existing documentation and a query of the CNDDDB for the McCloud-Pit project, covering the area within the project boundary and a one-mile buffer around it, provided information on special-status plant species that may occur. Special-status plant species that may

occur in the vicinity of the project are listed in Table 4.5-7. No special-status were identified within the project boundaries and a one-mile buffer around the McCloud-Pit project.

### Bundle 3: Kilarc-Cow Creek

#### *Kilarc-Cow Creek (FERC 0606)*

**Vegetation Communities.** The Kilarc-Cow Creek project is within the Cascade Region and, more specifically, the High Cascade Range (elevations above 1,650 feet) and Cascade Range Foothills (elevations between 300 and 1,650 feet) subregions. The Kilarc Forebay is located at an elevation of 3,785 feet amsl, while the Cow Creek Forebay is located at 1,539 feet amsl. Vegetation in the vicinity of the Kilarc Powerhouse is characterized as mixed conifer forest comprised of ponderosa pine, Douglas fir, incense cedar and California black oak (Table 4.5-8). Vegetation in the vicinity of the Cow Creek Powerhouse is characterized as oak-foothill pine association (PG&E Co., 1975).

**Wildlife Resources.** The major wildlife habitat types identified within the project boundary include Sierra mixed conifer forest and blue oak-digger pine (Table 4.5-8). Wildlife values of these habitat types include transitional or migratory habitat for deer, and they also support a wide variety of non-game birds and mammals (PG&E Co., 1989). FERC License Articles 15 and 16 address the conservation and development of wildlife resources in the project.

A query of the CNDDDB for the project, covering the area within the project boundary and a one-mile buffer around it, produced no special-status wildlife species sighting records. A northwestern pond turtle was observed by North State Resources biologists on May 3, 2000, during site reconnaissance at the Cow Creek Powerhouse. Table 4.5-9 provides a list of special-status wildlife species with potential to occur in the Bundle 3 project.

**Table 4.5-8 Bundle 3 – Kilarc-Cow Creek Vegetation Communities Associated With the Kilarc-Cow Creek Project (FERC 0606)**

Project Features	Foothill Communities		Transition Communities					Water Elements		
	AGS	BOP	MCH	MRI	MHC	PPN	SMC	FEW	RIV	LAC
<b>Generation Facilities</b>										
Kilarc Complex				X	X	X	X	X		
Cow Creek Complex			X	X	X			X		
<b>Transmission Lines and Access Roads</b>										
Kilarc Complex				X	X	X	X	X		
Cow Creek Complex			X	X	X			X		
<b>FERC Licensed Lands</b>										

**Table 4.5-8 Bundle 3 – Kilarc-Cow Creek Vegetation Communities Associated With the Kilarc-Cow Creek Project (FERC 0606)**

Project Features	Foothill Communities		Transition Communities					Water Elements		
	AGS	BOP	MCH	MRI	MHC	PPN	SMC	FEW	RIV	LAC
Kilarc Complex	X	X		X	X	X	X	X		
Cow Creek Complex	X	X	X	X	X		X	X	X	X
<b>Project Waterways</b>										
North Canyon Creek				X				X		
South Canyon Creek				X				X		
Mill Creek				X				X		
South Fork Cow Creek				X				X		
<b>Watershed Lands</b>										
Cow Creek Complex	X	X	X	X	X			X	X	X

**NOTES:**

Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc.

Transmission Lines and Access Roads: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer.

FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC, contiguous to a generation facility or project waterway and are part of the proposed project.

Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations.

Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

Recreation Facilities: Campgrounds, day use areas, picnic areas, that are owned by Pacific Gas and Electric Company and are part of the proposed project.

**Habitats:**

AGS = Annual Grassland  
 BOP = Blue Oak-Foothill Pine  
 BOW = Blue Oak Woodland  
 CRC = Chamise-Redshank Chaparral  
 DFR = Douglas-Fir  
 FEW = Fresh Emergent Wetland  
 JPN = Jeffrey Pine  
 LAC = Lacustrine  
 LPN = Lodgepole Pine  
 LSG = Low Sagebrush  
 MCP = Montane Chaparral  
 MCH = Mixed Chaparral  
 MHC = Montane Hardwood-Conifer

MHW = Montane Hardwood  
 MRI = Montane Riparian  
 PPN = Ponderosa Pine  
 RFR = Red Fir  
 RIV = Riverine  
 SCN = Subalpine Conifer  
 SGB = Sagebrush  
 SMC = Sierra Mixed Conifer  
 VOW = Valley Oak Woodland  
 VRI = Valley Foothill Riparian  
 WFR = White Fir  
 WTM = Wet Meadow

**Table 4.5-9 Bundle 3 – Kilarc-Cow Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/-FSS	MRI, VRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/--	BOP, AGS, FEW, LAC, MHC, MRI, PPN, RIV, VRI, MCH, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP /FSS, BLM	BOP, AGS, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Western spadefoot <i>Scaphiopus hammondi</i>	SOC/SSC, CFP/ BLM	BOP, AGS, FEW, RIV, LAC, MCH	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP /FSS	BOP, AGS, FEW, VRI, MRI, RIV, LAC, MHC, PPN, SMC, MCP, MCH, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
<b>Birds</b>			
American white pelican <i>Pelecanus erythrorhynchos</i>	--/SSC/--	LAC, RIV	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP/FSS	BOP, AGS, FEW, JUN, RIV, LAC, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek

**Table 4.5-9 Bundle 3 – Kilarc-Cow Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Bank swallow <i>Riparia riparia</i>	--/ST/--	AGS, FEW, LAC, RIV, LSG, MRI, VRI, MCH, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Barrow's goldeneye <i>Bucephala islandica</i>	-/SSC/-	LAC, RIV	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Black swift <i>Cypseloides niger</i>	--/SSC/-	BOP, AGS, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LAC, RIV, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Black tern <i>Chlidonias niger</i>	SOC/SSC/-	FEW, WTM, LAC	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
Black-capped chickadee <i>Parus atricapillus</i>	--/SSC/--	MRI, PPN, WTM, SMC, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Burrowing owl <i>Athene cunicularia</i>	SOC/-BLM	AGS, JUN, LSG	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
California gull <i>Larus californicus</i>	--/SSC/--	AGS, FEW, WTM, RIV, LAC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Common loon <i>Gavia immer</i>	SOC/SSC/-	LAC, RIV, FEW	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Cooper's hawk <i>Accipiter cooperi</i>	--/SSC/-	BOP, AGS, JUN, MCH, MCP, VRI, SMC, PPN, MRI, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek

**Table 4.5-9 Bundle 3 – Kilarc-Cow Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	FEW, LAC, RIV, VRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Ferruginous hawk <i>Buteo regalis</i>	SOC/SSC/BLM	BOP, AGS, FEW, JUN, WTM, VRI, LSG	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP/BLM	BOP, AGS, FEW, JUN, WTM, LSG, MHC, MRI, PPN, SMC, VRI, MCP, MCH	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Great blue heron <i>Ardea herodias</i>	--/--/CDF	BOP, FEW, JUN, WTM, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Great egret <i>Casmerodius albus</i>	--/--/CDF	FEW, LAC, MHC, MRI, RIV, VRI, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Greater sandhill crane <i>Grus canadensis tabida</i>	--/ST/FSS	AGS, FEW, WTM, LAC, VRI	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
Harlequin duck <i>Histrionicus histrionicus</i>	--/SSC/BLM	LAC, RIV, FEW	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Horned lark <i>Eremophila alpestris</i>	--/SSC/-	BOP, AGS, VRI, WTM, LSG	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
Least bittern <i>Ixobrychus exilis</i>	--/SSC/BLM	LAC, FEW	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
Loggerhead shrike <i>Lanius ludovicianus</i>	--/SSC/--	BOP, AGS, JUN, VRI, WTM, MCH, PPN, MRI, MHC, LSG	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek

**Table 4.5-9 Bundle 3 – Kilarc-Cow Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Long-billed curlew <i>Numenius americanus</i>	SOC/SSC/-	AGS, FEW, WTM, RIV, LAC, VRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Long-eared owl <i>Asio otus</i>	-/SSC/-	BOP, AGS, FEW, JUN, MCH, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Merlin <i>Falco columbarius</i>	-/SSC/-	BOP, AGS, FEW, JUN, LAC, LSG, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Mountain plover <i>Charadrius montanus</i>	SOC/SSC/-	AGS	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
Northern goshawk <i>Accipiter gentilis</i>	MNBMC/ SSC/FSS,CDF	BOP, JUN, SMC, MCH, MCP, VRI, PPN, MRI, MHC, LSG	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Northern harrier <i>Circus cyaneus</i>	-/SSC/-	BOP, AGS, FEW, JUN, LAC, LSG, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Osprey <i>Pandion haliaetus</i>	-/SSC/-	BOP, AGS, FEW, JUN, WTM, MCH, MCP, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Peregrine falcon <i>Falco peregrinus anatum</i>	-/SE, CFP/FSS	BOP, AGS, FEW, JUN, SMC, MHC, WTM, RIV, LAC, LSG, MRI, PPN, VRI, MCP, MCH	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Prairie falcon <i>Falco mexicanus</i>	-/SSC/-	BOP, AGS, FEW, JUN, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek



**Table 4.5-9 Bundle 3 – Kilarc-Cow Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Purple martin <i>Progne subis</i>	--/SSC/--	BOP, AGS, FEW, RIV, LAC, MRI, PPN, SMC, WTM, VRI, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/-	BOP, AGS, JUN, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Short-eared owl <i>Asio flammeus</i>	--/SSC/-	BOP, AGS, FEW, JUN, MCH, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Snowy egret <i>Egretta thula</i>	--/--/CDF	FEW, RIV, MRI, VRI, WTM, LAC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/-	AGS, VRI, JUN, LSG	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/BLM	AGS, FEW, WTM, VRI	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
Vaux's swift <i>Chaetura vauxi</i>	SOC/SSC/-	BOP, FEW, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LAC, RIV, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
White-faced ibis <i>Plegadis chihi</i>	SOC/SSC/--	LAC, FEW, AGS, WTM	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
White-tailed kite <i>Elanus leucurus</i>	--/CFP/-	BOP, AGS, FEW, WTM, MCH, VRI	FERC Licensed Lands associated with the Kilarc and Cow Creek complexes, Watershed Lands associated with the Cow Creek Complex
Willow flycatcher <i>Empidonax traillii</i>	-/SE/FS/-S	WTM, MRI, RIV, WTM, VRI, MRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek

**Table 4.5-9 Bundle 3 – Kilarc-Cow Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC/--	BOP, MHC, RIV, MRI, PPN, SMC, MCH, MCP, VRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Yellow-breasted chat <i>Icteria virens</i>	--/SSC/--	MRI, VRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP /FSS	MHC, SMC, WTM, MRI, MCP	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Little brown myotis <i>Myotis lucifugus</i>	--/SSC/-	BOP, AGS, FEW, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, LAC, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Mountain lion <i>Felis concolor</i>	--/SSC/--	BOP, AGS, JUN, PPN, MCH, MCP, MRI, WTM, VRI, LSG, SMC, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/FSS, BLM	MHC, SMC, MRI, PPN	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Pale big-eared bat <i>Corynorhinus townsendii pallascens</i>	SOC/SSC/FSS, BLM-	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLM	BOP, AGS, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek

**Table 4.5-9 Bundle 3 – Kilarc-Cow Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Pine marten <i>Martes americana</i>	--/--/FSS	MHC, PPN, MRI, WTM, SMC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Ringtail <i>Bassariscus astutus</i>	--/CFPI/-	BOP, AGS, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	--/SSC/-	MHC, PPN, SMC, MRI, WTM	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	SOC/ST/FSS	MHC, PPN, MCP, MRI, WTM, SMC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Townsend's big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/FSS, BLM	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Western red bat <i>Lasiurus borealis</i>	--/--/FSS	FEW, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, LAC, MHC	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
White-tailed hare <i>Lepus townsendii</i>	--/SSC/--	JUN, SMC, LSG, WTM, MRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/ BLM	BOP, AGS, JUN, MHC, LAC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Kilarc Complex, Cow Creek Complex, Transmission Lines and Access Roads associated with both complexes, associated FERC and Pacific Gas and Electric Company for both complexes, Watershed lands associated with Cow Creek Complex, North Canyon Creek, Mill Creek, South Fork Cow Creek

Notes:

Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

Special-Status Species:

## 4.5 Terrestrial Biology

### Federal:

FE = Federally listed as endangered  
 FT = Federally listed as threatened  
 SOC = Federal species of concern  
 FC = Federal Candidate species

### State:

SE = State listed as endangered  
 ST = State listed as threatened  
 SSC = State species of special concern  
 CFP = California Fully Protected species

### Other:

FSS = Forest Service sensitive species  
 BLM = Bureau of Land Management sensitive species  
 CDF = California Department of Forestry and Fire Protection sensitive species

### Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Botanical Resources.** A query of the CNDDDB for the project, covering the area within the project boundary and a one-mile buffer around it, produced no special-status plant species sighting records. Special-status species that have potential to occur within the Bundle 3 project boundary are listed in Table 4.5-10.

**Table 4.5-10 Bundle 3 – Kilarc-Cow Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Scientific Name and Common Name	Status: USFWS/State/CNPS /Other	Habitats	Facilities
<i>Arctostaphylos klamathensis</i> Klamath manzanita	SOC/--1B/BLM	Chprl, SCFrS, UCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Asplenium septentrionale</i> northern spleenwort	--1--/2/--	Chprl, LCFrs, SCFrS	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands

**Table 4.5-10 Bundle 3 – Kilarc-Cow Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Scientific Name and Common Name	Status: USFWS/State/CNPS /Other	Habitats	Facilities
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> Suksdorf's milk-vetch	SOC/-/1B/FSS, BLM	GBScr, LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> long-haired star-tulip	SOC/-/1B/FSS, BLM	LCFrs, Medws	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Calystegia atriplicifolia</i> ssp. <i>butensis</i> Butte County morning-glory	SOC/-/1B/FSS	LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Campanula shetleri</i> Castle Crags harebell	-/-/1B/FSS	LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Carex vulpinoidea</i> fox sedge	-/-/2/-	MshSw, RpWld	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Collomia larsenii</i> talus collomia	-/-/2/-	AlpBR, CCFrs, UCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Watershed Lands
<i>Cryptantha crinita</i> silky cryptantha	SOC/-/1B/BLM	CmWld, LCFrs, RpWld, VFGrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Drosera anglica</i> English sundew	-/-/2/-	BgFns, Medws	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek

**Table 4.5-10 Bundle 3 – Kilarc-Cow Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Scientific Name and Common Name	Status: USFWS/State/CNPS /Other	Habitats	Facilities
<i>Epilobium oreganum</i> Oregon fireweed	SOC/--/1B/FSS, BLM	BgFns, LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Fritillaria eastwoodiae</i> Butte County fritillary	SOC/--/1B/FSS, BLM	Chprl, CMWld, LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	--/E/1B/--	MshSw, VnPls	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Hierochloe odorata</i> vanilla-grass	--/--/2/--	CoPrr, VFGrs	Kilarc Complex Watershed Lands; Cow Creek Complex Watershed Lands and Watershed Lands
<i>Ivesia longibracteata</i> Castle Crags ivesia	SOC/--/1B/BLM	LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff dwarf rush	--/--/1B/FSS, BLM	Chprl, CmWld, VFGrs, VnPls	Kilarc Complex Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands and Watershed Lands
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/--/1B/FSS, BLM	BUFrS, Chprl, CmWld, LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Lewisia cotyledon</i> var. <i>howellii</i> Howell's lewisia	SOC/--/3/--	BUFrS, Chprl, CmWld, LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Limnanthes floccosa</i> ssp. <i>bellerophanta</i> Bellingher's meadowfoam	SOC/--/1B/FSS, BLM	CmWld, Medws	Kilarc Complex Watershed Lands; Cow Creek Complex Watershed Lands and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek

**Table 4.5-10 Bundle 3 – Kilarc-Cow Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Scientific Name and Common Name	Status: USFWS/State/CNPS /Other	Habitats	Facilities
<i>Madia stebbinsii</i> Stebbins' madia	--/--/1B/BLM	Chprl, LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Marsilea oligospora</i> Nelson's pepperwort	--/--/3/--	MshSw, VnPls	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Orcuttia tenuis</i> slender orcutt grass	T/E/1B/--	VnPls	Kilarc Complex Watershed Lands; Cow Creek Complex Watershed Lands, and Watershed Lands
<i>Paronychia ahartii</i> Ahart's paronychia	SOC/--/1B/BLM	CmWld, VFGrs, VnPls	Kilarc Complex Watershed Lands; Cow Creek Complex Watershed Lands, and Watershed Lands
<i>Penstemon filiformis</i> thread-leaved beardtongue	SOC/--/1B/FSS, BLM	CmWld, LCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Phacelia dalesiana</i> Scott Mountain phacelia	SOC/--/4/BLM	LCFrs, Medws, SCFrs, UCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Picea engelmannii</i> Engelmann spruce	--/--/2/--	UCFrs	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Watershed Lands
<i>Potamogeton praelongus</i> white-stemmed pondweed	--/--/2/--	MshSw	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek

**Table 4.5-10 Bundle 3 – Kilarc-Cow Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Scientific Name and Common Name	Status: USFWS/State/CNPS /Other	Habitats	Facilities
<i>Potamogeton zosteriformis</i> eel-grass pondweed	--/--/2/--	MshSw	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Scirpus subterminalis</i> water bulrush	--/--/2/--	MshSw	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Scutellaria galericulata</i> marsh skullcap	--/--/2/--	LCFrS, Medws, MshSw	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Sedum paradisum</i> Canyon Creek stonecrop	SOC/--/1B/BLM	BUFrS, Chprl, LCFrS, SCFrS	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> western campion	SOC/--/1B/FSS	Chprl, LCFrS	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands
<i>Silene suksdorfii</i> Cascade alpine campion	--/--/2/--	AlpBR	
<i>Smilax jamesii</i> English Peak greenbriar	--/--/1B/FSS, BLM	BUFrS, LCFrS, MshSw	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek
<i>Stellaria longifolia</i> long-leaved starwort	--/--/2/--	Medws	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek



**Table 4.5-10 Bundle 3 – Kilarc-Cow Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Kilarc-Cow Creek Project (FERC 0606)**

Scientific Name and Common Name	Status: USFWS/State/CNPS /Other	Habitats	Facilities
<i>Trimorpha acris</i> var. <i>debilis</i> Northern daisy	--/2/--	AlpBR, Medws, SCFrS	Kilarc Complex Generation Facilities, Transmission Lines and Access Roads, and Watershed Lands; Cow Creek Complex Generation Facilities, Transmission Lines and Access Roads, Watershed Lands, and Watershed Lands; North Canyon Creek; South Canyon Creek; Mill Creek; South Fork Cow Creek

**NOTES:**

Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** California status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

**CNPS:** California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information—a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

**Other:** Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLM = Bureau of Land Management Special Status Plants

**Habitats:**

AlpBR = Alpine Boulder and Rock Field LCFrs = Lower Montane Conifer Forest

BgFns = Bogs and Fens

Medws = Meadows and Seeps

BUFrS = Broadleaved Upland Forest

MshSw = Marshes and Swamps

CCFrS = Closed-Cone Conifer Forest

PJWld = Pinyon and Juniper Woodland

Chprl = Chaparral

Plyas = Playas

ChScr = Chenopod Scrub

RpFrS = Riparian Forest

Cmwld = Cismontane Woodland

RpScr = Riparian Scrub

CoDns = Coastal dunes

RpWld = Riparian Woodland

CoPrr = Coastal Prairie

SCFrS = Subalpine Conifer Forest

CoScr = Coastal Scrub

GBGrS = Great Basin grassland

GBScr = Great Basin Scrub

UCFrS = Upper Montane Conifer Forest

VFGrs = Valley and Foothill Grassland

VnPls = Vernal Pools

### **Bundle 4: Battle Creek**

#### ***Battle Creek (FERC 1121)***

**Vegetation Communities.** The Battle Creek project land is within the Cascade Region and, more specifically, the High Cascade Range (elevations above 1,650 feet) and Cascade Range Foothills (elevations between 300 and 1,650 feet) subregions. Within the overall Shasta Assets region, the Battle Creek project has the widest range of elevations between hydroelectric facilities, ranging from North Battle Creek Reservoir (5,567 feet amsl) at the highest elevation to Coleman Forebay (942 feet amsl) at the lower elevation. Elevations at other project facilities include: Lake Grace (3,483 feet amsl); Lake Nora (3,433 feet amsl); and Macumber Reservoir (4,092 feet amsl).

Vegetation types in the upland Battle Creek project consist of mixed conifer forest and open meadow to the north and valley foothill riparian and annual grassland down at the lower elevations near the Coleman Powerhouse. Willows and emergent wetland vegetation border portions of the reservoirs with submergent vegetation in shallow areas (Biosystems, 1988). A complete list of vegetation communities occurring in the Bundle 4 project is provided in Table 4.5-11.

**Wildlife Resources.** Wildlife habitat in the upper elevations of the project is characterized by Sierran mixed conifer forest, wet meadow, and fresh emergent wetland (Table 4.5-11). The range of the Eastern Tehama Deer Herd, the largest migratory herd in California, extends into the project boundary (USFS, 1981). At the lower elevations, blue oak-foothill pine, valley foothill riparian, and annual grassland are the predominant habitat types.

Existing documentation and a query of the CNDDDB for the project, covering the area within the project boundary and a one-mile buffer around it, provided information on special-status wildlife. A number of special-status wildlife species occur in the vicinity of the Bundle 4 project and are included in Table 4.5-12.

Wetland monitoring plans were requested from Pacific Gas and Electric Company under FERC License Article 401 for the Macumber Berm Improvement Project. Pacific Gas and Electric Company's plans include elimination of cattle grazing at the meadow located upstream of Macumber Reservoir, enhancement of wetland habitat, monitoring stream and meadow habitat conditions, revegetating the reconstructed berm, monitoring vegetation growth and assisting in planting appropriate plant species (FERC, 1996a).

**Table 4.5-11 Bundle 4 – Battle Creek Vegetation Communities Associated With the Battle Creek Project (FERC 1121)**

Project Features	Foothill Communities			Mid Elevation and Transition Communities						Water Elements			
	AGS	VOW	BOP	VRI	MRI	MHC	PPN	JPN	SMC	FEW	WTM	RIV	LAC
<b>Generation Facilities</b>													
Volta 1 and 2 Complex			X		X		X					X	
South Complex			X	X								X	
Inskip Complex	X		X	X								X	
Coleman Complex	X	X	X	X								X	
Macumber Reservoir Complex					X		X						
North Battle Creek Complex					X		X						X
<b>Transmission Lines and Access Roads</b>													
Macumber Reservoir Complex					X		X						X
Volta 1 and 2 Complex			X		X							X	
South Complex			X	X								X	
Inskip Complex	X		X	X								X	
Coleman Complex	X	X	X	X								X	
North Battle Creek Complex					X		X					X	
<b>FERC Licensed Lands</b>													
Macumber Reservoir Complex					X		X			X	X	X	X
Volta 1 and 2 Complex			X		X		X			X	X	X	
South Complex			X	X						X		X	
Inskip Complex	X	X	X	X						X		X	
Coleman Complex	X	X	X	X						X		X	
North Battle Creek Complex					X		X		X	X		X	X
<b>Project Waterways</b>													
North Battle Creek				X	X							X	

**Table 4.5-11 Bundle 4 – Battle Creek Vegetation Communities Associated With the Battle Creek Project (FERC 1121)**

Project Features	Foothill Communities			Mid Elevation and Transition Communities						Water Elements			
	AGS	VOW	BOP	VRI	MRI	MHC	PPN	JPN	SMC	FEW	WTM	RIV	LAC
<b>Watershed Lands</b>													
North Battle Creek Complex					X	X		X		X	X	X	X
Volta 1 and 2 Complex	X		X		X	X		X		X	X	X	
South Complex			X	X	X					X		X	
Inskip Complex	X	X	X	X	X					X		X	
Coleman Complex	X	X	X	X						X		X	

**NOTES:**

**Generation Facilities:** Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc.

**Transmission Lines and Access Roads:** Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer.

**FERC Licensed Lands:** Pacific Gas and Electric Company owned lands that are regulated by FERC, contiguous to a generation facility or project waterway and are part of the proposed project.

**Project Waterways:** Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations.

**Watershed Lands:** Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Table 4.5-12 Bundle 4 – Battle Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/-FSS	MRI, VRI	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT/-/--	AGS	Watershed Lands (Inskip, and Coleman complexes)
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE/-/--	AGS	Watershed Lands (Inskip, and Coleman complexes)
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/--	BOP, AGS, FEW, LAC, MHC, MRI, PPN, RIV, VRI, MCH, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Foothill yellow-legged frog <i>Rana boylei</i>	--/SSC, CFP/FSS, BLM	BOP, AGS, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Western spadefoot <i>Scaphiopus hammondi</i>	SOC/SSC, CFP/BLM	BOP, AGS, FEW, RIV, LAC, MCH	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes but Macumber, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/FSS	BOP, AGS, FEW, VRI, MRI, RIV, LAC, MHC, PPN, SMC, MCP, MCH, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
<b>Birds</b>			
American white pelican <i>Pelecanus erythrorhynchos</i>	--/SSC/-	LAC, RIV	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek

**Table 4.5-12 Bundle 4 – Battle Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP /FSS, CDF	BOP, AGS, FEW, JUN, RIV, LAC, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Bank swallow <i>Riparia riparia</i>	--/ST/--	AGS, FEW, LAC, RIV, LSG, MRI, VRI, MCH, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Barrow's goldeneye <i>Bucephala islandica</i>	--/SSC/--	LAC, RIV	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Black swift <i>Cypseloides niger</i>	SOC/SSC/--	BOP, AGS, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LAC, RIV, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Black tern <i>Chlidonias niger</i>	--/SSC/--	FEW, WTM, LAC	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Black-capped chickadee <i>Parus atricapillus</i>	--/SSC/--	MRI, PPN, WTM, SMC, MHC	Volta 1 and 2 Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads (Volta 1 and 2, Macumber, North Battle Creek), FERC Licensed Lands (Volta 1 and 2, Macumber, North Battle Creek), Watershed Lands (Volta 1 and 2, Macumber, North Battle Creek), North Battle Creek
Burrowing owl <i>Athene cunicularia</i>	SOC/SSC/BLM	AGS, JUN, LSG	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
California gull <i>Larus californicus</i>	--/SSC/--	AGS, FEW, WTM, RIV, LAC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek

**Table 4.5-12 Bundle 4 – Battle Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Common loon <i>Gavia immer</i>	SOC/SSC/--	LAC, RIV, FEW	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Cooper's hawk <i>Accipiter cooperi</i>	--/SSC/--	BOP, AGS, JUN, MCH, MCP, VRI, SMC, PPN, MRI, MHC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	FEW, LAC, RIV, VRI	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Ferruginous hawk <i>Buteo regalis</i>	SOC/SSC/BLM	BOP, AGS, FEW, JUN, WTM, VRI, LSG	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP /BLM	BOP, AGS, FEW, JUN, WTM, LSG, MHC, MRI, PPN, SMC, VRI, MCP, MCH	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Great blue heron <i>Ardea herodias</i>	--/--/CDF	BOP, FEW, JUN, WTM, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Great egret <i>Casmerodius albus</i>	--/--/CDF	FEW, LAC, MHC, MRI, RIV, VRI, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Greater sandhill crane <i>Grus canadensis tabida</i>	--/ST/FSS	AGS, FEW, WTM, LAC, VRI	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek

**Table 4.5-12 Bundle 4 – Battle Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Harlequin duck <i>Histrionicus histrionicus</i>	--/SSC/BLM	LAC, RIV, FEW	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Horned lark <i>Eremophila alpestris</i>	--/SSC/--	BOP, AGS, VRI, WTM, LSG	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Least bittern <i>Ixobrychus exilis</i>	--/SSC/BLM	LAC, FEW	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Loggerhead shrike <i>Lanius ludovicianus</i>	--/SSC/--	BOP, AGS, JUN, VRI, WTM, MCH, PPN, MRI, MHC, LSG	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Long-billed curlew <i>Numenius americanus</i>	SOC/SSC/--	AGS, FEW, WTM, RIV, LAC, VRI	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Long-eared owl <i>Asio otus</i>	--/SSC/--	BOP, AGS, FEW, JUN, MCH, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Merlin <i>Falco columbarius</i>	--/SSC/--	BOP, AGS, FEW, JUN, LAC, LSG, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Mountain plover <i>Charadrius montanus</i>	SOC/SSC/--	AGS	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Northern goshawk <i>Accipiter gentilis</i>	SOC/ SSC /FSS,CDF	BOP, JUN, SMC, MCH, MCP, VRI, PPN, MRI, MHC, LSG	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek



**Table 4.5-12 Bundle 4 – Battle Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Northern harrier <i>Circus cyaneus</i>	--/SSC/--	BOP, AGS, FEW, JUN, LAC, LSG, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Osprey <i>Pandion haliaetus</i>	--/SSC/--	BOP, AGS, FEW, JUN, WTM, MCH, MCP, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Peregrine falcon <i>Falco peregrinus anatum</i>	--/SE, CFP/FSS	BOP, AGS, FEW, JUN, SMC, MHC, WTM, RIV, LAC, LSG, MRI, PPN, VRI, MCP, MCH	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	BOP, AGS, FEW, JUN, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Purple martin <i>Progne subis</i>	--/SSC/-	BOP, AGS, FEW, RIV, LAC, MRI, PPN, SMC, WTM, VRI, MHC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	BOP, AGS, JUN, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Short-eared owl <i>Asio flammeus</i>	--/SSC/--	BOP, AGS, FEW, JUN, MCH, VRI, SMC, PPN, MRI, MHC, LSG, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek

**Table 4.5-12 Bundle 4 – Battle Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Snowy egret <i>Egretta thula</i>	--/--/CDF	FEW, RIV, MRI, VRI, WTM, LAC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--	AGS, VRI, JUN, LSG	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/BLM	AGS, FEW, WTM, VRI	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Vaux's swift <i>Chaetura vauxi</i>	SOC/SSC/--	BOP, FEW, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LAC, RIV, WTM	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
White-faced ibis <i>Plegadis chihi</i>	SOC/SSC/--	LAC, FEW, AGS, WTM	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
White-tailed kite <i>Elanus leucurus</i>	--/CFP/--	BOP, AGS, FEW, WTM, MCH, VRI	South Complex, Inskip Complex, Coleman Complex, FERC Licensed Lands (South, Inskip, and Coleman complexes), Watershed Lands (South, Inskip, and Coleman complexes), North Battle Creek
Willow flycatcher <i>Empidonax traillii</i>	-/SE/FSS	WTM, MRI, RIV, WTM, VRI, MRI	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Yellow breasted-chat <i>Icteria virens</i>	--/SSC/--	MRI, VRI	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC/--	BOP, MHC, RIV, MRI, PPN, SMC, MCH, MCP, VRI	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek

**Table 4.5-12 Bundle 4 – Battle Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP/ FSS	MHC, SMC, WTM, MRI, MCP	Volta 1 and 2 Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads (Volta 1 and 2, Macumber, North Battle Creek), FERC Licensed Lands (Volta 1 and 2, Macumber, North Battle Creek), Watershed Lands (Volta 1 and 2, Macumber, North Battle Creek), North Battle Creek
Little brown myotis <i>Myotis lucifugus</i>	--/SSC/--	BOP, AGS, FEW, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, LAC, MHC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Mountain lion <i>Felis concolor</i>	--/SSC, CFP/--	BOP, AGS, JUN, PPN, MCH, MCP, MRI, WTM, VRI, LSG, SMC, MHC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/ FSS, BLM	MHC, SMC, MRI, PPN	Volta 1 and 2 Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads (Volta 1 and 2, Macumber, North Battle Creek), FERC Licensed Lands (Volta 1 and 2, Macumber, North Battle Creek), Watershed Lands (Volta 1 and 2, Macumber, North Battle Creek), North Battle Creek
Pale big-eared bat <i>Corynorhinus townsendii pallescens</i>	--/SSC/--	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Pine marten <i>Martes americana</i>	--/FSS	MHC, PPN, MRI, WTM, SMC	Volta 1 and 2 Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads (Volta 1 and 2, Macumber, North Battle Creek), FERC Licensed Lands (Volta 1 and 2, Macumber, North Battle Creek), Watershed Lands (Volta 1 and 2, Macumber, North Battle Creek), North Battle Creek
Ringtail <i>Bassariscus astutus</i>	--/CFP/--	BOP, AGS, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, MHC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	--/SSC/--	MHC, PPN, SMC, MRI, WTM	Volta 1 and 2 Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads (Volta 1 and 2, Macumber, North Battle Creek), FERC Licensed Lands (Volta 1 and 2, Macumber, North Battle Creek), Watershed Lands (Volta 1 and 2, Macumber, North Battle Creek), North Battle Creek

**Table 4.5-12 Bundle 4 – Battle Creek Special-Status Wildlife Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	SOC/ST/FSS	MHC, PPN, MCP, MRI, WTM, SMC	Volta 1 and 2 Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads (Volta 1 and 2, Macumber, North Battle Creek), FERC Licensed Lands (Volta 1 and 2, Macumber, North Battle Creek), Watershed Lands (Volta 1 and 2, Macumber, North Battle Creek), North Battle Creek
Townsend's big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/ FSS, BLM	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
Western red bat <i>Lasiurus borealis</i>	--/--/FSS	FEW, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, LAC, MHC	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek
White-tailed hare <i>Lepus townsendii</i>	--/SSC/	JUN, SMC, LSG, WTM, MRI	Volta 1 and 2 Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads (Volta 1 and 2, Macumber, North Battle Creek), FERC Licensed Lands (Volta 1 and 2, Macumber, North Battle Creek), Watershed Lands (Volta 1 and 2, Macumber, North Battle Creek), North Battle Creek
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLM	BOP, AGS, JUN, MHC, LAC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Volta 1 and 2 Complex, South Complex, Inskip Complex, Coleman Complex, Macumber Reservoir Complex, North Battle Creek Complex, Transmission Lines and Access Roads associated with all complexes, FERC Licensed Lands associated with all complexes, Watershed Lands (North Battle Creek, Volta 1 and 2, South, Inskip, and Coleman complexes), North Battle Creek

**Notes:**

Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

**Special-Status Species:****Federal:**

FE Federally listed as endangered  
 FT Federally listed as threatened  
 SOC Federal species of concern  
 FC Federal Candidate species

**State:**

SE State listed as endangered  
 ST State listed as threatened  
 SSC State species of special concern  
 CFP California Fully Protected species

**Other:**

FSS Forest Service sensitive species  
 BLM Bureau of Land Management sensitive species  
 CDF California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Botanical Resources.** Table 4.5-13 provides a list of special-status plant species with potential to occur in the Bundle 4 project. A query of the CNDDDB for the project, covering the area within the Battle Creek project boundary and a one-mile buffer around it, provided known occurrence information on special-status plant species. Known occurrences were identified for the following species: fox sedge (*Carex vulpinoidea*); silky cryptantha (*Cryptantha crinita*); Butte County fritillary (*Fritillaria eastwoodiae*); Boggs Lake hedge-hyssop (*Gratiola heterosepala*); slender orcutt grass (*Orcuttia tenuis*) and Ahart's paronychia (*Paronychia aharti*). Fox sedge was documented at the Battle Creek Wildlife Area, on the north side of Battle Creek, in 1994. A population of silky cryptantha was observed in the vicinity of the Battle Creek project in 1991, and a single population of Boggs Lake hedge-hyssop was observed in the vicinity in 1993. A large population of slender orcutt grass in the vicinity of the project boundary has been fenced off to protect against grazing impacts. Several populations of Butte County fritillary have been documented within the project boundary in 1981, while several populations of Ahart's paronychia were observed in the project vicinity in 1997.

#### 4.5.4.2 DeSabra Regional Bundle

##### Regional Setting

The DeSabra regional bundle is located within the High Sierra Nevada Floristic Province and, specifically, within the Feather, Yuba, and Bear River watersheds of the northern Sierra Nevada. This region supports a variety of terrestrial and aquatic wildlife habitats characteristic of the west slope of the Sierra Nevada, foothills, and valleys. These habitats, in turn, support a diverse assemblage of resident and migratory wildlife which use these habitats for breeding, cover, foraging and as transient habitat during migration. This diverse vegetation composition and structure produces high-level species richness relative to the vegetatively less diverse Central Valley to the west and Great Basin to the east.

**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Achnatherum lemmonii</i> var. <i>pubescens</i> pubescent needle grass	--/--/3/--	Chprl, LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Agrostis hendersonii</i> Henderson's bent grass	SOC/--/3/--	VFGrS, VnPls	Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Volta 1 and 2 Complex Watershed Lands; North Battle Creek Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads
<i>Antirrhinum subcordatum</i> dimorphic snapdragon	--/--/4/BLM	Chprl, LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Arctostaphylos canescens</i> ssp. <i>sonomensis</i> Sonoma manzanita	--/--/1B/--	Chprl, LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Arctostaphylos klamathensis</i> Klamath manzanita	SOC/--/1B/BLM	Chprl, SCFrs, UCFrs	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Asplenium septentrionale</i> northern spleenwort	--/--/2/--	Chprl, LCFrs, SCFrs	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> Suksdorf's milk-vetch	SOC/--/1B/FSS, BLM	GBScr, LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Astragalus rattani</i> var. <i>jepsonianus</i> Jepson's milk-vetch	--/--/1B/--	CmWld, VFGrS	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	--/--/1B/BLM	CmWld, VFGrS	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands
<i>Botrychium ascendens</i> upswept moonwort	SOC/--/2/FSS, BLM	LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands

**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Botrychium crenulatum</i> scalloped moonwort	SOC/--/2/FSS, BLM	BgFns, LCFrs, Medws, MshSw	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Botrychium minganense</i> Mingan moonwort	--/--/2/--	LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Botrychium montanum</i> western goblin	--/--/2/FSS	LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Brodiaea coronaria</i> ssp. <i>rosea</i> Indian Valley brodiaea	SOC/E/1B/--	CCFrs, Chprl, VFGrs	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Landsand Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Landsand Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands;
<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> long-haired star-tulip	SOC/--/1B/FSS, BLM	LCFrs, Medws	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Watershed Lands
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i> Butte County morning-glory	SOC/--/1B/FSS	LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Campanula shetteri</i> Castle Crags harebell	--/--/1B/FSS	LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Campanula wilkinsiana</i> Wilkin's harebell	SOC/--/1B/FSS	Medws, SCFrs, UCFrs	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Landsand Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Landsand Watershed Lands
<i>Cardamine pachystigma</i> var. <i>dissectifolia</i> dissected-leaved toothwort	--/--/3/--	Chprl	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Coleman Complex Generation Lands, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, Project Waterway and Watershed Lands
<i>Carex comosa</i> bristly sedge	--/--/2/--	Medws	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Watershed Lands

**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Carex vulpinoidea</i> fox sedge	--/--/2/--	MshSw, RpWld Documented at the Battle Creek Wildlife Area, on the north side of Battle Creek, in 1994 <sup>a</sup>	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Coleman Complex Generation Lands, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, Project Waterway and Watershed Lands
<i>Clarkia borealis</i> ssp. <i>arida</i> Shasta clarkia	SOC/--/1B/BLM	Chprl, CmWld, LCFrs	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex Watershed Lands
<i>Collomia larsenii</i> talus collomia	--/--/2/--	AlpBR, CCFrs, UCFrs	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Cryptantha crinita</i> silky cryptantha	SOC/--/1B/BLM	CmWld, LCFrs, RpWld, VFGr Population documented in the vicinity of the project in 1991 <sup>a</sup>	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; Coleman Complex Generation Lands, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, Project Waterway and Watershed Lands
<i>Downingia pusilla</i> dwarf downingia	--/--/2/--	VFGr, VnPls	Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands; Volta 1 and 2 Complex Watershed Lands; North Battle Creek Complex Generation Facilities, FERC Licensed Lands, and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads and FERC Licensed Lands
<i>Drosera anglica</i> English sundew	--/--/2/--	BgFns, Medws	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands



**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Eleocharis quadrangulata</i> four-angled spikerush	--/--/2/--	MshSw	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Epilobium oreganum</i> Oregon fireweed	SOC/--/1B/FSS, BLM	BgFns, LCFrs	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Fritillaria eastwoodiae</i> Butte County fritillary	SOC/--/1B/FSS, BLM	Chprl, CMWld, LCFrs Several populations documented in the project area in 1981 <sup>a</sup>	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands, North Battle Creek Watershed Lands
<i>Fritillaria pluriflora</i> adobe-lily	SOC/--/1B/BLM	Chprl, CmWld, VFGrs	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	--/SE/1B/--	MshSw, VnPls One population found in the vicinity of the project in 1993 <sup>a</sup>	Macumber Reservoir Complex Transmission Lines and Access Roads, FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Generation Facilities, FERC Licensed Lands and Watershed Lands
<i>Hierochloe odorata</i> vanilla-grass	--/--/2/--	CoPrr, VFGrs	Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands; Volta 1 and 2 Complex Watershed Lands
<i>Ivesia longibracteata</i> Castle Crags ivesia	SOC/--/1B/BLM	LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands

**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff dwarf rush	--/--/1B/FSS, BLM	Chprl, CmWld, VFGrs, VnPls	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex Generation Facilities and FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads, FERC Licensed Lands
<i>Lathyrus sulphureus</i> var. <i>argillaceus</i> dubious pea	--/--/3/--	CmWld, LCFrs, UCFrs	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands
<i>Layia septentrionalis</i> Colusa lily	--/--/1B/BLM	Chprl, CmWld, VFGrs	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands
<i>Legenere limosa</i> legenere	SOC/--/1B/BLM	VnPls	Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC and Pacific Gas and Electric Company Lines, and Watershed Lands; Volta 1 and 2 Complex Watershed Lands
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/--/1B/FSS, BLM	BUFrS, Chprl, CmWld, LCFrs	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex Watershed Lands
<i>Lewisia cotyledon</i> var. <i>howellii</i> Howell's lewisia	SOC/--/3/--	BUFrS, Chprl, CmWld, LCFrs	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex Watershed Lands

**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Limnanthes floccosa</i> ssp. <i>bellingiana</i> Belling's meadowfoam	SOC/--/1B/FSS, BLM	CmWld, Medws	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Macumber Reservoir Complex FERC Licensed Lands; North Battle Creek Complex Watershed Lands
<i>Linanthus nuttallii</i> ssp. <i>howellii</i> Mt. Tedoc linanthus	SOC/--/1B/BLM	LCFrS	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Lotus rubriflorus</i> red-flowered lotus	SOC/--/1B/BLM	CmWld, VFGrS	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands
<i>Lupinus antoninus</i> Anthony Peak lupine	SOC/--/1B/BLM	LCFrS, UCFrS	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Madia stebbinsii</i> Stebbins' madia	--/--/1B/BLM	Chprl, LCFrS	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Marsilea oligospora</i> Nelson's pepperwort	--/--/3/--	MshSw, VnPls	North Battle Creek Complex Generation Facilities, FERC Licensed Lands, and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads and FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	--/--/1B/BLM	CmWld, LCFrS, Medws, VFGrS, VnPls	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads and FERC Licensed Lands
<i>Neviusia cliftonii</i> Shasta snow-wreath	--/--/1B/FSS, BLM	LCFrS	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Orcuttia tenuis</i> slender orcutt grass	T/E/1B/--	VnPls	North Battle Creek Complex Generation Facilities, FERC Licensed Lands, and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads and FERC Licensed Lands

**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Paronychia ahartii</i> Ahart's paronychia	SOC/-1B/BLM	CmWld, VFGrS, VnPls	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads and FERC Licensed Lands
<i>Penstemon filiformis</i> thread-leaved beardtongue	SOC/-1B/FSS, BLM	CmWld, LCFrs	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex Watershed Lands
<i>Phacelia dalesiana</i> Scott Mountain phacelia	SOC/-14/BLM	LCFrs, Medws, SCFrs, UCFrs	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Picea engelmannii</i> Engelmann spruce	--/-12/--	UCFrs	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Pogogyne floribunda</i> profuse-flowered pogogyne	--/-1B/FSS, BLM	VnPls	North Battle Creek Complex Generation Facilities, FERC Licensed Lands, and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads and FERC Licensed Lands
<i>Potamogeton praelongus</i> white-stemmed pondweed	--/-12/--	MshSw	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Potamogeton zosteriformis</i> eel-grass pondweed	--/-12/--	MshSw	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Puccinellia howellii</i> Howell's alkali grass	SOC/-1B/FSS	Medws	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Watershed Lands

**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Rupertia hallii</i> Hall's rupertia	--/--/1B/FSS, BLM	CmWld	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands
<i>Sagittaria sanfordii</i> Sanford's arrowhead	SOC/--/1B/BLM	MshSw	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Sanicula tracyi</i> Tracy's sanicle	SOC/--/4/BLM	CmWld, LCFrs, UCFrS	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Scirpus heterochaetus</i> slender bulrush	--/--/2/--	MshSw, LCFrs	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Scirpus subterminalis</i> water bulrush	--/--/2/--	MshSw	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Scutellaria galericulata</i> marsh skullcap	--/--/2/--	LCFrS, Medws, MshSw	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; South Complex FERC Licensed Lands and Watershed Lands; Inskip Complex FERC Licensed Lands and Watershed Lands; Coleman Complex FERC Licensed Lands and Watershed Lands; North Battle Creek FERC Licensed Lands and Watershed Lands
<i>Sedum paradisum</i> Canyon Creek stonecrop	SOC/--/1B/BLM	BUFrS, Chprl, LCFrS, SCFrS	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Senecia hydrophiloides</i> sweet marsh ragwort	--/--/3/--	LCFrS, Medws	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Watershed Lands
<i>Silene campanulata</i> ssp. <i>campanulata</i> Red Mountain catchfly	C/E/4/BLM	Chprl, LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands

**Table 4.5-13 Bundle 4 – Battle Creek Special-Status Plant Species That Occur Or Potentially Could Occur On the Battle Creek Project (FERC 1121)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/Other	Habitats	Facilities
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> western campion	SOC/-/4/FSS	Chprl, LCFrs	North Battle Creek Complex and Volta 1 and 2 Complex Watershed Lands
<i>Silene suksdorfii</i> Cascade alpine campion	--/--/2/--	AlpBR	North Battle Creek Complex and Volta 2 Complex Watershed Lands
<i>Smilax jamesii</i> English Peak greenbriar	--/--/1B/FSS, BLM	BUFrS, LCFrs, MshSw	Volta 1 and 2 Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; South Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Inskip Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; Coleman Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands, and Watershed Lands; North Battle Creek Complex FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex FERC Licensed Lands
<i>Stellaria longifolia</i> long-leaved starwort	--/--/2/--	Medws	Macumber Reservoir Complex FERC Licensed Lands; Volta 1 and 2 Complex FERC Licensed Lands and Watershed Lands; North Battle Creek Complex Watershed Lands
<i>Trimorpha acris</i> var. <i>debilis</i> Northern daisy	--/--/2/--	AlpBR, Medws, SCFrS	Volta 1 and 2 Complex Generation Facilities, FERC Licensed Lands and Watershed Lands; Macumber Reservoir Complex Generation Facilities, Transmission Lines and Access Roads, and FERC and Pacific Gas and Electric Company Lines; North Battle Creek Complex Generation Facilities, Transmission Lines and Access Roads, FERC Licensed Lands and Watershed Lands
<i>Tuctoria greenei</i> Greene's tuctoria	E/R/1B/--	VnPls	North Battle Creek Complex Generation Facilities, FERC Licensed Lands, and Watershed Lands; Macumber Reservoir Complex Transmission Lines and Access Roads and FERC Licensed Lands

**NOTES:**

Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

**CNPS:** California Native Plant Society listing.

- 1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.
- 2 = Plants rare, threatened or endangered in California but more common elsewhere.
- 3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLM = Bureau of Land Management Special Status Plants

Habitats:

AlpBR = Alpine Boulder and Rock Field	LCFrS = Lower Montane Conifer Forest
BgFns = Bogs and Fens	Medws = Meadows and Seeps
BUFrS = Broadleaved Upland Forest	MshSw = Marshes and Swamps
CCFrS = Closed-Cone Conifer Forest	PJWld = Pinyon and Juniper Woodland
Chprl = Chaparral	Plyas = Playas
ChScr = Chenopod Scrub	RpFrS = Riparian Forest
Cmwld = Cismontane Woodland	RpScr = Riparian Scrub
CoDns = Coastal dunes	RpWld = Riparian Woodland
CoPrr = Coastal Prairie	SCFrS = Subalpine Conifer Forest
CoScr = Coastal Scrub	UCFrS = Upper Montane Conifer Forest
GBGrS = Great Basin grassland	VFGrs = Valley and Foothill Grassland
GBScr = Great Basin Scrub	VnPls = Vernal Pools

According to the California Wildlife Habitat Relationships (CWHR) program, the watersheds within the DeSabra regional bundle host several special-status species. Generally, riparian areas along the major rivers and their tributaries and lacustrine-related habitats would support greater species diversity and richness than monotypic forest, shrub or scrub vegetative communities. Migratory wildlife, especially birds, seeks riparian and lacustrine habitats that offer relatively rich food supplies and cover for transient use.

### **Local Regulations and Policies**

Table 4.5-14 presents local regulations and policies, which may be relevant to the operations of the projects in this regional bundle. Applicable local plans for the DeSabra Region are the Tehama County, Butte County, Lassen County, and Plumas County General Plans. Additionally, most of the DeSabra assets are located directly adjacent or are surrounded by Plumas and Lassen National Forest lands. Project facilities and watershed lands within Plumas National Forest lands include Bundle 5 (all facilities), Bundle 6 (all facilities), and Bundle 7 (all facilities). Project facilities and watershed lands within Lassen National Forest lands include Bundle 8 (Philbrook Reservoir). Table 4.5-14 identifies the goals, objectives, and policies contained within local planning documents that provide guidance for development in the region, specific to biological resources.

**Table 4.5-14 Local Policies Associated With the DeSabra Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle #
Butte County General Plan	Conservation Element	Con-9 Wildlife	Riparian areas should be controlled to protect this environment.	6,8
Butte County General Plan	Land Use Element (LUE)	LUE-6.3.a (Open Space)	Provide open space areas near designated urban areas	6,8
Butte County General Plan	Land Use Element (LUE)	LUE-6.5.a (Biological Habitat)	Regulate development in identified winter deer ranges	6,8
Butte County General Plan	Land Use Element (LUE)	LUE-6.5.b	Prevent development of marshes and significant riparian habitats	6,8
Butte County General Plan	Land Use Element (LUE)	LUE-6.5.c	Limit development which increases sediment loads in prime fishing waters	6,8
Butte County General Plan	Land Use Element (LUE)	LUE-6.5.d	Regulate development to facilitate survival of rare and endangered plants and animals	6,8
Butte County General Plan	Land Use Element (LUE)	LUE-6.6.a (Natural Areas)	Encourage the creation and expansion of natural and wilderness areas	6,8
Plumas County General Plan	Open Space Element (OSE)	OSE-page14 (Sensitive Water Areas)	Identify "sensitive water areas" including important fish and wildlife habitat	5,6,7
Plumas County General Plan	Open Space Element (OSE)	OSE-page15 (Wildlife)	Identify "important wildlife habitats". these areas provide essential habitat components (food, water, shelter) in high quality where a species is found	5,6,7
Plumas County General Plan	Open Space Element (OSE)	OSE-page15 (Wildlife)	Identify "important wildlife migration routes" and prohibit interference with these routes.	5,6,7
Plumas County General Plan	Open Space Element (OSE)	OSE-page15 (Wildlife)	Identify "significant wetlands" and prohibit alteration of natural characteristics of wetlands by any activity	5,6,7
Plumas County General Plan	Open Space Element (OSE)	OSE-page15 (Wildlife)	Restrict density and intensity of development in important wildlife habitat	5,6,7
Plumas County General Plan	Open Space Element (OSE)	OSE-page15 (Wildlife)	Require on-site analysis and mitigation into project design	5,6,7
Plumas County General Plan	Open Space Element (OSE)	OSE-page15 (Wildlife)	Require developments to retain or replace streamside vegetation along stream corridors	5,6,7
Plumas County General Plan	Open Space Element (OSE)	OSE-page15 (Wildlife)	Diversion of stream courses not permitted for the purpose of facilitating new development	5,6,7
Plumas County General Plan	Appendix V (Special Management Areas)	SMA-Wildlife	Maintain blacktail deer winter range	5,6,7
Plumas County General Plan	Appendix V (Special Management Areas)	SMA-Wildlife	Prohibit development and mining in roadless areas and significant wetlands	5,6,7
Plumas County General Plan	Appendix V (Special Management Areas)	SMA-Wildlife	Preserve remaining old growth stands	5,6,7



**Table 4.5-14 Local Policies Associated With the DeSabra Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle #
Plumas County General Plan	Appendix V (Special Management Areas)	SMA-Wildlife	Maintain or enhance wet meadow/willow habits for T&E species and waterfowl	5,6,7
Plumas County General Plan	Appendix V (Special Management Areas)	SMA-Wildlife		5,6,7
Tehama County General Plan	Wildlife Resources Element (WRE)	Objective WR-1	Preserve environmentally sensitive and significant lands and water valuable for their plant and wildlife habitat, natural appearance, and character	8
Tehama County General Plan	Wildlife Resources Element (WRE)	Objective WR-2	Afford, to the extent feasible, adequate protection to areas identified by CDFG and CNDDDB as critical riparian areas	8
Tehama County General Plan	Wildlife Resources Element (WRE)	Objective WR-3	Support and coordinate County plans with interjurisdictional programs for the proper management of riparian resources in the County	8
Tehama County General Plan	Wildlife Resources Element (WRE)	WR-a	Significant wildlife and wildlife habitat (as identified by CDFG, CNDDDB, CNPS, or CNACC) shall be protected	8
Tehama County General Plan	Wildlife Resources Element (WRE)	WR-b	Future land division applications shall be referred to CDFG for review	8
Tehama County General Plan	Wildlife Resources Element (WRE)	WR-c	Significant river and creekside corridors shall be designated on zoning maps	8
Tehama County General Plan	Wildlife Resources Element (WRE)	WR-d	Natural habitat resources shall be designated on General Plan Maps	8
Tehama County General Plan	Wildlife Resources Element (WRE)	WR-e	Water diversions/dams shall be designed to protect fish populations and ensure adequate flows for spawning	8
Tehama County General Plan	Forest Goals and Policies	Wildlife, Fish, and Sensitive Plants	Maintain habitat to support viable populations of all native and desirable non-native vertebrate species	8
Tehama County General Plan	Forest Goals and Policies	Wildlife, Fish, and Sensitive Plants	Improve and protect habitat for designated emphasis and harvest species	8
Tehama County General Plan	Forest Goals and Policies	Wildlife, Fish, and Sensitive Plants	Provide habitat leading to viable populations of endangered species	8
Tehama County General Plan	Forest Goals and Policies	Wildlife, Fish, and Sensitive Plants	Manage portions of Middle Fork Feather River, Nelson Creek, and Yellow Creek environments to protect Wild Trout species	8
Tehama County General Plan	Forest Goals and Policies	Wildlife, Fish, and Sensitive Plants	Provide diversity of plant and animal communities and tree species	8
Tehama County General Plan	Forest Goals and Policies	Riparian Areas	Protect riparian areas and water quality by limiting streamside disturbance	8

**Table 4.5-14 Local Policies Associated With the DeSabra Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle #
Tehama County General Plan	Forest Goals and Policies	Riparian Areas	Inventory streams, streamside areas, and other wetlands and restore on a priority basis	8
Tehama County General Plan	Forest Goals and Policies	Riparian Areas	Encourage natural protective processes	8
Tehama County General Plan	Forest Goals and Policies	Special Areas	Protect unique botanical resources for research purposes	8
Tehama County General Plan	Forest Goals and Policies	Special Areas	Maintain the Butterfly Valley Botanical Area and Feather Falls Scenic Area	8
Tehama County General Plan	Forest Goals and Policies	Special Areas	Protect other areas of unique geologic, scenic, or ecologic value	8
Tehama County General Plan	Forest Objectives	Wildlife Habitat Objectives	Provide suitable habitat for known bald eagle, peregrine falcon, prairie falcon, osprey, golden eagle, goshawk, and spotted owl territories	8
Tehama County General Plan	Forest Goals and Policies	Wildlife Habitat Objectives	Provide summer and winter range habitat for deer herds	8
Tehama County General Plan	Forest-wide Standards and Guidance	Wildlife, Fish and Sensitive Plants	Provide a diversity of vegetation types and habitats to support viable populations of fish, wildlife, and plant species	8
Tehama County General Plan	Forest-wide Standards and Guidance	Wildlife, Fish and Sensitive Plants	Maintain viability dependent on snag and dead and down material	8
Tehama County General Plan	Forest-wide Standards and Guidance	Wildlife, Fish and Sensitive Plants	Maintain viability of species dependent on meadow-conifer and hardwood ecotones	8
Tehama County General Plan	Forest-wide Standards and Guidance	Wildlife, Fish and Sensitive Plants	Promote species viability and recovery	8
Tehama County General Plan	Forest-wide Standards and Guidance	Wildlife, Fish and Sensitive Plants	Maintain viable populations of sensitive plant species	8
Tehama County General Plan	Forest-wide Standards and Guidance	Wildlife, Fish and Sensitive Plants	Protect and improve habitat for emphasis/harvest species	8
Tehama County General Plan	Forest-wide Standards and Guidance	Wildlife, Fish and Sensitive Plants	Improve and protect habitat for trout	8
Tehama County General Plan	Management Prescriptions	Rx-1 wilderness Prescription	Promote wildlife diversity	8
Tehama County General Plan	Management Prescriptions	Rx-9 Riparian Areas Prescriptions	Assure adequate protection for fish and wildlife resources	8

**Table 4.5-14 Local Policies Associated With the DeSabra Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle #
Tehama County General Plan	Management Prescriptions	Rx-9 Riparian Areas Prescriptions	Improve ranges and implement grazing systems to protect riparian areas	8
Tehama County General Plan	Management Prescriptions	Rx-9 Riparian Areas Prescriptions	Manage timber to protect riparian areas	8
Tehama County General Plan	Management Prescriptions	Rx-9 Riparian Areas Prescriptions	Facilitate hydroelectric development that provides protection of riparian resources	8
Tehama County General Plan	Management Prescriptions	Rx-11 Bald Eagle Habitat Prescription	Encourage species recovery	8
Tehama County General Plan	Management Prescriptions	Rx-12 Spotted Owl Habitat Prescription	Maintain spotted owl viability	8
Tehama County General Plan	Management Prescriptions	Rx-13 goshawk Habitat Prescription	Maintain goshawk viability	8
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Britton Management Area)	Sensitive Plants	Monitor and protect populations of slender Orcutt grass and Mathias' coyote thistle. Inventory for Boggs Lake hedge-hyssop, Bellinger's meadow foam, and additional slender Orcutt grass and Mathias' coyote thistle populations in vernal pools and other seasonally wet areas. Inventory for Salmon Mountains wakerobin in moist drainages.	5,6,7,8
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Britton Management Area)	Water and Riparian Areas	Rehabilitate Screwdriver and Rock Creeks. Apply special management practices to protect the sensitive nature of these watersheds. Do not approve mining operating plans without measures to protect the water quality of Lake Britton and the Pit River.	5,6,7,8

**Table 4.5-14 Local Policies Associated With the DeSabra Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle #
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Britton Management Area)	Wildlife	<p>Maintain year-long road closure in the North Shore Bald Eagle territory.</p> <p>Maintain seasonal road closure in the Warner Grade/Dry Lakes Bald Eagle Management Unit.</p> <p>Apply special silvicultural prescriptions to enhance bald eagle habitat.</p> <p>Emphasize hardwood retention; prohibit firewood use of standing hardwoods.</p> <p>When manipulating vegetation, emphasize wild turkey habitat where appropriate.</p> <p>Give mule deer priority by allocating forage in winter range areas. Continue regenerating decadent brushfields to improve winter range.</p> <p>Provide bank swallow nesting habitat during mining reclamation if habitat potential exists.</p> <p>Manage the Northern Spotted Owl Habitat Conservation Area in a manner not inconsistent with the Interagency Spotted owl Committee's recommendation.</p>	5,6,7,8
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Hat Creek Management Area)	Sensitive Plants	Monitor and protect populations of Boggs Lake hedge-hyssop and other rare vernal pool species, on Murken Bench. Inventory for additional populations in vernal pool habitat types.	5,6,7,8
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Hat Creek Management Area)	Water and Riparian Areas	<p>Maintain and improve riparian habitat along Hat Creek.</p> <p>To the extent of Forest Service authority, no development of hydroelectric power facilities would be permitted on Hat Creek.</p>	5,6,7,8
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Hat Creek Management Area)	Wildlife	<p>Protect lava tubes and caves as necessary to provide for bat roosting and maternity colonies.</p> <p>Protect and enhance foraging and nesting habitat for osprey.</p>	5,6,7,8
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Logan Management Area)	Sensitive Plants	Inventory for long-haired star tulip in meadow areas.	5,6,7,8
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Logan Management Area)	Wildlife	<p>Regenerate decadent brushfields to improve summer range for the Cow Creek deer herd.</p> <p>Where feasible, develop wetlands to increase waterfowl production and provide habitat for fall migrants.</p>	5,6,7,8

**Table 4.5-14 Local Policies Associated With the DeSabra Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle #
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Red Management Area)	Sensitive Plants	Inventory for talus collomia populations in alpine or subalpine areas. Monitor and protect populations of northern spleenwort and inventory for additional populations on rocky outcrops. Inventory for possible short-petalled campion in red fir stands.	5,6,7,8
Lassen National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Red Management Area)	Wildlife	Regenerate decadent brushfields to improve summer range for black-tailed deer. Enhance critical fawning habitat in the Manzanita Chutes area. Apply special silvicultural prescriptions to enhance potential nesting habitat for bald eagles at the North Battle Creek Reservoir. Monitor cliff sites in Blue Lake Canyon for peregrine falcon.	5,6,7,8
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction	Wildlife	Maintain habitat to support viable populations of all native and desired non-native vertebrate species Improve and protect habitat for designated emphasis and harvest species.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction	Sensitive Plants	Provide diversity of plant and animal communities and tree species by assuring the continuous and viable presence of all seral stages of all native plant communities occurring on the forest.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction	Riparian Areas	Protect riparian areas and water quality by limiting disturbance in streamside management zones. Encourage natural protective processes. Inventory streams, streamside areas, and other wetlands in deteriorating condition and restore on a priority basis.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Diversity	Within each vegetation association provide at least 5% in each seral stage on a forest-wide basis Designate and maintain 5% of each forested vegetation type for old growth management.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Snags	Provide and/or maintain an average of at least 1.5 snags/acre. The snags should be distributed within each timber compartment. give preference to soft snags, cull trees, and hard snags with evidence of wildlife uses.	5, 6, 7

**Table 4.5-14 Local Policies Associated With the DeSabra Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle #
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Dead and Down Wood	Maintain a Management Area average of 320 cubic feet/acre of slash and/or down logs.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Meadow Ecotones	Maintain viability of species dependent on meadow-conifer ecotones.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Oaks and Other Hardwoods	Maintain viability of wildlife species dependent on hardwoods. Give retention preference to black oaks 12" DBH of larger, and to groups rather than single trees.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Wildlife (Peregrine Falcon)	Provide two nest sites within suitable peregrine falcon habitat for species re-establishment.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Wildlife (Prairie Falcon, Osprey, Golden Eagle)	Maintain suitability of occupied sites	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Wildlife (Bald Eagle)	Maintain and enhance the suitability of currently-occupied nesting territories, and provide sufficient potential nesting, foraging and winter habitat to meet recovery goals of the Pacific States Bald Eagle Recovery Plan.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Wildlife (Spotted Owl)	Establish a network of 54 habitat areas containing suitable breeding, roosting, and foraging habitat.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Wildlife (Goshawk)	Provide a network of 60 nest stands containing suitable breeding habitat.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Wildlife (Sierra Red Fox, Wolverine, Marten, Greater Sandhill Crane, Great Gray Owl, and Willow Flycatcher)	In cooperation with the DFG, conduct surveys for State-listed species. At minimum, provide habitat sufficient to maintain existing populations.	5, 6, 7

**Table 4.5-14 Local Policies Associated With the DeSabra Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle #
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Sensitive and Special Interest Plants	Protect sensitive and special interest plant species as needed to maintain viability. Inventory and monitor sensitive plant populations on a project-by-project basis. Develop species management guides to identify population goals and compatible management activities/prescriptions that will maintain viability. Continue working on the Botanical Investigations for <i>Lupinus dalesiae</i> and <i>Caccinium coccinium</i> and assess the need for a guide for these species.	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Wildlife (Deer)	Implement cooperative FS/DFG deer herd plans. Provide additional black oak in addition to the "Oak and Other Hardwoods" standards where needed to achieve habitat objectives of deer-herd plans	5, 6, 7
Plumas National Forest Land and Resource Management Plan	Chapter 4 – Management Direction (Forest-wide Standards and Guidelines)	Riparian Areas	Favor riparian dependent resources and limit disturbance in all riparian areas including riparian and aquatic ecosystems, wetlands, streambanks, and floodplains over other resources, except cultural resources in cases of conflict.	5, 6, 7

**Bundle 5: Hamilton Branch*****Hamilton Branch (non-FERC)***

The Hamilton Branch project facilities are located in the High Sierra Nevada Floristic Province. The climate fluctuates with the seasons with warm dry summers and cold wet (snow) winters. Average annual precipitation is 39 inches. Elevations of the various facilities range from 4,400 to 4,900 feet.

***Vegetation Communities.*** Vegetation communities in the vicinity of the Hamilton Branch project are typical of the upper transition zone and conifer forest cover types of the west slope of the Sierra Nevada Mountain Range from the 2,500 to 5,000-foot elevation. Major habitats identified include sierran mixed conifer forest, montane riparian, ponderosa pine, white fir, juniper-pinyon pine, eastside pine, fresh emergent wetland, wet meadow, riverine, and lacustrine (Table 4.5-15). Dominant species include ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), incense cedar (*Calocedrus decurrens*), white fir (*Abies concolor*), lodgepole pine (*Pinus contorta*), sugar pine (*Pinus lambertiana*), sedge (*Carex* spp.), and willow (*Salix* spp.). In addition to forested habitats, Mountain Meadows Reservoir is bordered by approximately 5,000 acres of fresh emergent

**Table 4.5-15 Bundle 5-Hamilton Branch Vegetation Communities Associated With the Hamilton Branch Project (No FERC License)**

Project Features	Montane Communities								Water Elements				Foothill Communities		
	SMC	EPN	LPN	WFR	MRI	PPN	MCP	JPN	LAC	WTM	FEW	RIV	CRP	AGS	PGS
<b>Generation Facilities</b>															
<i>Powerhouses</i>															
Hamilton Branch	X		X	X	X	X	X					X	X	X	X
<i>Substations</i>															
Hamilton Branch						X								X	X
Chester															X
<i>Diversion Dams</i>															
Clear Creek					X										
Spring Creek					X										
Hamilton Branch				X	X										
Mountain Meadows		X			X			X							X
<b>Watershed Lands / Project Waterways</b>															
Mountain Meadows	X		X		X				X	X	X				

**NOTES:**

Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc.

Transmission Lines: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer.

FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC, contiguous to a generation facility or project waterway and are part of the proposed project.

Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations.

Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	



wetland and wet meadow. The wet meadow is dominated by Nebraska sedge (*Carex nebrascensis*), Sierra rush (*Juncus* spp.), spikerush (*Eleocharis* spp.), and tufted hairgrass (*Deschampsia cespitosa*).

**Wildlife Resources.** The area of the Hamilton Branch Powerhouse and associated facilities is within the summer range for the Eastern Tehama Deer Herd. Deer migrate through the area and across the Hamilton Branch canal. Canal crossings are a source of deer mortality, and studies were conducted from 1981-1982 to determine if the Hamilton Branch canal was a significant source of mortality for the Eastern Tehama Herd. The studies concluded that average annual loss of deer in the canal was not biologically significant, considering the size and population trend of the herd (PG&E Co., 1982). As part of a mitigation agreement, Pacific Gas and Electric Company agreed to enhance approximately 1,500 acres of both upland and wetland habitats in the Mountain Meadows Reservoir complex owned by Pacific Gas and Electric Company. Mountain Meadows Reservoir supports a migratory waterfowl population and several other key wildlife species [including bald eagle (*Haliaeetus leucocephalus*), greater sandhill crane (*Grus canadensis*), and willow flycatcher (*Empidonax traillii*)]. The term of this agreement is ten years, from 1996-2006. A grazing regime, restricted to late summer and early fall, will be allowed under a management plan to enhance waterfowl and wildlife habitat. No other agricultural uses of the wildlife habitat area, such as haying, are allowed.

Migratory waterfowl nest on Mountain Meadows Reservoir from April to mid-July (CDFG, 1966). Nesting islands for geese were constructed in the reservoir in 1970. Studies of waterfowl nesting on the islands in 1986 documented high predation losses, mostly by canids that gained access to the islands when reservoir elevations dropped (PG&E Co., Undated 2).

Three bald eagle nesting territories occur on Mountain Meadows Reservoir, and active nests were documented between 1975 and 1987. Nesting was particularly successful in the eastern Mountain Meadows nesting territory. In addition to the territories on Mountain Meadows Reservoir, four active bald eagle nesting territories are located around Lake Almanor. One of the territories was reported active in 1981. The greater sandhill crane is another special-status species known to nest at Mountain Meadows Reservoir.

Existing documentation, queries of the CNDDDB, CWHR, the Feather River Ranger District, and the USFS provided information on other rare, threatened, or endangered wildlife species that may occur in the vicinity of Bundle 5 (see Table 4.5-16). The CNDDDB query covered the area within the project boundary and a one-mile buffer around the project boundary.

**Botanical Resources.** The Hamilton Branch Project is within the Sierra Nevada Region and more specifically, the High Sierra Nevada subregion (elevations between 1,640 feet and 9,840 feet) and Northern High Sierra Nevada district. The High Sierra Nevada subregion is characterized by mostly conifer forest above 1,640 feet and has complex vegetation ranging from lower montane

ponderosa pine forests to upper montane red fir forests and treeless alpine communities at the highest elevations (Hickman, 1993). Bundle 5 lies just below the northern boundary of the Northern High Sierra Nevada district, which is along the Plumas-Lassen county line. The elevational change between the highest point and lowest point in the project is 400 feet. The majority of the facilities and lands are located around Hamilton Branch Powerhouse and Mountain Meadows.

No special-status plant species have been documented in Bundle 5. Table 4.5-17 is a list of special-status plant species that have the potential to occur.

Table 4.5-17 lists the special status plants that occur, or potentially could occur, in Bundle 5. This list was compiled using CNDDDB, Forest Service sensitive plant lists, related project documents, surveys of the project land that have been conducted during the FERC re-licensing process, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

#### **Bundle 6: Upper North Fork Feather River**

##### ***Upper North Fork Feather River (FERC 2105), Rock-Creek-Cresta (FERC 1962), Poe (FERC 2107)***

The Upper North Fork Feather River Project is located in the High Sierra Nevada Floristic Province. The weather fluctuates with the seasons with warm dry summers and cold wet (snow) winters. Average annual precipitation is 39 inches. Elevations of the various facilities range from 2,900 to 4,200 feet.

The Rock Creek-Cresta area is located in the northern Sierra Nevada Foothills Floristic Province. The climate fluctuates with the seasons with warm dry summers and cold wet (rain) winters. Average annual precipitation is 54 inches. Elevations of the various facilities range from 900 to 2,200 feet.

The Poe Project is located in the northern Sierra Nevada Foothills Floristic Province. The climate fluctuates with the seasons with warm dry summers and cold wet (rain) winters. Average annual precipitation is 32 inches. Elevations of the various facilities range from 900 to 1,400 feet.

***Vegetation Communities.*** Vegetation communities in the vicinity of the Upper North Fork Feather River project and Rock-Creek-Cresta project are typical of the upper transition zone and conifer forest cover types of the western slope of the Sierra Nevada Mountain Range from the 2,500- to 5,000-foot elevation. Major habitats identified include annual grassland, perennial grassland, sierran mixed conifer forest, montane riparian, fresh emergent wetland, blue oak woodland, blue oak pine, sierran mixed conifer, lodgepole pine, ponderosa pine, white fir, red fir, montane-hardwood conifer, riverine, lacustrine, and wet meadow (Table 4.5-18). The dominant species

**Table 4.5-16 Bundle 5 - Hamilton Branch Threatened, Endangered, Or Sensitive Wildlife Species That Occur or Potentially Could Occur in the Hamilton Branch Project (No FERC License)**

Common Name and Scientific Name	Status: USFW/State/Other	Habitat	Facilities
<b>Invertebrates</b>			
California floater (freshwater mussel) <i>Anodonta californiensis</i>	--/--/FSS	LAC, RIV	Mountain Meadows Reservoir
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP	LAC, FEW, RIV	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Cascades frog <i>Rana cascadae</i>	SOC/SSC, CFP/FSS	LAC, RIV, WTM, FEW, SMC, MRI	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Foothill yellow-legged frog <i>Rana boylei</i>	--/SSC, CFP/FSS, BLM	WTM, SMC, RIV, MRI	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Mountain yellow-legged frog <i>Rana muscosa</i>	--/SSC, CFP/FSS	LAC, FEW, RIV	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Northern leopard frog <i>Rana pipiens</i>	--/SSC/ FSS	FEW, LAC, MRI, WTM, SMC	Mountain Meadows Reservoir
Western spadefoot toad <i>Scaphiopus hammondi</i>	SOC/SSC, CFP/BLM	FEW, LAC, RIV	Mountain Meadows Reservoir Hamilton Branch Powerhouse
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/ SSC, CFP/ FSS, BLM	FEW, LAC, RIV	Mountain Meadows Reservoir Hamilton Branch Powerhouse
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP/--	RIV, LAC	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Bank swallow <i>Riparia riparia</i>	--/ST	FEW, LAC, MRI, RIV, WTM	Mountain Meadows Reservoir Hamilton Branch Powerhouse
California spotted owl <i>Strix occidentalis occidentalis</i>	--/SSC/ FSS, BLM	SMC	Mountain Meadows Reservoir
Great gray owl <i>Strix nebulosa</i>	--/SE, SSC/FSS	WTM, SMC	Mountain Meadows Reservoir
Greater sandhill crane <i>Grus Canadensis tabida</i>	ST, CFP/--/	WTM, FEW	Mountain Meadows Reservoir
Northern goshawk <i>Accipiter gentilis</i>	SOC/ SSC/ FSS, CFP	SMC, RIV	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Osprey <i>Pandion haleaetus</i>	--/SSC/--	LAC, RIV	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Peregrine falcon <i>Falco peregrinus anatum</i>	SE, CFP	SMC, RIV, FEW, LAC, WTM, MRI	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Swainson's hawk <i>Buteo swainsoni</i>	--/ST	WTM	Mountain Meadows Reservoir

**Table 4.5-16 Bundle 5 - Hamilton Branch Threatened, Endangered, Or Sensitive Wildlife Species That Occur or Potentially Could Occur in the Hamilton Branch Project (No FERC License)**

Common Name and Scientific Name	Status: USFW/State/Other	Habitat	Facilities
Willow flycatcher <i>Empidonax traillii</i>	SE/FSS	MRI, WTM	Mountain Meadows Reservoir
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP/ FSS	SMC, WTM	Mountain Meadows Reservoir
Fringed myotis <i>Myotis thysanodes</i>	--/--/FSS, BLM	LAC, MRI, SMC	Mountain Meadows Reservoir
Long-eared myotis <i>Myotis evotis</i>	--/--/FSS, BLM	FEW, LAC, WTM, MRI, SMC, RIV	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Long-legged myotis <i>Myotis volans</i>	--/--/FSS, BLM	SMC, WTM, LAC, RIV	Mountain Meadows Reservoir Hamilton Branch Powerhouse
Pacific fisher <i>Martes pennant pacifica</i>	SOC/SSC/ FSS, BLM	SMC, MRI	Mountain Meadows Reservoir
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLM	SMC, MRI,	Mountain Meadows Reservoir
Pine marten <i>Martes americana</i>	--/SOC/FSS	SMC, MRI	Mountain Meadows Reservoir
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	SOC/ST/FSS	SMC, WTM, MRI	Mountain Meadows Reservoir
Sierra Nevada snowshoe hare <i>Lepus americanus tahoensis</i>	SOC/SSC/FSS	SMC, MRI	Mountain Meadows Reservoir
Townsend's big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/FSS, BLM	SMC, MRI	Mountain Meadows Reservoir
Western red bat <i>Lasiurus blossevillii</i>	--/--/FSS	SMC, MRI	Mountain Meadows Reservoir
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/FSS, BLM	FEW, LAC, RIV, SMC, WTM, MRI	Mountain Meadows Reservoir Hamilton Branch Powerhouse

**Notes:**

Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

**Special-Status Species:**

**Federal:**

FE Federally listed as endangered

FT Federally listed as threatened

SOC Federal species of concern

FC Federal Candidate species

**State:**

SE State listed as endangered

ST State listed as threatened

SSC State species of special concern

CFP California Fully Protected species

**Other:**

FSS Forest Service sensitive species

BLM Bureau of Land Management sensitive species  
 CDF California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Table 4.5-17 Bundle 5 Special-Status Plant Species That Occur Or Potentially Could Occur Within the Hamilton Project**

Scientific Name and Common Name	Status: USFWS/ State/ CNPS/ Other	Habitat	Facilities
<i>Arabis constancei</i> Constance's rock cress	--/--/1B/FSS	Chprl, LCFrs / serpentinite	Hamilton Branch Powerhouse and Substation, Mountain Meadows Diversion Dam
<i>Arnica fulgens</i> hillside arnica	--/--/2/--	GBScr, LCFrs, Medws / mesic	Hamilton Branch Powerhouse and Substation, Mountain Meadows Diversion Dam, Mountain Meadows Waterway
<i>Arnica sororia</i> twin arnica	--/--/2/--	GBScr, PJWld	Hamilton Branch Powerhouse
<i>Astragalus argophyllus</i> var. <i>argophyllus</i> silver-leaved milk-vetch	--/--/2/BLM	Medws, Plyas, / alkaline	Mountain Meadows
<i>Astragalus lentiformis</i> lens-pod milk-vetch	SOC/--/1B/BLM	GBScr, LCFrs / volcanic	Hamilton Branch Powerhouse and Substation, Mountain Meadows Diversion Dam
<i>Astragalus pulsiferae</i> var. <i>pulsiferae</i> Pulsifer's milk-vetch	--/--/1B/BLM	GBScr, LCFrs, PJWld / volcanic, sandy or rocky	Hamilton Branch Powerhouse and Substation, Mountain Meadows Diversion Dam
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> Suksdorf's milk-vetch	SOC/--/1B/FSS, BLM	GBScr, LCFrs/ volcanic, often rocky	Hamilton Branch Powerhouse and Substation, Mountain Meadows Diversion Dam
<i>Carex limosa</i> shore sedge	--/--/2/--	BgFns, LCFrs, UCFrs	Hamilton Branch Powerhouse, Substation, and Diversion Dam, Mountain Meadows Diversion Dam and Waterway
<i>Carex petasata</i> Liddon's sedge	--/--/2/--	LCFrs, Medws	Hamilton Branch Powerhouse and Substation, Mountain Meadows Diversion Dam and Waterway
<i>Carex sheldonii</i> Sheldon's sedge	--/--/2/--	LCFrs (mesic), RpScr	Hamilton Branch Powerhouse, Substation, and Diversion Dam; Mountain Meadows Diversion Dam and Waterway; Clear Creek Diversion Dam; Spring Creek Diversion Dam
<i>Corallorhiza trifida</i> northern coralroot	--/--/2/--	LCFrs, Medws( edges)/ mesic	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam and Waterway
<i>Drosera anglica</i> English sundew	--/--/2/--	BGFns, Medws	Mountain Meadows Waterway

**Table 4.5-17 Bundle 5 Special-Status Plant Species That Occur Or Potentially Could Occur Within the Hamilton Project**

Scientific Name and Common Name	Status: USFWS/ State/ CNPS/ Other	Habitat	Facilities
<i>Eriogonum prociduum</i> prostrate buckwheat	SOC/--/1B/	GBScr, PJWld, UCFrS/ volcanic	Hamilton Branch Powerhouse and Diversion Dam, Mountain Meadows Waterway
<i>Geum aleppicum</i> Aleppo avens	--/--/2/--	GBScr, LCFrS, Medws	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam and Waterway
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	--/E/1B/--	MshSw (lake margins), VnPls / clay	Mountain Meadows Waterway
<i>Ivesia aperta</i> var. <i>aperta</i> Sierra Valley ivesia	SOC/--/1B/	GBScr, LCFrS, Medws (xeric), PJWld / usually volcanic	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam and Waterway
<i>Ivesia sericoleuca</i> Plumas ivesia	SOC/--/1B/FSS, BLM	GBScr, LCFrS, Medws, VnPls/vernally mesic, usually volcanic	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam and Waterway
<i>Ivesia unguiculata</i> Yosemite ivesia	--/--/1B/--	Medws, SCFrS, UCFrS	Hamilton Branch Powerhouse and Diversion Dam; Mountain Meadows Waterway
<i>Ivesia webberi</i> Webber's ivesia	SOC/--/1B/BLM	GBScr (volcanic ash), LCFrS	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam and Waterway
<i>Lupinus dalesiae</i> Quincy lupine	--/--/1B/FSS, BLM	LCFrS, UCFrS/ often in disturbed areas	Hamilton Branch Powerhouse, Substation and Diversion Dam; Mountain Meadows Diversion Dam and Waterway
<i>Marsilea oligospora</i> Nelson's pepperwort	--/--/3/--	MshSw, VnPls/muddy	Mountain Meadows Waterway
<i>Mimulus pigmaeus</i> Egg Lake monkeyflower	SOC/--/4B/BLM	GBScr(clay), LCFrS, Medws/ vernally mesic	Mountain Meadows Waterway, Hamilton Branch Powerhouse
<i>Monardella folletti</i> Follett's monardella	--/--/1B/FSS	LCFrS (rocky, serpentinite)	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam
<i>Orcuttia tenuis</i> slender orcutt grass	T/E/1B/--	VnPls	Mountain Meadows Waterway
<i>Penstemon personatus</i> closed-throated beardtongue	SOC/--/1B/FSS, BLM	LCFrS, UCFrS/ metavolcanic	Hamilton Branch Powerhouse, Substation and Diversion Dam; Mountain Meadows Diversion Dam and Waterway
<i>Polygonum polygaloides</i> ssp. <i>esotericum</i> Modoc County knotweed	--/--/1B/BLM	GBScr (mesic), VnPls	Hamilton Branch Powerhouse, Mountain Meadows Waterway
<i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i> Nuttall's pondweed	--/--/2/--	MshSw (assorted shallow freshwater)	Mountain Meadows Waterway
<i>Potamogeton filiformis</i> slender-leaved pondweed	--/--/2/--	MshSw (assorted shallow freshwater)	Mountain Meadows Waterway
<i>Potamogeton zosteriformis</i> eel-grass pondweed	--/--/2/--	MshSw (assorted freshwater)	Mountain Meadows Waterway
<i>Potentilla basaltica</i> Black Rock potentilla	SOC/--/1B/BLM	Medws (alkaline, sandy, volcanic)	Mountain Meadows Waterway

**Table 4.5-17 Bundle 5 Special-Status Plant Species That Occur Or Potentially Could Occur Within the Hamilton Project**

Scientific Name and Common Name	Status: USFWS/ State/ CNPS/ Other	Habitat	Facilities
<i>Pyrrocoma lucida</i> sticky pyrrocoma	--/1B/--	LCFrS (alkaline clay)	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam
<i>Rorippa columbiae</i> Columbia yellow cress	SOC/--/1B/FSS, BLM	Medws, PJWld, Plyas	Mountain Meadows Waterway
<i>Salix bebbiana</i> gray willow	--/2/--	MshSw (streambanks and lake margins) RpScr	Mountain Meadows Diversion Dam and Waterway, Hamilton Branch Powerhouse and Diversion Dam; Clear Creek Diversion Dam; Spring Creek Diversion Dam
<i>Scheuchzeria palustris</i> var. <i>americana</i> American scheuchzeria	--/2/FSS	MshSw (lake margins)	Mountain Meadows Waterway
<i>Scirpus subterminalis</i> water bulrush	--/2/--	MshSw (montane lake margins)	Mountain Meadows Waterway
<i>Scutellaria galericulata</i> marsh skullcap	--/2/--	LCFrS, Medws (mesic), MshSw	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam and Waterway
<i>Sedum albomarginatum</i> Feather River stonecrop	--/1B/--	Chprl, LCFrS / serpentine	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam
<i>Senecio eurycephalus</i> var. <i>lewisroesei</i> cut-leaved ragwort	--/1B/FSS, BLM	Chprl, CmWld, LCFrS / serpentine	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> western campion	SOC/--/3/FSS	Chprl, LCFrS	Hamilton Branch Powerhouse and Substation; Mountain Meadows Diversion Dam
<i>Solidago gigantea</i> smooth goldenrod	--/2/--	Medws (mesic), MshSw (streambanks and lake margins)	Mountain Meadows Waterway
<i>Vaccinium coccineum</i> Siskiyou Mountains huckleberry	--/3/FSS	LCFrS, UCFrS/ often serpentine	Mountain Meadows Diversion Dam and Waterway; Hamilton Branch Powerhouse, Substation and Diversion Dam

**NOTES:**

Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.**USFWS:** United States Fish and Wildlife Service status.**E** = Federally listed as endangered.**T** = Federally listed as threatened.**PE** = Proposed endangered.**PT** = Proposed threatened.

**C** = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

**SOC** = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californian status.**E** = Endangered; Species whose continued existence in California is jeopardized.**T** = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.**R** = Rare**CNPS:** California Native Plant Society listing.

- 1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.
- 2 = Plants rare, threatened or endangered in California but more common elsewhere.
- 3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLM = Bureau of Land Management Special Status Plants

Habitats:

AlpBR = Alpine Boulder and Rock Field	LCFr = Lower Montane Conifer Forest
BgFns = Bogs and Fens	Medws = Meadows and Seeps
BUFr = Broadleaved Upland Forest	MshSw = Marshes and Swamps
CCFr = Closed-Cone Conifer Forest	PJWld = Pinyon and Juniper Woodland
Chprl = Chaparral	Plyas = Playas
ChScr = Chenopod Scrub	RpFr = Riparian Forest
Cmwld = Cismontane Woodland	RpScr = Riparian Scrub
CoDns = Coastal dunes	RpWld = Riparian Woodland
CoPrr = Coastal Prairie	SCFr = Subalpine Conifer Forest
CoScr = Coastal Scrub	UCFr = Upper Montane Conifer Forest
GBGr = Great Basin grassland	VFGrs = Valley and Foothill Grassland
GBScr = Great Basin Scrub	VnPls = Vernal Pools

include ponderosa pine, Douglas fir, incense cedar, white fir, sugar pine, California black oak (*Quercus kelloggii*), dogwood (*Cornus spp.*), ceanothus (*Ceanothus spp.*), and willow.

Major habitats identified in the Poe project include montane-hardwood conifer, montane chaparral, annual grassland, montane riparian, fresh emergent wetland, riverine, and lacustrine. The dominant species include: California black oak, ponderosa pine, Douglas fir, incense cedar, madrone (*Arbutus menziesii*), dogwood, brome (*Bromus spp.*), and willow (Table 4.5-18).

**Wildlife Resources.** The Upper North Fork Feather River Project falls within the range of the Bucks Mountain and Eastern Tehama deer herds. This is the largest migratory herd in California and occupies a range considered to be the most extensive in California (USFS, 1981). Project operation and maintenance have resulted in agreements with the resource agencies and FERC license articles to protect and enhance wildlife species and habitat. Specifically, FERC License Article 104 requires annual consultation with the USFS regarding measures to ensure protection and use of natural resources (FPC, 1955), and FERC License Article 28 requires construction and maintenance of protective devices in the interest of wildlife conservation (FERC, 1996b). In addition, when Butt Valley Reservoir was originally filled, the reservoir was not cleared of vegetation to the high water mark as normally required by FERC. Over the years CDFG and Non-Governmental Organizations (NGOs) have requested snag retention to provide for nesting osprey (*Pandion haliaetus*), double-crested cormorant (*Phalacrocorax auritus*) and bald eagle, and to provide shelter and food areas for fish. These changes were approved by FERC, and FERC License Article 10 was amended requiring Pacific Gas and Electric Company to leave snags around Butt Valley Reservoir for wildlife and fish habitat (FPC, 1974b).



**Table 4.5-18 Bundle 6-Feather River Vegetation Communities Associated With the North Fork Feather River Project (FERC 2105); Rock Creek - Cresta Project (FERC 1962); and the Poe Project (FERC 2107)**

Project Features	Foothill Communities				Transition Communities	Montane Communities										Water Elements			
	AGS	BOW	BOP	PGS	MHC	MCP	LPN	PPN	WFR	MRI	MHW	SMC	RFR	FEW	RIV	WTM	LAC	VRI	
Generation Facilities																			
Powerhouses																			
Butt Valley				X	X		X		X			X	X						
Caribou 1	X			X			X	X	X				X		X		X		
Caribou 2	X			X			X	X	X				X		X		X		
Oak Flat								X							X				
Belden															X				
Poe						X				X	X				X				
Rock Creek – Cresta		X						X			X				X	X			
Substation																			
Big Meadows									X			X							
Reservoirs																			
Lake Almanor				X								X		X			X		
Butt Valley																	X		
Beldon Forebay																	X		
Rock Creek Forebay																	X		
Tunnels																			
Butt Valley																			
Rock Creek																			
Penstock																			
Butt Valley																			
Diversion Dams																			
Butt Valley																			
Rock Creek																			
Big Bend																			
Watershed Lands																			
Powerhouse																			
Rock Creek –	X				X	X		X		X		X		X	X			X	

**Table 4.5-18 Bundle 6-Feather River Vegetation Communities Associated With the North Fork Feather River Project (FERC 2105); Rock Creek - Cresta Project (FERC 1962); and the Poe Project (FERC 2107)**

Project Features	Foothill Communities				Transition Com- munities	Montane Communities										Water Elements			
	AGS	BOW	BOP	PGS	MHC	MCP	LPN	PPN	WFR	MRI	MHW	SMC	RFR	FEW	RIV	WTM	LAC	VRI	
Cresta																			
Poe	X		X		X	X				X		X			X				
Reservoirs																			
Rock Creek	X							X				X		X		X	X	X	
Cresta	X					X						X		X		X	X		
Poe	X					X						X					X		
FERC Licensed Lands																			
Powerhouses																			
Cresta		X			X			X		X	X							X	
Beldon		X			X					X									
Poe					X					X	X								
Reservoir																			
Butt Valley												X							
Tunnel																			
Butt Valley												X							

**NOTES:**

Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc.

Transmission Lines: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer.

FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC.

Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations.

Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

DFR = Douglas-Fir

FEW = Fresh Emergent Wetland

JPN = Jeffrey Pine

LAC = Lacustrine

LPN = Lodgepole Pine

LSG = Low Sagebrush

MCP = Montane Chaparral

MCH = Mixed Chaparral

MHC = Montane Hardwood-Conifer

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

SCN = Subalpine Conifer

SGB = Sagebrush

SMC = Sierra Mixed Conifer

VOW = Valley Oak Woodland

VRI = Valley Foothill Riparian

WFR = White Fir

WTM = Wet Meadow

According to the WHR database, montane riparian habitat in the vicinity of the Rock Creek-Cresta project is capable of providing habitat value for up to 179 vertebrate species, including eight amphibians, 105 birds, 55 mammals, and 11 reptiles. Species for which the overall value of the montane riparian habitat is considered high include the rough-skinned newt (*Taricha granulosa*), Cooper's hawk (*Accipiter cooperii*), downy woodpecker (*Picoides pubescens*), western flycatcher (*Empidonax difficilis*), water shrew (*Sorex palustris*), big brown bat (*Eptesicus fuscus*), western harvest mouse (*Reithrodontomys megalotis*), beaver (*Aplodontia ruta*), muskrat (*Ondatra zibethicus*), coyote (*Canis latrans*), mink (*Mustela vison*), mountain lion (*Felis concolor*), mule deer (*Odocoileus hemionus*), and others. The montane hardwood-conifer habitat provides habitat for up to 211 vertebrate species, including 26 amphibians, 113 birds, 53 mammals, and 19 reptiles (Planning Associates, 1993). The Rock-Creek-Cresta Project falls within the range of the Bucks Mountain and the Eastern Tehama deer herds. A Fish and Wildlife Agreement between Pacific Gas and Electric Company and CDFG stipulates several wildlife habitat enhancements within the Rock Creek-Cresta project. Improvements to Pacific Gas and Electric Company's Humbug Valley land, currently leased for cattle grazing, include cattle guards, stream improvements, riparian plantings, and limits on grazing (PG&E Co., 1991). Pacific Gas and Electric Company must submit a general resource management plan within three years of relicensing (the new license for Rock Creek-Cresta is currently pending) that addresses improvements to aquatic and riparian habitat, minimization of consumptive water use on grazing lands, minimization of erosion and sediment transport, evaluation of continuing grazing leases, and recommendations for best use of the existing resources (PG&E Co., 1991).

Potentially occurring State and Federally-listed species included osprey, peregrine falcon (*Falco peregrinus*), bald eagle, California red-legged frog (*Rana aurora draytonii*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Numerous species of concern were also indicated in the vicinity of the project (FERC, 1997). Double-crested cormorant rookeries have been established along the shoreline of Butt Valley Reservoir. Numerous osprey nest sites have been documented at Mountain Meadows Reservoir, Lake Almanor, and Butt Valley Reservoir. Foothill yellow-legged frog (*Rana boylei*) was observed in a drainage adjacent to the North Fork of the Upper Feather River in 1998. In addition, in 1984, a threatened and endangered species survey conducted on project land documented a golden eagle (*Aquila chrysaetos*) nest at Rock Creek Reservoir (PG&E Co., 1984).

A query of the CNDDDB for the Poe project, covering the area within the project boundary and a one-mile buffer around it, indicated the presence of the State endangered and Federal threatened bald eagle and State species of special concern ringtail (*Bassariscus astutus*). The eagle nest territory is located near the Poe Powerhouse and the project transmission line right-of-way. Pacific Gas and Electric Company includes the eagle nest in its biological survey work, although it is not required under the FERC license. The Poe Project falls within the range of the Bucks Mountain and Eastern Tehama deer herds.

#### 4.5 Terrestrial Biology

Existing documentation, a query of the California Natural Diversity Database (CNDDDB), a query of the California Native Plant Society Database (CNPS), and the Feather River Ranger District of the USFS, provided information on rare, threatened, and endangered (RTE) plant species that may occur in the vicinity of the project. The CNDDDB query covered the area within the project boundary and a one-mile buffer around it (Table 4.5-19).

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Invertebrates</b>			
Sacramento Valley tiger beetle <i>Cicindela hirticollis abrupta</i>	SOC/-/-	MRI	Poe Powerhouse Poe Watershed Lands Beldon Watershed Lands
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/-/	MRI	Poe Powerhouse Poe Watershed Lands Beldon Watershed Lands
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/FSS	FEW, WTM, MRI, LAC	Beldon Watershed Lands Beldon Forebay Reservoir Butt Valley Reservoir Caribou 1 and 2 Powerhouses Cresta Reservoir Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Reservoir Watershed Lands
Cascades frog <i>Rana cascadae</i>	SOC/SSC, CFP/FSS	SMC, FEW, LAC, MRI, WTM	Beldon Watershed Lands Beldon Forebay Reservoir Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Reservoir Watershed Lands Poe Powerhouse Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Reservoir Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Foothill yellow-legged frog <i>Rana boylei</i>	/SSC, CFP/FSS, BLM	SMC, RIV, MRI, WTM, AGS	Beldon Watershed Lands Beldon Powerhouse Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Caribou 1 and 2 Powerhouse Cresta Powerhouse Cresta Powerhouse Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Powerhouse Watershed Lands Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands
Mountain yellow-legged frog <i>Rana muscosa</i>	/SSC, CFP/FSS	SMC, FEW, LAC, MRI, RIV, WTM	Beldon Watershed Lands Beldon Forebay Reservoir Beldon Powerhouse Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Poe Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Northern leopard frog <i>Rana pipiens</i>	--/SSC/FSS	SMC, FEW, LAC, AGS, RIV, MRI, WTM	Beldon Watershed Lands Beldon Forebay Reservoir Beldon Powerhouse Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Poe Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands
Western spadefoot <i>Scaphiopus hammondi</i>	SOC/SSC, CFP/BLM	FEW, LAC, RIV, AGS	Beldon Forebay Reservoir Beldon Powerhouse Butt Valley Reservoir Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/FSS	FEW, LAC, RIV, AGS, MCP	Beldon Forebay Reservoir Beldon Powerhouse Butt Valley Reservoir Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands
<b>Birds</b>			
American peregrine falcon <i>Falco peregrinus anatum</i>	/SE, CFP/	SMC, FEW, LAC, RIV, MRI, WTM, AGS, MCP	Beldon Watershed Lands Beldon Forebay Reservoir Beldon Powerhouse Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP/	BOP, FEW, JUN, RIV, LAC, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG	Beldon Forebay Reservoir Beldon Powerhouse Watershed Lands Beldon Watershed Lands Butt Valley Powerhouse Butt Valley Reservoir Cresta Reservoir Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands
Bank swallow <i>Riparia riparia</i>	-/ST/-	AGS, FEW, LAC, RIV, LSG, MRI, VRI, MCH, WTM	Beldon Forebay Reservoir Beldon Powerhouse Beldon Watershed Lands Butt Valley Reservoir Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLM	MRI, SMC, MHC	Beldon Powerhouse Watershed Lands Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Cresta Powerhouse Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands Rock Creek Powerhouse Watershed Lands



**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Double-crested cormorant <i>Phalacrocorax auritus</i>	-/SSC/-	FEW, LAC, RIV, VRI	Beldon Forebay Reservoir Beldon Powerhouse Butt Valley Reservoir Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands
Golden eagle <i>Aquila chrysaetos</i>	-/SSC, CFP/BLM	SMC, FEW, MRI, WTM, AGS, MCP	Poe Powerhouse Lake Almanor Reservoir Beldon Watershed Lands Butt Valley Powerhouse Big Meadows Substation Poe Powerhouse Watershed Lands Lake Almanor Reservoir Butt Valley Watershed Lands
Greater sandhill crane <i>Grus canadensis tabida</i>	-/ST/FSS	AGS, FEW, WTM, LAC	Beldon Forebay Reservoir Butt Valley Reservoir Caribou 1 and 2 Powerhouses Cresta Reservoir Watershed Lands Lake Almanor Reservoir Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Reservoir Watershed Lands
Little willow flycatcher <i>Empidonax traillii brewsteri</i>	SOC/-/FSS	MRI, WTM	Poe Powerhouse Poe Watershed Lands Beldon Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC/FSS	MRI, SMC, MCP, MHC	Beldon Watershed Lands Beldon Powerhouse Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Cresta Powerhouse Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands Rock Creek Powerhouse Watershed Lands
Osprey <i>Pandion haliaetus</i>	--/SSC/--	BOP, AGS, FEW, JUN, WTM, MCH, MCP, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Beldon Forebay Reservoir Beldon Powerhouse Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	AGS, FEW, WTM, MCP, SMC, MRI	Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands
White-tailed kite <i>Elanus caeruleus</i>	--/CFP/--	FEW, WTM, AGS	Lake Almanor Reservoir Poe Powerhouse Watershed Lands
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	MRI, WTM	Poe Powerhouse Poe Watershed Lands Beldon Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP/FSS	MHC, SMC, WTM, MRI, MCP	Poe Powerhouse Beldon Watershed Lands Butt Valley Powerhouse Big Meadows Substation Poe Powerhouse Watershed Lands Lake Almanor Reservoir Butt Valley Watershed Lands
Fringed myotis <i>Myotis thysanodes</i>	--/FSS, BLMS	SMC, MRI, LAC, RIV, AGS, MCP, MHC	Beldon Forebay Reservoir Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Reservoir Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Poe Watershed Lands Rock Creek Forebay Reservoir Rock Creek Reservoir Watershed Lands
Greater western mastiff bat <i>Eumops perotis californicus</i>	--/SSC/BLM	FEW, MRI, WTM, AGS, MCP, MHC	Poe Powerhouse Beldon Watershed Lands Lake Almanor Reservoir Poe Powerhouse Watershed Lands
Long-eared myotis <i>Myotis evotis</i>	SOC/--/BLM	SMC, FEW, LAC, RIV, MRI, WTM, MCP, MHC	Beldon Forebay Reservoir Beldon Powerhouse Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Long-legged myotis <i>Myotis volans</i>	SOC/-/-	SMC, LAC, MRI, RIV, WTM, AGS, MCP, MCH	Beldon Forebay Reservoir Beldon Powerhouse Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/FSS, BLM	MHC, SMC, MRI, PPN	Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands
Pale Townsend's big-eared bat <i>Corynorhinus townsendii pallascens</i>	SOC/SSC/FSS, BLM	SMC, MRI, RIV, MHC, MCP, AGS	Beldon Powerhouse Beldon Powerhouse Watershed Lands Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Caribou 1 and 2 Powerhouse Cresta Powerhouse Cresta Powerhouse Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Pallid bat <i>Antrozous pallidus</i>	-/SSC/FSS, BLM	BOP, AGS, JUN, VRI, WTM, MRI, MCP, MCH, SMC, PPN, LSG, RIV, MHC	Beldon Powerhouse Beldon Powerhouse Watershed Lands Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Caribou 1 and 2 Powerhouse Cresta Powerhouse Cresta Powerhouse Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Watershed Lands Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands
Pine marten <i>Martes americana</i>	-/SSC/FSS	MHC, PPN, MRI, WTM, SMC	Poe Powerhouse Beldon Watershed Lands Butt Valley Powerhouse Big Meadows Substation Poe Powerhouse Watershed Lands Lake Almanor Reservoir Butt Valley Watershed Lands
Ringtail <i>Bassariscus astutus</i>	-/CFP/--	BOP, AGS, JUN, VRI, WTM, MRI, MCP, MRI, MCH, SMC, PPN, LSG, MHC	Beldon Powerhouse Watershed Lands Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Cresta Powerhouse Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands Rock Creek Powerhouse Watershed Lands
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	SOC/ST/FSS, BLM	MHC, PPN, MCP, MRI, WTM, SMC	Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands
Sierra Nevada snowshoe hare <i>Lepus americanus tahoensis</i>	SOC/SSC/--	JUN, SMC, LSG, WTM, MRI	Poe Powerhouse Poe Watershed Lands Beldon Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Small-footed myotis <i>Myotis ciliolabrum</i>	SOC/-/BLM	SMC, FEW, LAC, MRI, RIV, WTM, AGS, MHC, MCP	Beldon Forebay Reservoir Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watershed Lands Caribou 1 and 2 Powerhouses Cresta Reservoir Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Reservoir Watershed Lands
Spotted bat <i>Euderma maculatum</i>	SOC/SSC/BLM	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Poe Powerhouse Beldon Watershed Lands Butt Valley Powerhouse Big Meadows Substation Poe Powerhouse Watershed Lands Lake Almanor Reservoir Butt Valley Watershed Lands
Townsend's western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/FSS, BLM	SMC, MRI, RIV, MHC, MCP, AGS	Beldon Powerhouse Watershed Lands Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Watershed Lands Cresta Powerhouse Watershed Lands Lake Almanor Reservoir Poe Powerhouse Poe Powerhouse Watershed Lands Rock Creek Powerhouse Watershed Lands
Western red bat <i>Lasiurus blossevillii</i>	-/-/FSS	AGS, FEW, MCP, MRI, MHC, RIV, SMC, WTM	Beldon Powerhouse Beldon Watershed Lands Caribou 1 and 2 Powerhouse Cresta Powerhouse Cresta Powerhouse Watershed Lands Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands

**Table 4.5-19 Bundle 6 Special-Status Wildlife Species That Occur or Potentially Could Occur on the Upper North Fork Feather River Project (FERC 2105) / Rock Creek-Cresta Project (FERC 1962) / and the Poe Project (FERC 2107)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLM	BOP, AGS, JUN, MHC, LAC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Beldon Forebay Reservoir Beldon Powerhouse Beldon Watershed Lands Big Meadows Substation Butt Valley Powerhouse Butt Valley Reservoir Butt Valley Watersheds Lands Caribou 1 and 2 Powerhouses Cresta Powerhouse Cresta Powerhouse Watershed Lands Cresta Reservoir Watershed Lands Lake Almanor Reservoir Oak Flat Powerhouse Poe Powerhouse Poe Powerhouse Watershed Lands Poe Reservoir Watershed Lands Rock Creek Forebay Reservoir Rock Creek Powerhouse Rock Creek Powerhouse Watershed Lands Rock Creek Reservoir Watershed Lands

Notes: Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

Special-Status Species:

Federal:

FE = Federally listed as endangered  
FT = Federally listed as threatened  
SOC = Federal species of concern  
FC = Federal Candidate species

State:

SE = State listed as endangered  
ST = State listed as threatened  
SSC = State species of special concern  
CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species  
BLM = Bureau of Land Management sensitive species  
CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Botanical Resources.** The Feather River Project, Rock Creek-Cresta Project, and Poe Project are within the Sierra Nevada Region and more specifically, the High Sierra Nevada subregion (elevations between 1,640 feet and 9,840 feet), Northern High Sierra Nevada district, and the Sierra Nevada Foothills subregion (elevations below 1,640 feet), Northern Sierra Nevada Foothills district. The High Sierra Nevada subregion is characterized by mostly conifer forest above 1,640 feet and has complex vegetation ranging from lower montane ponderosa pine forests to upper montane red fir forests and treeless alpine communities at the highest elevations (Hickman, 1993). The Sierra Nevada Foothills subregion is mostly blue-oak/foothill pine woodland dotted with serpentine. Bundle 8 lies just below the northern boundary of the Northern High Sierra Nevada district and Northern Sierra Nevada Foothills district along the Plumas-Lassen county line. The highest point is within the Feather River Project at 4,510 amsl, and lowest point in the project is within the Poe project at 939 amsl. The majority of the facilities and lands are located around Lake Almanor, Butt Valley Reservoir, Caribou and Belden Powerhouses, Humbug Valley, Rock Creek Reservoir, Cresta Powerhouse, and Poe Powerhouse

Three special-status plant species have been documented near Bundle 6, Quincy lupine, Egg-Lake monkeyflower, and slender orcutt grass. This occurrence information was generated from a run of the CNDDDB.

Table 4.5-20 lists the special status plants that occur, or potentially could occur, in Bundle 6. This list was compiled using CNDDDB, Forest Service sensitive plant lists, related project documents, surveys of project land that have been conducted during the FERC re-licensing process, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

**Table 4.5-20 Bundle 6 Special-Status Plant Species That Occur or Potentially Could Occur Within the Feather River Project (FERC 2105); Rock Creek-Cresta Project (FEERC 1962); and Poe Project (FERC 2107)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Agrostis hendersonii</i> Henderson's bent grass	SOC/-/3/-	VFGrs (mesic) VnPls	Caribou 1 Powerhouse; Caribou 2 Powerhouse; Rock Creek – Cresta Powerhouse; Poe Powerhouse and Reservoir; Rock Creek Forebay and Reservoir; Cresta Reservoir; Lake Almanor Reservoir; Butte Valley Reservoir; Beldon Forebay Reservoir
<i>Allium jepsonii</i> Jepson's onion	SOC/-1B/FSS,BLMS	CmWld, LCFrs, /serpentinite or volcanic	Poe Powerhouse; Rock Creek-Cresta Powerhouse; Cresta Powerhouse; Butt Valley Powerhouse; Beldon Powerhouse
<i>Arabis constancei</i> Constance's rock cress	-/-/1B/FSS	Chprl, LCFrs /serpentinite	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Powerhouse and Reservoir; Butt Valley Powerhouse; Beldon Powerhouse
<i>Astragalus pulsiferae</i> var. <i>pulsiferae</i> Pulsifer's milk-vetch	-/-/1B/BLMS	GBScr, LCFrs, PJWld/ volcanic, sandy or rocky	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse



**Table 4.5-20 Bundle 6 Special-Status Plant Species That Occur or Potentially Could Occur Within the Feather River Project (FERC 2105); Rock Creek-Cresta Project (FEERC 1962); and Poe Project (FERC 2107)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> Suksdorf's milk-vetch	SOC/--1B/FSS,BLMS	GBScr, LCFrs/ volcanic, often rocky	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse
<i>Atriplex depressa</i> brittlescale	--/--1B/--	ChScr, Plyas, VFGrS / alkaline or clay	Caribou 1 Powerhouse; Caribou 2 Powerhouse; Lake Almanor Reservoir; Butt Valley Reservoir; Beldon Forebay; Rock Creek Forebay and Reservoir; Cresta Reservoir; Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse and Reservoir
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	--/--1B/BLMS	CmWld, VFGrS, sometimes serpentine	Caribou 1 Powerhouse; Caribou 2 Powerhouse; Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Powerhouse and Reservoir; Rock Creek Reservoir
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i> Butte County morning-glory	SOC/--1B/FSS	LCFrs	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse
<i>Cardamine pachystigma</i> var. <i>dissectifolia</i> dissected-leavedtoothwort	--/--3/FSS	Chprl (serpentine)	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Reservoir
<i>Carex limosa</i> shore sedge	--/--2/--	BgFns, LCFrs, UCFrs	Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Powerhouse and Reservoir; Butt Valley Powerhouse; Poe Powerhouse; Beldon Powerhouse; Caribou 1 Powerhouse; Caribou 2 Powerhouse; Big Meadows Substation
<i>Carex sheldonii</i> Sheldon's sedge	--/--2/--	LCFrs (mesic), RpScr	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse; Rock Creek Reservoir
<i>Carex vulpinoidea</i> fox sedge	--/--2/--	MshSw, RpWld	Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Powerhouse and Reservoir; Poe Powerhouse; Beldon Powerhouse
<i>Clarkia gracilis</i> ssp. <i>albicaulis</i> white-stemmed clarkia	--/--1B/BLMS	Chprl, CmWld/ sometimes serpentine	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Reservoir and Powerhouse; Rock Creek Powerhouse
<i>Clarkia mosquinii</i> Mosquin's clarkia	SOC/--1B/BLMS	CmWld	Poe Powerhouse; Rock Creek-Cresta Powerhouse; Cresta Powerhouse
<i>Corallorhiza trifida</i> northern coralroot	--/--2/--	LCFrs, Medws( edges)/ mesic	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse; Rock Creek Reservoir
<i>Drosera anglica</i> English sundew	--/--2/--	BgFns, Medws	Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Reservoir
<i>Eleocharis quadrangulata</i> four-angled spikerush	--/--2/--	MshSw (freshwater)	Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Reservoir
<i>Fritillaria eastwoodiae</i> Butte County fritillary	SOC/--3/FSS, BLMS	Chprl, CmWld, LCFrs (openings)/ sometimes serpentine	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse

**Table 4.5-20 Bundle 6 Special-Status Plant Species That Occur or Potentially Could Occur Within the Feather River Project (FERC 2105); Rock Creek-Cresta Project (FEERC 1962); and Poe Project (FERC 2107)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Fritillaria pluriflora</i> adobe-lily	SOC/-/1B/BLMS	Chprl, CmWld, LCFrs (openings)/ sometimes serpentinite	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse
<i>Ivesia baileyi</i> var. <i>baileyi</i> Bailey's ivesia	--/-/2/--	LCFrs (volcanic)	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse
<i>Ivesia sericoleuca</i> Plumas ivesia	SOC/-/1B/FSS, BLMS	GBScr, LCFrs, Medws, VnPls / vernal mesic, usually volcanic	Butt Valley Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Poe Powerhouse and Reservoir; Cresta Powerhouse and Reservoir; Beldon Powerhouse and Forebay; Rock Creek Reservoir and Forebay; Caribou 1 Powerhouse; Caribou 2 Powerhouse; Lake Almanor Reservoir
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff dwarf rush	--/-/1B/BLMS	Chprl, CmWld, VFGrs, VNPls/ vernal mesic	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Reservoir and Powerhouse; Caribou 1 Powerhouse; Caribou 2 Powerhouse; Rock Creek Reservoir and Forebay; ; Butt Valley Reservoir; Beldon Forebay
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/-/1B/FSS, BLMS	BUFrs, Chprl, CmWld, LCFrs / mesic, granitic	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse
<i>Limnanthes floccosa</i> ssp. <i>californica</i> Butte County meadowfoam	E/E/1B/--	VFGrs (mesic), VnPls	Caribou 1 Powerhouse; Caribou 2 Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse and Reservoir; Rock Creek Reservoir and Forebay; Cresta Reservoir; Lake Almanor Reservoir; Butt Valley Reservoir; Beldon Forebay
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i> woolly meadowfoam	--/-/2/--	CmWld, VFGrs/ vernal mesic	Caribou 1 Powerhouse; Caribou 2 Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse and Reservoir; Rock Creek Reservoir; Cresta Reservoir and Powerhouse
<i>Lupinus dalesiae</i> Quincy lupine	--/-/1B/FSS, BLMS	LCFrs, UCFrs/ often in disturbed areas	Caribou 1 Powerhouse; Caribou 2 Powerhouse; Butt Valley Powerhouse; Rock Creek – Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse; Big Meadows Substation
<i>Mimulus pygmaeus</i> Egg Lake monkeyflower	SOC/-/4/BLMS	GBScr(clay), LCFrs, Medws/ vernal mesic	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse; Rock Creek Reservoir
<i>Monardella douglasii</i> ssp. <i>venosa</i> veiny monardella	SOC/-/1B/BLMS	VFGrs(heavy clay)	Caribou 1 Powerhouse; Caribou 2 Powerhouse; Rock Creek –Cresta Powerhouse; Poe Powerhouse and Reservoir; Rock Creek Reservoir; Cresta Reservoir
<i>Monardella folletti</i> Follett's monardella	--/-/1B/FSS	LCFrs (rocky, serpentinite)	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse
<i>Monardella stebbensii</i> Stebbins' monardella	--/-/1B/FSS	BUFrs, Chprl, LCFrs/ serpentinite	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse
<i>Paronychia ahartii</i> Ahart's paronychia	SOC/-/1B/BLMS	CmWld, VFGrs, VnPls.	Caribou 1 Powerhouse; Caribou 2 Powerhouse; Rock Creek –Cresta Powerhouse; Poe Powerhouse and Reservoir; Rock Creek Reservoir and Forebay; Cresta Powerhouse and Reservoir; Lake Almanor Reservoir; Butt Valley Reservoir; Beldon Forebay

**Table 4.5-20 Bundle 6 Special-Status Plant Species That Occur or Potentially Could Occur Within the Feather River Project (FERC 2105); Rock Creek-Cresta Project (FEERC 1962); and Poe Project (FERC 2107)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Penstemon personatus</i> closed-throated beardtongue	SOC/--1B/FSS, BLMS	LCFrS, UCFrS/ metavolcanic	Butt Valley Powerhouse; Caribou 1 Powerhouse; Caribou 2 Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse; Big Meadows Substation
<i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i> Nuttall's pondweed	--1--/21--	MshSw (assorted shallow freshwater)	Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Reservoir
<i>Pyrrocoma lucida</i> sticky pyrocoma	--1--/1B/--	LCFrS (alkaline clay)	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse
<i>Rhynchospora californica</i> California beaked-rush	SOC/--1B/BLMS	LCFrS, Medws (seeps), MshSw (freshwater)	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse; Rock Creek Reservoir; Lake Almanor Reservoir
<i>Rupertia hallii</i> Hall's rupertia	--1--/1B/FSS, BLMS	CmWld	Poe Powerhouse; Rock Creek-Cresta Powerhouse; Cresta Powerhouse
<i>Sagittaria sanfordii</i> Sanford's arrowhead	SOC/--1B/BLMS	MshSw (assorted shallow freshwater)	Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Reservoir
<i>Sanicula tracyi</i> Tracy's sanicle	SOC/--14/BLMS	CmWld, LCFrS, UCFrS/ openings	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse; Rock Creek Powerhouse; Butt Valley Powerhouse; Caribou 1 Powerhouse; Caribou 2 Powerhouse; Big Meadows Substation
<i>Scheuchzeria palustris</i> var. <i>Americana</i> American scheuchzeria	--1--/2/FSS	MshSw (lake margins)	Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Reservoir
<i>Scirpus subterminalis</i> water bulrush	--1--/21--	MshSw (montane lake margins)	Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Reservoir
<i>Scutellaria galericulata</i> marsh skullcap	--1--/2/FSS	LCFrS, Medws (mesic), MshSw	Butt Valley Powerhouse; Lake Almanor Reservoir; Rock Creek-Cresta Powerhouse; Rock Creek Reservoir; Cresta Reservoir and Powerhouse; Poe Powerhouse; Beldon Powerhouse
<i>Sedum albomarginatum</i> Feather River stonecrop	--1--/1B/BLMS	Chprl, LCFrS/ serpentinite	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse and Reservoir; Cresta Powerhouse and Reservoir; Beldon Powerhouse
<i>Sencio eurycephalus</i> var. <i>lewisrosei</i> cut-leaved ragwort	--1--/1B/FSS, BLMS	Chprl, CmWld, LCFrS/ serpentinite	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse
<i>Sidalcea robusta</i> Butte County checkerbloom	SOC/--1B/BLMS	Chprl, CmWld	Poe Powerhouse and Reservoir; Rock Creek-Cresta Powerhouse; Cresta Powerhouse and Reservoir; Beldon Powerhouse
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> western campion	SOC/--1B/FSS	Chprl, LCFrS	Butt Valley Powerhouse; Rock Creek-Cresta Powerhouse; Poe Powerhouse and Reservoir; Cresta Powerhouse and Reservoir; Beldon Powerhouse
<i>Solidago gigantea</i> smooth goldenrod	--1--/21--	Medws (mesic), MshSw (streambanks and lake margins)	Lake Almanor Reservoirs; Rock Creek-Cresta Powerhouse; Rock Creek Reservoirs; Cresta Reservoir

**Table 4.5-20 Bundle 6 Special-Status Plant Species That Occur or Potentially Could Occur Within the Feather River Project (FERC 2105); Rock Creek-Cresta Project (FEERC 1962); and Poe Project (FERC 2107)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Vaccinium coccineum</i> Siskiyou Mountains huckleberry	--/--/3/FSS	LCFrS, UCFrS/ often serpentinite	Butt Valley Powerhouse; Caribou 1 Powerhouse; Caribou 2 Powerhouse; Big Meadows Substation; Rock Creek-Cresta Powerhouse; Poe Powerhouse; Cresta Powerhouse; Beldon Powerhouse

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

**CNPS:** California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

**Other:** Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

**Habitats:**

AlpBR = Alpine Boulder and Rock Field LCFrS = Lower Montane Conifer Forest

BgFns = Bogs and Fens Medws = Meadows and Seeps

BUFrS = Broadleaved Upland Forest MshSw = Marshes and Swamps

CCFrS = Closed-Cone Conifer Forest PJWld = Pinyon and Juniper Woodland

Chprl = Chaparral Plyas = Playas

ChScr = Chenopod Scrub RpFrS = Riparian Forest

Cmwld= Cismontane Woodland RpScr = Riparian Scrub

CoDns = Coastal dunes RpWld = Riparian Woodland

CoPrr = Coastal Prairie SCFrS = Subalpine Conifer Forest

CoScr = Coastal Scrub UCFrS = Upper Montane Conifer Forest

GBGrS = Great Basin grassland VFGrS = Valley and Foothill Grassland

GBScr = Great Basin Scrub VnPls = Vernal Pools

**Bundle 7: Bucks Creek*****Bucks Creek (FERC 0619)***

The Bucks Creek Project is located in the High Sierra Nevada Floristic Province. The weather fluctuates with the seasons with warm dry summers and cold wet (snow) winters. Average annual precipitation is 68 inches. Elevations of the various facilities range from 4,300 to 6,100 feet.

***Vegetation Communities.*** Vegetation communities in the vicinity of the Bucks Creek project are typical of the upper transition zone and conifer forest cover types of the western slope of the Sierra Nevada Mountain Range from the 2,500- to 5,000-foot elevation. Major habitats identified include sierran mixed conifer forest, montane hardwood-conifer, red fir, montane chaparral, montane riparian, fresh emergent wetland, riverine, and lacustrine (Table 4.5-21). The dominant species include ponderosa pine, Douglas fir, incense cedar, white fir, sugar pine, black oak, dogwood, ceanothus, alders (*Alnus spp.*), willow and sedges.

**Table 4.5-21 Bundle 7-Bucks Creek Vegetation Communities Associated With the Bucks Creek Project (FERC 0619)**

Project Features	Montane Communities						Water Elements		
	MRI	MHC	SMC	RFR	MCP	MCH	FEW	RIV	LAC
<b>Generation Facilities</b>									
<i>Powerhouse</i>									
Buck's Creek	X	X	X	X		X		X	
<i>Reservoirs</i>									
Buck's Lake		X	X			X			X
Three Lakes							X		X
Buck's Diversion Reservoir									X
Grizzly Forebay			X						X
<i>Tunnels</i>									
Grizzly Forebay					X				
Grizzly PH					X				
Lower Buck's Lake					X				
<i>Penstock</i>									
Grizzly PH		X							
<b>FERC License Lands</b>									
<i>Reservoir</i>									
Buck's Lake		X	X		X				

**NOTES:**

Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc.

Transmission Lines: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer.

FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC.

Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations.

Habitats:

AGS	=	Annual Grassland	MHW	=	Montane Hardwood
BOP	=	Blue Oak-Foothill Pine	MRI	=	Montane Riparian
BOW	=	Blue Oak Woodland	PPN	=	Ponderosa Pine
CRC	=	Chamise-Redshank Chaparral	RFR	=	Red Fir
DFR	=	Douglas-Fir	RIV	=	Riverine
FEW	=	Fresh Emergent Wetland	SCN	=	Subalpine Conifer
JPN	=	Jeffrey Pine	SGB	=	Sagebrush
LAC	=	Lacustrine	SMC	=	Sierra Mixed Conifer
LPN	=	Lodgepole Pine	VOW	=	Valley Oak Woodland
LSG	=	Low Sagebrush	VRI	=	Valley Foothill Riparian
MCP	=	Montane Chaparral	WFR	=	White Fir
MCH	=	Mixed Chaparral	WTM	=	Wet Meadow
MHC	=	Montane Hardwood-Conifer			

**Wildlife Resources.** The Bucks Creek project falls within the range of the Bucks Mountain and the Eastern Tehama deer herds. The project watershed covers approximately 49 square miles and is populated by a number of game species including waterfowl, mountain quail (*Oreortyx pictus*), Columbia black-tail deer (*Odocoileus hemionus columbianus*), black bear (*Ursus americanus*), brush rabbit (*Sylvilagus bachmani*) and gray squirrel (*Sciurus spp.*). FERC License Article 406 requires consultation with resource agencies to minimize impacts during land clearing or land disturbing activities. In addition, FERC License Article 16 requires Pacific Gas and Electric Company to construct, maintain, and operate protective devices and comply with reasonable modifications of project structures and operations in the interest of wildlife resources. Similarly, FERC License Article 17 states that Pacific Gas and Electric Company shall permit resource agencies use of lands, reservoirs, waterways and project works necessary to construct or improve existing wildlife facilities. FERC License Article 17 also requires modification of project operations to permit maintenance and operation of fish and wildlife facilities (FERC, 1974a).

According to the CNDDDB, no State or Federally listed or proposed species or USFS sensitive wildlife species have been documented in the immediate vicinity of the Grizzly Powerhouse. However, suitable habitat for threatened and endangered species and sightings have been reported in the vicinity of the project for bald eagle, osprey, California spotted owl (*Strix occidentalis occidentalis*), northern goshawk (*Accipiter gentilis*) and peregrine falcon (PG&E Co., 1981b). A bald eagle nesting territory is located at Bucks Lake, and California spotted owls have been recorded at Lower Bucks Lake and Grizzly Forebay. Willow flycatchers were documented along the southeast shoreline of Bucks Lake in 1998. Special status species that may occur in the vicinity of the project are included in Table 4.5-22.

**Table 4.5-22 Bundle 7-Bucks Creek Special-Status Species Wildlife That Occur Or Potentially Could Occur On the Bucks Creek Project (FERC 0619)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/--	BOP, AGS, FEW, LAC, MHC, MRI, PPN, RIV, VRI, MCH, WTM	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP/ FSS, BLMS	BOP, AGS, MHC, MRI, PPN, RIV, MCP, MCH, WTM	Buck's Creek Powerhouse Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel
Mountain yellow-legged frog <i>Rana muscosa</i>	SOC/SSC, CFP/ FSS	SMC, FEW, LAC, MRI, RIV	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Buck's Lake Reservoir Lands
Northern leopard frog <i>Rana pipiens</i>	SOC/SSC/ FSS	SMC, FEW, LAC, MRI, WTM	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Buck's Lake Reservoir Lands
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/ FSS	BOP, AGS, FEW, VRI, MRI, RIV, LAC, MHC, PPN, SMC, MCP, MCH, WTM	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
<b>Birds</b>			
American peregrine falcon <i>Falco peregrinus anatum</i>	SE, CFP	SMC, FEW, LAC, RIV, MRI, WTM, AGS, MCP	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP	BOP, FEW, JUN, RIV, LAC, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLM	MRI, SMC, MHC	Buck's Creek Powerhouse Buck's Lake Reservoir Grizzly Forebay Buck's Lake Reservoir Lands

**Table 4.5-22 Bundle 7-Bucks Creek Special-Status Species Wildlife That Occur Or Potentially Could Occur On the Bucks Creek Project (FERC 0619)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Greater sandhill crane <i>Grus canadensis tabida</i>	--/ST, CFP/FSS	AGS, FEW, WTM, LAC	Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay
Little willow flycatcher <i>Empidonax traillii brewsteri</i>	SOC/--/FSS	MRI, WTM	Buck's Creek Powerhouse
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC/ FSS	MRI, SMC, MCP, MHC	Buck's Creek Powerhouse Buck's Lake Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
Osprey <i>Pandion haliaetus</i>	--/SSC/--	BOP, AGS, FEW, JUN, WTM, MCH, MCP, VRI, SMC, RIV, PPN, MRI, MHC, LAC	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
Willow flycatcher <i>Empidonax traillii</i>	-/SE/FSS	MRI, WTM	Buck's Creek Powerhouse
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP/ FSS	MHC, SMC, WTM, MRI, MCP	Buck's Creek Powerhouse Buck's Lake Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
Fringed myotis <i>Myotis thysanodes</i>	SOC/--/FSS, BLM	SMC, MRI, LAC, RIV, AGS, MCP, MHC	Buck's Creek Powerhouse Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
Long-eared myotis <i>Myotis evotis</i>	SOC/--/BLM	SMC, FEW, LAC, RIV, MRI, WTM, MCP, MHC	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
Long-legged myotis <i>Myotis volans</i>	SOC/--/--	SMC, LAC, MRI, RIV, WTM, AGS, MCP, MCH	Buck's Creek Powerhouse Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands



**Table 4.5-22 Bundle 7-Bucks Creek Special-Status Species Wildlife That Occur Or Potentially Could Occur On the Bucks Creek Project (FERC 0619)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/ FSS, BLM	MHC, SMC, MRI, PPN	Buck's Creek Powerhouse Buck's Lake Reservoir Grizzly Forebay Buck's Lake Reservoir Lands
Pine marten <i>Martes americana</i>	--/SSC/FSS	MHC, PPN, MRI, WTM, SMC	Buck's Creek Powerhouse Buck's Lake Reservoir Grizzly Forebay Buck's Lake Reservoir Lands
Small-footed myotis <i>Myotis ciliolabrum</i>	SOC/--/BLM	SMC, FEW, LAC, MRI, RIV, WTM, AGS, MHC, MCP	Buck's Creek Powerhouse Three Lakes Reservoir Buck's Lake Reservoir Buck's Diversion Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
Spotted bat <i>Euderma maculatum</i>	SOC/SSC/ BLM	BOP, AGS, JUN, MHC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Buck's Creek Powerhouse Buck's Lake Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel
Townsend's western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/ FSS, BLM	SMC, MRI, RIV, MHC, MCP, AGS	Buck's Creek Powerhouse Buck's Lake Reservoir Grizzly Forebay Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands
Western mastiff bat <i>Eumops perotis</i>	--/SSC/BLM	FEW, MRI, WTM, AGS, MCP, MHC	Buck's Creek Powerhouse Grizzly Forebay Three Lakes Reservoir Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/ BLM	MHC, PPN, MCP, MRI, WTM, SMC	Buck's Creek Powerhouse Grizzly Forebay Tunnel Grizzly Powerhouse Tunnel Lower Buck's Lake Tunnel Buck's Lake Reservoir Lands

Notes: Scientific names are based on the following sources: California Department of Fish and Game:  
Special Animal List, July 2000.

**Special-Status Species:**

**Federal:**

FE Federally listed as endangered

FT Federally listed as threatened

SOC Federal species of concern

FC Federal Candidate species

**State:**

SE State listed as endangered

ST State listed as threatened

SSC State species of special concern

CFP California Fully Protected species

**Other:**

FSS Forest Service sensitive species

BLM Bureau of Land Management sensitive species

CDF California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS =	Annual Grassland	MHW =	Montane Hardwood
BOP =	Blue Oak-Foothill Pine	MRI =	Montane Riparian
BOW =	Blue Oak Woodland	PPN =	Ponderosa Pine
CRC =	Chamise-Redshank Chaparral	RFR =	Red Fir
DFR =	Douglas-Fir	RIV =	Riverine
FEW =	Fresh Emergent Wetland	SCN =	Subalpine Conifer
JPN =	Jeffrey Pine	SGB =	Sagebrush
LAC =	Lacustrine	SMC =	Sierra Mixed Conifer
LPN =	Lodgepole Pine	VOW =	Valley Oak Woodland
LSG =	Low Sagebrush	VRI =	Valley Foothill Riparian
MCP =	Montane Chaparral	WFR =	White Fir
MCH =	Mixed Chaparral	WTM =	Wet Meadow
MHC =	Montane Hardwood-Conifer		

**Botanical Resources.** The Bucks Creek Project is within the Sierra Nevada Region and more specifically, the High Sierra Nevada subregion (elevations between 1,640 feet and 9,840 feet), Northern High Sierra Nevada district. The High Sierra Nevada subregion is characterized by mostly conifer forest above 1,640 feet and has complex vegetation ranging from lower montane ponderosa pine forests to upper montane red fir forests and treeless alpine communities at the highest elevations (Hickman, 1993). Bundle 7 lies within the Northern High Sierra Nevada district along the Plumas-Lassen county line. The highest point is within the Bucks Creek Project is 5,160 amsl, and lowest point in the project is 1,760 amsl. The majority of the facilities and lands are located around Bucks Lake, Lower Bucks Lake, Three Lakes and Grizzly Forebay.

No special-status plant species have been documented near Bundle 7. This information was generated from a run of the CNDDDB. Table 4.5-23 is a list of special-status plant species that have the potential to occur.

Table 4.5-23 lists the special status plants that occur, or potentially could occur, in Bundle 7. This list was compiled using CNDDDB, Forest Service sensitive plant lists, related project documents, surveys of the project that have been conducted during the FERC re-licensing process, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

### **Bundle 8: Butte Creek**

#### ***DeSabra-Centerville (FERC 0803), Lime Saddle (non-FERC), Coal Canyon (non-FERC)***

The DeSabra-Centerville Project is located in the northern Sierra Nevada foothills Floristic Province. The weather fluctuates with the seasons with warm dry summers and cool wet (rain) winters. Average annual precipitation is 64 inches. Elevations of the various facilities range from 1,200 to 2,900 feet.

**Table 4.5-23 Bundle 7 Special-Status Plant Species That Occur or Potentially Could Occur Within the Bucks Creek Project (FERC 0619)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Arabis constancei</i> Constance's rock cress	--/--/1B/FSS	Chprl, LCFrs / serpentinite	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Arnica fulgens</i> hillside arnica	--/--/2/--	GBScr, LCFrs, Medws/ mesic	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Carex limosa</i> shore sedge	--/--/2/--	BgFns, LCFrs, UCFrs	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly Forebay and PH Penstock,, Three Lakes Reservoir
<i>Corallorhiza trifida</i> northern coralroot	--/--/2/--	LCFrs, Medws( edges)/ mesic	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Drosera anglica</i> English sundew	--/--/2/--	BGFns, Medws	Three Lakes Reservoir
<i>Epilobium luteum</i> yellow willowherb	--/--/2/--	LCFrs (along streams and seeps)	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Ivesia aperta</i> var. <i>aperta</i> Sierra Valley ivesia	SOC/--/1B/--	GBScr, LCFrs, Medws (xeric), PJWld/ usually volcanic	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Ivesia sericoleuca</i> Plumas ivesia	SOC/--/1B/FSS, BLMS	GBScr, LCFrs, Medws, VnPls/vernally mesic, usually volcanic	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly Forebay and PH Penstock, Three Lakes Reservoir, Buck's Diversion Reservoir
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/--/1B/FSS, BLMS	BUFrs, Chprl, CmWld, LCFrs/ mesic, granitic	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Lupinus dalesiae</i> Quincy lupine	--/--/1B/FSS, BLMS	LCFrs, UCFrs/ often in disturbed areas	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly Forebay
<i>Mimulus pygmaeus</i> Egg Lake monkeyflower	SOC/--/4/BLMS	GBScr(clay), LCFrs, Medws/ vernally mesic	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Monardella stebbensii</i> Stebbins' monardella	--/--/1B/FSS	BUFrs, Chprl, LCFrs/ serpentinite	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Penstemon personatus</i> closed-throated beardtongue	SOC/--/1B/FSS, BLMS	LCFrs, UCFrs/ metavolcanic	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock, Grizzly Forebay
<i>Polygonum polygaloides</i> ssp. <i>esotericum</i> Modoc County knotweed	--/--/1B/BLMS	GBScr (mesic), VnPls	Buck's Lake Reservoir, Three Lakes Reservoir, Buck's Diversion Reservoir, Grizzly Forebay
<i>Pyrrocoma lucida</i> sticky pyrrocoma	--/--/1B/--	LCFrs (alkaline clay)	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Scutellaria galericulata</i> marsh skullcap	--/--/2/FSS	LCFrs, Medws (mesic), MshSw	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Sedum albomarginatum</i> Feather River stonecrop	--/--/1B/BLMS	Chprl, LCFrs,/ serpentinite	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Sencio eurycephalus</i> var. <i>lewisrosei</i> cut-leaved ragwort	--/--/1B/FSS, BLMS	Chprl, CmWld, LCFrs/ serpentinite	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> western campion	SOC/--/1B/FSS	Chprl, LCFrs	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly PH Penstock

**Table 4.5-23 Bundle 7 Special-Status Plant Species That Occur or Potentially Could Occur Within the Bucks Creek Project (FERC 0619)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Solidago gigantea</i> smooth goldenrod	--/--/2/--	Medws (mesic), MshSw (streambanks and lake margins)	Three Lakes Reservoir
<i>Vaccinium coccineum</i> Siskiyou Mountains huckleberry	--/--/3/FSS	LCFRs, UCFrs/ often serpentinite	Buck's Creek Powerhouse, Buck's Lake Reservoir, Grizzly Forebay and PH Penstock

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

**CNPS:** California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

**Other:** Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

**Habitats:**

AlpBR = Alpine Boulder and Rock Field LCFrs = Lower Montane Conifer Forest

BgFns = Bogs and Fens Medws = Meadows and Seeps

BUFRs = Broadleaved Upland Forest MshSw = Marshes and Swamps

CCFRs = Closed-Cone Conifer Forest PJWld = Pinyon and Juniper Woodland

Chprl = Chaparral Plyas = Playas

ChScr = Chenopod Scrub RpFRs = Riparian Forest

Cmwld = Cismontane Woodland RpScr = Riparian Scrub

CoDns = Coastal dunes RpWld = Riparian Woodland

CoPrr = Coastal Prairie SCFRs = Subalpine Conifer Forest

CoScr = Coastal Scrub UCFrs = Upper Montane Conifer Forest

GBGrS = Great Basin grassland VFGrs = Valley and Foothill Grassland

GBScr = Great Basin Scrub VnPls = Vernal Pools

The Lime Saddle Powerhouse project sites are located in the northern Sierra Nevada foothills Floristic Province. The weather fluctuates with the seasons with warm dry summers and cool wet (rain) winters. Average annual precipitation is 64 inches. Elevations of the various facilities range from 1,000 to 1,500 feet.

The Coal Canyon Powerhouse project sites are located in the northern Sierra Nevada foothills Floristic Province. The weather fluctuates with the seasons with warm dry summers and cool wet (rain) winters. Average annual precipitation is 44 inches. Elevations of the various facilities range from 460 to 500 feet.

**Vegetation Communities.** Major habitats identified in the Bundle 8 (DeSabra-Centerville, Lime Saddle, Coal Canyon projects) region include annual grassland, pasture, perennial grassland, cropland, sierran mixed conifer, montane hardwood-conifer, blue oak-foothill pine, lodgepole pine, ponderosa pine, mixed chaparral, valley foothill riparian, fresh emergent wetland, riverine, and lacustrine (Table 4.5-24). The dominant species include blue oak (*Quercus douglasii*), foothill pine (*Pinus sabiniana*), black oak, ponderosa pine, Douglas fir, incense cedar, white fir, sugar pine, dogwood, ceanothus, manzanita (*Arctostaphylos spp.*), poison oak (*Toxicodendron diversilobum*), California coffeeberry (*Rhamnus californica*), cottonwood (*Populus spp.*), and willow.

Existing documentation, a query of the California Natural Diversity Database (CNDDB), and a query of the California Native Plant Society Database (CNPS), provided information on rare, threatened, and endangered (RTE) plant species that may occur in the vicinity of the project. The CNDDB query covered the area within the project boundary and a one-mile buffer around it (Table 4.5-24).

**Table 4.5-24 Bundle 8 - Butte Creek Vegetation Communities Associated With the DeSabra-Centerville Project (FERC 0803); Lime Saddle Project (No FERC License); and the Coal Canyon Project (No FERC License)**

Project Features	Foothill Communities				Transition Communities		Montane Communities					Water Elements			
	PAS	AGS	BOP	BOW	MHC	CRP	MRI	MCP	SMC	PPN	MCH	FEW	RIV	LAC	URB
<b>Generation Facilities</b>															
<i>Powerhouses</i>															
Centerville			X	X	X			X	X	X	X		X		
DeSabra			X	X	X			X	X	X	X		X		
Lime Saddle													X	X	
Coal Canyon		X											X		
<i>Substation</i>															

**Table 4.5-24 Bundle 8 - Butte Creek Vegetation Communities Associated With the DeSabra-Centerville Project (FERC 0803); Lime Saddle Project (No FERC License); and the Coal Canyon Project (No FERC License)**

Project Features	Foothill Communities				Transition Communities		Montane Communities					Water Elements			
	PAS	AGS	BOP	BOW	MHC	CRP	MRI	MCP	SMC	PPN	MCH	FEW	RIV	LAC	URB
Oro Fino			X	X	X										
Oroville															X
Wyandotte															X
<i>Reservoirs</i>															
Kunckle												X		X	
Round Valley												X		X	
Philbrook												X		X	
DeSabra Forebay														X	
<i>Tunnels</i>															
<b>FERC License Lands</b>															
<i>Powerhouses</i>															
DeSabra	X	X	X	X	X	X	X						X		
Centerville			X	X	X		X	X	X	X			X		
<b>Watershed Lands</b>															
<i>Powerhouses</i>															
DeSabra		X	X	X	X			X	X		X				
Centerville			X	X	X			X	X		X				
Lime Saddle			X	X											
<i>Reservoir</i>															
Philbrook			X	X	X										

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Transmission Lines: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer. FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC, contiguous to a generation facility or project waterway and are part of the proposed project. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

DFR	=	Douglas-Fir	RIV	=	Riverine
FEW	=	Fresh Emergent Wetland	SCN	=	Subalpine Conifer
JPN	=	Jeffrey Pine	SGB	=	Sagebrush
LAC	=	Lacustrine	SMC	=	Sierra Mixed Conifer
LPN	=	Lodgepole Pine	VOW	=	Valley Oak Woodland
LSG	=	Low Sagebrush	VRI	=	Valley Foothill Riparian
MCP	=	Montane Chaparral	WFR	=	White Fir
MCH	=	Mixed Chaparral	WTM	=	Wet Meadow
MHC	=	Montane Hardwood-Conifer			

**Wildlife Resources.** Big game in the DeSabra-Centerville Project include mule deer and black bear. Smaller mammals include coyote, bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), mink, northern river otter (*Lutra canadensis*), striped skunk (*Mephitis mephitis*), and western gray squirrel (*Sciurus griseus*). Game birds are band-tailed pigeon (*Columba fasciata*), mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), and mountain quail. The most significant wildlife population within the project boundary is the Eastern Tehama Deer Herd. This herd, the largest migratory deer herd in California, was estimated in the early 1980s to contain nearly 60,000 animals. For the most part, deer from the herd are found in the lower elevations of the project from late October to late April or early May and are seasonally found throughout the rest of the project (FERC, 1991).

FERC License Articles 15 and 16 address the conservation and development of wildlife resources in the DeSabra-Centerville Project and allow for construction and improvement to existing wildlife conservation measures at the facility (FPC, 1975a). FERC License Article 37 requires consultation with USFS, USFWS, and CDFG in implementing measures to ensure continued protection and development of the project's natural resources. Under FERC License Article 37, FERC reserves the right to require changes in project operations as necessary to accomplish protection and development of natural resources at the project. In addition, Item 4 of FERC License Article 39 stipulates wildlife protection and enhancement requirements requested by CDFG for the project (FERC, 1980). Pacific Gas and Electric Company provided funding to CDFG for the acquisition and rehabilitation of the 300-acre Butte Creek House Meadow, a wet-meadow habitat area east of Round Valley Reservoir. CDFG acquired the meadow, erected cattle exclusion fences, and installed check dams on the meadow stream to maintain the wet habitat (FERC, 1992a). Pacific Gas and Electric Company constructed numerous deer crossings over the project canals, installed flashers across the canals at locations where entrapped deer can escape from the flow, and modified canal features to preclude deer entry or to improve deer escape (FERC, 1992a).

The southern bald eagle, a Federal threatened species and State endangered species, and osprey, a State species of concern, have been documented within the vicinity of the DeSabra-Centerville project (PG&E Co., 1982a). A query of the CNDDDB for the project, covering the area within the project boundary and a one-mile buffer around it, produced no additional TES wildlife species

sighting records. However, Pacific Gas and Electric Company biologists have observed foothill yellow-legged frogs in drainages throughout the project.

Wildlife species in the vicinity of the Lime Saddle Powerhouse are those typical of the mid-elevation, western slopes of the Sierra foothills. Representative species are the same as those listed for the nearby DeSabra-Centerville Project, and these include large mammal species such as mule deer, mountain lion, and black bear. Smaller mammals include coyote, bobcat, raccoon, striped skunk, and western gray squirrel. Game birds include band-tailed pigeon, mourning dove, California quail, and mountain quail.

Wildlife species in the vicinity of the Coal Canyon Powerhouse are those typical of mid-elevation, west slope Sierra foothills. Representative species are the same as those listed for the nearby DeSabra-Centerville project. A query of the CNDDDB for the powerhouse, covering the facilities and a one-mile buffer around them, produced several TES wildlife species sighting records (Table 4.5-25). Vernal pool tadpole shrimp (*Lepidurus packardii*), classified as Federally endangered, were documented in the powerhouse vicinity in 1993 (CDFG, 1998b).

**Table 4.5-25 Bundle 8-Butte Creek Special-Status Wildlife Species That Occur or Potentially Could Occur Within the DeSabra-Centerville Project (FERC 0803) / Lime Saddle Powerhouse Project (No FERC License)/Coal Canyon Project (No FERC License)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Invertebrates</b>			
Sacramento Valley tiger beetle <i>Cincindela hirticollis abrupta</i>	SOC/SSC/--	RIV, MRI	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Powerhouse DeSabra Watershed Lands Lime Saddle Powerhouse
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE/--/--	AGS, FEW	DeSabra Watershed Lands Kunckle Reservoir Philbrook Reservoir Round Valley Reservoir
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/--	BOP, AGS, FEW, LAC, MHC, MRI, PPN, RIV, MCP, MCH, WTM	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Lime Saddle Watershed Lands Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir



**Table 4.5-25 Bundle 8-Butte Creek Special-Status Wildlife Species That Occur or Potentially Could Occur Within the DeSabra-Centerville Project (FERC 0803) / Lime Saddle Powerhouse Project (No FERC License)/Coal Canyon Project (No FERC License)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Cascade frog <i>Rana cascadae</i>	SOC/SSC, CFP/FSS	FEW, LAC, RIV, SMC, WTM, MRI	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Philbrook Reservoir Round Valley Reservoir
Foothill yellow-legged frog <i>Rana boylei</i>	--/SSC, CFP/FSS, BLMS	BOP, AGS, MHC, MRI, PPN, RIV, SMC, VRI, MCP, MCH, WTM	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Powerhouse DeSabra Watershed Lands Lime Saddle Powerhouse Lime Saddle Watershed Lands Oro Fino Substation Philbrook Reservoir Watershed Lands
Mountain yellow-legged frog <i>Rana muscosa</i>	SOC/SSC, CFP/FSS	MHC, MRI, PPN, RIV, SMC, MCP, WTM	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Powerhouse DeSabra Watershed Lands Lime Saddle Powerhouse Oro Fino Substation Philbrook Reservoir Watershed Lands
Western spadefoot <i>Scaphiopus hammondi</i>	SOC/SSC, CFP/BLMS	BOP, AGS, FEW, RIV, LAC, MCH	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Lime Saddle Watershed Lands Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/FSS	BOP, AGS, FEW, VRI, MRI, RIV, LAC, MHC, PPN, SMC, MCP, MCH, WTM	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Lime Saddle Watershed Lands Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir

**Table 4.5-25 Bundle 8-Butte Creek Special-Status Wildlife Species That Occur or Potentially Could Occur Within the DeSabra-Centerville Project (FERC 0803) / Lime Saddle Powerhouse Project (No FERC License)/Coal Canyon Project (No FERC License)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Birds</b>			
American peregrine falcon <i>Falco peregrinus anatum</i>	--/SE, CFP/--	SMC, FEW, LAC, RIV, MRI, WTM, AGS, MCP	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunkle Reservoir Lime Saddle Powerhouse Philbrook Reservoir Round Valley Reservoir
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP/FSS	BOP, FEW, JUN, RIV, LAC, WTM, MCH, MCP, VRI, SMC, PPN, MRI, MHC, LSG	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunkle Reservoir Lime Saddle Powerhouse Lime Saddle Watershed Lands Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLMS	MRI, SMC, MHC	DeSabra Watershed Lands Centerville Watershed Lands Centerville Powerhouse DeSabra Powerhouse Oro Fino Substation DeSabra Watershed Lands Centerville Watershed Lands Philbrook Reservoir Watershed Lands
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP/BLMS	SMC, FEW, MRI, WTM, AGS, MCP	Centerville Watershed Lands DeSabra Watershed Lands Kunkle Reservoir Philbrook Reservoir Round Valley Reservoir
Little willow flycatcher <i>Empidonax trailii brewsteri</i>	SOC/--/FSS	MRI, WTM	DeSabra Watershed Lands Centerville Watershed Lands
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC/FSS	MRI, SMC, MCP, MHC	Centerville Powerhouse Centerville Watershed Lands DeSabra Powerhouse DeSabra Watershed Lands Oro Fino Substation Philbrook Reservoir Watershed Lands
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/ --	FEW, WTM	DeSabra Forebay Kunkle Reservoir Lime Saddle Powerhouse Philbrook Reservoir Round Valley Reservoir
Western burrowing owl <i>Athene cunicularia</i>	SOC/SSC/BLMS	AGS, LSG	DeSabra Watershed Lands

**Table 4.5-25 Bundle 8-Butte Creek Special-Status Wildlife Species That Occur or Potentially Could Occur Within the DeSabra-Centerville Project (FERC 0803) / Lime Saddle Powerhouse Project (No FERC License)/Coal Canyon Project (No FERC License)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP/ FSS	MHC, SMC, WTM, MRI, MCP	Centerville Powerhouse Centerville Watershed Lands DeSabra Powerhouse DeSabra Watershed Lands Oro Fino Substation Philbrook Reservoir Watershed Lands
Fringed myotis bat <i>Myotis thysanodes</i>	SOC/--/BLMS	SMC, MRI, LAC, RIV, AGS, MCP, MHC	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir
Western mastiff bat <i>Eumops perotis californicus</i>	SOC/SSC/BLMS	FEW, MRI, WTM, AGS, MCP, MHC	Centerville Watershed Lands DeSabra Powerhouse DeSabra Watershed Lands DeSabra Watershed Lands Centerville Powerhouse Kunckle Reservoir Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir
Long-eared myotis bat <i>Myotis evotis</i>	SOC/--/BLMS	SMC, FEW, LAC, RIV, MRI, WTM, MCP, MHC	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir
Long-legged myotis bat <i>Myotis volans</i>	SOC/--/--	SMC, LAC, MRI, RIV, WTM, AGS, MCP, MCH	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Philbrook Reservoir Round Valley Reservoir

**Table 4.5-25 Bundle 8-Butte Creek Special-Status Wildlife Species That Occur or Potentially Could Occur Within the DeSabra-Centerville Project (FERC 0803) / Lime Saddle Powerhouse Project (No FERC License)/Coal Canyon Project (No FERC License)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/FSS, BLMS	MHC, SMC, MRI, PPN	Centerville Powerhouse Centerville Watershed Lands DeSabra Powerhouse DeSabra Watershed Lands Oro Fino Substation Philbrook Reservoir Watershed Lands
Pale big-eared bat <i>Plecotus townsendii pallescens</i>	SOC/SSC/FSS, BLMS	SMC, MRI, RIV, MHC, MCP, AGS	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Powerhouse DeSabra Watershed Lands Lime Saddle Powerhouse Oro Fino Substation Philbrook Reservoir Watershed Lands
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	SOC/ST/ FSS	MHC, PPN, MCP, MRI, WTM, SMC	Centerville Powerhouse Centerville Watershed Lands DeSabra Powerhouse DeSabra Watershed Lands Oro Fino Substation Philbrook Reservoir Watershed Lands
Sierra Nevada snowshoe hare <i>Lepus americanus tahoensis</i>	SOC/SSC/--	JUN, SMC, LSG, WTM, MRI	DeSabra Watershed Lands Centerville Watershed Lands
Small-footed myotis bat <i>Myotis ciliolabrum</i>	SOC/--/BLMS	SMC, FEW, LAC, MRI, RIV, WTM, AGS, MHC, MCP	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLMS	BOP, AGS, JUN, MHC, LAC, RIV, LSG, PPN, SMC, MCH, MCP, MRI, WTM, VRI	Centerville Powerhouse Centerville Watershed Lands Coal Canyon Powerhouse DeSabra Forebay DeSabra Powerhouse DeSabra Watershed Lands Kunckle Reservoir Lime Saddle Powerhouse Lime Saddle Watershed Lands Oro Fino Substation Philbrook Reservoir Philbrook Reservoir Watershed Lands Round Valley Reservoir

Notes: Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

**Special-Status Species:**

**Federal:**

- FE = Federally listed as endangered
- FT = Federally listed as threatened
- SOC = Federal species of concern
- FC = Federal Candidate species

State:		
SE	=	State listed as endangered
ST	=	State listed as threatened
SSC	=	State species of special concern
CFP	=	California Fully Protected species
Other:		
FSS	=	Forest Service sensitive species
BLM	=	Bureau of Land Management sensitive species
CDF	=	California Department of Forestry and Fire Protection sensitive species
Habitats:		
AGS	=	Annual Grassland
BOP	=	Blue Oak-Foothill Pine
BOW	=	Blue Oak Woodland
CRC	=	Chamise-Redshank Chaparral
DFR	=	Douglas-Fir
FEW	=	Fresh Emergent Wetland
JPN	=	Jeffrey Pine
LAC	=	Lacustrine
LPN	=	Lodgepole Pine
LSG	=	Low Sagebrush
MCP	=	Montane Chaparral
MCH	=	Mixed Chaparral
MHC	=	Montane Hardwood-Conifer
MHW	=	Montane Hardwood
MRI	=	Montane Riparian
PPN	=	Ponderosa Pine
RFR	=	Red Fir
RIV	=	Riverine
SCN	=	Subalpine Conifer
SGB	=	Sagebrush
SMC	=	Sierra Mixed Conifer
VOW	=	Valley Oak Woodland
VRI	=	Valley Foothill Riparian
WFR	=	White Fir
WTM	=	Wet Meadow

**Botanical Resources.** The DeSabra-Centerville Project and Lime Saddle and Coal Canyon Powerhouse areas are within the Sierra Nevada Region and more specifically, the High Sierra Nevada subregion (elevations between 1,640 feet and 9,840 feet), Northern High Sierra Nevada district, and the Sierra Nevada Foothills subregion (elevations below 1,640 feet), Northern Sierra Nevada Foothills district. The High Sierra Nevada subregion is characterized by mostly conifer forest above 1,640 feet and has complex vegetation ranging from lower montane ponderosa pine forests to upper montane red fir forests and treeless alpine communities at the highest elevations (Hickman, 1993). The Sierra Nevada Foothills subregion is mostly blue-oak/ foothill pine woodland dotted with serpentine. Bundle 8 lies just below the northern boundary of the Northern High Sierra Nevada district and Northern Sierra Nevada Foothills district along the Plumas-Butte county line. The highest point is within the DeSabra-Centerville Project at 5650 amsl, and lowest point in the project is within the Coal Canyon Powerhouse at 460 amsl. The majority of the facilities and lands are located around Toadtown Powerhouse, DeSabra Powerhouse, Round Valley Reservoir and Philbrook Reservoir.

No special-status plant species have been documented in Bundle 8. This information was generated from a run of the CNDDB.

Table 4.5-26 lists the special status plants that occur, or potentially could occur, in Bundle 8. This list was compiled using CNDDB, Forest Service sensitive plant lists, related project documents, surveys of the project that have been conducted during the FERC re-licensing process, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

**Table 4.5-26 Bundle 8 Butte Creek Special-Status Plant Species That Occur Or Potentially Could Occur Within the DeSabra-Centerville Project (FERC 0803)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Allium jepsonii</i> Jepson's onion	SOC/--1B/FSS, BLMS	CmWld, LCFrs,/ serpentinite or volcanic	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	--/--1B/BLMS	CmWld, VFGrs, sometimes serpentinite	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Botrychium ascendens</i> upswept moonwort	SOC/--1/2/FSS	LCFrs (mesic)	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Botrychium crenulatum</i> scalloped moonwort	SOC/--1/2/FSS, BLMS	BgFns, LCFrs, Medws, MshSw (freshwater)	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Botrychium minganense</i> Mingan moonwort	--/--1/2/--	LCFrs (mesic)	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Botrychium montanum</i> western goblin	--/--1/2/FSS	LCFrs (mesic)	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i> Butte County morning-glory	SOC/--1B/FSS	LCFrs	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Carex limosa</i> shore sedge	--/--1/2/--	BgFns, LCFrs, UCFrs	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Carex vulpinoidea</i> fox sedge	--/--1/2/--	MshSw, RpWld	DeSabra Powerhouse, Centerville Powerhouse
<i>Clarkia gracilis</i> ssp. <i>albicaulis</i> white-stemmed clarkia	--/--1B/BLMS	Chprl, CmWld/ sometimes serpentinite	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Clarkia mosquinii</i> Mosquin's clarkia	SOC/--1B/BLMS	CmWld	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Epilobium luteum</i> yellow willowherb	--/--1/2/--	LCFrs (along streams and seeps)	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Fritillaria eastwoodiae</i> Butte County fritillary	SOC/--1/3/FSS, BLMS	Chprl, CmWld, LCFrs (openings)/ sometimes serpentinite	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Fritillaria pluriflora</i> adobe-lily	SOC/--1B/BLMS	Chprl, CmWld, LCFrs (openings)/ sometimes serpentinite	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Juncus leiostermus</i> var. <i>leiostermus</i> Red Bluff dwarf rush	--/--1B/BLMS	Chprl, CmWld, VFGrs, VNPIs/ vernally mesic	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/--1B/FSS, BLMS	BUFrs, Chprl, CmWld, LCFrs/ mesic, granitic	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i> woolly meadowfoam	--/--1/2/--	CmWld, VFGrs/ vernally mesic	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Lupinus dalesiae</i> Quincy lupine	--/--1B/FSS, BLMS	LCFrs, UCFrs/ often in disturbed areas	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir

**Table 4.5-26 Bundle 8 Butte Creek Special-Status Plant Species That Occur Or Potentially Could Occur Within the DeSabra-Centerville Project (FERC 0803)**

Scientific Name and Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Monardella douglasii</i> ssp. <i>venosa</i> veiny monardella	SOC/--/1B/BLMS	VFGrs(heavy clay)	DeSabra Powerhouse
<i>Paronychia ahartii</i> Ahart's paronychia	SOC/--/1B/BLMS	CmWld, VFGrs, VnPls.	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Penstemon personatus</i> closed-throated beardtongue	SOC/--/1B/FSS, BLMS	LCFrS, UCFrS/ metavolcanic	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Rhynchospora californica</i> California beaked-rush	SOC/--/1B/BLMS	LCFrS, Medws (seeps), MshSw (freshwater)	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Rupertia hallii</i> Hall's rupertia	--/--/1B/FSS, BLMS	CmWld	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Sanicula tracyi</i> Tracy's sanicle	SOC/--/4/BLMS	CmWld, LCFrS, UCFrS/ openings	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Sedum albomarginatum</i> Feather River stonecrop	--/--/1B/BLMS	Chprl, LCFrS,/ serpentine	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Senecio eurycephalus</i> var. <i>lewisrosei</i> cut-leaved ragwort	--/--/1B/FSS, BLMS	Chprl, CmWld, LCFrS/ serpentine	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Sidalcea robusta</i> Butte County checkerbloom	SOC/--/1B/BLMS	Chprl, CmWld	DeSabra Powerhouse, Centerville Powerhouse, Lime Saddle Powerhouse, Philbrook Reservoir
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> western campion	SOC/-- /1B/FSS	Chprl, LCFrS	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir
<i>Stellaria longifolia</i> long-leaved starwort	--/--/2/-	Medws, freshwater seeps	???
<i>Vaccinium coccineum</i> Siskiyou Mountains huckleberry	--/--/3/FSS	LCFrS, UCFrS/ often serpentine	DeSabra Powerhouse, Centerville Powerhouse, Philbrook Reservoir

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

**E** = Federally listed as endangered.

**T** = Federally listed as threatened.

**PE** = Proposed endangered.

**PT** = Proposed threatened.

**C** = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

**SOC** = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

**E** = Endangered; Species whose continued existence in California is jeopardized.

**T** = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

CNPS: California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

Habitats:

AlpBR = Alpine Boulder and Rock Field      LCFrs = Lower Montane Conifer Forest

BgFns = Bogs and Fens      Medws = Meadows and Seeps

BUFrS = Broadleaved Upland Forest      MshSw = Marshes and Swamps

CCFrS = Closed-Cone Conifer Forest      PJWld = Pinyon and Juniper Woodland

Chprl = Chaparral      Plyas = Playas

ChScr = Chenopod Scrub      RpFrS = Riparian Forest

Cmwld = Cismontane Woodland      RpScr = Riparian Scrub

CoDns = Coastal dunes      RpWld = Riparian Woodland

CoPrr = Coastal Prairie      SCFrS = Subalpine Conifer Forest

CoScr = Coastal Scrub      UCFrs = Upper Montane Conifer Forest

GBGrS = Great Basin grassland      VFGrs = Valley and Foothill Grassland

GBScr = Great Basin Scrub      VnPls = Vernal Pools

#### 4.5.4.3 Drum Regional Bundle

##### Regional Setting

The Drum Region is located in El Dorado, Placer, Nevada, Mendocino, and Lake counties near the towns of Placerville, Auburn, Nevada City, Ukiah, and Potter Valley. The area contains 39 dams, 235,349 acre-feet of usable reservoir storage, 64.76 miles of canals, 9.92 miles of flumes, 11.34 miles of tunnel, and 14 powerhouses.

The system is located on five river/stream systems: North Yuba River, South Yuba River, Bear River, American River, and Eel River. The largest bundle within this watershed, Drum-Spaulding (FERC 2310), reaches from Spaulding Lake, lying northwest of Lake Tahoe, to Folsom Lake, east of Sacramento. The two other bundles that are part of the same river system as Drum-Spaulding are Chili Bar (FERC 2155) and Narrows (FERC 1403). The Narrows project lies within the Yuba River Basin, in Nevada County, downstream of the confluence of the South Fork, Middle Fork, and North Fork Yuba River, while Chili Bar project is located on the South Fork American River in El Dorado County (PG&E Co., 1999b). The fourth bundle in the Drum Region, Potter Valley (FERC 0077), is located in Mendocino County on the Eel and Russian Rivers.

Pacific Gas and Electric Company holds approximately 26,209 acres in the Drum Region. These lands are typically located in remote areas that are rich in biological resources. The asset bundles are associated with USFS and Bureau of Land Management (BLM) lands as well. Many informal



agreements have been established between these agencies and Pacific Gas and Electric Company to maintain biological habitats on land within the project boundaries.

There are a wide variety of vegetative communities in the region. Mixed blue oak woodlands, valley oak woodlands, and chaparral communities characterize the foothill regions. Transition communities include mixed hardwood, ponderosa pine, and riparian habitats. Montane habitats consist of subalpine conifer, montane chaparral, montane riparian, wet meadows, and red fir communities. In addition to these vegetative communities, riverine and lacustrine are major habitat types throughout the region.

### Local Regulations and Policies

Table 4.5-27 presents local regulations and policies relevant to the operation of the projects in this regional bundle.

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
El Dorado County General Plan	Project Description 'Conservation and Open Space Element'	II-8.7	This Element provides for the conservation and protection of soils, mineral resources, water, wildlife and fisheries, vegetation, cultural resources, and other open space features.	12
El Dorado County General Plan	Agriculture, Forestry, and Open Space 'Williamson Act Contracts'	V.3-8.f	The California Land Conservation Act of 1965, as amended, commonly known as the Williamson Act, is a voluntary tax incentive program for preserving agricultural and open space lands.	12
El Dorado County General Plan	Agriculture, Forestry, and Open Space 'Williamson Act Contracts'	V.3-8.f	Under a Williamson Act Contract, the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least ten years, and the County agrees to tax the land at a rate based on the agricultural production of the lands rather than its real estate market based on the agricultural production of the land rather than its real estate market value. Figure V-3-2 shows Williamson Act Contract lands in El Dorado County.	12
El Dorado County General Plan	Agriculture, Forestry, and Open Space 'Existing Timberland Policies'	V.3-13.C	Private timberland in California is governed by the Forest Taxation Reform Act of 1976. The Act created the Timberland Production Zone (TPZ) to preserve forestland from encroachment by other incompatible land uses.	12
El Dorado County General Plan	Agriculture, Forestry, and Open Space 'Existing Timberland Policies'	V.3-14.C	Counties were tasked with determining which lands qualified for TPZ zoning, deciding on minimum parcels sizes and describing compatible uses. The Forest Taxation Reform Act listed five compatible uses that must be included in the list of compatible uses in the local ordinance, all of which appear in the County's Zoning Ordinance: management for watershed, management of fish and wildlife, or hunting and fishing, uses related to the growing, harvesting, processing of forest products including, but not limited to roads, log landings, and log storage areas; construction, alteration or maintenance of gas, electric, water or communication transmission facilities, and grazing.	12
El Dorado County General Plan	Agriculture, Forestry, and Open Space 'Existing Timberland Policies'	V.3-14.C	Timber harvesting on private lands not located within a Timberland Production Zone is also regulated by the California Department of Forestry and Fire Protection.	12

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
El Dorado County General Plan	Agriculture, Forestry, and Open Space 'Open Space'	V.3 -19	The lower portion of the South Fork of the American River experiences a high volume of recreational rapids between Chili Bar, near Placerville, to Folsom Lake. In 1984, the El Dorado County Board of Supervisors adopted the Management Plan, South Fork of the American River, El Dorado County (1984), which is intended to provide overall guidance for the long-term use of the river.	12
El Dorado County General Plan	Biological Resources 'Guidelines for Determining Significance'	V.8-49	Significant Impact would occur if: Implementation of the land use plan and guiding policies would directly or indirectly substantially affect a special status plant or animal species or habitat of any such species.	12
El Dorado County General Plan	Biological Resources 'Guidelines for Determining Significance'	V.8-50	Habitat which supports native fish, wildlife, plants, or wetland is substantially reduced or degraded in quantity or quality .	12
El Dorado County General Plan	Biological Resources 'Guidelines for Determining Significance'	V.8-50	Substantial interference with the movement of any resident or migratory fish or wildlife species.	12
El Dorado County General Plan	Biological Resources 'Guidelines for Determining Significance'	V.8-50	A conflict exists between the Project Description and alternative with existing local, State, or Federal natural resource protection laws, policies, or guidelines.	12
Placer County General Plans	Existing Soil and Agricultural Resource Management Plans: Open Space and Conservation Plan	9-13	Placer County adopted an Open Space and Conservation Plan in 1973. The Plan's recommendations for the County are to preserve and protect agricultural operations, direct urbanization to areas least suited for agricultural production, and continue support of the agricultural preserve program (Placer County Planning Department 1973)	11
Placer County General Plans	Existing Soil and Agricultural Resource Management Plans: Timber Preserve Zoning	9-14	The Forest Taxation Reform Act of 1976 requires nonfederal timber-producing lands to be classified by county ordinances into Timberland Preserve Zones (TPZs) through a process involving the county assessor, the county planning commission, and timber owners.	11
Placer County General Plans	Existing Soil and Agricultural Resource Management Plans: Timber Preserve Zoning	9-14	Lands in TPZs may be used for growing forest products and compatible uses only, and the usual property taxes on TPZ lands are based on those limited uses.	11
Placer County General Plans	Riparian Communities	9-19	An awareness of this habitat's scarcity and special management needs fostered the development of public laws and policies that recognize the significance of riparian resources. In Placer County, an open space task force will be working on a policy for mitigating riparian habitat loss.	11
Placer County General Plans	Riparian Communities	9-19	DFG promotes the protection of riparian vegetation on projects it proposes or reviews. In addition, the U.S. Fish and Wildlife Service mitigation policy (1981) includes riparian habitat in Resource Category 1, a category requiring the most stringent mitigation, for which no net loss of existing habitat value is recommended.	11
Placer County General Plans	Jurisdictional Wetlands and Other Waters of the United States	9-30	Under Section 404 of the Federal Clean Water Act, the Corps regulates the placement of dredge or fill materials into "waters of the United States" which can be divided into "wetlands" and "other waters of the U.S."	11

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
Placer County General Plans	Jurisdictional Wetlands and Other Waters of the United States	9-30	Any proposed development or activity that would result in placement of dredge or fill material into jurisdictional wetlands or other waters of the U.S. would require a permit from the Corps, under Section 404 of the Clean Water Act.	11
Placer County General Plans	Significant Natural Areas	9-31	The Significant Natural Areas Program is administered by DFG and designed to encourage recognition of the State's most significant natural areas and to seek perpetuation of these areas (California Fish and Game Code 1930-1932).	11
Placer County General Plans	Significant Natural Areas	9-31	Significant Natural Areas (SNAs) have no legal status, but they have been identified in response to a legislative mandate (Assembly Bill 1039) to raise the level of awareness about California's natural diversity and to identify opportunities for which cooperative efforts can conserve important biological resources.	11
Placer County General Plans	Significant Natural Areas	9-31	DFG has only used the NDDB to identify SNAs in each county. SNAs have been identified on the basis of biological value alone; geological or cultural resource values have not been included in the inventory.	11
Placer County General Plans	Significant Natural Areas	9-31	To qualify as an SNA, a site must meet one of the following four criteria: 1) the species or community is extremely rare. 2) The site has a collection of three or more rare elements 3) the element is the best example (relatively undisturbed condition), or 4) the element is a center of high diversity.	11
Placer County General Plans	Migratory Deer Herds	9-32	Two Migratory Deer herds are present in Placer County. The Blue Canyon Deer herd is west of the Sierran Crest in the southern portion of the county, and the Loyalton-Truckee deer herd is the northeastern corner of the county.	11
Mendocino National Forest Management Plan	Forestwide Standards and Guidelines 'Visual Resources'	IV-39.1b	Retention: Foreground Distance Zone- Manage vegetation for diversity of species common to the area, with a range of ages and size classes up to and including trees with old growth characteristics. Normally, timber harvest opening will be limited to one acre. Uneven-aged silvicultural systems and special cutting methods are permitted.	
			Impacts of management activities in highly visible foreground areas will be reduced through special treatments such as leaving residual vegetation, screening, reshaping timber harvest units, and disposing of logging slash.	
			Middle ground Distance Zone – Manage vegetation with a range of ages and size classes. Even-aged, uneven-aged, and special cutting may be applied. Normally, timber harvest openings will be limited to ten acres; they will be screened and/or reshaped as necessary to maintain the characteristics of the natural landscape.	10
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-124	Manage all bald eagle nest sites as recommended in the Pacific Bald Eagle Recovery Plan and the Lake Pillsbury Bald Eagle Habitat Management Plan.	10
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-124	Analyze and Coordinate the development, management, and use of the Lake Pillsbury Basin.	10
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-125	Emphasize providing quality water-oriented recreation opportunities in a manner consistent with the protection of bald eagles. Expand opportunities in response to anticipated demand. Coordinate all expansion with Pacific Gas and Electric Company and FERC.	10

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-125	Where applicable to National Forest lands, implement watershed improvements identified by the Lake Pillsbury Basin Sediment Task Force to control sediment inflow to Lake Pillsbury. Also undertake improvements identified in the Forest Watershed Improvement Needs (WIN) inventory.	10
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-125	Emphasize stabilizing serpentine area along the lake shoreline as well as the banks of the Eel River and the Rice Fork of the Eel River at their inlets to the lake to help reduce turbidity in the lake.	10
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-125	Analyze opportunities for the development of watchable wildlife areas and wildlife habitat interpretation for the public.	10
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-125	Evaluate the potential effects of use and expansion of the airstrip on Bald Eagles. If found compatible, locate a qualified permittee to operate the airstrip within five years or close it to further use.	10
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-125	Do not issue a grazing permit in this area.	10
Mendocino National Forest Management Plan	Management Area #11 'Management Direction'	IV-125	Key Wildlife Habitat: Northern Spotted Owl, Bald Eagle, Tule Elk, and Deer	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines 'Lands'	IV-23.1	Emphasize ownership adjustment to improve efficiency and reduce long-term management costs once protection of basic resource values are assured. Implement these through all available procedures such as exchange, purchase, and donation.	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines 'Lands'	IV-23.2	Use land acquisition, exchange, and conservation easements to meet aquatic conservation strategy objective and facilitate restoration of fish stocks and other species at risk of extinction. (FSEIS ROD p. C-37)	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines 'Lands'	IV-23.3	Identify and attempt to secure in-stream flow needs to maintain riparian resources, channel conditions, and aquatic habitat. (FSEIS ROD p. C-37)	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines 'Lands'	IV-23.4	Assure that lands scheduled for exchange are kept free of encumbrances such as permits or other uses controlled by the Forest Service that exceed two years. Minimize investments in surveys, roads, and other resource management in these areas. Limit interim timber sale to salvage and/or thinning to enhance stand health and value.	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines 'Lands'	IV-23.7	Permit establishment of new electronic sites only when existing sites are fully occupied or shown to be inadequate for the proposed use and when the proposed site is not in conflict with other management objectives for the area. Consider potential vandalism problems when locating sites and developing permit clauses.	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines 'Lands'	IV-24.12	For all other watersheds: For hydroelectric and other surface water development proposals, give priority emphasis to in-stream flow and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the CDFG and the State Division of Water Rights. During relicensing of hydroelectric projects, provide written and timely license conditions for FERC that emphasize in-stream flows and habitat conditions that maintain or restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate State agencies (FSEIS ROD p. C-36)	10

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines ‘Riparian & Aquatic Ecosystems’	IV-30.1.a	Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines ‘Riparian & Aquatic Ecosystems’	IV-30.1.b	Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines ‘Riparian & Aquatic Ecosystems’	IV-30.1.c	Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines ‘Riparian & Aquatic Ecosystems’	IV-30.1.d	Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines ‘Riparian & Aquatic Ecosystems’	IV-30.1.f	Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.	10
Mendocino National Forest Management Plan	Forest –Wide Standards and Guidelines ‘Timber & other Forest Products’	IV-35.1	Prohibit timber harvest, including fuelwood cutting, in riparian reserves.	10
Mendocino National Forest Management Plan	Forest – Wide Standards and Guidelines ‘Wildlife & Fish’	IV-42.1	Manage sensitive animal species to ensure that they do not become threatened or endangered because of Forest Service Action.	10
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines ‘Wilderness Opportunity Level’	V-22.14	Management will strongly emphasize sustaining and enhancing the natural ecosystem.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines ‘Visual Quality Objectives’	V-24.16	<b>Preservation:</b> This visual quality objective allows ecological changes only. Management activities are prohibited, except construction of very low visual impact recreation facilities. Applies to wilderness areas, primitive areas, other special classified areas, area awaiting classification, and some unique management units that do not warrant special classification.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines ‘Visual Quality Objectives’	V-24.17	<b>Retention:</b> Maintain the appearance of large tree character (typical tree size diameter: 36”) in travel corridors or foreground zones around reservoirs. Provide well distributed habitat diversity on each Ranger District for all indigenous wildlife species	11

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Visual Quality Objectives'	V-24.18	<b>Partial Retention:</b> Maintain the appearance of large tree character (typical size: 30" diameter or better) in immediate foreground zones around reservoirs and travel corridors. Coordinate visual objectives with silvicultural objectives to create a mosaic landscape character of varying tree heights beyond the immediate foreground from sensitive travel routes.	11
Tahoe National Forest Land and Resource Management Plan		V-24.18	NOTE: All developed recreation site facilities are expected to meet the partial retention Visual Quality Objective, as a minimum, as seen from outside of the developed site.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Visual Quality Objectives'	V-24.19	<b>Modification:</b> Activities which introduce facilities such as buildings, signs, roads, etc., should borrow naturally established form, line, color, and texture so completely and such scale that the visual characteristics of the facilities are compatible with the natural surroundings.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Sensitive Fish and Wildlife Emphasis'	V-27.23	Develop programs for endangered, threatened and sensitive fish and wildlife species as outlined in Appendix D. Implement recovery plans and species management plans for threatened and endangered species.	11
Tahoe National Forest Land and Resource Management Plan		V-27.23	Practices may include: coordination with appropriate agencies, inventories, surveys, access control to critical or essential habitats, special area designation, and project coordination measure in timber harvest and other management activities.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Fish and Wildlife Management Direction'	V-27.23	<b>Peregrine Falcon</b> – Introduce three nesting pairs into suitable nesting habitat identified during the 1982 peregrine habitat survey. Adopt the Recovery Plan for the Peregrine Falcon (Pacific Population) as the guide for management on the Forest.	11
Tahoe National Forest Land and Resource Management Plan		V-27.23	<b>Bald Eagle</b> – Manage nesting and wintering habitats for target populations as specified in the species recovery plan. Adopt the Recovery Plan for the Northern Bald Eagle as the guide for management on the Forest.	11
Tahoe National Forest Land and Resource Management Plan		V-27.23	<b>Lahontan Cutthroat Trout</b> – In addition to the recommendations for the harvest species (Practice C2), restrict access to watersheds containing LCT to prevent illegal harvest and the introduction of competing species. Control beaver population where their dams keep the fish from reaching spawning areas.	11
Tahoe National Forest Land and Resource Management Plan		V-27.23	Cooperate with the State to explore ways to introduce Lahontans into streams that are suitable for habitation. Follow the direction set forth in the Federal management recovery plan.	11
Tahoe National Forest Land and Resource Management Plan		V-27.23	<b>Spotted Owl</b> - Manage habitats to provide and maintain at least 1,000 acres of suitable habitat in a forest wide network of spotted owl habitat areas (SOHAs) as described in the Regional Planning Guide (pages 4-15 to 4-22). No scheduled harvest, uneven-age, or even-age timber management systems or combinations of these prescriptions will be considered in these plans.	11
Tahoe National Forest Land and Resource Management Plan		V-27.23	<b>Pine Marten, Fisher, and Sierra Nevada Red Fox</b> - Suitable and optimum pine marten habitat is characterized by moderate to dense (40 to 100 percent) canopy closure, multi-storied, conifer and hardwood-conifer forests. Suitable and optimum habitats provided and average of two to three large (>24" DBH) snags or	11

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
			stumps and ten to 20 large logs (>15 DBH x 15' long) per acre.	
Tahoe National Forest Land and Resource Management Plan		V-27.23	Managed habitats should be adjacent to meadows or riparian corridors and may extend ¼ to ½ mile into upland areas. Managed marten habitat may provide scattered openings that measure two acres or smaller. Travel ways measuring at least 150 to 300 feet wide will be provided to allow interaction between animals in managed sites.	11
Tahoe National Forest Land and Resource Management Plan		V-27.23	Suitable and optimum fisher habitat is characterized by dense (60 to 100 percent) canopy closure, multi-storied, conifer and hardwood-conifer forests. Suitable and optimum habitats provide an average of two to five large (>20" DBH) snags and two to four large logs (>20" DBH x 15' long) per acre.	11
Tahoe National Forest Land and Resource Management Plan		V-27.23	Managed habitats should include meadows or riparian corridors and may extend well (¼ to ½ mile ) into upland areas. Provide travel ways with at least 50 percent crown closure in saddles to allow interaction between animals in managed areas. Minimize construction of new roads and regulate public use of roads in managed habitats.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Sensitive Plant Management Direction'	V-28.23	Prohibit collection of sensitive plant species except when authorized by the regional Forester. Modify or exclude activities not compatible with survival of Threatened or endangered species. When revegetating disturbed sites or making improvements in landscaping, require use of plant species native to the area or species approved for local use.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Wildlife Habitat management/ Viable Populations'	V-28.25	<b>Diversity:</b> Provide horizontal diversity by maintaining at least five percent of the mixed-conifer, red fir, and eastside pine types in each of seven seral stages Forestwide. Provide vertical diversity commensurate with established VQO's and habitat objectives for management emphasis species. Whenever practical, design cutting unit shapes and sizes to accommodate prevailing VQO's and habitat objectives for management emphasis species.	11
Tahoe National Forest Land and Resource Management Plan		V-28.25	<b>Old Growth:</b> Develop a forestwide program for management of old-growth forests (the last successional stage in the forest ecosystem while program is being developed) and evaluate old-growth resources for the planning compartment as a whole, using site-specific project analyses, when planning individual timber sales	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Snags'	V-29.26	To the extent possible, provide and maintain an average of 1.5 snags per acre in each timber compartment. Leave all snags and down logs in riparian areas where consistent with safety and fishery needs. Leave all soft snags where possible, as long as safety needs are met. Save live culls for future snags where consistent with stand management objectives. In firewood areas, designate snags in inaccessible terrain. In snag-deficient areas, cut only hazardous snags.	11
Tahoe National Forest Land and Resource Management Plan		V-29.26 V-29.26	<b>Snag Policy Exclusions</b> – Public use areas such as campgrounds, developed ski areas, summer home tracts, overlooks, picnic areas, etc. Powerline or special-use permit rights-of way. Road and trail maintenance zones. Distance from the road and trail will depend on snag height. All permittee, contractor, or Forest Service project areas where snags are determined to be a safety hazard. Designated fuel breaks. Fire control areas: Snag felling for fire control efforts is at	11

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Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
			the discretion of the incident commander.	
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Deer Habitat Management'	V-30.27	Limit vehicle access on key deer winter ranges when deer are present. Also limit vehicle access in key summer range habitats during periods of migration and fawning. Retain or establish roadside screening along open roads in area of importance for migration, fawning or concentrated seasonal use.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Hardwood management'	V-30.28	Manage hardwood stands to provide desirable wildlife habitat. Pure hardwood stands identified in the Forest database will not be converted to conifers. Coordinate management of hardwood-conifer stands with silvicultural activities that promote growth and regeneration. Consider seeding, planting, fertilizing and fuelwood control as desirable hardwood management practices.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Riparian and Meadow Vegetation Management'	V-31.29	Improve the habitat capability for riparian and meadow associated wildlife. Practices may include activities such as: Thinning, pruning, aspen regeneration, prescribed burning, planting seedlings, fertilization, lodgepole pine cutting, control of livestock, and human access.	11
Tahoe National Forest Land and Resource Management Plan	Forest Management Direction 'Range Program'	V-31.32	Protect, utilize, improve, inventory, and evaluate the range resources as needed.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Cumulative Watershed Effects Analysis'	V-33.43	Perform CWE analysis on all 3 <sup>rd</sup> Order or smaller watersheds (usually 500-2,000 acres) during timber sales planning.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Riparian Area/perennial Streamside Management Zones (SMZ)'	V-34.46	Riparian areas are defined as (1) areas within 100-foot horizontal distance from the edge of standing bodies of water. (2) areas within 100-foot horizontal distance of perennial stream channels; and (3) all wetlands. This width will be greater than 100 feet where needed to include the area that is recognizably dominated by riparian vegetation.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'General Direction for Management of Riparian Areas and Perennial SMZ's'	V-34.46	Variable -width SMZ's adjacent to perennial streams and lakes (including the 100 foot riparian zone) will be managed so that riparian-dependent resources (water, fish, wildlife, riparian related aesthetics, riparian related vegetation) take precedence over non-riparian related resources such as timber, grazing, mining, structures, and transportation. Where there is a conflict, it will be resolved in favor of the riparian-dependent resource.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Water uses and Needs (Consumptive)'	V-35.48	Use National and Regional procedures to secure water rights for existing and foreseeable NFS consumptive uses. Where applicable, water will be obtained and used in accordance with the reservation doctrine. Where the reservation doctrine or other Federal law is not applicable, water rights will be obtained in accordance with State law: either appropriative rights, riparian rights, or overlying rights will be exercised, as appropriate.	11
Tahoe National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines 'Water uses and Needs (Nonconsumptive)'	V-35.49	Determine nonconsumptive instream flow needs on a case-by-case basis during project environmental assessment and/or adjudication proceedings, using the R-5 or Instream Flow Group (IFG methods).	11



**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
Tahoe National Forest Land and resource Management Plan	Forestwide Standards and Guidelines 'Water Quality Protection'	V-35.50	Use Best Management Practices (BMP) to meet water quality objectives and maintain and improve the quality of surface water on the Forest. Methods and Techniques for applying the BMP will be identified and documented during project level environmental assessments and incorporated into the associated project plan and implementation documents.	11
Tahoe National Forest Land and resource Management Plan	Forestwide Standards and Guidelines 'Soil Restoration'	V-35.53	During project planning, identify area of soil damage and abandoned roads in need of rehabilitation. Include these areas in project plans for restoration and improvement. Include these areas in the Forest WIN inventory.	11
Tahoe National Forest Land and resource Management Plan	Forestwide Standards and Guidelines 'Special-Use Management – Non Recreational'	V-39.63	Process applications and administer non-recreation special uses such as isolated residences, utility corridors, and electronic sites in a timely manner. Provide for the protection of resources to meet management objective for the area. Units of measure are in cases.	11
Tahoe National Forest Land and resource Management Plan	Forestwide Standards and Guidelines 'R/W Grants –Roads and Trails	V-39.64	Process applications and administer road and trail R/W permits, easements, and licenses in a timely manner. Provide for the protection of resources to meet management objectives for this area. Units of measure is number of rights-of-ways.	11
Tahoe National Forest Land and resource Management Plan	Forestwide Standards and guidelines 'Power--Related Licenses / FERC'	V-39.65	Process applications and administer licenses and special-use permits for power-related activities such as dams, reservoirs, and transmission lines in a timely manner. Provide for the protection of resources to meet management objective for the area. Units of measure are applications, licenses, and permits.	11
Tahoe National Forest Land and resource Management Plan	Forestwide Standards and Guidelines 'Electronic Sites'	V-39.66	Authorize the placement of electronic transmitting and receiving communication equipment only at designated electronic sites with approved site plans. Existing designated electronic sites are in the following management area: 002 Ida, 015 Harding, 026 Galloway, 029 Pass, 030 Ruby, 055 Boreal Ridge, 077 Cisco Butte, 078 Blue, 088 Squaw Peak, 093 Ward, and 032 Stampede-Boca.	11
Tahoe National Forest Land and resource Management Plan	Forestwide Standards and guidelines 'Transportation System Management'	V-40.68	Restrict road, trail, and off-highway use to the extent necessary for protection of: Threatened, endangered, and sensitive plants or animals. Essential wildlife functions. Cultural resources. Riparian zones and wetlands.	11
Tahoe National Forest Land and resource Management Plan		V-40.68	Where County jurisdiction and maintenance would be appropriate, the county will be asked to accept a USDA easement and the maintenance responsibility for the access road.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Open OHV'	V-51 A4	Permit snow and land travel, except for system roads and trail where laws prohibit use. Activity Units-Manages Acres Output Units-RV Days Will only occur on lands where OHV use is permitted with restriction.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Restricted OHV'	V-51 A5	Restrict use to designated routes for summer or winter periods or both, or use restrict use by time of year. Activity Units-Managed Acres Output Units-RV Days Will only occur on lands where OHV use is allowed under various restrictions.	11

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Wilderness Area Management'	V-55.B1	Standard Management of the wilderness resource and its use is at a level that meets the established standard and management objectives developed in approved wilderness management plans.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Stream Fisheries – Nonstructural Improvement and Maintenance'	V-55.C1	Use nonstructural activities as needed to enhance cold waters ream fisheries. Practices may include: spawning bed improvement, chemical treatment, human access control, regulation of fishing pressure, enhancement of riparian vegetation, and removal of migration barriers.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Stream Fisheries – Structural Improvement and Maintenance'	V-55.C2	Establish or maintain structural improvements for cold-water fisheries. Practices may include activities such as streamside fencing, in-stream cover development (logs and rocks), Channel stabilization, spawning facility construction, fish way and fish screen construction, bank stabilization, removal or relocation of roads too close to streams but outside of the streamside management zone (SMZ), control of water level fluctuations, construction of water bars and culverts outside the SMZ to retard or direct water runoff, and riffle and pool establishment.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Early Succession Vegetation Management'	V-56.C5	Produce or maintain early successional vegetation stages in forests and chaparral. Practices may include activities such as livestock grazing, precommercial thinning, plantation release, prescribed burning, mechanical crushing, pruning and herbicide application.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Midsuccession Vegetation Management'	V-56.C6	Produce or maintain midsuccessional stages of forests and chaparral. Practices may include activities such as: intermediate timber treatments, prescribed burning, livestock grazing, wildlife stand improvement.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Late Seral Stage Vegetation Management'	V-56.C7	Maintain forestlands in a mature and overmature condition. Practices may include activities such as silvicultural treatments that maintain desired levels of canopy closure and structure, human access control, and uneven-aged timber management.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Structural habitat Improvement'	V-57.C8	Improve Habitat capability through structural improvements not covered in stream and lake or wetland habitat improvements. Practices may include activities such as placement of nest structures, den development, water development (guzzlers and watering ponds), protective fencing, and brush pile establishment and snag establishment or retention.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Wet meadow Habitat Improvement and Maintenance'	V-57.C9	Intensively manage, maintain, or improve habitat (ten acres or more) for wetlands species. Practices may include activities such as construction of potholes or shallow marshes, development of forage and cover, construction of nest boxes, islands, mounds, and human access control. MIS species include Canada geese, mallards, and wood ducks.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Special Cutting'	V-59.E7	Harvest timber to meet identified objectives for other resources or activities such as visual quality, sensitive plants, wildlife, habitat, streamside management, research and administrative studies, or special insect and disease conditions. Any even or uneven aged cutting method is permitted provided resource objectives are met and stand-specific silvicultural prescriptions are discussed in the appropriate environmental documents. Yields and management intensity are generally low. Stand size is unlimited except per 36 CFR 219.27	11
Tahoe National Forest Land and	Forest Practices 'Uneven-Age Cutting'	V-59.E8	High to moderate timber yields are expected over time. This practice's primary objective is to regulate timber yields by	11

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
Resource Management Plan	Method'		developing a balanced size or age class distribution. This type of cutting can be applied to tractor-logable ground of all forest types. The unit of measure for timber offered is MBF. The unit of measure for accountability is acres.	
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Artificial Stand Reestablishment'	V-60.E10	Reestablish stands deforested by any cause with desirable trees species by artificial methods.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Natural Stand Reestablishment'	V-60.E11	Reestablish stands deforested by any cause with desirable trees species primarily by natural seed fall from adjacent seed trees. Plant as needed to fill in areas where the natural seed fall does not successfully reforest the stand to the minimum standards and guidelines.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Release and Weeding'	V-60.E13	Reduce the effect of competing vegetation on the growth and development of desired tree species.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Pre-commercial thinning'	V-61.E14	Thin stands containing excess stocking to encourage the growth and development of potential crop trees.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Water Resource Improvement'	V-61.F1	Implement activities to improve watershed conditions. These are usually major soil erosion and water quality problem areas that are on the Forest WIN inventory. Includes erosion reduction; water flow improvement (e.g., reduced surface runoff); channel stabilization works and sediment retention practices. This involves re-vegetation with grasses, trees, and shrubs, and associated treatments such as mulching, spreading straw and jute; and improvements such as check dams, setting basins, and water spreading structures, developing water resource improvement plans, implementing restoration plans, and maintenance. The unit of measure is acres.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Soil Resource Improvement'	V-61.F4	Implement activities to improve the soil or maintain soil resource improvements. This includes such activities as reducing compaction, improving soil fertility, reducing effect of soil displacement, controlling erosion, and soil stabilization projects.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Timber Access Road Development - Road Construction/ Reconstruction	V-63.L1	Plan and construct collector or local roads that are needed to access the timber resource by timber purchaser or public works contract. Construct the roads according to the specifications set forth in the timber sale contract. These roads will be located and constructed (reconstructed) expressly for the most economical timber management along with suitable measures to protect all resources. Unit of measure is miles.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Multi-Resource Road Access Development - Road Construction/ Reconstruction	V-63 L2	Plan and construct arterial, collector, and local roads necessary to facilitate multi-resource development and protection. These roads will be located and constructed or reconstructed for economical resource management and safe general public use along with suitable measures employed to protect all resources. Unit measure is miles.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Trail Construction / Reconstruction - Foot Traffic only	V-63 L3	Construct or reconstruct trails to a standard necessary to carry foot traffic only. Unit of measure is miles.	11

**Table 4.5-27 Local Policies Associated With The Drum Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Associated Bundle Number
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Trail Construction /Reconstruction- foot and Equestrian Traffic Only	V-63.L4	Construct or reconstruct trails to a standard necessary to carry foot and equestrian only. Unit of measure is miles.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Trail Construction / Reconstruction – foot, Equestrian, and Trailbike	V-63.L5	Construct or reconstruct trails to a standard necessary to carry foot, equestrian, or trail bike traffic. Unit of measure is miles.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'Trail Construction/ Reconstruction – Special Requirements'	V-63.L6	Construct or reconstruct trails to a standard necessary to carry traffic for specific special requirements. Examples of special requirements include trails for the disabled, botanical education trails, cross-country ski trails, and snowmobile trails. Unit of measure is miles.	11
Tahoe National Forest Land and resource Management Plan	Forest Practices 'FA&O construction/ Reconstruction	V-63.L7	Plan, design, inspect, and construct capital improvements to support fire, administrative, and other (FA&O) multi-functional activities. Include opportunities to conserve energy (retrofitting). Unit of measure in each improvement.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Transportation Management, Roads –Open'	V-63.L8	Permit motorized access on all arterials, collectors, and local roads. Roads will be maintained at maintenance level III, IV, or V to provide access for all National Forest Traffic, public service, and private commercial haul.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'transportation Management, Roads – Regulated Use'	V-64.L9	By Regional Forester or Forest Supervisor Order, regulate roads to prohibit use by certain vehicle classes or user groups. Regulate to protect resource values and user, control maintenance expenditure, and reduce user conflicts. Maintain roads at maintenance level II to provide access for Forest Administrative traffic, for dispersed recreation traffic, and for any traffic regulated by special permit.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Transportation Management, Roads – Closed'	V-64.L10	Close local roads to motorized access. Maintain roads at maintenance level I. Maintain roads well enough to preserve the initial investment.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Transportation Management Roads – Obliterated'	V-64.L11	Return the road prism to resource production. In some cases, this means restoring the roadbed to original sideslope. Unit of measure is miles.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Transportation Management, Trails – Open'	V-64. L12	Open trails to intended use with no restrictions. Manage the type, volume, and season of trail use to achieve the desired trail management objectives.	11
Tahoe National Forest Land and Resource Management Plan	Forest Practices 'Transportation management, Trials – Restricted Use'	V- 64.L13	Place restrictions on trails when needed to achieve management objectives. An example of restricted use is the Pacific Crest Trail, which is closed to motor vehicles by law. Other restrictions would include seasonal restrictions of trail bikes and/or equestrian traffic to protect resources. Unit of measure is miles.	11

## Bundle 9: North Yuba River

### *Narrows (FERC 1403)*

The Narrows Project is in a relatively undeveloped portion of Nevada and Yuba County, approximately 12 miles west of Grass Valley and approximately three miles northeast of the unincorporated community of Smartville. The northwest boundary of the project is located on the Nevada and Yuba County line, covering a range of 300 to 900 feet elevation. The project lies within the Yuba River basin downstream of the confluence of the South Fork, Middle Fork, and North Fork Yuba River, and approximately 25 miles upstream of the confluence of the Yuba River with the Feather River. Land use in the vicinity of the project is characterized as recreational and open space. The U.S. Army Corps of Engineers, BLM, and private entities own surrounding lands (PG&E Co., 1999b).

The project has a Mediterranean-type climate: warm, dry summers alternate with cool, wet winters. The highest mean maximum monthly temperature is 97° F in July and the mean minimum monthly temperature is 37° F in January. Eighty percent of the region's total precipitation typically occurs from November through March with less than one inch of precipitation during each summer month. Recorded annual precipitation totals are 29.98 inches to 40.10 inches (PG&E Co., 1999b).

***Vegetation Communities.*** Pacific Gas and Electric Company's land use in the project consists primarily of activities and structures associated with hydroelectric generation. This area, which includes the project, is designated for low-intensity uses such as agriculture, recreation, and open space<sup>3</sup>. The project is located on the steep-walled canyon of the Yuba River, which has carved through metamorphic rocks in the western foothills of the Sierra Nevada. The project has a vertical elevation change from 900 to 300 feet (Englebright Reservoir, 1998).

Englebright Reservoir is in the foothills of the Sierra Nevada in Yuba County at an elevation of about 500 feet. The reservoir is surrounded by blue oak-foothill pine vegetation community type, which is common in the western Sierra Nevada foothills below 3000-foot elevation. The reservoir is in a gorge-like canyon of the Yuba River known as Narrows. Blue oak woodland and mixed hardwood habitats occur on the surrounding canyon walls of the lake. The wooded areas have a tree cover that ranges from sparse to closed canopy. In open areas, the understory consists of annual grassland, which also covers the more open portion of the surrounding hills. In other portions, the understory consists of chaparral vegetation. Steep cliffs and rock outcrops are prominent along some shoreline portions of the lake. Small sandy beaches have formed at the shoreline in about a dozen places. Most of the sand bars, and some portions of the shoreline support riparian vegetation, including willows (Englebright Reservoir, 1998). The area surrounding Englebright Reservoir is steep-sided due to the canyon's configuration. Mixed

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3 Pacific Gas and Electric Company. 1999. Proponent's Environmental Assessment, Volume 5: Drum Watershed Region Environmental Settings and Impacts.

hardwood and blue oak woodland vegetation communities make up the watershed habitat located within the project boundary.

At the dam the highest elevations above the steep cliffs up to the tram house, support blue oak woodland and blue oak-foothill pine. Annual grassland with scattered chaparral forms the understory and dominates in more open areas. The canyon is very narrow, with steep, cliff-like walls of rock. Chaparral vegetation grows on small ledges, while the canyon walls are generally exposed bare-rock faces. At the bottom of the canyon, the banks of the Yuba River are lined with large boulders (Englebright Reservoir, 1998).

Table 4.5-28 further outlines all of the vegetation communities of the Narrows Project based upon the Wildlife Habitat Relationships program (WHR) and the California Gap Analysis Project.

**Table 4.5-28 Bundle 9 – North Yuba River Vegetation Communities Associated With the Narrows Project (FERC 1403)**

Project Features	Foothill Communities		Transition Communities	Water Elements	
	AGS	BOP	MHW	RIV	LAC
<b>Generation Facilities</b>					
Narrows Powerhouse No.1		X	X	X	X
<b>Project Waterways</b>					
Yuba River				X	X
<b>Transmission Lines and Access Roads</b>					
	X	X	X	X	
<b>Watershed Lands</b>					
		X	X	X	
<b>FERC Licensed Lands</b>					
		X	X	X	

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Transmission Lines and Access Roads: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer. FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Wildlife Resources.** Wildlife habitat found in the project is primarily blue oak woodland and montane hardwood. These habitats are suitable for a number of wildlife species. Table 4.5-29 provides information on special status species that may occur within the project based on the habitat. Surrounding areas, including Englebright Reservoir, have suitable habitat for several special status species, including the bald eagle.

**Table 4.5-29 Bundle 9 – North Yuba River Special-Status Wildlife Species That Occur or Potentially Could Occur on the Narrows Project (FERC 1403)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Button's Sierra sideband (snail) <i>Monadenia mormonum buttoni</i>	SOC/--/FSS	VRI, LAC, WTM	Narrows Powerhouse No. 1, Yuba River
Spiny rhyacophilan caddisfly <i>Rhyacophila spinata</i>	SOC/--/--	LAC, RIV, MTM	Narrows Powerhouse No. 1, Yuba River
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/FSS	BOP, BOW, MRI, RIV, VRI	Narrows Powerhouse No. 1, Yuba River
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/--	VRI, RIV, LAC	Narrows Powerhouse No. 1, Yuba River
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP/FSS, BLMS	VRI, PPN, SMC, CSC, MHC, WTM, RIV	Narrows Powerhouse No. 1, Yuba River
<b>Reptiles</b>			
Western pond turtle <i>Clemmys marmorata marmorata</i>	--/SSC, CFP	VRI, MRI, RIV, LAC	Narrows Powerhouse No. 1, Yuba River
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP/--	RIV, LAC	Narrows Powerhouse No. 1, Yuba River
Burrowing owl <i>Athene cunicularia</i>	SOC/SSC/--	BOW, BOP, PPN, MCP,	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLMS	SMC, MHC, MHW, DFR	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Coopers hawk <i>Accipiter cooperii</i>	--/SSC/--	MHC, MHW, SMC, MCP, BOW, BOP	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	LAC	Narrows Powerhouse No. 1, Yuba River
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP/CDF, BLMS	BOP, MHW	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Great blue heron <i>Ardea herodias</i>	--/--/CDF	LAC	Narrows Powerhouse No. 1, Yuba River

**Table 4.5-29 Bundle 9 – North Yuba River Special-Status Wildlife Species That Occur or Potentially Could Occur on the Narrows Project (FERC 1403)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Great egret <i>Casmerodius albus</i>	--/--/CDF	BOW, BOP, LAC, RIV	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Yuba River
Greater sand-hill crane <i>Grus canadensis</i>	--/ST, CFP/--	WTM	Narrows Powerhouse No. 1
Horned lark <i>Eremophila alpestris actia</i>	--/SSC/--	BOP	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Loggerhead shrike <i>Lanius ludovicianus</i>	SOC/SSC	BOP	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Long-eared owl <i>Asio otus</i>	--/SSC/--	BOW, BOP, MHW, MHC, SMC, PPN, MCP	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, MHW, MHC, SMC, MCP, LAC, RIV	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands, Yuba River
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC/FSS,CDF	SCN, SMC, MHW	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Osprey <i>Pandion haliaetus</i>	--/SSC/CDF	LAC	Narrows Powerhouse No. 1, Yuba River
Peregrine falcon <i>Falco peregrinus</i>	--/SE,CFP/--	BAR, SMC, MHC, MHW	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Prairie falcon <i>Falco mexicanus</i>	--/SSC	BOP, MHW	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Purple martin <i>Progne subis</i>	--/SSC/--	AGS, BOW, BOP, LAC	Yuba River, Narrows Powerhouse No. 1, Transmission and Access Roads, FERC Licensed Lands Watershed Land
White-tailed kite <i>Elanus leucurus</i>	--/CFP/FWS	BOP	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	WTM	Narrows Powerhouse No. 1, Yuba River
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC/--	BOP	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<b>Mammals</b>			
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLMS	AGS, BOP, BOW, BAR, URB, VOW	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	SOC/SSC/--	MHW, MHC, PPN	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands



**Table 4.5-29 Bundle 9 – North Yuba River Special-Status Wildlife Species That Occur or Potentially Could Occur on the Narrows Project (FERC 1403)**

Common Name and Scientific Name	Status Fed/State/ Other	Habitat	Facilities
Townsend's Western big-eared bat <i>Corynorhinus townsendii</i>	SOC/SSC/FSS, BLMS	AGS, BOP, BOW, BAR, URB, VOW	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
Western red bat <i>Lasiurus blossevillei</i>	--/--/FSS	AGS, BOP, BOW, BAR, URB, VOW	Narrows Powerhouse No. 1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands

Notes: Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

**Special-Status Species:**

**Federal:**

FE = Federally listed as endangered

FT = Federally listed as threatened

SOC = Federal species of concern

FC = Federal Candidate species

**State:**

SE = State listed as endangered

ST = State listed as threatened

SSC = State species of special concern

CFP = California Fully Protected species

**Other:**

FSS = Forest Service sensitive species

BLM = Bureau of Land Management sensitive species

CDF = California Department of Forestry and Fire Protection sensitive species

**Habitats:**

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

DFR = Douglas-Fir

FEW = Fresh Emergent Wetland

JPN = Jeffrey Pine

LAC = Lacustrine

LPN = Lodgepole Pine

LSG = Low Sagebrush

MCP = Montane Chaparral

MCH = Mixed Chaparral

MHC = Montane Hardwood-Conifer

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

SCN = Subalpine Conifer

SGB = Sagebrush

SMC = Sierra Mixed Conifer

VOW = Valley Oak Woodland

VRI = Valley Foothill Riparian

WFR = White Fir

WTM = Wet Meadow

Bald eagle use of Englebright Reservoir has been an exclusively wintering phenomenon. Documented observations show the birds using foothill pines on the south side of the reservoir as roosting sites. The upstream position of the reservoir, with its relatively greater areas of shallows, may provide foraging habitat for eagles. Sightings have occurred of one or two bald eagles downstream near Englebright Dam as well as the area near Keystone Ravine (Englebright Reservoir, 1998). Between October and March, from one to several birds may winter at Englebright Reservoir. Their occurrence at any time is probably related to often-ephemeral food supplies in the form of fish or waterfowl.

Suitable habitat for the California red-legged frog may also occur at the Pacific Gas and Electric Company property or at Englebright Lake. The last California red-legged frogs observed in the Dry Creek Drainage were seen at the Sierra Foothills Field Station headquarters on April 4, 1974, about two miles northwest of the Pacific Gas and Electric Company facility. This Dry Creek population apparently died out during the extensive drought of 1986 through 1991. The original population of California red-legged frogs in the mid to lower parts of the Yuba River was probably eliminated soon after the filling of Englebright Lake.

**Botanical Resources.** The Narrows Project is located within the Sierra Nevada Region, on the border of both the Sierra Nevada foothills and high Sierra Nevada subregions. The Sierra Nevada foothill subregion is characterized by blue oak-foothill pine woodlands and is dotted with serpentine outcrops. The high Sierra Nevada subregion is characterized by mostly conifer forest above 1,640 feet and has complex vegetation ranging from lower montane ponderosa pine forests to upper montane red fir forests and treeless alpine communities at the highest elevations (Hickman, 1993). The northern Sierra Nevada foothills and the northern high Sierra Nevada districts are both within the project area, sharing the boundary of the Nevada and Yuba county line. Land within the project ranges from 300 to 900 feet in elevation, with the Narrows 1 Powerhouse (300 feet amsl) located at the lowest elevation and the substation and the Englebright Reservoir (500-900 feet amsl) located at the highest elevations (PG&E Co., 1999b).

The steep-walled canyon of the Yuba River consists of blue oak-foothill pine woodland, annual grassland, riverine, and montane hardwood habitat types. Narrows 1 Powerhouse is associated with all but annual grass habitat. Special-status plant species that may occur around the powerhouse include Butte County fritillary (*Fritillaria eastwoodiae*), bog club-moss (*Lycopodiella inundata*), and marsh skullcap (*Scutellara galericulata*). Riverine is the habitat category associated with the Yuba River, the major waterway within the project. Riparian vegetation is not common along the river because the canyon is very narrow, with steep, cliff-like walls of rock.

Watershed lands are associated with blue oak-foothill pine and montane woodland habitat types, which have a tree cover ranging from sparse to closed canopy. In more open areas, the understory consists of annual grassland and chaparral (Englebright Reservoir, 1998). Cantelow's lewisia (*Lewisia cantelonii*) and Follett's monardella (*Monardella follettii*) are among the few special-status plant species that could potentially occur in this area.

Table 4.5-30 lists the special status plants that are found, or potentially could occur, in Bundle 9. This list was compiled using CNDDB, USFS, and BLM sensitive plant lists, related project documents, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

**Table 4.5-30 Bundle 9 - North Yuba River Special-Status Plant Species That Occur Or Potentially Could Occur Within The Narrows Project (FERC 1403)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Calystegia stebbinsii</i> Stebbins' morning-glory	E/E/1B/--	Chprl, (openings) CmWld / serpentinite or gabbroic	Transmission Lines and Access Roads
<i>Fritillaria eastwoodiae</i> Butte County fritillary	SOC/--/3/FSS, BLMS	Chprl, CmWld, LCFrs (openings) / sometimes serpentinite	Narrows Powerhouse #1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Land
<i>Lathyrus sulphureus</i> var. <i>argillaceus</i> dubious pea	--/--/3/--	CmWld, LCFrs, UCFrs	Transmission Lines and Access Roads
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/--/1B/FSS, BLMS	BUFRs, Chprl, CmWld, LCFrs / mesic, granitic	Watershed Land
<i>Lycopodiella inundata</i> bog club-moss	--/--/2/--	BgFns (coastal) MshSw (lake margins), LCFrs (mesic)	Narrows Powerhouse #1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Land
<i>Monardella folletti</i> Follett's monardella	--/--/1B/FSS	LCFrs (rocky, serpentinite)	Watershed Lands
<i>Scutellara galericulata</i> marsh skullcap	--/--/2/FSS	LCFrs, Medws (mesic), MshSw	Narrows Powerhouse #1, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Land

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

**CNPS:** California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

**Other:** Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

**Habitats:**

AlpBR = Alpine Boulder and Rock Field

BgFns = Bogs and Fens

BUFRs = Broadleaved Upland Forest

CCFRs = Closed-Cone Conifer Forest

Chprl = Chaparral

ChScr = Chenopod Scrub

LCFrs = Lower Montane Conifer Forest

Medws = Meadows and Seeps

MshSw = Marshes and Swamps

PJWld = Pinyon and Juniper Woodland

Plyas = Playas

RpFrs = Riparian Forest

Cmwld= Cismontane Woodland  
CoDns = Coastal dunes  
CoPrr = Coastal Prairie  
CoScr = Coastal Scrub  
GBGrS = Great Basin grassland  
GBScr = Great Basin Scrub

RpScr = Riparian Scrub  
RpWld = Riparian Woodland  
SCFrS = Subalpine Conifer Forest  
UCFrS = Upper Montane Conifer Forest  
VFGrs = Valley and Foothill Grassland  
VnPls = Vernal Pools

### **Bundle 10: Potter Valley**

#### ***Potter Valley (FERC 0077)***

The Potter Valley Project, Bundle 10, is in a sparsely populated area of Mendocino, Lake, and Humboldt Counties. It is located in the coastal mountains of Northern California approximately five miles north of the community of Potter Valley. The project covers a range of 500 to 1,020 feet in elevation and lies on the Eel River and the Russian River. Lake Pillsbury and Van Arsdale Reservoir store and regulate water for the Potter Valley Powerhouse. Most of the land in the immediate vicinity of the project is undeveloped and is either privately owned or part of the Mendocino National Forest. BLM administers approximately 640 acres to the west of the project boundary. Substantial acreages of land in the Mendocino National Forest are located north and east of the project (PG&E Co., 1999b).

The Potter Valley facility consists of the Potter Valley Powerhouse, a tunnel and penstocks, Van Arsdale Reservoir, and Lake Pillsbury. Van Arsdale Reservoir is a diversion point that serves as a forebay to the powerhouse. A debris intake structure and a slide gate to stop water flow in Potter Valley Tunnel is located on the south bank of the Van Arsdale Reservoir.

Land use in the project consists primarily of activities and structures associated with hydroelectric generation. Other uses within the project boundary include timber production and grazing. Land around Lake Pillsbury is used heavily for recreation (PG&E Co., 1999b).

The climate of the Eel and Russian River basin is Mediterranean with sub-regional variations. Northern and western areas of the basin receive the highest precipitations with approximately 75 percent occurring in the form of rain between November and March. Snow occurs in some higher elevations (PG&E Co., 1999b).

***Vegetation Communities.*** A variety of vegetative types occur in the Potter Valley Project, including blue oak woodland, lacustrine, valley oak woodland, montane hardwood conifer, ponderosa pine, and urban. In general, on drier slopes, oak woodland and chaparral predominate, and on wetter soils, broadleaf and coniferous forests are found. Disjunct stands of valley foothill riparian communities occur along streams and the Eel River (PG&E Co., 1981c).

The Potter Valley Powerhouse is located in a disturbed area that is rocky and mostly barren. Habitat types occurring at the site include shrubs, annual grasses, and forbes. Potter Valley Tunnel crosses through many different habitat types, including annual grasses, blue oak-foothill pine, montane riparian, montane hardwood, and riverine. The access road to the powerhouse passes

through several stands of montane riparian habitat. Potter Valley Project waterways (Lake Pillsbury, Van Arsdale Reservoir, Eel River, and the East Fork of the Russian River) mostly consist of blue oak-woodland, montane riparian, valley foothill riparian, mixed hardwood conifer, and lacustrine and riverine water elements. Montane-hardwood conifer forest habitat occurs in the upland areas surrounding Lake Pillsbury and surrounding watershed lands.

There are two predominant wetland communities within the project boundary. The first is classified as a riverine wetland and consists of the Eel River from the water's edge to a depth of 6.6 feet at low water. The second is the valley foothill riparian communities (palustrine scrub-shrub). The source of water for these wetland communities is primarily the Eel River (PG&E Co., 1981c).

Table 4.5-31 further outlines all of the plant communities of the Potter Valley Project based upon the Wildlife Habitat Relationships program (WHR), and the California Gap Analysis Project.

**Table 4.5-31 Bundle 10 – Potter Valley Vegetation Communities Associated With the Potter Valley Project (FERC 0077)**

Project Features	Foothill Communities				Transition Communities		Water Elements	
	AGS	PPN	BOW	VOW	MRI	MHC	RIV	LAC
<b>Generation Facilities</b>								
Potter Valley Tunnel and Potter Valley Powerhouse	X			X	X	X	X	X
<b>Project Waterways</b>								
Lake Pillsbury		X	X	X				X
Van Arsdale Reservoir		X				X	X	X
Eel River		X		X		X	X	
East Fork of the Russian River						X	X	
<b>Transmission Lines and Access Roads</b>								
			X			X		
<b>Watershed Lands</b>								
		X	X	X		X	X	X
<b>FERC Licensed Lands</b>								
		X	X	X		X	X	X

NOTES: Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Transmission Lines and Access Roads: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer. FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

Habitats:

AGS	=	Annual Grassland	MHW	=	Montane Hardwood
BOP	=	Blue Oak-Foothill Pine	MRI	=	Montane Riparian
BOW	=	Blue Oak Woodland	PPN	=	Ponderosa Pine
CRC	=	Chamise-Redshank Chaparral	RFR	=	Red Fir
DFR	=	Douglas-Fir	RIV	=	Riverine
FEW	=	Fresh Emergent Wetland	SCN	=	Subalpine Conifer
JPN	=	Jeffrey Pine	SGB	=	Sagebrush
LAC	=	Lacustrine	SMC	=	Sierra Mixed Conifer
LPN	=	Lodgepole Pine	VOW	=	Valley Oak Woodland
LSG	=	Low Sagebrush	VRI	=	Valley Foothill Riparian
MCP	=	Montane Chaparral	WFR	=	White Fir
MCH	=	Mixed Chaparral	WTM	=	Wet Meadow
MHC	=	Montane Hardwood-Conifer			

**Wildlife Resources.** Based on the various vegetative types found in Potter Valley Project, five major wildlife habitats were identified: valley-foothill riparian, montane hardwood conifer, pasture, riverine, and lacustrine. Valley-foothill riparian habitat occurs at scattered locations along the edge of Van Arsdale Reservoir, the Eel River, and its tributaries. This habitat provides food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for wildlife. Montane-hardwood conifer forest habitat occurs in the upland areas surrounding Van Arsdale Reservoir, Lake Pillsbury, and Pacific Gas and Electric Company watershed lands. Mature montane-hardwood conifer forests are valuable to cavity-nesting birds, and are an important food source for many birds and mammals. Protected species likely to be found at most elevations include bald eagle, golden eagle (*Aquila chrysaetos*), and peregrine falcon (*Falco peregrinus*), to name a few (PG&E Co., 1981d).

The bald eagle is the only State or Federally listed species known to nest in the vicinity of the proposed project (PG&E Co., 1981d). The peregrine falcon is a wide-ranging species that may occur in the proposed project based on potential nesting habitat as well as the California spotted owl and the northern goshawk. At this time, osprey (*Pandion haliaetus*) is the only sensitive species known to nest in the area. There is an active nest location one-quarter mile southwest of Scott Dam which is located at Lake Pillsbury (PG&E Co., 1981d).

Lake Pillsbury area has optimal habitat for many wildlife species. An active bald eagle nest site is located within the area and has been documented as active since 1967<sup>4</sup>. Primary and secondary management zones have been approved for the Lake Pillsbury nest (PG&E Co., 1981d). Scott Dam lies just outside the western edge of the secondary management zone. Lake Pillsbury also contains habitat suitable for California spotted owl, California marten, pacific fisher (*Martes pennanti pacifica*), and northern goshawk.

Re-introduced tule elk (*Cervus elaphus nannodes*) use the northern portion of Lake Pillsbury as winter range (USDA, 1995). Grassland, wet meadows, and riparian areas are preferred habitats of

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4 Pacific Gas and Electric Company. FERC License No. 77, Potter Valley Project, Exhibit E, Terrestrial Resources, Environmental Report. 1981.

tule elk. Sightings and tracking by radio telemetry indicate that at least six different riparian zones are used by this Lake Pillsbury herd. The Eel River between Scott Dam and Benmore Creek is the only riparian zone in the proposed project utilized by the Lake Pillsbury herd (PG&E Co., 1981d). Currently, timber management activities and off road vehicle use are causing the greatest negative impact on the Lake Pillsbury Herd (PG&E Co., 1981d). Other game species that could be found within project boundaries include mourning dove (*Zenaidura macroura*), California quail (*Callipepla californica*), mountain quail (*Oreortyx pictus*), several species of waterfowl, band-tailed pigeon (*Columba fasciata*), grouse, ring-neck pheasant (*Phasianus colchicus*), brush rabbits (*Sylvilagus bachmani*), snowshoe hare (*Lepus americanus*), white-tailed hare (*Lepus townsendi*), black-tailed hare (*Lepus californicus*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), western gray squirrel (*Sciurus griseus*), and deer.

The Eel River also provides potential habitat for several species of concern. Riverine and blue oak woodland communities allow a diverse mix of species. Bald eagle, osprey, and other bird species such as the willow flycatcher (*Empidonax traillii*), use the Eel River as part of their feeding and nesting territory. Riparian habitat is potential habitat for several sensitive amphibian and reptile species including the northwestern pond turtle (*Clemmys marmorata marmorata*), California red-legged frog, and foothill yellow-legged frog. Bats have the potential to occupy dam structures such as the Cape Horn Dam facility located at Van Arsdale Reservoir. Bat surveys have not been conducted, but there are several special-status species of bats within the range of the project boundary, and there is potential for them to occur.

Complete lists of special status species that have the potential to occur in the project are listed in Table 4.5-32.

**Table 4.5-32 Bundle 10 – Potter Valley Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Potter Valley Project (FERC 0077)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Pomo bronze shoulderband <i>Helminthoglypta arrosa pomoensis</i>	SOC/-/-	BOW, BOP	Potter Valley Tunnel and Powerhouse, East Fork Russian River, Lake Pillsbury, Eel River, FERC Licensed Lands, Transmission Lines and Access Roads, Van Arsdale Reservoir, Watershed Lands
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC,CFP/-	VRI, RIV, LAC	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Van Arsdale Reservoir, Eel River, East Fork Russian River
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP/FSS, BLMS	VRI, PPN, SMC, CSC, MHC, WTM, RIV	Potter Valley Tunnel and Powerhouse, East Fork Russian River, Lake Pillsbury, Eel River, FERC Licensed Lands, Transmission Lines and Access Roads, Van Arsdale Reservoir, Watershed Lands

**Table 4.5-32 Bundle 10 – Potter Valley Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Potter Valley Project (FERC 0077)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
<b>Reptiles</b>			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/FSS	AGS, BOW BOP, MHW, MHC, RIV, LAC, MRI	Potter Valley Tunnel and Powerhouse, East Fork Russian River, Lake Pillsbury, Eel River, FERC Licensed Lands, Transmission Lines and Access Roads, Van Arsdale Reservoir, Watershed Lands
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP/--	AGS, MRI, BOW, BOP, MHW, MHC, LAC, RIV	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, FERC Licensed Lands, Watershed Lands, East Fork Russian River, Transmission Lines and Access Roads, Eel River
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLMS	SMC, MHC, MHW, DFR	Potter Valley Tunnel and Powerhouse, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Lands
Coopers hawk <i>Accipiter cooperii</i>	--/SSC/--	AGS, BOW, BOP, MRI, MHW, MHC	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, FERC Licensed Lands, Watershed Lands, East Fork Russian River, Transmission Lines and Access Roads, Eel River
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	LAC	Potter Valley Powerhouse, Lake Pillsbury, Van Arsdale Reservoir, Watershed Lands, FERC Licensed Lands
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP/CDF, BLMS	BOP, MHW, MHC	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Eel River, East Fork Russian River, Transmission Lines, Watershed Lands, FERC Licensed Lands
Loggerhead shrike <i>Lanius ludovicianus</i>	SOC/SSC/--	BOP	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Eel River, East Fork Russian River, Transmission Lines, Watershed Lands, FERC Licensed Lands
Merlin <i>Falco columbarius</i>	--/SSC/--	AGS, BOW, BOP, MHW, MHC, SMC, MRI, LAC, RIV	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, FERC Licensed Lands, Watershed Lands, East Fork Russian River, Transmission Lines and Access Roads, Eel River
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC/FSS, CDF	BOW, BOP, MRI, MHW, MHC,	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, FERC Licensed Lands, Watershed Lands, East Fork Russian River, Transmission Lines and Access Roads, Eel River
Northern harrier <i>Circus cyaneus</i>	--/SSC/--	AGS, MRI, BOW, BOP, MHW, MHC, LAC, RIV	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, FERC Licensed Lands, Watershed Lands, East Fork Russian River, Transmission Lines and Access Roads, Eel River
Osprey <i>Pandion haliaetus</i>	--/SSC/CDF	LAC	Potter Valley Powerhouse, Lake Pillsbury, Van Arsdale Reservoir, Watershed Lands, FERC Licensed Lands
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/--	AGS, BOW, BOP, MRI, MHW, MHC, LAC, RIV	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, FERC Licensed Lands, Watershed Lands, East Fork Russian River, Transmission Lines and Access Roads, Eel River
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	BOP, MHW, AGS	Potter Valley Tunnel and Powerhouse



**Table 4.5-32 Bundle 10 – Potter Valley Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Potter Valley Project (FERC 0077)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Purple martin <i>Progne subis</i>	--/SSC/--	AGS, BOW, BOP, LAC	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, Eel River, East Fork of the Russian River, Transmission Lines and Access Roads, Watershed Lands, FERC Licensed Lands
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	AGS, BOW, BOP, MHW, MHC, MRI	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, FERC Licensed Lands, Watershed Lands, East Fork Russian River, Transmission Lines and Access Roads, Eel River
White-tailed kite <i>Elanus leucurus</i>	--/CFP/FSS	BOP, BOW	
Willow flycatcher <i>Empidonax traillii</i>	-/SE/FSS	WTM, MRI, RIV	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir, Lake Pillsbury, FERC Licensed Lands, Watershed Lands, East Fork Russian River, Transmission Lines and Access Roads, Eel River
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC/--	BOP, BOW	Lake Pillsbury, Transmission Lines and Access Roads, Watershed Lands, FERC Licensed Lands
<b>Mammals</b>			
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/FSS, BLMS	MHW, MHC	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, East Fork Russian River
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLMS	AGS, BOW, BOP, MCH	Valley Tunnel and Powerhouse, Lake Pillsbury, Van Arsdale Reservoir, Eel River, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Lands, Watershed Lands
Pine marten <i>Martes americana</i>	--/--/FSS	MHC, MHW	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, East Fork Russian River
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	SOC/SSC/--	MRI, MHW, MHC	Potter Valley Tunnel and Powerhouse, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Lands, Watershed Land
Townsend's Western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/FSS, BLMS	AGS, BOW, BOP, MCH	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Van Arsdale Reservoir, Eel River, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Lands, Watershed Lands
Western red bat <i>Lasiurus blossevillei</i>	--/--/FSS	AGS, BOW, BOP, MCH	Valley Tunnel and Powerhouse, Lake Pillsbury, Van Arsdale Reservoir, Eel River, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Lands, Watershed Lands
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLMS	BOP, VOW	Lake Pillsbury, Transmission Lines and Access Roads, Watershed Lands, FERC Licensed Lands

Notes: Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

Special-Status Species:

Federal:

FE = Federally listed as endangered

FT = Federally listed as threatened

SOC = Federal species of concern

FC = Federal Candidate species

State:

SE = State listed as endangered

#### 4.5 Terrestrial Biology

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ST = State listed as threatened  
SSC = State species of special concern  
CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species  
BLM = Bureau of Land Management sensitive species  
CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Botanical Resources.** The Potter Valley Project is within the northwestern California region and, more specifically, the North Coast Ranges subregion (elevations between 500 to 1,020 feet) and the High North Coast Ranges district. Noble or red fir and oak woodland or montane fir/pine forest characterize the North Coast Ranges subregion. Bundle 10 lies within the High North Coast Ranges district in Mendocino County and borders the Outer North Coast Ranges district. A mix of regions occurs due to the location of the project. The Outer North Coast Ranges district is characterized by redwood, mixed-evergreen, and mixed-hardwood forests, as well as noble or red fir and oak woodland communities (Hickman, 1993).

Specific vegetative communities associated with the Potter Valley powerhouse and tunnel include annual grass, blue oak-foothill pine, montane riparian, montane hardwood-conifer, and riverine. The powerhouse is located in a very disturbed area, mostly rocky and barren, but waterways around the powerhouse support a number of sensitive riparian plant species. Potter Valley tunnel crosses through many different habitat types and is mainly surrounded by annual grassland used for grazing, with patches of blue oaks and foothill pine stands. The annual grassland provides potential habitat for a variety of native sensitive grasses and chaparral species as well as sensitive flower species.

Project waterways include Lake Pillsbury, Van Arsdale Reservoir, Eel River, and the East Fork of the Russian River. Lake Pillsbury and Van Arsdale Reservoir are both associated with habitat components of open water. Open water provides resting and feeding habitat for several wildlife species. Lake Pillsbury is approximately 1,800 feet in elevation and is associated with blue oak-foothill pine, montane hardwood, and lacustrine habitat types. Several rare, threatened, or endangered species of plants such as marsh horsetail (*Equisetum palustre*) and Kruckeberg's jewel-flower (*Streptanthus morrisonii* ssp. *kruckebergii*) potentially could occur in the Lake Pillsbury

area. Van Arsdale Reservoir is associated with both riverine and lacustrine habitat types. Nuttall's pondweed (*Potamogeton epithydrus* ssp. *nuttallii*) and eel-grass pondweed (*Potamogeton zosteriformis*) are two special status species of plants that have the potential to occur at Van Arsdale Reservoir.

The Eel River and the East Fork of the Russian River are heavily associated with riparian vegetation and provide the water for wetland communities within the project. Cottonwood (*Populus* sp.), sycamore (*Plantus* sp.), and valley oak (*Quercus lobata*) are among the many riparian species that occur along the rivers.

Watershed lands located within this project are associated with montane hardwood, blue oak-foothill pine, and montane hardwood conifer habitat types. Potential habitat for special-status plant species could occur in the chaparral and lower montane conifer forests of the area. Pubescent needle grass (*Achnatherum lemmonii* var. *pubescens*) and Anthony peak lupine (*Lupinus antoninus*) are two examples of plants species specific to this vegetation community.

Table 4.5-33 lists the special status plants that are found, or potentially could occur, in Bundle 10. This list was compiled using CNDDB, Forest Service and BLM sensitive plant lists, related project documents, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

**Table 4.5-33 Bundle 10 - Potter Valley Special-Status Plant Species That Occur or Potentially Could Occur Within the Potter Valley Project (FERC 0077)**

Scientific Name Common Name	Status : USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Achnatherum lemmonii</i> var. <i>pubescens</i> pubescent needle grass	--/--/3	Chprl, LcFrS/ serpentinite	Watershed Lands
<i>Antirrhinum subcordatum</i> dimorphic snapdragon	--/--/4/BLMS	Chprl, LCFrS/ sometimes serpentinite	Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Arabis macdonaldiana</i> McDonald's rock cress	E/E/1B/--	LCFrS, UCFrS/ serpentinite	East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Arctostaphylos canescens</i> ssp. <i>sonomensis</i> Sonoma manzanita	--/--/1B/--	Chprl, LCFrS	East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Astragalus rattanii</i> var. <i>jepsonianus</i> Jepson's milk-vetch	--/--/1B/--	CmWld, VFGrS, / often serpentinite	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	--/--/1B/BLMS	CmWld, VFGrS, sometimes serpentine	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Botrychium minganense</i> Mingan moonwort	--/--/2/--	LCFrS (mesic)	Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands

**Table 4.5-33 Bundle 10 - Potter Valley Special-Status Plant Species That Occur or Potentially Could Occur Within the Potter Valley Project (FERC 0077)**

Scientific Name Common Name	Status : USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Brodiaea coronaria</i> ssp. <i>rosea</i> Indian Valley brodiaea	SOC/E/1B/--	CCFrS, Chprl, VFGrs / serpentine	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River
<i>Cardamine pachystigma</i> var. <i>dissectifolia</i> dissected-leaved toothwort	--/--/3/FSS	Chprl (serpentine)	East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands,
<i>Ceanothus confusus</i> Rincon Ridge ceanothus	SOC/--/1B/BLMS	CCFrS, Chprl, CmWld./ volcanic or serpentine	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Epilobium oreganum</i> Oregon fireweed	SOC/--/1B/BLMS	BgFns, LCFrs (mesic)	Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Equisetum palustre</i> marsh horsetail	--/--/3/--	MshSw	Lake Pillsbury
<i>Eriastrum brandegeae</i> Brandegee's eriastrum	SOC/--/1B/--	Chprl, CmWld/ volcanic	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Erigeron biolettii</i> streamside daisy	--/--/3/--	BUFrS, CmWld, NCFrs / rocky, mesic	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Eriogonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	--/--/3/--	Chprl, CoPrr, VFGrs / serpentine	Potter Valley Tunnel and Powerhouse, Watershed Lands
<i>Fritillaria pluriflora</i> adobe-lily	SOC/--/1B/BLMS	Chprl, CmWld, LCFrs (openings)/ sometimes serpentine	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Glyceria grandis</i> American manna grass	--/--/2/--	BgFns, Medws, MshSw (streambanks and lake margins)	Van Arsdale Reservoir
<i>Hemizonia congesta</i> ssp. <i>leucocephala</i> Hayfield tarplant	--/--/3/--	COScr, VFGrs	Potter Valley Tunnel and Powerhouse
<i>Hesperolinon</i> <i>adenophyllum</i> glandular western flax	SOC/--/1B/BLMS	Chprl, VFGrs (serpentine)	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Hesperolinon</i> <i>didymocarpum</i> Lake County western flax	SOC/E/1B/--	Chprl, CmWld, VFGrs/ serpentine	Potter Valley Tunnel and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Hesperolinon</i> <i>drymarioides</i> drymaria-like western flax	SOC/--/1B/BLMS	CCFrS, Chprl, CmWld, VFGrs (serpentine)	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Horkelia bolanderi</i> Bolander's horkelia	SOC/--/1B/--	LCFrS, Medws(edges, vernally mesic), VFGrs	Potter Valley Tunnel and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands

**Table 4.5-33 Bundle 10 - Potter Valley Special-Status Plant Species That Occur or Potentially Could Occur Within the Potter Valley Project (FERC 0077)**

Scientific Name Common Name	Status : USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Layia septentrionalis</i> Colusa layia	--/--/1B/BLMS	Chprl, CmWld, VFGr/sandy serpentine	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Lewisia stebbinsii</i> Stebbins' lewisia	SOC/--/1B/--	LCFr, UCFr/ gravelly, sometimes serpentine	Watershed Lands
<i>Limnanthes bakeri</i> Baker's meadowfoam	SOC/R/1B/--	Medws, MshSw (freshwater) VFGr (vernally mesic), VnPls	Potter Valley Tunnel and Powerhouse, Van Arsdale Reservoir
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i> woolly meadowfoam	--/--/2/--	CmWld, VFGr/ vernally mesic	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Lupinus antoninus</i> Anthony Peak lupine	SOC/--/1B/BLMS	LCFr, UCFr	Watershed Lands
<i>Lupinus milo-bakeri</i> Milo Baker's lupine	SOC/T/1B/--	CmWld (often along roadsides), VFGr	Potter Valley Tunnel and Powerhouse, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Lupinus sericatus</i> Cobb Mountain lupine	--/--/1B/--	Chprl, CmWld, LCFr	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Malacothamnus mendocinensis</i> Mendocino bush mallow	SOC/--/1A/--	CmWld	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Monardella folletii</i> Follett's monardella	--/--/1B/FSS	LCFr (rocky, serpentine)	Potter Valley Tunnel and Powerhouse
<i>Monardella villosa</i> ssp. <i>globosa</i> robust monardella	--/--/1B/--	Chprl (openings), CmWld	Lake Pillsbury, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	--/--/1B/BLMS	CmWld, LCFr, Medws (mesic), VFGr, VnPls	Potter Valley Tunnel and Powerhouse, East Fork Russian River, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Parvisedum leiocarpum</i> Lake County stonecrop	E/E/1B/--	CmWld, VFGr, VnPls/ vernally mesic depressions in rock outcrops	Potter Valley Tunnel and Powerhouse, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Plagiobothrys lithocaryus</i> Mayacamas popcorn flower	--/--/1A/--	Chprl/ CmWld, VFGr/ mesic	Potter Valley Tunnel and Powerhouse, East Fork Russian River, Eel River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i> Nuttall's pondweed	--/--/2/--	MshSw (assorted shallow freshwater)	Van Arsdale Reservoir
<i>Potamogeton zosteriformis</i> eel-grass pondweed	--/--/2/--	MshSw (assorted freshwater)	Van Arsdale Reservoir
<i>Sanguisorba officinalis</i> great burnet	--/--/2/--	BgFns, BUFrs, Medws, MshSw, NCFrs, RpFr / often serpentine	Lake Pillsbury, Van Arsdale Reservoir, Eel River, East Fork Russian River

**Table 4.5-33 Bundle 10 - Potter Valley Special-Status Plant Species That Occur or Potentially Could Occur Within the Potter Valley Project (FERC 0077)**

Scientific Name Common Name	Status : USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Sedum eastwoodiae</i> Red Mountain stonecrop	C/--/1B/--	LCFrS (serpentine)	Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Sidalcea oregana</i> ssp. <i>hydrophila</i> marsh checkerbloom	--/--/1B/--	Medws, RpFrS/ mesic	Potter Valley Tunnel and Powerhouse, Lake Pillsbury, Van Arsdale Reservoir, Eel River, East Fork Russian River Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Silene campanulata</i> ssp. <i>campanulata</i> Red Mountain catchfly	SOC/E/4/--	Chprl, LCFrS/ serpentine	Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Streptanthus brachiatus</i> ssp. <i>hoffmanii</i> Freed's jewel-flower	SOC/--/1B/BLMS	Chprl, LCFrS/ serpentine	Potter Valley Tunnel and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Streptanthus morrisonii</i> ssp. <i>kruckebergii</i> Kruckeberg's jewel-flower	SOC/--/1B/BLMS	CmWld (serpentine)	Lake Pillsbury, Eel River
<i>Tracyina rostrata</i> beaked tracyina	--/--/1B/--	CmWld, VFGrS	Potter Valley Tunnel and Powerhouse, Eel River, East Fork Russian River, Transmission Lines and Access Roads, FERC Licensed Land, Watershed Lands
<i>Trifolium amoenum</i> showy Indian clover	E/--/1B/--	VFGrS (sometimes serpentine)	Potter Valley Tunnel and Powerhouse

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

**CNPS:** California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

**Other:** Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

**Habitats:**

AlpBR = Alpine Boulder and Rock Field	LCFrS = Lower Montane Conifer Forest
BgFns = Bogs and Fens	Medws = Meadows and Seeps
BUFrS = Broadleaved Upland Forest	MshSw = Marshes and Swamps
CCFrS = Closed-Cone Conifer Forest	PJWld = Pinyon and Juniper Woodland
Chprl = Chaparral	Plyas = Playas
ChScr = Chenopod Scrub	RpFrS = Riparian Forest
Cmwld= Cismontane Woodland	RpScr = Riparian Scrub
CoDns = Coastal dunes	RpWld = Riparian Woodland
CoPrr = Coastal Prairie	SCFrS = Subalpine Conifer Forest
CoScr = Coastal Scrub	UCFrS = Upper Montane Conifer Forest
GBGrS = Great Basin grassland	VFGrs = Valley and Foothill Grassland
GBScr = Great Basin Scrub	VnPls = Vernal Pools

## **Bundle 11: South Yuba River**

### ***Drum-Spaulding (FERC 2310)***

The Drum-Spaulding project is in portions of both Placer and Nevada Counties and extends along Interstate 80 from Auburn to Donner Summit on the western slope of the Sierra Nevada. It begins on the South Yuba River near Donner Summit and ends at Folsom Lake on the American River, covering an elevational range of 8,000 to 300 feet. Most of the project's forebays, afterbays, and powerhouses, as well as two recreation facilities, lie outside the Tahoe National Forest, north of the I-80 corridor near Auburn (PG&E Co., 1999b).

The project consists of an extensive network of hydraulically linked facilities located within Yuba River, Bear River, Deer Creek and American River Basins, including multiple interbasin water transfers. Facilities within this project consist of 12 powerhouses: Spaulding 1, 2, and Spaulding 3, Drum 1 and 2, Deer Creek, Dutch Flat, Alta, Halsey, Wise 1 and Wise 2, and Newcastle.

From the upper lakes to Folsom Lake, the entire project totals 18,537 acres. The Spaulding Complex (Powerhouses 1, 2, and 3, Spaulding Dam and Tunnel) is on the northwest shore of Lake Spaulding and the South Yuba River about 38 miles northeast of Auburn, Placer County. The Deer Creek Complex (South Yuba Canal, Deer Creek Forebay and Powerhouse) is on the South Fork of Deer Creek about 14 miles east of Nevada City, in Nevada County. The Drum Complex (Drum 1 and 2 Powerhouses, canal, forebay, penstocks, and afterbay) is on the Bear River and are about 29 miles northeast of Auburn, Placer County. The Alta Complex (Alta Powerhouse, forebay, and penstock) is on a tributary to the Bear River, near Alta, in Placer County. The Dutch Flat Complex (Dutch Flat 1 Powerhouses, tunnel, penstock, and afterbay) is located on the Bear River and is most readily accessed via the town of Dutch Flat, off interstate 80, about 25 miles northeast of Auburn, in Placer County. The Halsey Complex (Halsey Powerhouse, forebay, afterbay, and Bear River Canal) is east of Interstate 80 in Placer County. The Wise Complex (Wise 1 and 2 Powerhouses, canal, forebay, penstocks, afterbay, South Canal, South Canal Spillway, and Newcastle Powerhouse) is adjacent to South Canal, off Interstate 80, in Auburn, in Placer County.

The major lakes and reservoirs of this project are associated with some of the above complexes. Upper Lakes (Upper Rock Lake, Lower Rock Lake, Culbertson Lake, Upper Lindsey Lake,

Middle Lindsey Lake, Upper Feeley Lake, Lower Feeley Lake, Blue Lake, Rucker Lake, and Fuller Lake) and the Spaulding Lake Complex (Lake Fordyce, Kidd Lake, Upper and Lower Peak Lakes, Lake Sterling, White Rock Lake, and Meadow Lake) are all storage lakes associated with the Spaulding Complex. All but one are natural bodies of water with a usable storage capacity increased by earth or rock filled dams. Lake Fordyce is a human-made lake. Kelly Lake and Lake Valley Reservoirs store water that is conveyed to the powerhouses via the Lake Valley and Drum Canals for the Drum Complex system.

Project lands experience a typical Mediterranean-type climate: warm, dry summers alternate with cool, wet winters. Average annual precipitation varies from about 50 inches near the western boundary to 80 inches at the 6,000-foot level. Most precipitation occurs between November and May in the form of thunderstorms in lower elevations and snow about 5,000 feet elevation on the west side of the Sierra Nevada crest. Extended drought periods can occur at lower elevations (PG&E Co., 1999b).

***Vegetation Communities.*** A variety of vegetative types occur in the Drum-Spaulding Project, including sagebrush, blue oak woodland, annual grassland, blue oak-foothill pine, cropland, barren, Jeffery pine, Douglas-fir, mixed chaparral, montane chaparral, red-fir, sierran mixed conifer, subalpine conifer, urban, wet meadow, and white fir communities. In general, on drier slopes, oak woodland and chaparral predominate, and on wetter soils, coniferous forests can be found. Montane hardwood and mixed conifer forests are more common in the upper region of the bundle while the foothill and transition communities are found in the southern portion. In some of the higher elevations, barren and rocky outcrops can be found among open coniferous forests.

The Upper Lakes and the Spaulding Lake Complex are associated with subalpine conifer forests. This habitat occurs in areas where substantial snowpack accumulation and cold temperatures limit the growing season to three months or less (CNPS, 1994). The mid-region of the project, Spaulding Lake, Spaulding Complex, Deer Creek, Drum Complex, and Dutch Flat Complex, is associated with lower montane conifer forests. This habitat type is defined by open to dense stands of conifers found at lower and middle elevations in the mountains. Broad-leaved trees and shrubstories may be present in the understory. Shrubstories may be dense assemblages of chaparral species, especially in seral stands (CNPS, 1994). The lower region of the project, Alta complex, Rollins reservoir, Halsey Complex, and Wise Complex, is associated with mixed blue oak woodlands, annual grassland, and mixed chaparral communities.

Table 4.5-34 further outlines all of the vegetation communities of the Drum-Spaulding project based upon the Wildlife Habitat Relationships program (WHR) and the California Gap Analysis Project.



**Table 4.5-34: Bundle 11 South Yuba–Bear River Vegetation Communities Associated With the Drum-Spaulding Project (FERC 2310)**

Project Features	Foothill Communities						Transition Communities					Montane Communities									Water Elements	
	AGS	CRP	BAR	URB	BOW	BOP	DFR	MCH	MHW	MHC	PPN	JPN	WTM	SGB	SMC	WFR	RFR	SCN	MCP	RIV	LAC	
Generation Facilities																						
Spaulding Complex									X	X	X		X						X	X	X	
Deer Creek Complex									X						X				X	X	X	
Drum Complex											X				X				X	X	X	
Lake Valley Canal												X				X			X	X		
Towle Diversion and Towle Canal											X								X	X		
Alta Complex											X									X	X	
Dutch Flat Complex			X						X		X									X	X	
Halsey Complex						X														X	X	
Wise Complex		X		X		X														X	X	
Transmission Lines and Access Roads																						
Upper Lakes and Spaulding Complex			X						X	X	X	X		X	X	X	X	X	X	X	X	
Drum Complex										X	X								X			
Deer Complex										X	X				X							
Dutch Flat Complex									X		X				X				X			
Rollins Complex					X				X		X											
Halsey Complex						x			X	X												

**Table 4.5-34: Bundle 11 South Yuba–Bear River Vegetation Communities Associated With the Drum-Spaulding Project (FERC 2310)**

Project Features	Foothill Communities						Transition Communities					Montane Communities								Water Elements	
	AGS	CRP	BAR	URB	BOW	BOP	DFR	MCH	MHW	MHC	PPN	JPN	WTM	SGB	SMC	WFR	RFR	SCN	MCP	RIV	LAC
Wise Complex						X			X												
<b>Watershed Lands</b>																					
Upper Lakes and Spaulding Complex										X	X	X					X		X		
Drum and Deer Complex											X				X						
Rollins Complex											X										
<b>Project Waterways</b>																					
Upper Lakes			X									X		X	X	X	X	X	X	X	X
Spaulding Lake Complex										X	X								X		X
Lake Van Norden												X			X		X				X
Peak Lakes, South Yuba River, Fordyce Creek, South Fork of Deer Creek and Kidd Lake			X									X			X				X		X
Lake Valley Reservoir and Kelley Lake												X									X
Bear River and Rollins Reservoir					X					X	X									X	X
Rock Creek Reservoir						X															X

**Table 4.5-34: Bundle 11 South Yuba–Bear River Vegetation Communities Associated With the Drum-Spaulding Project (FERC 2310)**

Project Features	Foothill Communities						Transition Communities					Montane Communities								Water Elements	
	AGS	CRP	BAR	URB	BOW	BOP	DFR	MCH	MHW	MHC	PPN	JPN	WTM	SGB	SMC	WFR	RFR	SCN	MCP	RIV	LAC
<b>FERC Licensed Lands</b>																					
Upper Lakes and Spaulding Complex			X						X	X	X	X		X	X	X	X	X	X	X	X
Dutch Flat Complex									X	X									X		
Halsey Complex						X														X	

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Transmission Lines: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer. FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC, contiguous to a generation facility or project waterway and are part of the proposed project. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood	MCP = Montane Chaparral
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian	WFR = White Fir
BOW = Blue Oak Woodland	PPN = Ponderosa Pine	MCH = Mixed Chaparral
CRC = Chamise-Redshank Chaparral	RFR = Red Fir	WTM = Wet Meadow
DFR = Douglas-Fir	RIV = Riverine	MHC = Montane Hardwood-Conifer
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer	
JPN = Jeffrey Pine	SGB = Sagebrush	
LAC = Lacustrine	SMC = Sierra Mixed Conifer	
LPN = Lodgepole Pine	VOW = Valley Oak Woodland	
LSG = Low Sagebrush	VRI = Valley Foothill Riparian	

**Wildlife Resources.** The Drum-Spaulding project extends from the crest of the central Sierra Nevada Mountains to Auburn, California, covering an elevational drop from 8,000 to 300 feet. The project includes habitat types that range from foothill communities to mid elevation and transition communities to montane communities as well as several reservoirs, rivers, streams, and creeks. This diversity in vegetation communities can provide suitable habitat to a large number of wildlife species. Mainly, the project includes annual grassland, montane chaparral, blue oak-foothill pine woodland, montane hardwood conifer, montane hardwood, sierra mixed conifer, ponderosa pine, and Jeffrey pine.

Complete lists of special-status species that have the potential to occur on lands within the project boundary are listed in Table 4.5-35 listed below.

**Table 4.5-35 Bundle 11 - South Yuba-Bear River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Drum-Spaulding Project (FERC 2310)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Button's Sierra sideband (snail) <i>Monadenia mormonum buttoni</i>	SOC/-/FSS	MRI, RIV, LAC	Alta Complex, Spaulding Complex, Halsey Complex, Wise Complex, Deer Creek Complex
Spiny rhyacophilan caddisfly <i>Rhyacophila spinata</i>	SOC/-/-	MRI, RIV, LAC	Alta Complex, Spaulding Complex, Dutch Flat Complex, Halsey Complex, Wise Complex
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/-/FSS	MRI, RIV, LAC, elderberry bush	Alta Complex, Halsey Complex, Drum Creek Complex, Wise Complex, Dutch Flat Complex
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/-	VRI, RIV, LAC	Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Deer Creek Complex, Drum Complex, South Fork of Deer Creek, Towle Canal and Diversion, Bear River
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/CFP, SSC/FSS, BLMS	VRI, PPN, SMC, CSC, MCH, WTM, RIV	Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Deer Creek Complex, Drum Complex, South Fork of Deer Creek, Towle Canal and Diversion, Bear River
Mountain yellow-legged frog <i>Rana muscosa</i>	SSC, CFP/FSS	MRI, LPN, SCN, WTM, RIV	Spaulding Complex, Lake Valley Canal, Upper Lakes, Spaulding Lake Complex, Peak Lakes, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek
<b>Reptiles</b>			
California horned lizard <i>Phrynosoma coronatum frontale</i>	SOC/SSC, CFP/BLMS	MHC	Dutch Flat Complex, Wise Complex, Halsey Complex
Western pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC/FSS	VRI, MRI, RIV, LAC	Drum Complex, Towle Diversion and Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Deer Creek Complex, Bear River, Rock Creek Reservoir

**Table 4.5-35 Bundle 11 - South Yuba-Bear River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Drum-Spaulding Project (FERC 2310)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP/FSS, CDF	RIV, LAC	Spaulding Lake Complex, Upper Lakes, Deer Creek Complex, Spaulding Complex, Drum Complex, Lake Valley Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Lake Van Norden, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Bear River and Rollins Reservoir, Rock Creek Reservoir, Lake Valley Reservoir and Kelley Lake
Black swift <i>Cypseloides niger</i>	--/SSC/--	JPN, MHC, RFR, WFR	Spaulding Complex, Lake Valley Canal, Upper Lakes, Spaulding Lake Complex, Peak Lakes, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLMS	SMC, MHC, MHW, RFR	Spaulding Lake Complex, Upper Lakes, Deer Creek Complex, Spaulding Complex, Drum Complex, Lake Valley Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Lake Van Norden Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Bear River and Rollins Reservoir, Rock Creek Reservoir, Lake Valley Reservoir and Kelley Lake
Coopers hawk <i>Accipiter cooperii</i>	--/SSC/--	MHC, MHW, SMC, MCP, BOW, BOP	Deer Creek Complex, Halsey Complex, Dutch Flat Complex, Alta Complex, Wise Complex, Bear River, Rollins Reservoir, Rock Creek Reservoir
Ferruginous hawk <i>Buteo regalis</i>	--/SSC/--	BOW, BOP	Halsey Complex, Rollins Complex Transmission Lines and Access Roads, Wise Complex Transmission Lines and Access Roads, Bear River and Rollins Reservoir, Rock Creek Reservoir, Halsey Complex Watershed Lands
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP/ FSS, CDF, BLMS	MHW, MHC, RIV, LAC	Spaulding Lake Complex, Upper Lakes, Deer Creek Complex, Spaulding Complex, Drum Complex, Lake Valley Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Lake Van Norden Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Bear River and Rollins Reservoir, Rock Creek Reservoir, Lake Valley Reservoir and Kelley Lake
Great blue heron <i>Ardea herodias</i>	--/--/CDF	LAC	Spaulding Complex, Lake Valley Canal, Upper Lakes, Spaulding Lake Complex, Peak Lakes, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek
Great egret <i>Casmerodius albus</i>	--/--/CDF	BOW, BOP, LAC, RIV	Halsey Complex, Wise Complex, Bear River and Rollins Reservoir, Rock Creek Reservoir
Greater sandhill crane <i>Grus canadensis tabida</i>	--/ST, CFP/--	WTM	Spaulding Complex, Lake Valley Canal, Upper Lakes, Spaulding Lake Complex, Peak Lakes, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek
Long-eared owl <i>Asio otus</i>	--/SSC/--	BOW, BOP, MHW, MHC, SMC, PPN, MCP	Halsey Complex, Wise Complex, Bear River and Rollins Reservoir, Rock Creek
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, MHW, MHC, SMC, MCP, LAC, RIV	Deer Creek Complex, Towle Diversion and Towle Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Bear River and Rollins Reservoir, Rock Creek

**Table 4.5-35 Bundle 11 - South Yuba-Bear River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Drum-Spaulling Project (FERC 2310)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Northern goshawk <i>Accipiter gentilis</i>	--/SSC/FSS, CDF	SCN, SMC	Spaulding Lake Complex, Upper Lakes, Deer Creek Complex, Spaulding Complex, Drum Complex, Lake Valley Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Lake Van Norden, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Bear River and Rollins Reservoir, Rock Creek Reservoir, Lake Valley Reservoir and Kelley Lake
Northern harrier <i>Circus cyaneus</i>	--/SSC/FSS	BOW, BOP, MHW, MHC, MCP, LAC, RIV, AGS	Texas Creek, Upper Lakes
Osprey <i>Pandion haliaetus</i>	--/SSC/FSS	RIV, LAC, MHC	Spaulding Lake Complex, Upper Lakes, Deer Creek Complex, Spaulding Complex, Drum Complex, Lake Valley Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Lake Van Norden Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Bear River and Rollins Reservoir, Rock Creek Reservoir, Lake Valley Reservoir and Kelley Lake
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/FSS	BAR, SMC, MHC	Spaulding Lake Complex, Upper Lakes, Deer Creek Complex, Spaulding Complex, Drum Complex, Lake Valley Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Lake Van Norden, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Bear River and Rollins Reservoir, Rock Creek Reservoir, Lake Valley Reservoir and Kelley Lake
Pileated woodpecker <i>Dryocopus pileatus</i>	--/--/FSS	MHC, MHW, MCP	Spaulding Lake Complex, Upper Lakes, Deer Creek Complex, Spaulding Complex, Drum Complex, Lake Valley Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Lake Van Norden Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Bear River and Rollins Reservoir, Rock Creek Reservoir, Lake Valley Reservoir and Kelley Lake
Purple martin <i>Progne subis</i>	--/SSC/--	AGS, BOW, BOP, LAC	Deer Creek Complex, Towle Diversion and Towle Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Bear River and Rollins Reservoir, Rock Creek
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	BOW, BOP, MHW, MHC, SMC, PPN, MCP	Spaulding Complex, Deer Creek Complex, Drum Complex, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Upper Lakes, Spaulding Lake Complex, Lake Van Norden, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Lake Valley Reservoir and Kelley Lake, Bear River and Rollins Reservoir, Rock Creek
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/FSS	BOW, BOP, MHW, MHC, PPN, MCP	Halsey Complex, Wise Complex, Bear River and Rollins Reservoir, Rock Creek
White-tailed kite <i>Elanus leucurus</i>	--/CFP/FSS	BOP	Deer Creek Complex, Towle Diversion and Towle Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Bear River and Rollins Reservoir, Rock Creek
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	WTM, MRI, RIV	Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, Lake Van Norden, Upper Lakes, Lake Valley Canal and Kelley Lake, Spaulding Lake Complex

**Table 4.5-35 Bundle 11 - South Yuba-Bear River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Drum-Spaulling Project (FERC 2310)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC/--	BOP	Deer Creek Complex, Towle Diversion and Towle Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Bear River and Rollins Reservoir, Rock Creek
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP/FSS	MHC, SMC, MCP	Spaulding Complex, Upper Lakes, Spaulding Lake Complex, Lake Van Norden, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek
Lodgepole chipmunk <i>Tamias speciosus</i>	--/--/FSS	SMC, MCP	Spaulding Complex, Lake Valley Canal, Upper Lakes, Spaulding Lake Complex, Peak Lakes, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek
Pacific fisher <i>Martes pennanti pacifica</i>	--/SSC/ FSS, BLMS	MHW, MHC, SMC, PPN, MCP	Spaulding Complex, Upper Lakes, Spaulding Lake Complex, Drum Complex, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek
Pallid bat <i>Antrozous pallidus</i>	--/SSC/ FSS, BLMS	AGS, BOW, BOP, MCH	Halsey Complex, Wise Complex, Deer Creek Complex, Bear River and Rollins Reservoir, Rock Creek Reservoir
Pine marten <i>Martes americana</i>	--/--/FSS	JPN, PPN, MHC, MHW, SMC	Spaulding Complex, Deer Creek Complex, Lake Valley Canal, Drum Complex, Towle Diversion and Towle Canal, Dutch Flat Complex, Halsey Complex, Wise Complex, Upper Lakes, Spaulding Lake complex, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Lake Valley Reservoir and Kelley Lake, Bear River and Rollins Reservoir
Sierra Nevada mountain beaver <i>Aplodontia ruja californica</i>	SOC/SSC/--	MHW, PPN, MHC	Spaulding Complex, Lake Valley Canal, Upper Lakes, Spaulding Lake Complex, Peak Lakes, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek
Townsend's Western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/ FSS, BLMS	AGS, BOW, BOP, MCH	Spaulding Complex, Deer Creek Complex, Drum Complex, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Upper Lakes, Spaulding Lake Complex, Lake Van Norden, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Lake Valley Reservoir and Kelley Lake, Bear River and Rollins Reservoir, Rock Creek Reservoir, Towle Canal and Diversion
Western red bat <i>Lasiurus blossevillei</i>	--/--/FSS	AGS, BOW, BOP, MCH	Spaulding Complex, Deer Creek Complex, Drum Complex, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Spaulding Lake Complex, Lake Van Norden, Peak Lake, Kidd Lake, South Yuba River, Fordyce Creek, South Fork of Deer Creek, Lake Valley Reservoir and Kelley Lake, Bear River and Rollins Reservoir, Rock Creek Reservoir, Towle Canal and Diversion
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLMS	BOP, VOW	Deer Creek Complex, Towle Diversion and Towle Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Bear River and Rollins Reservoir, Rock Creek

**Notes:** Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

**Special-Status Species:**

**Federal:**

FE            Federally listed as endangered  
 FT            Federally listed as threatened  
 SOC          Federal species of concern

FC	Federal Candidate species
State:	
SE	State listed as endangered
ST	State listed as threatened
SSC	State species of special concern
CFP	California Fully Protected species
Other:	
FSS	Forest Service sensitive species
BLM	Bureau of Land Management sensitive species
CDF	California Department of Forestry and Fire Protection sensitive species
Habitats:	
AGS =	Annual Grassland
BOP =	Blue Oak-Foothill Pine
BOW =	Blue Oak Woodland
CRC =	Chamise-Redshank Chaparral
DFR =	Douglas-Fir
FEW =	Fresh Emergent Wetland
JPN =	Jeffrey Pine
LAC =	Lacustrine
LPN =	Lodgepole Pine
LSG =	Low Sagebrush
MCP =	Montane Chaparral
MCH =	Mixed Chaparral
MHC =	Montane Hardwood-Conifer
MHW =	Montane Hardwood
MRI =	Montane Riparian
PPN =	Ponderosa Pine
RFR =	Red Fir
RIV =	Riverine
SCN =	Subalpine Conifer
SGB =	Sagebrush
SMC =	Sierra Mixed Conifer
VOW =	Valley Oak Woodland
VRI =	Valley Foothill Riparian
WFR =	White Fir
WTM =	Wet Meadow

Lakes and facilities associated with the higher elevation and montane vegetative communities provide potential habitat for numerous species type. The most common known occurrences include special status bird species such as the willow flycatcher, northern goshawk, California spotted owl, and bald eagle. The Upper Lakes have known bald eagle, osprey, and California spotted owl areas nesting and foraging sites associated with them. Spaulding Lake Complex has similar areas associated with it. The Spaulding Complex facilities and waterways also have known occurrences of bald eagle nesting and foraging in their vicinity.

This montane vegetative community also provides potential habitat for special status mammal species. The Pacific fisher (*Martes pennanti pacifica*), pine marten, and California wolverine (*Gulo gulo luteus*) are among the larger sensitive mammal species that could occur near or in the Spaulding Complex, Upper Lakes, and the Spaulding Lakes Complex. Many furbearers have migratory corridors that are considered of significant importance and could be impacted by development of watershed lands.

Lakes, creeks, reservoirs, and facilities associated with the mid elevations and transition communities provide potential habitats for numerous species type. Dominant habitat types associated with this area of the project are Sierran mixed conifer, Jeffery pine, ponderosa pine, montane chaparral, and montane hardwood. Known occurrences of California spotted owl and northern goshawk are associated with several complexes and waterways found in these vegetative communities, such as Deer Creek Complex, Lake Valley Reservoir, and Drum Complex. The northwestern pond turtle has known occurrences associated with Kelly Lake, South Yuba River and canal, Drum Canal, and the Bear River. Lake Putt, however, is not within the project but could be



effected by the operation of the existing project which also has known occurrences of the northwestern pond turtle.

Foothill communities associated with the lower elevation facilities of the project are dominated by blue oak-foothill pine, blue oak woodlands, annual grassland, and mixed chaparral habitats. Known occurrences of special status species for this area include foothill yellow-legged frog, California red-legged frog, California spotted owl, and pileated woodpecker (*Dryocopus pileatus*) (Nevada City Ranger District, 2000).

Bats have a tendency to inhabit powerhouses and related facilities and can be considered nuisances because they create unsanitary conditions that the facility managers wish to eliminate. Bat surveys have not been conducted, so the species of bats that may utilize facilities are unknown, but as noted in the species table above, the habitat within the project boundary has the potential to support several species of bats.

**Botanical Resources.** The Drum-Spaulding project, Bundle 11, is located within the Sierra Nevada Region and, more specifically, the high Sierra Nevada subregion and the northern high Sierra Nevada ranges. The high Sierra Nevada subregion is characterized by mostly conifer forest. Vegetation is complex, including lower montane ponderosa pine, white-fir, giant-sequoia forests, upper montane red-fir, Jeffrey pine, lodgepole-pine forests, subalpine mountain-hemlock and whitebark-pine forests, with treeless alpine communities at the highest elevations (Hickman, 1993).

The Drum-Spaulding project reaches from Bowman Lake to the northeastern end of Folsom Lake. There is a large elevational change that, in turn, gives a variety of vegetation communities. Specific vegetative communities associated with the lower region of this project (Newcastle Powerhouse, Wise Complex, Halsey Complex, Rollins Reservoir, and Dutch Flat Complex) include annual grassland, blue oak woodland, blue oak-foothill pine, cropland, mixed chaparral, and wet meadow. Vegetative communities associated with the upper region of this project (Drum Complex, Spaulding Complex, Deer Creek, Spaulding Lakes, Upper Lakes, and Peak Lakes) include more transitional and montane communities such as Jeffrey pine, Douglas fir, montane chaparral, montane hardwood, red fir, Sierran mixed conifer, subalpine conifer, white fir, sagebrush, and wet meadow. The highest elevations are barren.

Project waterways include the many reservoirs, Spaulding Lake Complex, Upper Lakes, and the Peak Lakes. Each of the project waterways is associated with habitat components of open water such as riverine and lacustrine. Several rare, threatened, or endangered species of plants such as Robbin's pondweed (*Potamogeton robbinsii*), Scadden Flat checkerbloom (*Sidalcea oregana* ssp. *hydrophila*), and American mannagrass (*Glyceria grandis*) have the potential to occur near these waterways. Other vegetation community types, such as wet meadows and lower montane conifer forest, provide potential habitat for sensitive plant species such as Mingan moonwort (*Botrychium minganense*), Sheldon's sedge (*Carex sheldonii*), and Stebbins' phacelia (*Phacelia stebbinsii*).

Table 4.5-36 lists the special status plant species that are found, or potentially could occur, in Bundle 11. This list was compiled using CNDDB, Forest Service and BLM sensitive plant lists, related documents of the project, and a CNPS model projecting plants that could occur related to the habitats and elevations of the project facilities.

**Table 4.5-36 Bundle 11 - South Yuba River Special-Status Plant Species That Occur or Potentially Could Occur Within the Drum-Spaulling Project (FERC 2310)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	--/1B/BLMS	CmWld, VFGrS, sometimes serpentine	Deer Creek Complex, Drum Complex, Towle Diversion and Canal, Halsey Complex, Wise Complex, Rollins Complex, Bear River, Rollins Reservoir, Rock Creek Reservoir
<i>Botrychium minganense</i> Mingan moonwort	--/2/--	LCFrS (mesic)	Upper Lakes, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake
<i>Calystegia stebbinsii</i> Stebbins' morning-glory	E/E/1B/--	Chprl, (openings) CmWld/ serpentinite or gabbroic	Transmission Lines and Access Roads
<i>Cardamine pachystigma</i> var. <i>dissectifolia</i> dissected-leaved toothwort	--/3/FSS	Chprl (serpentinite)	Spaulding Complex, Deer Creek Complex, Drum Complex, Lake Valley Canal, Towle Diversion and Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Upper Lakes, Rollins Complex, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake
<i>Carex sheldonii</i> Sheldon's sedge	--/2/--	LCFrS (mesic), RpScr	Spaulding Complex, Deer Creek Complex, Drum Complex, Lake Valley Canal, Towle Diversion and Canal, Alta Complex, Upper Lake, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake, Lake Valley Reservoir, Kelley Lake
<i>Chlorogalum grandiflorum</i> Red Hills soaproot	SOC/1B/FSS, BLMS/	Chprl, CwWld, / serpentinite or gabbroic	Dutch Flat Complex, Halsey Complex, Wise Complex, Rollins Complex, Bear River, Rollins Reservoir, Rock Creek Reservoir
<i>Erigeron miser</i> starved daisy	--/1B/FSS	UCFrS (rocky)	Upper Lakes, Spaulding Lake Complex, Lake Van Norden
<i>Eriogonum umbellatum</i> var. <i>torreyanum</i> Donner Pass buckwheat	SOC/1B/FSS	medws, UCFrS / volcanic	Upper Lakes, Spaulding Lake Complex, Lake Van Norden
<i>Fritillaria eastwoodiae</i> Butte County fritillary	SOC/3/FSS, BLMS	Chprl, CmWld, LCFrS (openings)/ sometimes serpentinite	Spaulding Complex, Deer Creek Complex, Drum Complex, Lake Valley Canal, Towle Diversion and Canal, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Rollins Complex, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake, Bear River, Rollins Reservoir, Rock Creek Reservoir
<i>Glyceria grandis</i> American manna grass	--/2/--	BgFns, Medws, MshSw (streambanks and lake margins)	Spaulding Complex, Deer Creek Complex, Drum Complex, Alta Complex, Dutch Flat Complex, Halsey Complex, Wise Complex, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake, Lake Valley Reservoir, Kelley Lake, Bear River, Rollins Reservoir, Rock Creek Reservoir
<i>Ivesia sericoleuca</i> Plumas ivesia	SOC/1B/FSS, BLMS	GBScr, LCFrS, Medws, VnPls / vernally mesic, usually volcanic	Spaulding Complex, Upper Lake, Lake Van Norden, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake

**Table 4.5-36 Bundle 11 - South Yuba River Special-Status Plant Species That Occur or Potentially Could Occur Within the Drum-Spaulling Project (FERC 2310)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Juncus marginatus</i> var. <i>marginatus</i> red-anthered rush	--/--/2/--	MshSw	Dutch Flat Complex
<i>Lathyrus sulphureus</i> var. <i>argillaceus</i> dubious pea	--/--/3/--	CmWld, LCFrs, UCFrs	Wise Complex
<i>Lewisia cantelovii</i> Cantelow's lewisia	--/--/1B/FSS, BLMS	BUFrS, Chprl, CmWld, LCFrS/ mesic, granitic	Deer Creek Complex, Drum Complex, Lake Valley Canal, Towle Diversion and Canal, Alta Complex, Dutch Flat Complex, Rollins Complex, Bear River, Rollins Reservoir
<i>Lewisia serrata</i> saw-toothed lewisia	SOC/--/1B/FSS	BUFrS, LCFrs, RpFrS	Deer Creek Complex, Drum Complex, Lake Valley Canal, Towle Diversion and Canal, Alta Complex, Dutch Flat Complex, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake
<i>Lycopodiella inundata</i> bog club-moss	--/--/2/--	BgFrS (coastal) MshSw (lake margins), LCFrs (mesic)	Dutch Flat Complex, Rollins Complex, Bear River, Rollins Reservoir
<i>Monardella folletii</i> Follett's monardella	--/--/1B/FSS	LCFrS (rocky, serpentinite)	Spaulding Complex, Deer Creek Complex, Drum Complex, Lake Valley Canal, Towle Diversion and Canal, Alta Complex, Dutch Flat Complex, Upper Lakes, Rollins Complex, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake, Lake Valley Reservoir, Kelley Lake, Bear River, Rollins Reservoir
<i>Phacelia stebbinsii</i> Stebbins' phacelia	SOC/--/1B/FSS, BLMS	CmVAd, LCFrs, Medws	Spaulding Complex, Deer Creek Complex, Drum Complex, Lake Valley Canal, Towle Diversion and Canal, Alta Complex, Dutch Flat Complex, Upper Lakes, Rollins Complex, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake, Lake Valley Reservoir, Kelley Lake, Bear River, Rollins Reservoir
<i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i> Nuttall's pondweed	--/--/2/--	MshSw (assorted shallow freshwater)	Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake, Lake Valley Reservoir, Kelley Lake, Bear River, Rollins Reservoir
<i>Potamogeton robbinsii</i> Robbins' pondweed	--/--/2/--	MshSW (deep water, lakes)	Spaulding Complex, Upper Lakes, Spaulding Lake Complex, Lake Van Norden
<i>Scutellara galericulata</i> marsh skullcap	--/--/2/FSS	LCFrS, Medws (mesic), MshSw	Spaulding Complex, Deer Creek Complex, Drum Complex, Alta Complex, Dutch Flat Complex, Lake Valley Canal, Towle Diversion and Canal, Halsey Complex, Wise Complex, Upper Lake, Spaulding Lake Complex, Peak Lakes, South Yuba River, Fordyce Creek, South Fork Deer Creek, Kidd Lake, Lake Valley Reservoir, Kelley Lake, Bear River, Rollins Reservoir, Rock Creek Reservoir
<i>Sidalcea stipularis</i> Scadden Flat checkerbloom.	SOC/E/1B/--	MshSw (montane freshwater)	Bear River, Rollins Reservoir

NOTES: Scientific names are based on the following sources: Hickman 1993.

Status: Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

USFWS: United States Fish and Wildlife Service status.

E = Federally listed as endangered.

- T = Federally listed as threatened.  
PE = Proposed endangered.  
PT = Proposed threatened.  
C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.  
SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.  
State: Californai status.  
E = Endangered; Species whose continued existence in California is jeopardized.  
T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.  
R = Rare  
CNPS: California Native Plant Society listing.  
1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.  
2 = Plants rare, threatened or endangered in California but more common elsewhere.  
3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.  
Other: Forest Service and Bureau of Land Management designations.  
FSS = Forest Service Sensitive Species  
BLMS = Bureau of Land Management Special Status Plants  
Habitats:  
AlpBR = Alpine Boulder and Rock Field      LCFrs = Lower Montane Conifer Forest  
BgFns = Bogs and Fens      Medws = Meadows and Seeps  
BUFrS = Broadleaved Upland Forest      MshSw = Marshes and Swamps  
CCFrS = Closed-Cone Conifer Forest      PJWld = Pinyon and Juniper Woodland  
Chprl = Chaparral      Plyas = Playas  
ChScr = Chenopod Scrub      RpFrS = Riparian Forest  
Cmwld= Cismontane Woodland      RpScr = Riparian Scrub  
CoDns = Coastal dunes      RpWld = Riparian Woodland  
CoPrr = Coastal Prairie      SCFrS = Subalpine Conifer Forest  
CoScr = Coastal Scrub      UCFrs = Upper Montane Conifer Forest  
GBGrS = Great Basin grassland      VFGrs = Valley and Foothill Grassland  
GBScr = Great Basin Scrub      VnPls = Vernal Pools

#### **Bundle 12: Chili Bar**

##### ***Chili Bar (FERC 2155)***

The Chili Bar project is located on the South Fork American River, in El Dorado County, approximately three miles north of Placerville, and is surrounded by the El Dorado National Forest. Land use in the project consists primarily of activities and structures associated with hydroelectric generation. Land surrounding the project is sparsely populated, with some industrial and commercial development.

The lands within the project boundary experience a typical Mediterranean-type climate: warm, dry summers alternate with cool, wet winters. Most precipitation occurs between November and May in the form of thunderstorms in lower elevations. Average temperature ranges between 57.6° F to 110° F with an average precipitation of 43.97 inches (PG&E Co., 1999b).

**Vegetation Communities.** Vegetation communities associated with the Chili Bar project range from foothill communities to montane communities. The Power House and penstock areas are associated with blue oak woodland, blue oak-foothill pine, chamise redshank chaparral, and ponderosa pine habitat types. Watershed lands and project waterways, including the South Fork of the American River and Chili Bar Reservoir, are associated with blue oak woodland, montane hardwood, blue oak-foothill pine, ponderosa pine, mixed chaparral, chamise redshank chaparral, riverine, and lacustrine habitat types. Mixed chaparral communities can be found along transmission lines and areas along the reservoir and river on damp or north facing slopes.

Blue oak woodland is dominated by the deciduous oak and the evergreen foothill pine and has an understory that consists of a mixture of annual grasses and shrubs. Hardwood forests found within the project are a mixture of broadleaf deciduous tree species and coniferous tree species. Montane hardwood and montane hardwood conifers can be found along drainages of the South Fork of the American River and major streams.

Table 4.5-37 further outlines all of the wildlife habitats of the Chili Bar Project based upon the Wildlife Habitat Relationships Program (WHR), and California Gap Analysis Project.

**Table 4.5-37 Bundle 12 – Chili Bar Vegetation Communities Associated With the Chili Bar Project (FERC 2155)**

Project Features	Foothill Communities			Transition Communities			Water Elements	
	BOW	CRC	BOP	MHW	PPN	MCH	RIV	LAC
<b>Generation Facilities</b>								
Chili Bar Penstock and Powerhouse			X	X	X		X	
<b>Transmission Lines and Access Roads</b>								
			X		X			
<b>Watershed Lands</b>								
	X	X	X	X	X	X	X	X
<b>Project Waterways</b>								
South Fork of the American River	X	X	X	X	X	X	X	
Chili Bar Reservoir	X	X	X		X		X	X
<b>FERC Licensed Lands</b>								
	X	X	X	X	X	X	X	X

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Transmission Lines and Access Roads: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer. FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

Habitats:

AGS	=	Annual Grassland	MHW	=	Montane Hardwood
BOP	=	Blue Oak-Foothill Pine	MRI	=	Montane Riparian
BOW	=	Blue Oak Woodland	PPN	=	Ponderosa Pine
CRC	=	Chamise-Redshank Chaparral	RFR	=	Red Fir
DFR	=	Douglas-Fir	RIV	=	Riverine
FEW	=	Fresh Emergent Wetland	SCN	=	Subalpine Conifer
JPN	=	Jeffrey Pine	SGB	=	Sagebrush
LAC	=	Lacustrine	SMC	=	Sierra Mixed Conifer
LPN	=	Lodgepole Pine	VOW	=	Valley Oak Woodland
LSG	=	Low Sagebrush	VRI	=	Valley Foothill Riparian
MCP	=	Montane Chaparral	WFR	=	White Fir
MCH	=	Mixed Chaparral	WTM	=	Wet Meadow
MHC	=	Montane Hardwood-Conifer			

**Wildlife Resources.** The Chili Bar project has not gone through the process of relicensing. Pacific Gas and Electric Company have not conducted any recent wildlife studies in the project. Therefore, information regarding wildlife resources is limited. There are no FERC license articles pertaining to wildlife resources. The most sensitive species found within the project boundary is the northwestern pond turtle (PG&E Co., 1999b).

The Chili Bar project is associated with several vegetation communities that provide potential habitat for wildlife species. The penstock and powerhouse are located in an area dominated by blue oak woodland, blue oak-foothill pine, ponderosa pine, riverine, and mixed-chaparral wildlife habitat types. These habitat types can support a number of wildlife species such as the foothill yellow-legged frog, northwestern pond turtle, California spotted owl, and several sensitive bat species. A query of the CNDDDB, WHR, CDFG, and USFS for the project, covering the area within the project boundary and a one-mile buffer, produced a list of sensitive wildlife species that could occur based on these potential habitat types.

Wildlife species that commonly inhabit mixed chaparral communities include the western rattlesnake (*Crotalus viridis*), California thrasher (*Toxostoma redivivum*), California quail, gray fox (*Urocyon cinereoargenteus*), and mule deer (*Odocoileus hemionus* spp.). In addition, wildlife species of special concern have the potential to occur in montane hardwood and ponderosa pine forests include the Mount Lyell salamander (*Hydromantes platycephalus*), Sierra Nevada mountain beaver (*Aplodontia rufa californica*).

The habitat components of rivers and streams include open water, the bottom substrate, and riparian vegetation. Open water provides resting habitat for waterfowl and habitat for floating insects which provide prey for amphibians, fish and birds. In fast moving riverine habitats, the bottom substrate is rocky and provides habitat for breeding, nesting and feeding. Slow moving riverine habitats have a sandy bottom favored by freshwater clams that are preyed on by great blue herons (*Ardea herodias*) and other wildlife.

Complete lists of special-status species that have the potential to occur in the project are listed in Table 4.5-38.

**Table 4.5-38 Bundle 12 - Chili Bar Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Chili Bar Project (FERC 2155)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Spiny rhyacophilan caddisfly <i>Rhyacophila spinata</i>	SOC/--/--	MRI, RIV, LAC	Chili Bar Penstock and Powerhouse, South Fork American River, Chili Bar Reservoir
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/FSS, BLMS	BOP, BOW, MRI, RIV, VRI,	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, South Fork American River, Chili Bar Reservoir
<b>Amphibians</b>			
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP/FSS, BLMS	VRI, PPN, SMC, CSC, MCH, WTM, RIV	Chili Bar Penstock and Powerhouse, South Fork American River, Chili Bar Reservoir
<b>Reptiles</b>			
California horned lizard <i>Phrynosoma coronatum frontale</i>	SOC/SSC, CFP/BLMS	MHC	Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River
Western pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/FSS	VRI, MRI, RIV, LAC	Chili Bar Penstock and Powerhouse, South Fork American River, Chili Bar Reservoir
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP/FSS, CDF	RIV, LAC	Chili Bar Reservoir, South Fork American River
Burrowing owl <i>Athene cunicularia</i>	--/SSC/--	BOW, BOP, PPN, MCP,	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLMS	SMC, MHC, MHW, RFR	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Coopers hawk <i>Accipiter cooperii</i>	--/SSC/--	MHC, MHW, SMC, MCP, BOW, BOP, PPN	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	LAC	Chili Bar Reservoir, South Fork American River
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP/CDF, BLMS	BOP, MHW	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Great blue heron <i>Ardea herodias</i>	--/--/CDF	LAC	Chili Bar Reservoir, South Fork American River
Great egret <i>Casmerodius albus</i>	--/CDF	BOW, BOP, LAC, RIV	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Great sandhill crane <i>Grus canadensis tabida</i>	--/ST, CFP/--	WTM, RIV, LAC	Chili Bar Reservoir, South Fork American River
Horned lark <i>Eremophila alpestris actia</i>	--/SSC/--	BOP	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir

**Table 4.5-38 Bundle 12 - Chili Bar Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Chili Bar Project (FERC 2155)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Loggerhead shrike <i>Lanius ludovicianus</i>	--/SSC/--	BOP	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Long-eared owl <i>Asio otus</i>	--/SSC/--	BOW, BOP, MHW, MHC, SMC, PPN, MCP	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, MHW, MHC, SMC, MCP, LAC, RIV	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Northern goshawk <i>Accipiter gentiles</i>	--/SSC/FSS,CDF	BOP, MHW, MHC, PPN, SMC, MCP	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Northern harrier <i>Circus cyaneus</i>	--/SSC/FSS	BOW, BOP, MHW, MHC, SMC, MCP, LAC, RIV	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Osprey <i>Pandion haliaetus</i>	--/SSC/FSS	LAC	Chili Bar Reservoir, South Fork American River
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/FSS	BOP, MHW, MHC, PPN, SMC, MCP, LAC, RIV	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	BOP, MHW	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Purple martin <i>Progne subis</i>	--/SSC/--	AGS, BOW, BOP, LAC	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	BOW, BOP, MHW, MHC, SMC, PPN, MCP	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
White-tailed kite <i>Elanus leucurus</i>	--/CFP/FSS	BOP	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	WTM, MRI, RIV	Chili Bar Penstock and Powerhouse, South Fork American River, Chili Bar Reservoir
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC/--	BOP	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
<b>Mammals</b>			
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLMS	AGS, BOW, BOP, MCH	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	SOC/SSC/FSS	MHW, MHC, PPN	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir



**Table 4.5-38 Bundle 12 - Chili Bar Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Chili Bar Project (FERC 2155)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Townsend's Western big-eared bat <i>Corynorhinus townsendii townsendii</i>	--/SSC/FSS, BLMS	AGS, BOW, BOP, MCH	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLMS	BOP, VOW	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir

Notes: Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

Special-Status Species:

Federal:

FE = Federally listed as endangered

FT = Federally listed as threatened

SOC = Federal species of concern

FC = Federal Candidate species

State:

SE = State listed as endangered

ST = State listed as threatened

SSC = State species of special concern

CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species

BLM = Bureau of Land Management sensitive species

CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

DFR = Douglas-Fir

FEW = Fresh Emergent Wetland

JPN = Jeffrey Pine

LAC = Lacustrine

LPN = Lodgepole Pine

LSG = Low Sagebrush

MCP = Montane Chaparral

MCH = Mixed Chaparral

MHC = Montane Hardwood-Conifer

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

SCN = Subalpine Conifer

SGB = Sagebrush

SMC = Sierra Mixed Conifer

VOW = Valley Oak Woodland

VRI = Valley Foothill Riparian

WFR = White Fir

WTM = Wet Meadow

The Chili Bar Project, Bundle 12, is within the Sierra Nevada Region and, more specifically, the Sierra Nevada foothills subregion and Northern Sierra Nevada Foothills district. Sierra Nevada foothills subregion is characterized by blue oak-foothill pine woodlands and is dotted with serpentine outcrops. The project lies very close to the northern high Sierra Nevada district that accounts for the montane hardwood, montane hardwood conifer, ponderosa pine, and sierran mixed conifer vegetation community types.

Lower elevations in the project are associated with blue oak-foothill pine vegetation communities while higher elevations are associated with montane hardwood and ponderosa pine. Mainly, special-status plant species that potentially could occur would be found in the chaparral

#### 4.5 Terrestrial Biology

communities which are associated with lower elevations, and cismontane woodland, that is associated with higher elevation habitat types (CNPS, 1994).

Table 4.5-39 lists the special status plants that are found, or potentially could occur, in Bundle 12. This list was compiled using CNDDDB, Forest Service and BLM sensitive plant lists, related project documents, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

**Table 4.5-39 Bundle 12 - Chili Bar Special-Status Plant Species That Occur or Potentially Could Occur Within the Chili Bar Project (FERC 2155)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Calachortus clavatus</i> var. <i>avius</i> Pleasant Valley mariposa lily	SOC/--/1B/FSS,BLMS	LCFrS (Josephine silt loam volcanic)	Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
<i>Calystegia stebbinsii</i> Stebbins' morning glory	E/E/1B/--	Chprl, (openings) CmWld/ serpentinite or gabbroic	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
<i>Ceanothus roderickii</i> Pine Hill ceanothus	E/R/1B/--	Chprl, CmWld/ often serpentinite or gabbroic	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
<i>Chlorogalum grandiflorum</i> Red Hills soaproot	SOC/--/1B/FSS, BLMS	Chprl, CwWld/ serpentinite or gabbroic	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
<i>Galium californicum</i> ssp. <i>sierrae</i> El Dorado bedstraw	E/R/1B/--	Chprl, CmWld, LCFrS (gabbroic)	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
<i>Horkelia parryi</i> Parry's horkelia	SOC/--/1B/FSS, BLMS	Chprl, CmWld/ especially lone formation	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River
<i>Scutellara galericulata</i> marsh skullcap	--/1--/2/FSS	LCFrS, Medws (mesic), MshSw	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
<i>Senecio layneae</i> Layne's ragwort	T/R/1B/FSS	Chprl, CmWld/ serpentinite or gabbroic	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir
<i>Wethia reticulata</i> El Dorado County mule ears	SOC/--/1B/BLMS	Chprl, CmWld, LCFrS/ clay or gabbroic	Chili Bar Penstock and Powerhouse, Transmission Lines and Access Roads, FERC Licensed Lands, South Fork American River, Chili Bar Reservoir

NOTES: Scientific names are based on the following sources: Hickman 1993.

Status: Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

USFWS: United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

- PE = Proposed endangered.  
PT = Proposed threatened.  
C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.  
SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.  
State: Californai status.  
E = Endangered; Species whose continued existence in California is jeopardized.  
T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.  
R = Rare  
CNPS: California Native Plant Society listing.  
1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.  
2 = Plants rare, threatened or endangered in California but more common elsewhere.  
3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.  
Other: Forest Service and Bureau of Land Management designations.  
FSS = Forest Service Sensitive Species  
BLMS = Bureau of Land Management Special Status Plants  
Habitats:  
AlpBR = Alpine Boulder and Rock Field      LCFrs = Lower Montane Conifer Forest  
BgFns = Bogs and Fens      Medws = Meadows and Seeps  
BUFRs = Broadleaved Upland Forest      MshSw = Marshes and Swamps  
CCFRs = Closed-Cone Conifer Forest      PJWld = Pinyon and Juniper Woodland  
Chprl = Chaparral      Plyas = Playas  
ChScr = Chenopod Scrub      RpFrs = Riparian Forest  
Cmwld = Cismontane Woodland      RpScr = Riparian Scrub  
CoDns = Coastal dunes      RpWld = Riparian Woodland  
CoPrr = Coastal Prairie      SCFRs = Subalpine Conifer Forest  
CoScr = Coastal Scrub      UCFrs = Upper Montane Conifer Forest  
GBGrS = Great Basin grassland      VFGrs = Valley and Foothill Grassland  
GBScr = Great Basin Scrub      VnPls = Vernal Pools

#### 4.5.4.4 Motherlode Regional Bundle

##### Regional Setting

The Motherlode Regional Bundle is located in Amador, Calaveras, Alpine, Tuolumne, Merced and Mariposa Counties near the towns of Jackson and Sonora. The system is located on four rivers: the North Fork Mokelumne River, South Fork Stanislaus River, Middle Fork Stanislaus River, and the Merced River. Motherlode region varies from 8,500 feet to 600 feet in elevation.

There are four FERC licensed projects within the region: the Mokelumne River Project (FERC 0137), the Spring Gap-Stanislaus Project (FERC 2130), the Phoenix Project (FERC 1061), and the Merced Falls Project (FERC 2467). These projects lie across two national forests, the Eldorado (Amador Ranger District) and the Stanislaus (Calaveras, Summit, and MiWok Ranger Districts) National Forests.

Foothills areas are characterized by cropland, annual grassland and blue oak-foothill pine habitats. Transition communities include mixed chaparral, mixed hardwood, ponderosa pine, and riparian habitats. Montane habitats consist of subalpine conifer, montane chaparral, montane riparian, and red fir communities.

Numerous wildlife species are found in the Motherlode Region. Several endangered, threatened, and sensitive species such as bald eagle (*Haliaeetus leucocephalus*), California spotted owl (*Strix occidentalis occidentalis*), western pond turtle (*Clemmys marmorata*), pine marten (*Martes americana*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), northern goshawk (*Accipiter gentiles*), foothill yellow-legged frog (*Rana boylei*), and California red-legged frog (*Rana aurora draytonii*) can be found within the project boundary. Four distinct deer ranges are also found in the Motherlode region. The Salt Springs, Railroad Flat, Stanislaus, and Tuolumne deer herds all move across some part of the Mokelumne and Spring Gap-Stanislaus projects.

### Local Regulations and Policies

Table 4.5-40 presents local regulations and policies relevant to the operations of the projects in this regional bundle.

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Alpine County General Plan	Conservation and Open Space Element	Policy No. 8	Preserve and protect wetland areas by minimizing the development in or conversion of wetlands	13
Alpine County General Plan	Conservation and Open Space Element	Policy No. 9	Protect and increase the populations of threatened, rare, or endangered plant species through consultation with the California Department of Fish and Game (CDFG).	13
Alpine County General Plan	Conservation and Open Space Element	Policy No. 13	Protect the critical habitat of all Federal or State listed sensitive, threatened, rare, or endangered wildlife through cooperation with CDFG.	13
Alpine County General Plan	Conservation and Open Space Element	Policy No. 14a and 14b	Protect important deer habitats and migration routes to the greatest extent feasible.	13
Amador County General Plan	Open Space Element	Policy A: Open-Wilderness	Lands included in wilderness areas that are protected and regulated by the Forest Service to maintain natural environmental features.	13
Amador County General Plan	Open Space Element	Policy B: Open-Forest	Forest lands are to be maintained for timber production, grazing, mining, and recreation	13
Amador County General Plan	Open Space Element	Policy D: Open-Crest	High elevation lands within National Forests are to be used for seasonal recreation and limited mining, grazing, and forestry. Natural environmental values shall be maintained.	13
Amador County General Plan	Open Space Element	Policy E: Open-Watershed	Lands that have essential watershed values shall be maintained with respect to erosion, wildfire, wildlife habitat improvement, and game protection measures.	13

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Amador County General Plan	Conservation Element	Policy A: General Forest	Sound forestry practices that maintain long-term timber productivity shall be encouraged. Encroachment of other land uses that threaten timber production shall be discouraged.	13
Amador County General Plan	Conservation Element	Policy B: Water Project	Possible future water development projects that may impact adjacent land uses shall be investigated and regulated.	13
Amador County General Plan	Conservation Element	Policy C: Designated Floodway	Delineated floodplains shall be subject to the restrictions of State law.	13
Bureau of Land Management – Federal Land Policy and Management Act of 1976	Congressional declaration of policy	Sec. 1701.a.8	Public lands shall be managed in a manner that will protect the quality of scientific, scenic, ecological, environmental, and water resources. Public lands will be preserved and will protect certain lands in their natural condition. Public lands will provide food and habitat for fish and wildlife.	15
Calaveras County General Plan	Conservation Element	IV-13A	Promote the development of hydroelectric facilities in the County.	13
Calaveras County General Plan	Open Space Element	V-1A	Review proposed development for potential impacts to significant wildlife and botanical habitats.	13
Calaveras County General Plan	Open Space Element	V-2A	Protect streams, rivers, and lakes from excessive sedimentation due to development and grading. Review proposed development projects for potential effects on nearby and adjacent streams, rivers, and lakes.	13
Calaveras County General Plan	Open Space Element	V-3A	Protect and preserve riparian habitat along streams and rivers in the County. Review proposed development projects for potential impacts to riparian areas.	13
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.a.ix.	Maintain and enhance movement of kit foxes between the Mendota area, Fresno County, natural lands in western Madera County, and easement lands of Merced County.	15
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.a.xiii.	Protect and enhance corridors for movement of kit foxes through the Salinas Valley to the San Joaquin Valley.	15
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.a.xiv.	Protect existing kit fox habitat in the northern, northeastern, and northwestern segments of their geographic range and existing connections between habitat in those areas and habitat farther south.	15
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.b.i.	Determine habitat restoration and management prescriptions for kit foxes.	15

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.b.ii.	Determine current geographic distribution and population status of kit foxes.	15
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.b.iii	Establish a scientifically valid population monitoring program range-wide.	15
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.b.iv.	Determine use of farmland by kit foxes. Studies should determine types of crops and cultural practices providing foraging habitat and structures and landscape features promote movement throughout agricultural lands.	15
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.b.vi.	Determine direct and indirect effects of rodent and rabbit control programs on kit foxes.	15
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.b.vii	Measure genetic features and degree of isolation of agricultural “island” populations using DNA techniques.	15
Draft Recovery Plan for Upland Species of the San Joaquin Valley, California	Species Accounts – San Joaquin Kit Fox – Recovery Actions	II.L.6.b.viii.	Determine the nature of interactions between kit foxes, red foxes, coyotes, and free-ranging dogs on both farmland and grazing land.	15
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 35	Maintain and enhance habitat for fish and wildlife species.	13
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 41	Provide cover and forage for species that require early successional vegetation.	13
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 42	Provide habitat for late successional wildlife species associated with old-growth timber stands.	13
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 44	Provide habitat for wildlife species that are dependent on snags and downed logs.	13
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 45	Manage oaks and other hardwoods for wildlife benefits, utilize products, and aesthetic values. The guidelines for oaks and deer are a proxy for other species which utilize hardwoods.	13
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 46	Provide cover and forage for wildlife species dependent on meadows and the adjacent forest edge. Maintain the integrity of the meadow ecosystem.	13
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 48	Utilize administrative measures to protect and improve endangered, threatened, rare, and sensitive wildlife species.	13

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 49	Provide for protection and habitat needs of sensitive plants so that forest activities will not jeopardize the continued existence of such species.	13
Eldorado National Forest	Forest Wide Standards and Guidelines	Policy 50	Participate in administration, coordination, and inventory activities designed to meet Regional standards and guidelines, legal mandates, and planning direction for fish, wildlife, and sensitive plants.	13
Eldorado National Forest	Management Area 1 – Wilderness	Policy 35	Manage to allow a natural ecological succession of wildlife, habitats, including natural wildfire and natural infestation of insects, to operate freely insofar as they do not endanger resources outside of wilderness.	13
Eldorado National Forest	Management Area 2 – Wild and Scenic Rivers	Policy 40	Improve or maintain habitat for wetland species.	13
Eldorado National Forest	Management Area 2 – Wild and Scenic Rivers	Policy 44	Provide a habitat designed to support a more intensive level of snag and down log management.	13
Eldorado National Forest	Management Area 4 – Special Areas	Policy 35	Manage to allow natural ecological successions of wildlife, including natural wildfire and natural infestations of insects, insofar as they do not endanger resources outside such areas.	13
Eldorado National Forest	Management Area 6 – Semiprimitive Nonmotorized High Country	Policy 40	Improve or maintain habitat for wetland species.	13
Eldorado National Forest	Management Area 6 – Semiprimitive Nonmotorized High Country	Policy 42	Provide habitat for wildlife species associated with late-successional and old-growth forests.	13
Eldorado National Forest	Management Area 7 – Semiprimitive Motorized High Country	Policy 40	Improve or maintain habitat for wetland species.	13
Eldorado National Forest	Management Area 7 – Semiprimitive Motorized High Country	Policy 42	Provide habitat for wildlife species associated with late-successional and old-growth forests.	13
Eldorado National Forest	Management Area 7 – Semiprimitive Motorized High Country	Policy 43	Enhance productivity of forage and cover plants for wildlife.	13
Eldorado National Forest	Management Area 7 – Semiprimitive Motorized High Country	Policy 44	Provide a habitat designed to support a more intensive level of snag and down log management.	13
Eldorado National Forest	Management Area 18 – Spotted Owl Habitat Area (SOHA)	Policy 42	Provide habitat for wildlife species associated with late successional stages and old growth forests. Manage these areas in high quality condition.	13
Eldorado National Forest	Management Area 18 – Spotted Owl Habitat Area (SOHA)	Policy 48	Protect and improve habitat for threatened, endangered, and sensitive species.	13

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Eldorado National Forest	Management Area 19 – Goshawk	Policy 42	Provide habitat for wildlife species associated with late successional stages and old growth forests. Manage these areas in high quality condition.	13
Eldorado National Forest	Management Area 19 - Goshawk	Policy 48	Protect and improve habitat for threatened, endangered, and sensitive species.	13
Eldorado National Forest	Management Area 20 – Visual Foreground Retention	Policy 40	Improve or maintain habitat for wetland species.	13
Eldorado National Forest	Management Area 20 – Visual Foreground Retention	Policy 43	Enhance productivity of forage and cover plants for wildlife.	13
Eldorado National Forest	Management Area 20 – Visual Foreground Retention	Policy 44	Make snag and down log management part of the visual experience where it does not affect safety.	13
Eldorado National Forest	Management Area 20 – Visual Foreground Retention	Policy 47	Improve the habitat capability of wildlife species through structural improvements.	13
Eldorado National Forest	Management Area 21 – Visual Foreground Partial Retention	Policy 40	Improve or maintain habitat for wetland species.	13
Eldorado National Forest	Management Area 21 – Visual Foreground Partial Retention	Policy 43	Enhance productivity of forage and cover plants for wildlife.	13
Eldorado National Forest	Management Area 21 – Visual Foreground Partial Retention	Policy 47	Improve the habitat capability of wildlife species through structural improvements.	13
Eldorado National Forest	Management Area 22 – Visual Middleground Retention	Policy 40	Improve or maintain habitat for wetland species.	13
Eldorado National Forest	Management Area 22 – Visual Middleground Retention	Policy 43	Enhance productivity of forage and cover plants for wildlife.	13
Eldorado National Forest	Management Area 22 – Visual Middleground Retention	Policy 47	Improve the habitat capability of wildlife species through structural improvements.	13
Eldorado National Forest	Management Area 23 – Visual Middleground and Partial Retention	Policy 40	Improve or maintain habitat for wetland species.	13
Eldorado National Forest	Management Area 23 – Visual Middleground and Partial Retention	Policy 43	Enhance productivity of forage and cover plants for wildlife.	13
Eldorado National Forest	Management Area 23 – Visual Middleground and Partial Retention	Policy 47	Improve the habitat capability of wildlife species through structural improvements.	13
Mariposa County General Plan	Conservation Element	Policy 6.404.1	Minimize the potential adverse effects of growth and development on sensitive wildlife and scenic areas.	15



**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Mariposa County General Plan	Conservation Element	Policy 6.404.2	Conduct site review on all development projects that require CEQA review proposed in identified sensitive wildlife areas.	15
Mariposa County General Plan	Conservation Element	Policy 6.404.3	Review non-residential development projects proposed along State highways to ensure preservation of scenic resources.	15
Mariposa County General Plan	Conservation Element	Policy 6.504.1	In areas of critical wildlife habitat, minimum lot size and/or density shall be determined through site specific review and analysis.	15
Mariposa County General Plan	Conservation Element	Policy 6.504.2	Utilize open space or common ownership setbacks in rural areas to preserve scenic resource areas or sensitive wildlife habitats.	15
Mariposa County General Plan	Open Space Element	Policy 7.601.1	Encourage the preservation of the County's natural wildlife, wildlife habitat and water resources.	15
Mariposa County General Plan	Open Space Element	Policy 7.601.2	Establish policies which provide for, and support, the managed production of natural resources.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.1	Recognize significant wetland habitat.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.2	Regulate development to minimize adverse impacts to rare and endangered species habitats.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.3	Redesignation of land from rural to urban should consider the potential impact on significant habitats.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.4	Urban areas should not include threatened species habitat areas unless provisions are made for their protection.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.5	Urban uses should be directed to less sensitive wetland, wildlife and vegetation habitat areas.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.6	Building approved for temporary use in significant wetland should not be converted to permanent residential use.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.7	Public utility facilities should be located to minimize significant loss of wetland resources.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.8	Development adjacent to rare and endangered species habitats should ensure that protection and monitoring occur.	15
Merced County General Plan	Open Space/Conservation Element	Policy 1.1A.9	Aquatic and waterfowl habitats should be protected against water withdrawals that would endanger or interrupt migratory patterns.	15
Merced County General Plan	Open Space/Conservation Element	Policy 2.2A.1	Removal of vegetative resources that stabilize slopes and reduce erosion and sedimentation should be minimized.	15

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Merced County General Plan	Open Space/Conservation Element	Policy 2.2A.2	Watersheds are necessary for the replenishment of reservoirs and should be protected and preserved.	15
Merced County General Plan	Open Space/Conservation Element	Policy 2.2A.3	Structures located within watershed recharge areas should be constructed in a manner to minimize erosion and impact to water quality.	15
Merced County General Plan	Open Space/Conservation Element	Policy 2.2A.4	Flood control alterations to waterways that contain important riparian vegetation should avoid significant vegetative impacts and soil loss.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.2.b	Every five years, high mountain meadows are inspected for condition and forage production for livestock and deer.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.2.c.	Habitat inventories should be made of key holding areas.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.2.d	Annual inventories should be made of potential habitat improvement sites on the summer, intermediate, and winter ranges.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.B.1.a	Reduce neonatal fawn loss by improving the nutritional level of pregnant deer by maintaining the condition of the winter range and the improvement of key holding areas along deer migration corridors.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.B.1.b.	Reduce overall fawn mortality by improving key fawning areas, rehabilitating eroded fawning meadows, and improving key wintering areas.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.B.1.d	Alleviate deer kill at problem areas where traditional migration routes cross existing roads.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.C.1.f	Approach the County Planning Commission for Alpine and Calaveras counties to zone prime deer areas with compatible land uses. For example, restrictions may not allow conversion to intensive agriculture, reservoir construction, or residential development.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.C.1.i	Work with private landowners and provide funding or manpower to assist with habitat improvements projects.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.C.1.l	Acquire key deer areas now in private ownership and most likely to be lost to development in the future.	15
Railroad Flat Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.C.1.m	Acquire grazing rights to key deer areas to assure some control over future livestock use of the lands.	15

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.2.b	Forage growth and use checks should be done every year.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.2.c	Habitat investigation should be made for location of key areas.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.2.d	Annual inventories should be made of potential habitat improvement sites on the summer, intermediate, and winter ranges.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.B.1	Improve the condition of the winter range and key holding areas along deer migration corridors.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.B.2	Reduce fawn mortality by improving key fawning areas and whatever other methods prove effective.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.B.3	Additional realignments and road improvements in areas that will significantly increase the highway kill should be discouraged unless appropriate mitigation measures will avoid or minimize deer losses.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.B.4	Alleviate deer kill at problem areas where traditional migration routes cross roads.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.C.6	Approach the County Planning Commission for Amador and Alpine counties to zone prime deer areas with compatible land uses. For example, restrictions may not allow conversion to intensive agriculture, reservoir construction, or residential development.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.C.12	Acquire key deer areas now in private ownership and most likely to be lost to development in the future.	15
Salt Springs Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	V.4.C.13	Acquire grazing rights to key deer areas.	15
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.B.7	Areas where excessive road kills are known to occur should be posted to warn motorists. Design of future roads should incorporate knowledge of deer use.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.1	Support the United States Forest Service (U.S.F.S.) Fire Management Program to improve habitat quality on U.S.F.S. ranges. Encourage private landowners to manipulate vegetation in conjunction with the California Department of Forestry and Fire Protection (CDF).	14

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.2	Oak stands should be managed for deer, especially in the winter range and delay areas.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.3	Provisions for deer needs should be included in all grazing allotment plans.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.4	A combination of fire, logging and grazing management should be utilized to modify habitat for the benefit of deer. Input from the U.S.F.S. and a qualified wildlife biologist should be considered.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.6	Roadside screening through the use of vegetative cover should be used to minimize harassment from vehicles and poachers.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.7	All water projects that reduce deer habitat should be opposed unless full compensation for the loss is provided.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.9	Consideration of deer needs should be given top priority when decisions regarding visitor use and motorcross events are made.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.10	Deer should receive a high priority when construction of new roads is contemplated. Impacts to deer or critical areas should be addressed in the planning process and mitigated for to the maximum extent.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.C.13	Emphasis on protection of critical habitats on private lands should be provided through favorable zoning by county agencies and toward acquisition when lands are otherwise threatened by development.	14
Stanislaus Deer Herd Management Plan	Management Programs, Objectives, and Recommended Prescriptions	VI.D.2	A program of effective road closures or other use restrictions should be put into action when areas of excessive disturbance to deer are identified.	14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines – Fish and Wildlife Habitat	Policy 5-A	Provide habitat for diverse and viable populations of all native and desired non-native wildlife and fish and all native plants. Maintain and improve habitat for Federally listed Threatened and Endangered species. Cooperate with State and Federal agencies in meeting mutual goals.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines – Late Successional Stage Habitat Management	Policy 5-E	Provide suitable nesting habitat to support a viable population of goshawks according to the current habitat capability model.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines – Late Successional Stage Habitat Management	Policy 5-E	Meet the Forest's share of the bald eagle recovery plan goal of three active breeding sites.	13, 14

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines – Late Successional Stage Habitat Management	Policy 5-E	Provide travel corridors as necessary to connect the furbearer areas so that they are all available and usable for supporting a viable population of fisher.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines – Recovery Species Management	Policy 5-L	Provide suitable nesting habitat in occupied areas and selected potential areas for willow flycatcher according to the habitat capability model for the species.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines Recovery Species Management	Policy 5-L	Meet the Forest's share of the peregrine falcon recovery plan goals of two active breeding territories by providing superior nesting habitat at two nest sites.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines Recovery Species Management	Policy 5-L	Provide suitable nesting habitat to support a viable population of great gray owls based on the habitat capability model.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines Recovery Species Management	Policy 5-L	Management activities will comply with the Endangered Species Act.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines – FERC Consultation	Policy 8-E	Provide for licensed actions that do not compromise the purpose of designated areas such as Wild and Scenic river corridors. Establish protection and enhancement measures in project licenses related to project-induced impacts on other Forest Resources	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines – Riparian and Meadow Habitat Management	Policy 11-A	Provide cover and forage for wildlife species dependent on meadows and the adjacent forest edge. Suitable habitat should be maintained in the form of small trees, shrubs, tall forbs and snags.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Forestwide Standards and Guidelines – Sensitive Plants	Policy 12-A	Provide for protection and habitat needs of sensitive plants, so the Forest activities will not jeopardize their continued existence.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 2 – Wild and Scenic Rivers and Proposed Wild and Scenic Rivers	Policy 19-B	Wild and Scenic Rivers, along with their immediate environments, will be managed to preserve their free flowing condition and to protect and enhance their Wild and Scenic River values.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 2 – Wild and Scenic Rivers and Proposed Wild and Scenic Rivers	Policy 19-C	Protect and enhance the Wild and Scenic River characteristics. To the extent of Forest Service authority, no development of hydroelectric power facilities would be permitted.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 3 – Near Natural Areas	Policy 5-D	Provide habitat needs for species that require early successional vegetation. Manage mule deer ranges with other resources to achieve appropriate cover/forage ratios.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 3 – Near Natural Areas	Policy 5-E	Give consideration to Threatened, Endangered and Sensitive species in the management of unroaded and Near Natural Areas. Special attention should be given to fisher and pine marten habitat areas over 7000 feet in elevation.	13, 14

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Stanislaus National Forest Land and Resource Management Plan	Management Area 3 – Near Natural Areas	Policy 5-F	Conduct general wildlife habitat management activities in a way that supports the overall objectives for Near Natural Areas.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 3 – Near Natural Areas	Policy 5-G and H	Maintain population viability of all species that are dependent on snags and down logs.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 3 – Near Natural Areas	Policy 5-K	Conduct general fish and wildlife habitat management activities in a way that supports the overall objectives for Near Natural Areas.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 4 - Wildlife	Policy 5-D	Provide habitat needs for species that require early successional vegetation such as mule deer.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 4 - Wildlife	Policy 5-E	Emphasize late successional wildlife species with special attention to spotted owl, fisher and pine marten.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 4 - Wildlife	Policy 5-F	Conduct activities as needed to meet wildlife objectives. All such activities and objectives will be consistent with the overall objectives of the Management Area.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 4 - Wildlife	Policy 5-K	Conduct activities as needed to meet wildlife objectives. All such activities and objectives will be consistent with the overall objectives of the Management Area.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 4 - Wildlife	Policy 5-H	Maintain population viability of all wildlife species that are dependent on snags and downed logs. Provide snags and dead/down material required by fisher, marten and spotted owl for specified capability levels.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 4 - Wildlife	Policy 5-I	Provide hardwoods for cover and forage needs for management indicator and associated wildlife species	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 4 - Wildlife	Policy 5-J	Provide a high level of hardwood management within designated critical areas for deer and other indicator species highly dependent on hardwoods.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 4 - Wildlife	Policy 9-A	Recognize the special value of meadows and riparian areas to fisher, pine marten and other wildlife in applying range management systems.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 8 – Scenic Corridors	Policy 5-D	Provide habitat needs for species that require early successional vegetation such as mule deer.	13, 14

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Stanislaus National Forest Land and Resource Management Plan	Management Area 8 – Scenic Corridors	Policy 5-E	Give consideration to threatened, endangered and sensitive species, with special consideration to SOHAs and fisher habitat areas and marten where they are known to occur.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 8 – Scenic Corridors	Policy 5-F	Conduct wildlife habitat management activities in ways that support the overall objectives for this Management Area.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 8 – Scenic Corridors	Policy 5-G and H	Maintain population viability of all wildlife species that depend on snags and downed logs.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 8 – Scenic Corridors	Policy 5-I	Provide hardwoods for cover and forage needs for management indicator and associated wildlife species.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 8 – Scenic Corridors	Policy 5-J	Provide a high level of hardwood management within areas designated critical for those indicator species highly dependent on hardwoods.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 8 – Scenic Corridors	Policy 5-K	Conduct habitat improvement activities where necessary in the recovery of threatened, endangered or sensitive species in a way which is consistent with the overall objectives of the management area.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 9 – General Forest	Policy 5-D	Provide habitat needs for species that require early successional vegetation.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 9 – General Forest	Policy 5-E	Meet or exceed the minimum diversity requirements for mature and older forest habitats to provide for the needs of late succession-dependent wildlife species.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 9 – General Forest	Policy 5-F	Conduct non-structural habitat improvement where necessary to improve habitats or restore habitats to conditions needed to meet wildlife objectives.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 9 – General Forest	Policy 5-G	Maintain population viability of all wildlife species that depend on snags and downed logs.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 9 – General Forest	Policy 5-I	Provide hardwoods for cover and forage needs for management indicator and associated wildlife species.	13, 14
Stanislaus National Forest Land and Resource Management Plan	Management Area 9 – General Forest	Policy 5-J	Provide a high level of hardwood management within designated critical areas for those indicator species highly dependent on hardwoods.	13, 14

**Table 4.5-40 Local Policies Associated With the Motherlode Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Applicable Bundle #
Stanislaus National Forest Land and Resource Management Plan	Management Area 9 – General Forest	Policy 5-K	Conduct structural habitat improvement where necessary to improve or resolve habitats to conditions needed to meet wildlife objectives.	13, 14
Tuolumne County General Plan	Conservation and Open Space Element	Policy 4.J.2	Maintain a biological resources conservation program to facilitate a consistent, fair and cost-effective approach to biological resource mitigation.	14
Tuolumne County General Plan	Conservation and Open Space Element	Policy 4.J.3	Recognize that the County contains a large number of public lands that provide open space for wildlife in formulating a biological resources conservation program.	14
Tuolumne County General Plan	Conservation and Open Space Element	Policy 4.J.5	Comply with “no-net loss” policy of habitat value for wetlands through avoidance and mitigation.	14
Tuolumne County General Plan	Conservation and Open Space Element	Policy 4.J.6	Comply with “no-net loss” policy for habitat value for “VOW, SER, OGC, ASP, PGS, NGS, CLF” through avoidance and mitigation.	14
Tuolumne County General Plan	Conservation and Open Space Element	Policy 4.J.7	Wildlife, fish and their habitats are important resources that are valued for recreation, hunting and fishing, research, education and open space.	14
Tuolumne County General Plan	Conservation and Open Space Element	Policy 4.K.2	Develop voluntary incentive programs to encourage private property owners to conserve high-value biological resource areas.	14
Tuolumne County General Plan	Conservation and Open Space Element	Policy 4.K.3	Support efforts to identify and acquire high-value biological resource areas, especially those that provide additional public benefits.	14

**Bundle 13: Mokelumne River*****Mokelumne River (FERC 0137)***

Bundle 13 encompasses the Mokelumne River Project (FERC 0137) and is located on the western slope of the Sierra Nevada in north-central California. The Mokelumne River originates near Ebbetts Pass (elevation 8,730 feet) in Alpine County and flows westerly to Electra powerhouse located south of Jackson (elevation 607 feet).

The project is located in Alpine, Amador, and Calaveras Counties and occupies Federal lands managed by the Eldorado and Stanislaus National Forests and the Bureau of Land Management (BLM). Within the Eldorado National Forest, a Game Refuge is located south of Lower Bear River Reservoir and is bordered by Highway 88 on the north and the North Fork Mokelumne River on the south (PG&E Co., 1972). Members of the Salt Springs Deer Herd use this refuge during their spring and fall migrations.

A climatic gradient occurs with elevation change. Warm summers and mild winters are common in the Central Valley while cool summers and winters with heavy snowfalls are typical of the high mountain areas. Annual precipitation also varies with elevation. The Blue Lakes area receives



approximately 52 inches of precipitation annually, 46 inches occurs at Salt Springs, and 36 inches at West Point. Most precipitation above 5,000 feet in elevation is snow, while below 5,000 feet it usually occurs as rain.

**Vegetation Communities.** The elevation range for Bundle 13 is approximately 8,200 feet at Upper and Lower Blue Lakes to 600 feet at the Electra Powerhouse. There are 16 habitats within the Pacific Gas and Electric Company Bundle 13 project boundaries.

Table 4.5-41 outlines vegetation communities found within the boundaries of the Mokelumne River Project. Upper elevation habitats of the Mokelumne Project are primarily conifer habitats, including white fir (*Abies concolor*), red fir (*A. magnifica*), lodgepole pine (*Pinus contorta*), and Jeffrey pine (*P. jeffreyi*). Typical understory shrubs and forbs are manzanita (*Arctostaphylos* spp.), California laurel (*Umbellularia californica*), mountain hemlock (*Tsuga mertensiana*), big sagebrush (*Artemisia tridentata*), ceanothus (*Ceanothus* spp.), mountain misery (*Rubus parviflorus*), alpine laurel (*Kalmia microphylla*), and lupine (*Lupinus polyphyllus*) (CDFG, 1998b). White fir is a common coniferous species at the moist, higher elevations, while ponderosa pine (*Pinus ponderosa*) dominates the drier, lower elevations (USFS, 1990). Riparian habitat occurs throughout the project and supports an extensive network of riparian vegetation such as willow (*Salix* spp.), cottonwood (*Populus* spp.), dogwood (*Cornus* spp.), and alder (*Alnus* spp.). Meadows occur in the vicinity of the North Fork Mokelumne River and are recognized as sensitive habitats that support a diverse collection of plant and wildlife species.

**Table 4.5-41 Bundle 13-Mokelumne River Vegetation Communities Associated With the Mokelumne River Project (FERC 0137)**

Project Features	Foothill Communities			Transition Communities								Montane Communities			Water Elements	
	AGS	BAR	BOP	CRC	MCH	MRI	MHW	MHC	PPN	JPN	SMC	DFR	RFR	SCN	RIV	LAC
<b>Generation Facilities</b>																
Salt Springs Complex		X					X				X				X	
Bear River Tunnel and Cole Creek Diversion										X			X		X	X
Tiger Creek Complex							X	X	X			X			X	X
West Point Complex								X							X	X
Electra Complex	X		X				X	X							X	X

**Table 4.5-41 Bundle 13-Mokelumne River Vegetation Communities Associated With the Mokelumne River Project (FERC 0137)**

Project Features	Foothill Communities			Transition Communities								Montane Communities			Water Elements	
	AGS	BAR	BOP	CRC	MCH	MRI	MHW	MHC	PPN	JPN	SMC	DFR	RFR	SCN	RIV	LAC
<b>Transmission Lines and Access Roads</b>																
Upper Lakes Complex														X		
Salt Springs Complex							X			X	X		X			
Tiger Creek Complex							X		X			X				
West Point Complex								X								
Electra Complex	X						X	X								
<b>FERC Licensed Lands</b>																
Upper Lakes Complex		X												X		
Salt Springs Complex		X				X			X				X			
Tiger Creek Complex						X		X				X				
West Point Complex							X	X								
Electra Complex							X	X								
<b>Project Waterways</b>																
Bear Complex		X								X			X		X	X
Upper Lakes Complex														X		X
Bear River								X			X				X	
Cole Creek						X		X					X			
North Fork of the Mokelumne River			X				X	X	X	X					X	
Salt Springs Reservoir and Beaver Creek		X						X		X	X				X	X
Panther Complex							X		X			X			X	

**Table 4.5-41 Bundle 13-Mokelumne River Vegetation Communities Associated With the Mokelumne River Project (FERC 0137)**

Project Features	Foothill Communities			Transition Communities								Montane Communities			Water Elements	
	AGS	BAR	BOP	CRC	MCH	MRI	MHW	MHC	PPN	JPN	SMC	DFR	RFR	SCN	RIV	LAC
Lake Tabeaud and Pardee Reservoir	X		X													X
<b>Watershed Lands</b>																
Upper Lakes Complex								X						X		
Salt Springs Complex		X					X				X		X			
Tiger Creek Complex							X				X	X				
Electra Complex	X						X									

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Transmission Lines: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer. FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

Vegetation types at mid-elevations (2,000 to 5,000 feet above sea level) (USFS, 1990) are adapted to light and regular ground fires and dry sites. Chaparral, mixed hardwood, and mixed conifer habitats dominate project lands. Overstory vegetation includes California black oak (*Quercus kelloggii*), ponderosa pine, incense cedar (*Calocedrus decurrens*), bigleaf maple (*Acer macrophyllum*), and Douglas fir (*Pseudotsuga menziesii*). Understory vegetation is comprised of California buckeye (*Aesculus californica*), mountain misery, ceanothus, manzanita, lupine, and Indian paintbrush (*Castilleja* spp.).

Vegetation communities of the lower elevations generally consist of blue oak (*Quercus douglasii*), canyon live oak (*Q. chrysolepis*), interior live oak (*Q. wislizenii*), and foothill pine (*Pinus sabiniana*). Understory vegetation is often comprised of annual grasses, forbs, and shrubs including ceanothus, manzanita, California buckeye, and poison oak (*Toxicodendron diversilobum*). Valley foothill riparian habitat occurs throughout the project and supports a well-developed network of riparian vegetation such as willow and cottonwood.

In general, habitats in the Mokelumne River Bundle occur in broad, wide bands that follow river canyons and ridge tops. Unlike other parts of the Sierra Nevada, elevation is a gradual decline from the crest to the Central Valley floor, resulting in long, well-defined vegetation communities. Logging is an important economic activity in Alpine and Amador counties. Little commercial logging has occurred in the upper reaches of the project due to poor access, rugged terrain, and the isolated nature of the Mokelumne River canyon (USFS, 1990). A timber harvest plan is currently being implemented in the Tiger Creek area (CDF, 1999), and habitats in the transition communities of the Mokelumne River Project provide ideal timber harvest conditions.

These vegetation communities are highly influenced by cattle grazing, particularly along road cuts and disturbed areas where grassland and similar meadow-like conditions are present. Eldorado National Forest operates three cattle allotments that border or encompass portions of the Mokelumne River Bundle. Indian Valley Allotment is located around Upper and Lower Blue Lakes, Twin Lake, and Meadow Lake. It operates 270 head of cattle on both National Forest and private land from July 21 through September 20. Bordering the Upper Bear River Reservoir to the east is the Corral Flat Allotment. Sixty head of cattle graze here from July 11 through September 30. On the west side of Upper Bear River Reservoir is the Bear River Allotment. It runs south to the North Fork Mokelumne River and encompasses the State Game Refuge and Lower Bear River Reservoir. It is active June 16 through September 30 with around 210 head of cattle. Stanislaus National Forest also has a number of cattle allotments bordering the project. Shotgun Cattle Allotment borders the North Fork Mokelumne River near the Tiger Creek Regulator Reservoir and supports 252 head of cattle from May 1 through August 31. Lower Blue Cattle Allotment is along the North Fork Mokelumne River next to the Shotgun cattle allotment and has 607 head of cattle on it (Lower Blue Cattle Allotment) from April 30 through September 15. The Stanislaus Meadow and Highland Lakes Cattle Allotments are also on the North Fork Mokelumne River well above Salt Springs Reservoir in the Mokelumne Wilderness. They are both active from July 1 through September 30 and have 100 and 320 head of cattle, respectively.

**Wildlife Resources.** Threatened and endangered species (TES) and species of special concern merit attention in hydroelectric projects, particularly where alteration of flow regimes may potentially affect aquatic and riparian wildlife species. Riparian habitats are the most likely to be significantly altered by changes in hydroelectric facility operations. Potential development of Watershed Lands associated with the project is of concern for species that may inhabit these largely undeveloped tracts of land.

Common species likely to be found at most elevations include western spadefoot (*Scaphiopus hammondi*), Mount Lyell salamander (*Hydromantes platycephalus*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Gerrhonotus multicarinatus*), rubber boa (*Charina bottae*), common kingsnake (*Lampropeltis getulus*), mountain garter snake (*Thamnophis elegans*), western rattlesnake (*Crotalus viridis*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), American kestrel (*Falco sparverius*), northern flicker (*Colaptes auratus*), American robin (*Turdus migratorius*), little brown myotis (*Myotis lucifugus*), Yuma myotis (*M. yumanensis*), long-eared myotis (*M. evotis*), big brown bat (*Eptesicus fuscus*), Townsend's big-eared bat (*Corynorhinus townsendii*), California ground squirrel (*Spermophilus beecheyi*), deer mouse (*Peromyscus maniculatus*), coyote (*Canis latrans*), black bear (*Ursus americanus*), and California mule deer (*Odocoileus hemionus californicus*) (PG&E Co., 1981a).

Habitats within this local bundle support a number of game species including mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), mountain quail (*Oreortyx pictus*), several species of waterfowl, band-tailed pigeon (*Columba fasciata*), blue grouse (*Dendragapus obscurus*), brush rabbit (*Sylvilagus bachmani*), snowshoe hare (*Lepus americanus*), gray fox (*Urocyon cinereoargenteus*), western gray squirrel (*Sciurus griseus*), black bear, Columbian black-tailed deer (*Odocoileus hemionus columbianus*), and California mule deer (PG&E Co., 1981a).

Mule deer are the most important big game animals of the project and have been the subject of CDFG and Pacific Gas and Electric Company studies (Pacific Gas and Electric Company Mokelumne Project FERC License, Exhibit S). The Salt Springs Deer Herd is located in Alpine and Amador counties on the western side of the Sierra Nevada and north of the North Fork Mokelumne River. Deer use large portions of the project as summer, intermediate, and winter range. The upper reaches around Upper Blue Lake, Lower Blue Lake, Twin Lake, Meadow Lake, and Upper and Lower Bear River Reservoirs are traditional summer range, while the area directly around Salt Springs Reservoir is within the intermediate range and used during seasonal migration. Lower reaches from Salt Springs Reservoir and continuing along the North Fork Mokelumne River to the West Point complex are used as winter ranges.

FERC License Article 19 outlines a deer herd management plan developed by CDFG in 1981 to restore and maintain deer herd size. Deer protection measures to reduce Salt Springs Deer Herd and other wildlife mortality include (1) undercrossings and overcrossings along the Tiger Creek Canal to maintain migratory corridors; (2) deer escapes along the canal; (3) fencing along the entire uphill side of Tiger Creek Canal to reduce the risk of wildlife entering the canal; and (4) maintenance of small water supplies at some of the seasonally dry undercrossings along project conduits (PG&E Co., 1996).

The Railroad Flat Deer Herd is the second herd that can be found in the project vicinity. The northern boundary of its range is the North Fork Mokelumne River and the southern boundary is the North Fork Stanislaus River. Of special concern are the northernmost migratory corridors that

parallel the North Fork Mokelumne River and the holding areas next to the North Fork Mokelumne River. Holding overlay areas are very important to the migrating herd. Delay areas are typically expansions of the migratory corridor where deer will delay their migration from several days to three or four weeks – often moving in relation to storms (CDFG, 1984). Holding areas also may encompass critical fawning areas – areas that provide the necessary food, water, and cover for successful birth and rearing of fawns (CDFG, 1984).

Table 4.5-42 includes TES and other special status species, the habitats where they tend to reside, and the project facilities or elements where these species may occur. This table is based on WHR modeling, CNDDDB, USFS and CDFG consultation, CDFG's Special Animals List, California Gap Analysis Project, and known habitat types and conditions within the FERC-licensed projects in the Mokelumne River drainage.

Surveys for TES within the project boundary have been, and are being, conducted during ongoing re-licensing efforts. Pacific Gas and Electric Company has conducted surveys for peregrine falcon, bald eagle, valley elderberry longhorn beetle, and California red-legged frog habitat and occurrence. The Eldorado National Forest has, in addition, conducted surveys of USFS property for California spotted owl, northern goshawk, Pacific fisher, American marten and other furbearers, western pond turtle and other sensitive amphibians.

A survey for valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) was done in September 1997, by Pacific Gas and Electric Company biologists. Areas above 3,000 feet in elevation were not surveyed because they are outside the range of VELB (PG&E Co., 1998c). Seventy-eight clumps with stems greater than one-inch diameter were recorded at 47 locations (PG&E Co., 1998b). Exit holes (created by the emerging larva) were observed in 31 of the observed clumps. VELB habitat was associated with transmission lines or project roads. Fifty-five clumps are located near the Tiger Creek-Bellota 230 kV No. 1 and No. 2 transmission line, and the West Point-Valley Springs 60 kV transmission line right-of-way or associated access roads (PG&E Co., 1998b). Ten clumps occur along the West Point Road, seven along the Tiger Creek Forebay Road, and six along Tiger Creek Road (PG&E Co., 1998c).

Amphibians and reptiles are highly sensitive species and are of special concern in relation to the project because of the potential for fluctuating river and reservoir levels. Habitat exists throughout the project for several species of amphibians and reptiles. Suitable California red-legged frog habitat has been designated in several areas of the Mokelumne River Project, although no frogs were found at any of the surveyed sites. California newt, ensatinas, slender salamanders, foothill yellow-legged frog, mountain yellow-legged frog, western toad, bullfrogs, and western pond turtles are all expected within the project boundary.

Several occurrences of nesting bald eagles have been recorded in the vicinity of Salt Springs Reservoir, Upper Blue Lake, Upper and Lower Bear River Reservoir, Meadow Lake, and at various locations along the North Fork Mokelumne River (Boatner, 2000). Peregrine falcons

**Table 4.5-42 Bundle 13- Mokelumne River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Mokelumne River Project (FERC 0137)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Button's Sierra sideband (snail) <i>Monadenia mormonum buttoni</i>	SOC/--/FSS	VRI, LAC, WTM	Bear River Tunnel, Tiger Creek Complex, West Point Complex, Electra Complex, Bear Complex, Upper Lakes Complex, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Lake Tabaud, Pardee Reservoir
Tight coin (=Yates Snail) <i>Ammonitella yatesi</i>	SOC/-/-	VRI, LAC, WTM	Bear River Tunnel, Tiger Creek Complex, West Point Complex, Electra Complex, Bear Complex, Upper Lakes Complex, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Lake Tabaud, Pardee Reservoir
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/-/FSS	VRI, MRI	Tiger Creek Complex, transmission lines, access roads, and watershed lands; West Point Complex, Salt Springs Watershed Lands; Cole Creek, Lake Tabaud, Pardee Reservoir
<b>Amphibians</b>			
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP /FSS, BLM	VRI, PPN, SMC, MCH, WTM, RIV	Lake Tabaud and Pardee Reservoir, North Fork of the Mokelumne River, Tiger Creek Complex, transmission lines, access roads, and watershed lands; Salt Springs Complex, transmission lines, access roads, and watershed lands; Bear Complex, Upper Lakes Complex, Bear River, Cole Creek, Salt Springs Reservoir and Beaver Creek, Panther Complex
Mount Lyell salamander <i>Hydromantes platycephalus</i>	SOC/SSC, CFP /-	RFR, SCN, VRI, RIV, LAC	Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek Complex, West Point Complex, Electra Complex, Upper Lakes Complex, and watershed lands; Lake Tabaud and Pardee Reservoir, Bear Complex, Bear River, Cole Creek, North Fork of the Mokelumne River, Salt Springs Reservoir and Beaver Creek, Panther Complex
Mountain yellow-legged frog <i>Rana muscosa</i>	SOC/SSC, CFP /FSS	MRI, SCN, WTM, RIV	Salt Springs watershed lands; Tiger Creek Complex and Watershed lands, Bear Complex, Upper Lakes Complex, transmission lines, access roads, and Watershed lands; Cole Creek, North Fork of the Mokelumne River, Bear River, Cole Creek, Salt Springs Reservoir and Beaver Creek, Panther Complex
Western spadefoot <i>Scaphiopus hammondi</i>	--/SSC, CFP /BLM	AGS, BOW, BOP, LAC, RIV	Electra Complex, transmission lines, access roads, and watershed lands; North Fork of the Mokelumne River, Lake Tabaud and Pardee Reservoir, Salt Springs Complex, Tiger Creek Complex, West Point Complex, Bear River Tunnel and Cole Creek, Bear Complex, Upper Lakes Complex, Bear River, Cole Creek, Panther Complex, Salt Springs Reservoir and Beaver Creek
Yosemite toad <i>Bufo canorus</i>	SOC/SSC, CFP /FSS	WTM, SCN	Upper Lakes Complex, transmission lines, access roads, and watershed lands; North Fork of the Mokelumne River
<b>Reptiles</b>			
California horned lizard <i>Phrynosoma coronatum frontale</i>	SOC/SSC, CFP /BLM	MHC	Electra Complex, transmission lines, access roads, and watershed lands; Lake Tabaud and Pardee Reservoir, Tiger Creek Complex and watershed lands; West Point Complex, transmission lines, access roads, and watershed lands; Bear River, Cole Creek, North Fork of the Mokelumne River, Salt Springs Reservoir and Beaver Creek, Upper Lakes watershed lands
Giant garter snake <i>Thamnophis gigas</i>	FT/ST/-	BOW, BOP, MHW, MHC, PPM, LAC, RIV	Central Valley floor only. No direct impacts, but is downstream from project areas and could possibly be affected by dramatic changes in water flow

**Table 4.5-42 Bundle 13- Mokelumne River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Mokelumne River Project (FERC 0137)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP /FSS	VRI, MRI, RIV, LAC	Upper Lakes Complex, Salt Springs Reservoir, Salt Springs Complex, Watershed lands; Bear complex, Tiger Complex, Watershed lands; Bear River, North Fork Mokelumne River, West Point Complex, Cole Creek, Panther Complex, Electra Complex, Beaver Creek, Lake Tabeaud, Pardee Reservoir
Southwestern pond turtle <i>Clemmys marmorata pallida</i>	SOC/SSC, CFP /FSS, BLM	VRI, MRI, RIV, LAC	Same as northwestern pond turtle
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE, CFP /FSS, CDF	RIV, LAC	Upper Lakes Complex, Salt Springs Reservoir, Salt Springs Complex, Bear Complex, Tiger Complex, Bear River, North Fork Mokelumne River, West Point Complex, Cole Creek, Panther Complex, Electra Complex, Beaver Creek, Lake Tabeaud, Pardee Reservoir
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC /FSS, BLM	SMC, MHC, MHW	Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek Complex, transmission lines, access roads, and watershed lands; West Point Complex, transmission lines, access roads, and Watershed lands; North Fork Mokelumne River, Bear River, Cole Creek, Salt Springs Reservoir, Beaver Creek, Panther Complex, Electra Complex, transmission lines, access roads, and watershed lands
Cooper's hawk <i>Accipiter cooperii</i>	--/SSC/--	VRI, MRI, BOW, BOP, MHW, MHC	Upper Lakes watershed lands, Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek Complex, transmission lines, access roads, and watershed lands; West Point Complex, transmission lines, access roads, and watershed lands; North Fork Mokelumne River, Bear River, Cole Creek, Salt Springs Reservoir, Beaver Creek, Panther Complex, Electra Complex, transmission lines, access roads, and watershed lands; Lake Tabeaud, Pardee Reservoir
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP /CDF, BLM	BOW, BOP, MHW, MHC, PPN, MCP, BAR, DFR	Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek Complex, transmission lines, access roads, and watershed lands; West Point Complex, transmission lines, access roads, and watershed lands; North Fork Mokelumne River, Bear River, Cole Creek, Salt Springs Reservoir, Beaver Creek, Panther Complex, Electra Complex, transmission lines, access roads, and watershed lands
Great blue heron <i>Ardea herodias</i>	--/--/CDF	CRP, MRI, WTM	Salt Springs Watershed lands, Tiger Creek watershed lands, Cole Creek, North Fork of the Mokelumne River
Great gray owl <i>Strix nebulosa</i>	--/SE/FSS, CDF	RFR, SMC, WTM	Salt Springs Complex, transmission lines, access roads, and watershed lands; Bear complex, Cole Creek, Bear River, Salt Springs Reservoir, Beaver Creek, Tiger Creek watershed lands, North Fork Mokelumne River
Horned lark <i>Eremophila alpestris</i>	--/SSC/--	AGS, MCH, BOW, BOP, BAR	Electra Complex, transmission lines, access roads, and watershed lands; Lake Tabeaud, Pardee Reservoir, North Fork Mokelumne River



**Table 4.5-42 Bundle 13- Mokelumne River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Mokelumne River Project (FERC 0137)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Long-eared owl <i>Asio otus</i>	--/SSC/--	VRI, MRI, BOW, BOP, MHW, MHC	Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek Complex, transmission lines, access roads, and watershed lands; West Point Complex, transmission lines, access roads, and watershed lands; North Fork Mokelumne River, Bear River, Cole Creek, Salt Springs Reservoir, Beaver Creek, Panther Complex, Electra Complex, transmission lines, access roads, and watershed lands
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, PPN, MHW, MHC, LAC, AGS	Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek complex, transmission lines, access road, and watershed lands; West Point complex, transmission lines, access roads, and watershed lands; North Fork Mokelumne River, Bear River, Cole Creek, Salt Springs Reservoir, Beaver Creek, Panther Complex, Electra complex, transmission lines, access roads, and watershed lands; Bear River Tunnel, Cole Creek Diversion, Bear complex, Upper Lakes Complex
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC /FSS, CDF	SCN, SMC	Salt Springs Complex, transmission lines, access roads; Upper Lakes Complex, watershed lands; North Fork of the Mokelumne, Bear River, Salt Springs Reservoir, Beaver Creek
Osprey <i>Pandion haliaetus</i>	--/SSC/CDF	LAC, PPN, SMC	Tiger Creek Complex, transmission lines, access roads, and watershed lands; Salt Springs Complex, transmission lines, access roads, and watershed lands; North Fork Mokelumne River, Panther Complex, Bear River Salt Springs Reservoir, Beaver Creek, Cole Creek Diversion, West Point Complex, Electra Complex, Bear Complex, Upper Lakes Complex, Lake Tabeaud, Pardee Reservoir
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP /FSS, CDF	BAR, SMC, MHC, DFR	Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek Complex, and watershed lands; West Point Complex, transmission lines, access roads, and watershed lands; Electra Complex, transmission lines, access roads, watershed lands; Bear River, Salt Springs Reservoir, Beaver Creek, Cole Creek
Purple martin <i>Progne subis</i>	--/SSC/--	BOW, MHW, BOP, MHC, VRI, PPN	Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek Complex, transmission lines, access roads, and watershed lands; West Point Complex, transmission lines, access roads, and PG&E Co. lands; North Fork Mokelumne River, Bear River, Cole Creek, Salt Springs Reservoir, Beaver Creek, Panther Complex, Electra Complex, transmission lines, access roads, and watershed lands
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	PPN, JPN, MRI, VRI, BOW, BOP, DFR	Tiger Creek Complex, transmission lines, access roads; Bear River Tunnel, Cole Creek Diversion, Salt Springs Complex, and PG&E Co. lands; North Fork of the Mokelumne River, Salt Springs Reservoir, Beaver Creek, Lake Tabeaud, Pardee Reservoir, Cole Creek, Electra Complex, transmission lines, access roads, and watershed lands
White-tailed kite <i>Elanus leucurus</i>	--/CFP/--	AGS, CRP, MCH	Electra Complex, transmission lines, access roads, and watershed lands; Lake Tabeaud, Pardee Reservoir.

**Table 4.5-42 Bundle 13- Mokelumne River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Mokelumne River Project (FERC 0137)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	WTM, MRI, RIV	Salt Springs Complex and PG&E Co. lands; Tiger Creek Complex and PG&E Co. lands; North Fork of the Mokelumne River, Cole Creek, Bear River tunnel, Cole Creek Diversion, West Point Complex, Electra Complex, Bear Complex, Bear River Salt Springs Reservoir, Beaver Creek, Panther Complex
Yellow warbler <i>Dendroica petechia</i>	--/SSC/--	MRI, MCP, PPN, SMC, VRI	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek Complex, transmission lines, access roads, watershed lands; Bear River, Cole Creek, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Panther Complex, Lake Tabeaud, Pardee Reservoir
Yellow-breasted chat <i>Icteria virens</i>	--/SSC/--	VRI, MRI	Salt Springs Watershed lands; Tiger Creek watershed lands, Cole Creek, Lake Tabeaud, Pardee Reservoir
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP /FSS	SMC, RFR, WTM	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek watershed lands; Bear River tunnel, Cole Creek Diversion, Bear Complex, Bear River, Cole Creek North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek
Little brown myotis <i>Myotis lucifugus</i>	--/SSC/--	JPN, MRI, BOW, BOP, SMC, PPN, RIV, LAC, BAR	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek Complex, transmission lines, access roads, watershed lands; West Point Complex; Electra Complex, transmission lines, access roads, watershed lands; Upper Lakes Complex, Bear River tunnel, Cole Creek Diversion, Bear Complex, Bear River, Cole Creek, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Panther Complex, Lake Tabeaud, Pardee Reservoir
Lodgepole chipmunk <i>Tamias speciosus</i>	SOC/--/FSS	SMC, MCP	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek watershed lands, Bear River, Salt Springs Reservoir, Beaver Creek
Northern flying squirrel <i>Glaucomys sabrinus</i>	--/SSC/FSS	BOW, BOP, JPN, MRI, SMC, VRI	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek, watershed lands; Electra Complex, transmission lines, access roads, watershed lands; Bear River tunnel, Cole Creek Diversion, Bear Complex, Bear River, Cole Creek, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Panther Complex, Lake Tabeaud, Pardee Reservoir
Ornate shrew <i>Sorex ornatus</i>	FC/SSC/--	VRI, MRI, MCH, AGS	Salt Springs PG&E Co. lands; Tiger Creek PG&E Co. lands; Electra Complex, transmission lines, access roads, watershed lands; Cole Creek, Panther Complex, Lake Tabeaud, Pardee Reservoir
Pacific fisher <i>Martes pennanti necator</i>	SOC/SSC /FSS, BLM	SCN, SMC, MRI, WFR, JPN	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek watershed lands; Upper lakes Complex, transmission lines, access roads, watershed lands; Bear River tunnel, Cole Creek Diversion, Bear Complex, Bear River, Cole Creek North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek

**Table 4.5-42 Bundle 13- Mokelumne River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Mokelumne River Project (FERC 0137)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLM	AGS, MHW, MHC, SMC, BAR	Electra Complex, transmission lines, access roads, and watershed lands; Lake Tabeaud, Pardee Reservoir, North Fork Mokelumne River, Bear River Tunnel, Cole Creek Diversion, Salt Springs transmission lines and access roads; Bear Complex, Salt Springs Reservoir, Beaver Creek
Pine marten <i>Martes americana</i>	--/-/FSS	RFR, SCN, SMC, JPN	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek watershed lands; Upper Lakes Complex, transmission lines, access roads, watershed lands; Bear River tunnel, Cole Creek Diversion, Bear Complex, Bear River, Cole Creek North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek
Riparian woodrat <i>Neotoma fuscipes riparia</i>	FPE/SSC/--	BOW, BOP, MHW, MHC, SMC, MCP, DFR	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek Complex, transmission lines, access roads, watershed lands; West Point Complex, transmission lines, access roads, PG&E Co. lands; Electra Complex, transmission lines, access roads, watershed lands; Upper Lakes watershed lands; Bear River, Cole Creek, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Panther Complex, Lake Tabeaud, Pardee Reservoir
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	FE/SSC/--	MHC, MHW, PPN, DFR	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek Complex, transmission lines, access roads, watershed lands; West Point Complex, transmission lines, access roads, PG&E Co. lands; Electra Complex, transmission lines, access roads, watershed lands; Upper Lakes watershed lands; Bear River, Cole Creek, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Panther Complex
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	--/ST/FSS	WTM, SCN, RFR, MCH, MRI, SMC, PPN	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek Complex, transmission lines, access roads, watershed lands; Upper lakes Complex, transmission lines, access roads, watershed lands; Bear River tunnel, Cole Creek Diversion, Bear Complex, Bear River, Cole Creek North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Panther Complex
Sierra Nevada snowshoe hare <i>Lepus americanus</i>	--/SSC/--	MRI, SMC, JPN, RIV, MCH	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek Complex, watershed lands; West Point Complex; Electra Complex; Bear River tunnel, Cole Creek Diversion, Bear Complex, Bear River, Cole Creek, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Panther Complex
Spotted bat <i>Euderma maculatum</i>	--/SSC/BLM	SMC, BAR, AGS	Electra Complex, transmission lines, access roads, and watershed lands; Salt Springs Complex, transmission lines, access roads, and watershed lands; Tiger Creek Complex and watershed lands; Bear River Salt Springs Reservoir, Beaver Creek, Lake Tabeaud, Pardee Reservoir
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	--/SSC/FSS, BLM	AGS, WTM, BOW, BOP, MRI	Electra Complex, transmission lines, access roads, and watershed lands; Lake Tabeaud, Pardee Reservoir, North Fork Mokelumne River, Salt Springs Watershed lands, Tiger Creek Watershed lands, Cole Creek
Western mastiff bat <i>Eumops perotis</i>	--/SSC/BLM	BOP, BOW, AGS, MCH, MRI, WTM	Electra Complex, transmission lines, access roads, and watershed lands; Lake Tabeaud, Pardee Reservoir, North Fork Mokelumne River, Salt Springs Watershed lands, Tiger Creek PG&E Co. lands

**Table 4.5-42 Bundle 13- Mokelumne River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Mokelumne River Project (FERC 0137)**

Common Name and Scientific Name	Status USFWS/State/ Other	Habitat	Facilities
Western red bat <i>Lasiurus blossevillei</i>	--/FSS	AGS, BOW, BOP, JPN, MRI, VRI, SMC	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek watershed lands; Electra Complex, transmission lines, access roads, watershed lands; Bear River tunnel, Cole Creek Diversion, Bear Complex, Bear River, Cole Creek, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Lake Tabeaud, Pardee Reservoir
Yuma myotis <i>Myotis yumanensis</i>	--/SSC/-	AGS, BOW, BOP, MCH, MRI, PPN, SMC, VRI	Salt Springs Complex, transmission lines, access roads, watershed lands; Tiger Creek Complex, transmission lines, access roads, watershed lands; Electra Complex, transmission lines, access roads, watershed lands; Bear River, Cole Creek, North Fork Mokelumne River, Salt Springs Reservoir, Beaver Creek, Panther Complex, Lake Tabeaud, Pardee Reservoir

NOTES: Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.

Special Status Species:

Federal:

FE = Federally listed as endangered

FT = Federally listed as threatened

SOC = Federal species of concern

FC = Federal Candidate species

State:

SE = State listed as endangered

ST = State listed as threatened

SSC = State species of special concern

CFP = California Fully Protected species

FSS = Forest Service sensitive species

BLM = Bureau of Land Management sensitive species

CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland

BAR = Barren

BOP = Blue Oak-Foothill Pinecrest Lake

BOW = Blue Oak Woodland

DFR = Douglas Fir

JPN = Jeffrey Pine

LAC = Lacustrine

MCH = Mixed Chaparral

MCP = Montane Chaparral

MHC = Mixed Hardwood-Conifer

MHW = Mixed Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

SCN = Subalpine Conifer

SMC = Sierra Mixed Conifer

VRI = Valley Foothill Riparian

WTM = Wet Meadow

(*Falco peregrinus*) also occur on land within the project as migrants or residents, and nesting peregrines have been observed in the Salt Springs Reservoir vicinity for several consecutive years

(Boatner, 2000). There is a designated raptor protection zone in the Salt Springs/Calaveras Dome area. Entry to this area during critical nesting season is prohibited (Stanislaus, 1994). Golden eagles have been found nesting in the vicinity of the North Fork Mokelumne River, Salt Springs Reservoir, Lower Bear River Reservoir, and around the upper elevation lakes (Boatner, 2000). Northern goshawk and California spotted owl also have ample habitat in the project, and both species are confirmed to have nested within project boundaries and the immediate vicinity over the last five to ten years (Boatner, 2000). Habitat exists for a number of other sensitive avian species.

Bat surveys have not been conducted, so the species of bats that may use facilities are unknown, but habitat within the project boundary as well as the project facilities themselves have the potential to support several species of bats.

***Botanical Resources.*** The Mokelumne River Project is within the Sierra Nevada Region and, more specifically, the High Sierra Nevada subregion (between 1,640 feet and 9,840 feet elevation) and Northern High Sierra Nevada district. The High Sierra Nevada subregion is characterized by mostly conifer forest above 1,640 feet and has complex vegetation ranging from lower montane ponderosa pine forests to upper montane red fir forests and treeless alpine communities at the highest elevations (Hickman, 1993). The project lies just above the southern boundary of the Northern High Sierra Nevada district, which is along the Calaveras-Tuolumne county line. Upper and Lower Blue Lake Reservoirs (8,200 feet amsl) are located at the highest elevations in the project, while Electra powerhouse (607 feet amsl) is located at the lowest elevation within the project.

There is a broad range of vegetation in the Mokelumne River area, depending primarily on elevation, slope, exposure, and soil type. Pasture and croplands prevail around Lake Taboada and Electra powerhouse, with live oak, blue oak, and foothill pine stands throughout the area. Commercial species of Douglas fir, black oak, ponderosa pine, incense cedar, and sugar pine are found in the virgin and managed stands throughout the transition and lower montane reaches of the project. Prime timberland along Tiger Creek and Panther Creek has ongoing timber harvests and future harvests are planned (Boatner, 2000). The upper river area, especially near Calaveras Dome and Salt Springs Reservoir, is primarily barren rock outcroppings. Subalpine conifers, lodgepole pine and red fir stands dominate the high elevation areas near Upper and Lower Blue Lakes, Meadow Lake and Twin Lake.

Hidden in high montane areas are pristine wet meadows in which are found many uncommon plant and wildlife species. Meadows located on, or in the vicinity of, the Mokelumne River Project have the potential to support several species of rare plants (Taylor, 2000). Montane and valley riparian vegetation is evident and prominent throughout the project. Narrow river canyons in the montane elevations allow sparse, scrubby vegetation, but the lower river has broader floodplains that provide for well-developed, extensive riparian vegetation. Riparian areas and wet meadows are important habitats to many species of rare plants because they provide the moist and mostly undisturbed soils that plants need.

Two plant species known to occur in the Mokelumne River Bundle are prairie wedgegrass (*Sphenopholis obtusata* var. *obtusata*), a CNPS list 2 species documented at Tiger Creek Afterbay, and Pleasant Valley mariposa lily (*Calochortus clavatus* var. *avius*), a CNPS list 1B species and Federal Species of Concern. Both species have been found 1.4 miles north of the Mokelumne River.

Table 4.5-43 lists the special status plants that occur, or potentially could occur, in this Bundle. This list was compiled using CNDDDB, USFS sensitive plant lists, related project documents, surveys of lands within the project boundary conducted during the FERC re-licensing process, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

**Table 4.5-43 Bundle 13 – Mokelumne River Special-Status Plant Species That Occur or Potentially Could Occur Within the Mokelumne Project (FERC 0137)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Agrostis hendersonii</i> Henderson's bent grass	SOC/--/3/--	VFGrs (mesic) VNPIs	Electra Complex
<i>Allium tribracteatum</i> three-bracted onion	SOC/--/1/FSS	Chprl, LCFrs, UCFrs, / volcanic	Salt Springs Complex, Upper and Lower Bear Reservoir
<i>Arctostaphylos myrtifolia</i> lone manzanita	TI/--/1B/--	Chprl, CmWld/acidic lone clay or sandy	Lake Tabeaud, Pardee Reservoir, Electra Complex
<i>Calochortus clavatus</i> var. <i>avius</i> Pleasant Valley mariposa lily	SOC/--/1B/FSS,BLMS	LCFrs (Josephine silt loam volcanic)	Tiger Creek Complex, Bear, Beaver and Cole Creeks, Salt Springs Reservoir, West Point Complex, East and West Fork Panther Creek
<i>Calycadenia hooveri</i> Hoover's calycadenia	SOC/--/1B/--	CmWld, VFGrs/rocky	Electra Complex, Lake Tabeaud, Pardee Reservoir
<i>Carex petasata</i> Liddon's sedge	--/1/2/--	LCFrs, Medws	Upper Lakes Complex
<i>Chlorogalum grandiflorum</i> Red Hills soaproot	SOC/--/1B/FSS, BLMS	Chprl, CmWld/serpentinite or gabbroic	West Point Complex, Electra Complex, Tiger Creek Complex, Bear, Beaver and Cole Creeks, Lake Tabeaud, Pardee Reservoir
<i>Claytonia umbellata</i> Great Basin claytonia	--/1/2/BLMS	SCFrs (talus)	Upper Lakes Complex
<i>Draba asterophora</i> var. <i>asterophora</i> Tahoe draba	--/1/1B/FSS	AlpBr, SCFrs	Upper Lakes Complex
<i>Helianthemum suffrutescens</i> Bisbee Peak rush-rose	--/1/3/--	Chprl (often serpentinite, gabbroic)	Lake Tabeaud, Pardee Reservoir, Electra Complex
<i>Horkelia parryi</i> Parry's horkelia	SOC/--/1B/FSS,BLMS	Chprl, CmWld./especially lone Formation	Lake Tabeaud, Pardee Reservoir, Electra Complex
<i>Lomatium stebbinsii</i> Stebbins' lomatium	SOC/--/1B/FSS	Chprl, LCFrs/gravelly, volcanic clay	Bear Creek, Salt Springs Reservoir, Beaver Creek
<i>Mimulus whipplei</i> Whipple's monkeyflower	SOC/--/1A/--	LCFrs	West Point Complex, Electra Complex, Lake Tabeaud, Pardee Reservoir

**Table 4.5-43 Bundle 13 – Mokelumne River Special-Status Plant Species That Occur or Potentially Could Occur Within the Mokelumne Project (FERC 0137)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Polystichum lonchitis</i> holly fern	--/3/--	SCFrS, UCFrS granitic	Upper Lakes Complex
<i>Potamogeton robbinsii</i> Robbins' pondweed	--/2/--	MshSW (deep water, lakes)	Upper Lakes Complex

NOTES: Scientific names are based on the following sources: Hickman 1993.

Status: Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

USFWS: United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

State: Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

CNPS: California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

Habitats:

AlpBR = Alpine Boulder and Rock Field

BgFns = Bogs and Fens

BUFrS = Broadleaved Upland Forest

CCFrS = Closed-Cone Conifer Forest

Chprl = Chaparral

ChScr = Chenopod Scrub

Cmwld= Cismontane Woodland

CoDns = Coastal dunes

CoPrr = Coastal Prairie

CoScr = Coastal Scrub

GBGrS = Great Basin grassland

GBScr = Great Basin Scrub

LCFrS = Lower Montane Conifer Forest

Medws = Meadows and Seeps

MshSw = Marshes and Swamps

PJWld = Pinyon and Juniper Woodland

Plyas = Playas

RpFrS = Riparian Forest

RpScr = Riparian Scrub

RpWld = Riparian Woodland

SCFrS = Subalpine Conifer Forest

UCFrS = Upper Montane Conifer Forest

VFGrs = Valley and Foothill Grassland

VnPls = Vernal Pools

### **Bundle 14: Stanislaus River**

#### ***Spring Gap-Stanislaus (FERC 2130), Phoenix (FERC 1061)***

Both the Spring Gap-Stanislaus Project (FERC 2130) and the Phoenix Project (FERC 1061) are in Bundle 14.

The Spring Gap-Stanislaus Project is located in Tuolumne County near the communities of Strawberry, MiWuk, Twain Harte, and Sonora. Much of the site is located in the Stanislaus National Forest. Yosemite National Park is located about ten miles south of Relief Reservoir, with the Emigrant Wilderness occupying the land in between (PG&E Co., 1999d). The project lies between the Middle Fork Stanislaus River and South Fork Stanislaus River.

The Phoenix Project uses water within the South Fork Stanislaus River drainage. Most of the project is located within the Stanislaus National Forest. Topography for both the Spring Gap-Stanislaus Project and the Phoenix Project is characterized by a series of broad sloping benches separated by river canyons and numerous tributaries. Climate is directly related to elevation. Above 4,000 feet, summers are cool and winters are snowy. Runoff from snowmelt, which feeds the rivers and creeks, occurs normally from March through July. Below 4,000 feet, mild, rainy winters and hot, dry summers prevail. Average precipitation is 30 to 35 inches annually.

***Vegetation Communities.*** The elevation range for the Stanislaus River Bundle is approximately 7,200 feet at Relief Reservoir to 1200 feet at the Stanislaus powerhouse. There are 8 defined habitats within the project, based on Mayer and Laudenslayer's A Guide to Wildlife Habitat of California (WHR). The United States Forest Service California Gap Analysis Project, along with the Spring Gap-Stanislaus and Phoenix Project FERC licenses, the PEA, and other project documents, were used to identify habitats.

Table 4.5-44 outlines the habitats found within the boundaries of the Spring Gap-Stanislaus and Phoenix projects. Upper elevations of Bundle 14 are primarily conifer habitats including red fir, lodgepole pine, and Jeffrey pine. Typical understory shrubs and forbs are manzanita, California laurel, mountain hemlock, big sagebrush, ceanothus, mountain misery, alpine laurel, and lupine. Montane chaparral is a dominant presence in the upper reaches of the project. Relief Reservoir, Middle Fork Stanislaus River, and South Fork Stanislaus River all support this vegetation community. Montane chaparral varies widely throughout California but usually includes one or more types of ceanothus, manzanita, mountain mahogany (*Cercocarpus* sp.), toyon (*Heteromeles arbutifolia*), chinquapin (*Chrysolepis* sp.), and California buckthorn (*Rhamnus* sp.) (CDFG, 1988b). It is a community that is often impenetrable to large mammals and may be found on shallow to deep soils, from gentle to steep slopes, and mostly throughout the coniferous forest zone (cold winters with large amounts of precipitation) (CDFG, 1988b).



**Table 4.5-44 Bundle 14 – Stanislaus River Vegetation Communities Associated With the Spring Gap–Stanislaus Project (FERC 2130) and the Phoenix Project (FERC 1061)**

Project Features	Foothill Communities	Transition Communities				Montane Communities	Water Elements	
	BOP	MHW	PPN	JPN	SMC	MCP	RIV	LAC
<b>Generation Facilities</b>								
Philadelphia Complex				X	X			X
Spring Gap Complex				X			X	X
Stanislaus Complex			X	X			X	X
Phoenix Complex	X	X					X	X
<b>Transmission Lines and Access roads</b>								
Spring Gap Complex		X	X					
Stanislaus Complex	X	X	X					
Phoenix Complex	X		X					
<b>FERC Licensed Lands</b>								
Relief Reservoir				X				
Spring Gap Complex				X				
Stanislaus Complex		X						
Phoenix Complex		X	X					
<b>Project Waterways</b>								
Relief Reservoir				X		X		X
Middle Fork of the Stanislaus River	X			X	X	X	X	
Donnells Reservoir, Pinecrest Lake			X	X	X			X
South Fork Stanislaus River	X	X	X		X	X	X	
Lyons Reservoir		X	X					X
New Melones Reservoir	X							X

**Table 4.5-44 Bundle 14 – Stanislaus River Vegetation Communities Associated With the Spring Gap–Stanislaus Project (FERC 2130) and the Phoenix Project (FERC 1061)**

Project Features	Foothill Communities	Transition Communities				Montane Communities	Water Elements	
	BOP	MHW	PPN	JPN	SMC	MCP	RIV	LAC
<b>Watershed Lands</b>								
Relief Reservoir				X				
Stanislaus Complex		X	X					
Spring Gap Complex		X	X					
Lyons Reservoir		X	X		X			
Phoenix Complex			X					

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Transmission Lines: Power lines and access roads that belong to Pacific Gas and Electric Company and are part of the project transfer. FERC Licensed Lands: Pacific Gas and Electric Company owned lands that are regulated by FERC. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are regulated by Pacific Gas and Electric Company, not contiguous to a generation facility or project waterway and are part of the proposed project.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

Wet meadows are a sensitive habitat that has the potential to occur within the upper elevations of the project. Kennedy Meadows is a popular meadow resort that borders several acres of Pacific Gas and Electric Company land. Meadows are recognized as sensitive and fragile communities and support a diverse collection of plant and wildlife species that rarely can be found elsewhere.

At mid-elevations, chaparral, mixed hardwood and mixed conifer habitats dominate project lands. Overstory vegetation includes California black oak, ponderosa pine, incense cedar, bigleaf maple, and Douglas fir. Understory vegetation is comprised of California buckeye, mountain misery, ceanothus, manzanita, lupine, and Indian paintbrush. Vegetation types in these habitats are adapted

to light and regular ground fires on dry sites between 2,000 to 5,000 feet above sea level (USFS, 1990). Chamise-redshank chaparral is a unique vegetation community within the project boundary and is found along the Middle Fork Stanislaus River and the South Fork Stanislaus River. This habitat lacks a well-developed overstory, and groundcover is dominated by nearly impenetrable shrub canopies that reach one to six meters in height (CDFG, 1988b). Dominant species associations include toyon, poison oak, and California buckthorn.

Vegetation communities of the lower elevations are generally comprised of blue oak, canyon live oak, interior live oak, and foothill pine. Understory vegetation is often comprised of annual grasses and forbs such as brome grasses (*Bromus* spp.), wild oat (*Avena fatua*) and other annual wildflowers; shrubs include ceanothus, manzanita, California buckeye, and poison oak. Riparian habitats exist throughout the project and support an extensive network of riparian vegetation such as willows, cottonwoods, dogwood, and blue elderberry (*Sambucus mexicana*).

Habitats on the Spring Gap-Stanislaus and Phoenix Projects occur in broad, wide bands that follow river canyons and ridge tops. Unlike other parts of the Sierra Nevada, elevation is a gradual decline from the crest to the Central Valley floor, and result in long, well-defined vegetation communities. Logging is an important economic activity in Tuolumne and neighboring counties. Commercial logging is a continual process within parts of Stanislaus National Forest, and habitats in the transition communities of Bundle 14 provide ideal timber harvest conditions.

Vegetation communities are highly influenced by cattle grazing, particularly along road cuts and disturbed areas where grassland and similar meadow-like conditions are present. The Stanislaus National Forest has a number of cattle allotments throughout the project. Wheats Cattle Allotment is located along the Middle Fork Stanislaus River near Donnell Lake and is active from June 25 through September 25 and supports 200 head of cattle. Southgrove-Smoothwire Cattle Allotment has three permittees with a combined 651 head of cattle. This allotment is located along the Middle Fork Stanislaus River and also runs from Donnell Lake to Beardsley Reservoir. Southgrove-Smooth Wire Cattle Allotment is active from June 1 through October 15. Rushing Cattle Allotment encompasses the area of land from Beardsley Reservoir on the Middle Fork Stanislaus River south to the South Fork Stanislaus River. Within its boundaries are Lyons Reservoir and the associated Watershed lands around Lyons Reservoir, Philadelphia Diversion Dam, Philadelphia Ditch, and Spring Gap powerhouse. Rushing Cattle Allotment opens May 16 through August 31 and holds 270 head of cattle. Next to the Rushing Cattle Allotment is the Deer Creek Allotment. Its southern boundary is along the South Fork Stanislaus River below Lyons Reservoir. Seventy head of cattle graze here, and it is open May 1 through September 15. On the western boundary of the Deer Creek Allotment is the Jupiter Allotment. It borders the Middle Fork Stanislaus River on the north and South Fork Stanislaus River on the south and encompasses the Stanislaus complex facilities. The Jupiter Allotment is active from May 1 through September 15 and has 57 head of cattle on it.

**Wildlife Resources.** Species of special concern are of considerable interest in hydroelectric projects, particularly where alteration of flow regimes may potentially affect aquatic and riparian

dependent wildlife species. Riparian habitats are the most likely to be significantly altered by changes in hydroelectric facility operations. Sales of Pacific Gas and Electric Company's hydroelectric assets have also brought importance to Watershed Lands, those lands that lie outside of the FERC license boundary. Potential development of these lands has resulted in special concern for species that may inhabit these largely undeveloped tracts of land.

Common species likely to be found at most elevations include California newt (*Taricha torosa*), California slender salamander (*Batrachoseps attenuatus*), western toad (*Bufo boreas*), Pacific tree-frog (*Hyla regilla*), red-tailed hawk, mourning dove, pygmy owl (*Glaucidium gnoma*), northern flicker, Steller's jay (*Cyanocitta stelleri*), mountain chickadee (*Parus gambeli*), western bluebird (*Sialia mexicana*), western tanager (*Piranga ludoviciana*), spotted towhee (*Pipilo erythrophthalmus*), vagrant shrew (*Sorex vagrans*), Yuma myotis, California myotis (*Myotis californicus*), western red bat (*Lasiurus blossevillii*), California ground squirrel, Douglas' squirrel (*Tamiasciurus douglasii*), California vole (*Microtus californicus*), porcupine (*Erethizon dorsatum*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), and California mule deer to name a few (PG&E Co., 1979). Complete lists of species that have the potential to occur in the project are listed in Table 4.5-45.

Habitats within Bundle 14 support a number of harvest species including mourning dove, California quail, mountain quail, several species of waterfowl, turkey (*Meleagris gallopavo*), band-tailed pigeon, grouse, brush rabbit, snowshoe hare, gray fox, western gray squirrel, black bear, and mule deer.

**Table 4.5-45 Bundle 14 – Stanislaus River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Spring Gap-Stanislaus Project (FERC 2130) and the Phoenix Project (FERC 1061)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Invertebrates</b>			
Grady's cave amphipod <i>Stygobromus gradyi</i>	SOC/-/-	Unknown	Unknown
Hara's cave amphipod <i>Stygobromus harai</i>	SOC/-/-	Unknown	South Fork Stanislaus River
Hirsute Sierra sideband <i>Monadenia mormonium hirsuta</i>	SOC/-/BLM	Unknown	Unknown
Keeled sideband (snail) <i>Monadenia circumcarinata</i>	SOC/-/FSS	VRI, LAC, WTM	Stanislaus Complex, Spring Gap Complex, Philadelphia Complex, Phoenix Complex, Relief Reservoir, Middle Fork Stanislaus River, South Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake, New Melones Reservoir, Lyons Reservoir
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/-/FSS	VRI, MRI	Middle Fork of the Stanislaus River, South Fork of the Stanislaus River

**Table 4.5-45 Bundle 14 – Stanislaus River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Spring Gap-Stanislaus Project (FERC 2130) and the Phoenix Project (FERC 1061)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/--	VRI, RIV, LAC	Stanislaus Complex, Spring Gap Complex, Philadelphia Complex, Phoenix Complex, Relief Reservoir, Middle Fork Stanislaus River, South Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake, New Melones Reservoir, Lyons Reservoir
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/SSC, CFP/FSS, BLM	VRI, PPN, SMC, CRC, MCH, WTM, RIV	Middle Fork Stanislaus River, South Fork Stanislaus River, Donnell's Lake, Pinecrest Lake, Philadelphia Complex, Spring Gap Complex, transmission lines, access roads; Stanislaus Complex, transmission lines, access roads; New Melones Reservoir, Phoenix Complex, transmission lines, access roads, Watershed lands, Lyons Reservoir
Mountain yellow-legged frog <i>Rana muscosa</i>	SOC/SSC, CFP/FSS	MRI, SCN, WTM, RIV,	Relief Reservoir, and Relief Watershed lands; Spring Gap Complex and Watershed lands; Stanislaus Complex, Middle Fork Stanislaus River, South Fork Stanislaus River, Phoenix Complex
Relictual slender salamander <i>Batrachoseps pacificus relictus</i>	--/SSC/FSS	MHC	Stanislaus Complex, transmission lines, access roads, and Watershed lands; South Fork Stanislaus River
Yosemite toad <i>Bufo canorus</i>	SOC/SSC, CFP/FSS	WTM, SCN	Relief Reservoir and Relief Watershed lands; Spring Gap Complex and Watershed lands; Middle Fork Stanislaus River
<b>Reptiles</b>			
California horned lizard <i>Phrynosoma coronatum frontale</i>	SOC/SSC, CFP/FSS, BLM	MHC	Stanislaus Complex, transmission lines, access roads, Watershed lands; South Fork Stanislaus River, Spring Gap transmission lines and access roads; Phoenix Complex transmission lines, access roads, Watershed lands; Lyons Reservoir
Giant garter snake <i>Thamnophis gigas</i>	FT/ST/--	BOW, BOP, MHW, MHC, PPN, LAC, RIV	Stanislaus Complex, transmission lines, access roads, Watershed lands; South Fork Stanislaus River, Spring Gap Complex, transmission lines and access roads; Phoenix Complex transmission lines, access roads, Watershed lands; Lyons Reservoir, Middle Fork Stanislaus River, New Melones Reservoir, Relief Reservoir, Donnell's Reservoir, Pinecrest Lake, Philadelphia Complex
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC, CFP/FSS	VRI, MRI, RIV, LAC	Philadelphia Complex, Spring Gap Complex, Stanislaus complex, Relief Reservoir, Middle Fork Stanislaus River, South Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake, New Melones Reservoir, Phoenix Complex, Lyons Reservoir
Southwestern pond turtle <i>Clemmys marmorata pallida</i>	SOC/SSC, CFP/FSS, BLM	VRI, MRI, RIV, LAC	Philadelphia Complex, Spring Gap Complex, Stanislaus Complex, Relief Reservoir, Middle Fork Stanislaus River, South Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake, New Melones Reservoir, Phoenix Complex, Lyons Reservoir
<b>Birds</b>			
Baird's sandpiper <i>Calidris bairdii</i>	--/SSC/--	BAR, LAC, RIV	Stanislaus Complex, Spring Gap Complex, Relief Reservoir, Donnell's Reservoir, Pinecrest Lake, New Melones Reservoir, Phoenix Complex, Lyons Reservoir, South Fork Stanislaus River

**Table 4.5-45 Bundle 14 – Stanislaus River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Spring Gap-Stanislaus Project (FERC 2130) and the Phoenix Project (FERC 1061)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/SE/FSS, CDF	RIV, LAC	Philadelphia Complex, Spring Gap Complex, Stanislaus Complex, Relief Reservoir, Donnell's Reservoir, Pinecrest Lake, South Fork Stanislaus River, Middle Fork Stanislaus River, New Melones Reservoir, Phoenix Complex, Lyons Reservoir
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS, BLM	SMC, MHC, MHW	Philadelphia Diversion, Philadelphia Ditch, Spring Gap Complex, transmission lines, and access roads; Stanislaus Complex, transmission lines, access roads, and Watershed lands; Middle Fork of the Stanislaus River, Donnell's Reservoir, Pinecrest Lake, South Fork Stanislaus River, Phoenix Complex, Lyons Reservoir, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Cooper's hawk <i>Accipiter cooperii</i>	--/SSC/--	VRI, MRI, BOW, BOP, MHW, MHC	Stanislaus Complex, transmission lines, access roads, watershed lands; Spring Gap Complex, transmission lines, access roads; South Fork Stanislaus River, Middle Fork Stanislaus River, New Melones Reservoir, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP/CDF, BLM	BOW, BOP, MHW, MHC, PPN, MCP, BAR, DFR	Stanislaus Complex, transmission lines, access roads, watershed lands; Spring Gap Complex, transmission lines, access roads; South Fork Stanislaus River, Middle Fork Stanislaus River, New Melones Reservoir, Relief Reservoir, Donnell's Reservoir, Pinecrest Lake, Philadelphia Complex, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Great gray owl <i>Strix nebulosa</i>	--/SE/FSS, CDF	RFR, SMC, WTM, PPN	Lyons Reservoir, South Fork Stanislaus River, Phoenix Complex, transmission lines, access roads, watershed lands; Philadelphia Complex, Stanislaus Complex, transmission lines, access roads; Spring Gap Complex, transmission lines access roads; Donnell's Reservoir, Pinecrest Lake
Long-eared owl <i>Asio otus</i>	--/SSC/--	VRI, MRI, BOW, BOP, MHW, MHC	Stanislaus Complex, transmission lines, access roads, watershed lands; Spring Gap Complex, transmission lines, access roads; South Fork Stanislaus River, Middle Fork Stanislaus River, New Melones Reservoir, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, PPN, MHW, MHC, LAC, AGS	Stanislaus Complex, transmission lines, access roads, watershed lands; Spring Gap Complex, transmission lines, access roads; South Fork Stanislaus River, Middle Fork Stanislaus River, New Melones Reservoir, Relief Reservoir, Donnell's Reservoir, Pinecrest Lake, Philadelphia Complex, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Northern goshawk <i>Accipiter gentilis</i>	--/SSC/FSS, CDF	SCN, SMC	Spring Gap Complex, watershed lands; Stanislaus Complex, Relief Reservoir and Relief watershed lands; Middle Fork of the Stanislaus River, Donnell's Reservoir, Pinecrest Lake, South Fork of the Stanislaus River, Phoenix Complex, Lyons Reservoir, Philadelphia Complex
Osprey <i>Pandion haliaetus</i>	--/SSC/CDF	SMC, PPN, LAC	Donnell's Reservoir, Pinecrest Lake, New Melones Reservoir, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir

**Table 4.5-45 Bundle 14 – Stanislaus River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Spring Gap-Stanislaus Project (FERC 2130) and the Phoenix Project (FERC 1061)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Peregrine falcon <i>Falco peregrinus</i>	--/SE/FSS, CDF	BAR, SMC, MHC, DFR	Middle Fork of the Stanislaus River, Donnell's Reservoir, Pinecrest Lake, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	PPN, JPN, MRI, VRI, BOW, BOP, DFR	Stanislaus Complex, transmission lines, access roads; Spring Gap Complex, transmission lines, access roads, watershed lands; Relief Reservoir and watershed lands; South Fork Stanislaus River, Middle Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake, New Melones Reservoir, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/BLM	AGS, CRP, VRI, RIV	Spring Gap Complex, Stanislaus Complex. Middle Fork Stanislaus River, South Fork Stanislaus River, Phoenix Complex
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	WTM, MRI, RIV	Spring Gap Complex, Stanislaus Complex. Middle Fork Stanislaus River, South Fork Stanislaus River, Phoenix Complex
Yellow warbler <i>Dendroica petechia</i>	--/SSC/--	MRI, MCP, PPN, SMC, VRI	Relief Reservoir, Middle Fork Stanislaus River, South Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake, Philadelphia Complex, Spring Gap Complex, transmission lines, access roads; Stanislaus complex, transmission lines, access roads, Phoenix transmission lines and access roads; Lyons Reservoir
<b>Mammals</b>			
American marten <i>Martes americana</i>	--/--/FSS	RFR, SCN, SMC, JPN	Spring Gap Complex, and watershed lands; Relief Reservoir and Relief watershed lands, Middle Fork Stanislaus River
California wolverine <i>Gulo gulo luteus</i>	--/ST/FSS	SMC, RFR, WTM, MRI, SCN	Relief Reservoir and Relief watershed lands; Middle Fork Stanislaus River, Lyons Reservoir, Spring Gap Complex, Donnell's Reservoir, Pinecrest Lake, Philadelphia Complex
Greater western mastiff bat <i>Eumops perotis</i>	--/SSC/BLM	BOP, BOW, AGS, MCH, MRI, WTM	Stanislaus transmission lines, access roads; Middle Fork Stanislaus River, South Fork Stanislaus River, New Melones Reservoir, Phoenix Complex, transmission lines and access roads
Little brown myotis <i>Myotis lucifugus</i>	--/SSC/--	JPN, MRI, BOW, BOP, SMC, PPN, RIV, LAC, BAR	Stanislaus Complex, transmission lines, access roads; Spring Gap Complex, transmission lines, access roads, watershed lands; Middle Fork Stanislaus River, South Fork Stanislaus River, New Melones Reservoir, Donnell's Reservoir, Pinecrest Lake, Relief Reservoir
Lodgepole chipmunk <i>Tamias speciosus</i>	--/--/FSS	SMC, MCP	Philadelphia Complex, Middle Fork Stanislaus River, South Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake, Relief Reservoir, Philadelphia Complex, Donnell's Reservoir, Pinecrest Lake
Pacific fisher <i>Martes pennanti necator</i>	--/SSC/FSS, BLM	SCN, SMC, MRI, MHC	Relief Reservoir and Relief watershed lands; Spring Gap Complex, and watershed lands; Stanislaus Complex, transmission lines, access roads, watershed lands; Middle Fork of the Stanislaus River, Donnell's Reservoir, Pinecrest Lake, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir, South Fork Stanislaus River

**Table 4.5-45 Bundle 14 – Stanislaus River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Spring Gap-Stanislaus Project (FERC 2130) and the Phoenix Project (FERC 1061)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLM	AGS, MHW, MHC, SMC, BAR	Spring Gap Complex, transmission lines, access roads; Stanislaus Complex, transmission lines, access roads, watershed lands; Philadelphia Complex, South Fork Stanislaus River, Middle Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake
Ringtail <i>Bassariscus astutus</i>	--/CPF/--	WTM, VRI, BOW, BOP, MRI	Stanislaus transmission lines, access roads; Middle Fork Stanislaus River, South Fork Stanislaus River, New Melones Reservoir, Phoenix Complex, transmission lines and access roads
Riparian woodrat <i>Neotoma fuscipes riparia</i>	FPE/SSC/--	BOW, BOP, MHW, MHC, SMC, MCP, DFR	Stanislaus Complex, transmission lines, access roads, watershed lands; Spring Gap Complex, transmission lines, access roads; South Fork Stanislaus River, Middle Fork Stanislaus River, New Melones Reservoir, Philadelphia Complex, Donnell's Reservoir, Pinecrest Lake, Relief Reservoir, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	FE/SSC/--	MHC, MHW, PPN, DFR	Stanislaus complex, transmission lines, access roads, watershed lands; Spring Gap complex, transmission lines, access roads; South Fork Stanislaus River, Phoenix complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Sierra Nevada red fox <i>Vulpes vulpes necator</i>	--/ST/FSS	WTM, SCN, RFR, MCH, MRI, SMC, PPN	Relief Reservoir and Relief watershed lands; Middle Fork of the Stanislaus River
Sierra Nevada snowshoe hare <i>Lepus americanus</i>	--/SSC/--	MRI, SMC, JPN, RIV, MCH	Philadelphia Complex, Spring Gap watershed lands, Relief Reservoir, watershed lands; Donnell's Reservoir, Pinecrest Lake, Middle Fork Stanislaus River, South Fork Stanislaus River, Phoenix Complex
Spotted bat <i>Euderma maculatum</i>	--/SSC/BLM	SMC, BAR, AGS	South Fork of the Stanislaus River, Middle Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	--/SSC/FSS, BLM	AGS, MHC, SMC	Stanislaus Complex, transmission lines, access roads, watershed lands; Philadelphia Complex, South Fork Stanislaus River, Middle Fork Stanislaus River, Donnell's Reservoir, Pinecrest Lake, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir
Western red bat <i>Lasiurus blossevillei</i>	--/FSS	AGS, CRP, BOW, BOP, MHW, MHC	Stanislaus Complex, transmission lines, access roads, watershed lands; Spring Gap Complex, transmission lines, access roads; South Fork Stanislaus River, Middle Fork Stanislaus River, New Melones Reservoir, Phoenix Complex, transmission lines and access roads
Yuma myotis <i>Myotis yumanensis</i>	--/SSC/--	AGS, BOW, BOP, MCH, MRI, PPN, SMC, VRI	Stanislaus Complex, transmission lines, access roads, watershed lands; Spring Gap Complex, transmission lines, access roads; Relief Reservoir, New Melones Reservoir, South Fork Stanislaus River, Philadelphia Complex, Donnell's Reservoir, Pinecrest Lake, Phoenix Complex, transmission lines, access roads, watershed lands; Lyons Reservoir

Notes: Scientific names are based on the following sources: California Department of Fish and Game: Special Animal List, July 2000.



Special-Status Species:Federal:

FE = Federally listed as endangered  
 FT = Federally listed as threatened  
 SOC = Federal species of concern  
 FC = Federal Candidate species

State:

SE = State listed as endangered  
 ST = State listed as threatened  
 SSC = State species of special concern  
 CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species  
 BLM = Bureau of Land Management sensitive species  
 CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

The Stanislaus Deer Herd is located in the vicinity of the Middle Fork Stanislaus River and South Fork Stanislaus River along the western slope of the Sierra Nevada in Calaveras, Alpine, and Tuolumne Counties. Mule deer are the most important big game animals of the project and use a large portion of project land as summer, intermediate, and winter range. The reaches around Donnell's Lake and the Carson-Iceberg Wilderness serve as their summer range, while the area directly along the Middle Fork Stanislaus River (including a State game refuge) is within the intermediate range and is used during seasonal migration. Migration corridors are routes used by deer as they move between summer and winter ranges. Holding areas are typically expansions of migratory corridors where deer delay migration for several days up to several weeks. Holding areas may also encompass the more critical fawning areas. There are several holding areas along the Middle Fork Stanislaus River and South Fork Stanislaus River. A migration of 600-700 deer occurs during October in the vicinity of Lyons Reservoir (PG&E Co., 1979). Members migrate along broad corridors to the winter ranges located around Beardsley Reservoir and Lyons Reservoir continuing along the Middle Fork Stanislaus River with some individuals even crossing the South Fork Stanislaus River (CDFG, 1988a).

FERC License Article 33 requires the maintenance of deer protective devices in and around Philadelphia Ditch in response to concerns about deer mortality (PG&E Co., 1999c). The ditch does not have deer escapes or diversion devices, but it appears that losses in general are minimal.

Pacific Gas and Electric Company does schedule canal outages during the month of July, which is the fawning season, in order to perform repairs.

The South Fork Stanislaus River also is the northern boundary for the Tuolumne Deer Herd. Migratory corridors closely parallel the South Fork Stanislaus River from above the town of Strawberry to below the community of Twain Harte. The Tuolumne deer herd occupies about 890 square miles of Tuolumne County. This herd has experienced a gradual decline from 50 to 80 fawns per 100 does in the 1950s and 1960s, to 20 to 40 fawns per 100 does in the 1980s (CDFG, 1981).

Pacific Gas and Electric Company identifies the potential for valley elderberry longhorn beetle (VELB), California red-legged frog, mountain and foothill yellow-legged frog, western pond turtle, California spotted owl, northern goshawk, great gray owl (*Strix nebulosa*), bald eagle, willow flycatcher (*Empidonax traillii*), wolverine (*Gulo gulo leutens*), Pacific fisher (*Martes pennanti pacifica*), Sierra Nevada red fox (*Vulpes vulpes necator*), spotted bat (*Euderma maculatum*), and others to occur on lands within the project (PG&E Co., 1999c). Pacific Gas and Electric Company has not performed recent surveys of the area, but has compiled current information in its November 1999 First Stage Consultation Document prepared for Spring Gap – Stanislaus FERC relicensing process. Current information has also been obtained from WHR modeling, CNDDB, USFS sensitive species lists, and the wildlife biologists of the Stanislaus National Forest.

According to the Pacific Gas and Electric Company, VELB surveys indicate the presence of a large population at the confluence of the Middle Fork Stanislaus River and the South Fork Stanislaus River (PG&E Co., 1999c). Suitable habitat exists elsewhere in the project along riparian corridors below 3000 ft. in elevation.

Amphibians and reptiles are highly sensitive species and are of special concern with this project because of the potential for fluctuating river and reservoir levels. Habitat exists throughout the project for several species of amphibians and reptiles. California newt, ensatinas, slender salamanders, western toad, bullfrogs, and western pond turtles are all expected within the project boundary.

USFS surveys and CNDDB results indicate the presence of many sensitive bird species. California spotted owl occurs in abundance throughout the project. Nesting pairs have been identified all along the Middle Fork Stanislaus River and South Fork Stanislaus River as well as around Strawberry Reservoir (Pinecrest Lake), Donnell's Lake, and Lyons Reservoir. California spotted owl has been documented near most generating facilities and transmission lines and within Watershed lands.

Bald eagles have nested near almost all the project reservoirs of Bundle 14 except for Lyons Reservoir, Beardsley Reservoir, and New Melones Reservoir. Habitat does exist in these areas, so the potential for bald eagles to occur is still high. Peregrine falcons and osprey have scattered areas

of suitable habitat and have been documented within the project boundary. Confirmed northern goshawk nests occur in or near the project vicinity. The large tracts of Watershed lands that belong to the Spring Gap-Stanislaus and Phoenix Projects are of special concern because they contain some of the most suitable old growth habitat for northern goshawk and California spotted owl. Confirmed nests of both species are located at or in the vicinity of Watershed lands, and potential development of these lands could be detrimental to goshawks or owls that reside there.

Wet meadows may occur within the project vicinity and are prime habitat for willow flycatchers and great gray owls. Willow flycatchers have been documented in several of the meadows within five miles of Relief Reservoir. Several pairs of great gray owls have been identified near the Middle Fork Stanislaus River, South Fork Stanislaus River, and Lyons Reservoir. Great gray owls are sensitive to noise and human encroachment and would be greatly affected by additional development or great changes in project operations.

Bats have the potential to inhabit powerhouses and other facilities and may be considered nuisances as they create unsanitary conditions that the facility managers may wish to eliminate. Bat surveys have not been conducted, but there are recorded occurrences of spotted bats within two miles of the Stanislaus Tunnel. Greater western mastiff bats have also been documented within one and a half miles from New Melones Reservoir. Several species of bats have suitable habitat within the project, and there is potential for them to occur.

Furbearers of significance that have been located near or within project boundaries include Pacific fisher (along the Middle Fork Stanislaus River and near Donnell's Lake), American marten (near the Philadelphia Diversion Dam, and Relief Reservoir), Sierra Nevada red fox (Middle Fork Stanislaus River), and wolverine (near Lyons Reservoir, Relief Reservoir, and Middle Fork Stanislaus River). Many furbearers have migratory corridors that are considered of significant importance and could be impacted by development of watershed lands.

***Botanical Resources.*** The Stanislaus River Project is within the Sierra Nevada Region. The upper and transitional portions of the project are located in the High Sierra Nevada subregion (elevations between 1,640 feet and 9,840 feet) and Central High Sierra Nevada district. The High Sierra Nevada subregion is characterized by mostly conifer forest above 1,640 feet and has complex vegetation ranging from lower montane ponderosa pine forests to upper montane red fir forests and treeless alpine communities at the highest elevations (Hickman, 1993). Relief Reservoir is located at approximately 7,200 feet, the highest elevation in the bundle, but most of Bundle 14 is within 2,600 feet to 5,600 feet.

The foothill regions of Bundle 14 are within the Sierra Nevada Foothills subregion (upper elevations from 1,640 feet to 2,624 feet) and, more specifically, the Central Sierra Nevada Foothills district. The Sierra Nevada Foothills subregion is characterized by blue oak-foothill pine woodlands interspersed with serpentine soils (Hickman, 1993). The eastern boundary of the Central Sierra Nevada Foothills district runs directly through Tuolumne County, crosses land

within the project boundary, and includes the city of Sonora. The lowest point of Bundle 14 is Stanislaus Powerhouse at 1,200 feet.

The broad ranges of vegetation in the Spring Gap-Stanislaus and Phoenix Project depend primarily on elevation, slope, exposure, and soil type. Around the Stanislaus River Bundle, live oak, blue oak, and foothill pine and mixed chaparral habitats are dominant. Commercial species of Douglas fir, black oak, ponderosa pine, incense cedar, and sugar pine are found in the virgin and managed stands throughout the transition and lower montane reaches of the project such as Pinecrest Lake, Philadelphia Diversion, and Phoenix development. Timber harvests occur throughout, and are essential to, the economy of Tuolumne County. The upper river area is primarily barren rock outcroppings, especially near Lyons Reservoir, the northeast end of Pinecrest Lake and the upper elevational areas of the project such as Relief Reservoir (PG&E Co., 1979; 1999a). These upper montane areas are dominated by subalpine conifers, red fir stands, and montane chaparral.

Wet meadows are scattered within conifer and montane forests and occur permanently to semi-permanently on moist or wet soils (PG&E Co., 1979). These meadows are hidden in montane areas and are refuges for many uncommon plant and wildlife species. Meadows, located on or in the vicinity of the Middle Fork Stanislaus River and South Fork Stanislaus River area, have the potential to support several species of rare plants. Montane and valley riparian vegetation is evident and prominent throughout the project. Narrow river canyons in the montane elevations allow sparse, scrubby vegetation, but the lower river has broader floodplains that provide for well-developed, extensive riparian vegetation. Riparian areas and wet meadows are important habitats to many species of rare plants because they provide the moist and mostly undisturbed soils that plants need.

Table 4.5-46 lists the special status plants that are found, or potentially could occur, in Bundle 14. This list was compiled using CNDDDB, USFS sensitive plant lists, related project documents, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities. Five known populations of Tuolumne fawn lily (*Erythronium toulumnense*), a CNPS list 1B species and a Federal Species of Concern, is known to occur in the Phoenix project and have suitable habitat around Lyons Reservoir (PG&E Co., 1979). Several other special status plants have potential to occur within Bundle 14, including three-bracted onion (*Allium tribracteatum*), a CNPS list 1B species and Federal Species of Concern which has been documented near Long Barn; Yosemite onion (*Allium yosemitense*), a CNPS list 1B species and California rare species, and Small's southern clarkia (*Clarkia australis*), CNPS list 1B species, both documented south of the Tuolumne River.

**Table 4.5-46 Bundle 14 – Stanislaus River Special-Status Plant Species That Occur or Potentially Could Occur Within the Spring Gap-Stanislaus Project (FERC 2130) and Phoenix Project (FERC 1061)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Allium jepsonii</i> Jepson's onion	SOC/1B/FSS,BLMS	CmWld, LCFrs/ serpentine or volcanic	Spring Gap Complex, Stanislaus Complex, Middle Fork Stanislaus, New Melones Reservoir, Phoenix Tuolumne Ditch
<i>Allium tribracteatum</i> three-bracted onion	SOC/-/1B/FSS	Chprl, LCFrs, UCFrs/volcanic	Philadelphia Complex, Spring Gap Complex, Relief Reservoir, Middle Fork Stanislaus, Donnell's Reservoir, Pinecrest Lake, South Fork Stanislaus, New Melones Reservoir, Lyons Reservoir
<i>Allium yosemitense</i> Yosemite onion	--/R/1B/FSS	BUFrs, Chprl, CmWld, LCFrs/ rocky metamorphic	Phoenix Tuolumne Ditch, Spring Gap Complex, Stanislaus Complex, Relief Reservoir
<i>Arctostaphylos nissenana</i> Nissenan manzanita	SOC/-/1B/FSS, BLMS	Chprl	Middle Fork Stanislaus
<i>Calycadenia hooveri</i> Hoover's calycadenia	SOC/-/1B/-	CmWld, VFGrS/rocky	New Melones Reservoir
<i>Carex limosa</i> shore sedge	--/-/2/-	BgFns, LCFrs, UCFrs	Philadelphia Complex, Spring Gap Complex, Relief Reservoir, Middle Fork Stanislaus, Donnell's Reservoir, Pinecrest Lake, South Fork Stanislaus, Phoenix Tuolumne Ditch, Lyons Reservoir
<i>Carex petasata</i> Liddon's sedge	--/-/2/-	LCFrs, Medws	Donnell's Reservoir, Pinecrest Lake
<i>Carex praticola</i> meadow sedge	--/-/2/-	Medws	Philadelphia Complex, Lyons Creek, Pinecrest Lake
<i>Chlorogalum grandiflorum</i> Red Hills soaproot	SOC/-/1B/FSS, BLMS	Chprl, CmWld/serpentine or gabbroic	Spring Gap Complex, Stanislaus Complex, Middle Fork Stanislaus, New Melones Reservoir, Phoenix Tuolumne Ditch
<i>Clarkia australis</i> Small's southern clarkia	--/-/1B/FSS	CmWld, LCFrs	Philadelphia Complex, Spring Gap Complex, Stanislaus Complex, Middle Fork Stanislaus, Donnell's Reservoir, Pinecrest Lake, South Fork Stanislaus, Phoenix Tuolumne Ditch
<i>Clarkia biloba</i> ssp. <i>australis</i> Mariposa clarkia	--/-/1B/FSS,BLMS	Chprl, CmWld	Stanislaus Complex, Middle Fork Stanislaus, New Melones
<i>Clarkia rostrata</i> beaked clarkia	SOC/-/1B/BLMS	CmWld, VFGrS	Stanislaus Complex, New Melones
<i>Eriophyllum nubigenum</i> Yosemite woolly sunflower	SOC/-/1B/FSS	Chprl, LCFrs, UCFrs (gravelly)	Philadelphia Complex, Relief Reservoir, Middle Fork Stanislaus, Donnell's Reservoir, Pinecrest Lake, South Fork Stanislaus
<i>Erythronium tuolumnense</i> Tuolumne fawn lily	SOC/-/1B/FSS,BLMS	BUFrs, Chprl, LCFrs	Spring Gap Complex, Stanislaus Complex, Middle Fork Stanislaus
<i>Horkelia parryi</i> Parry's horkelia	SOC/-/1B/FSS,BLMS	Chprl, CmWld,/ especially lone Formation	Middle Fork Stanislaus, New Melones Reservoir
<i>Lomatium congdonii</i> Congdon's lomatium	SOC/-/1B/BLMS	Chprl, CmWld/serpentine	Stanislaus Complex, Middle Fork Stanislaus, South Fork Stanislaus, New Melones Reservoir
<i>Lomatium stebbinsii</i> Stebbins' lomatium	SOC/-/1B/FSS	Chprl, LCFrs/gravelly, volcanic clay	Philadelphia Complex, Spring Gap Complex, Middle Fork Stanislaus, Donnell's Reservoir, Pinecrest Lake, South Fork Stanislaus, Lyons Reservoir

**Table 4.5-46 Bundle 14 – Stanislaus River Special-Status Plant Species That Occur or Potentially Could Occur Within the Spring Gap-Stanislaus Project (FERC 2130) and Phoenix Project (FERC 1061)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Lupinus spectabilis</i> shaggyhair lupine	SOC/-/1B/BLMS	Chprl, CmWld/serpentinite	Stanislaus Complex, New Melones Reservoir
<i>Mimulus filicaulis</i> slender-stemmed monkeyflower	SOC/-/1B/FSS, BLMS	CmWld, LCFrs ,Medws, UCFrS / vernaly mesic	Philadelphia Complex, Spring Gap Complex, Stanislaus Complex, Middle Fork Stanislaus, Donnells Reservoir, Pinecrest Lake, South Fork Stanislaus, Phoenix Tuolumne Ditch, Lyons Reservoir
<i>Monardella douglasii</i> ssp. <i>venosa</i> veiny monardella	SOC/-/1B/BLMS	VFGrs (heavy clay)	New Melones Reservoir
<i>Potamogeton robbinsii</i> Robbins' pondweed	--/2/--	MshSW (deep water, lakes)	Relief Reservoir. Donnells Reservoir, Pinecrest Lake
<i>Senecio layneae</i> Layne's ragwort	T/R/1B/FSS	Chprl, CmWld/serpentinite or gabbroic)	Stanislaus Complex, Middle Fork Stanislaus, New Melones Reservoir
<i>Verbena californica</i> California vervain	T/T/1B	CmWld, VFGrs / mesic usually serpentinite seeps or creeks	New Melones Reservoir

NOTES: Scientific names are based on the following sources: Hickman 1993.

Status: Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

USFWS: United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

State: Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

CNPS: California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for State listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

Habitats:

AlpBR = Alpine Boulder and Rock Field LCFrs = Lower Montane Conifer Forest

BgFns = Bogs and Fens Medws = Meadows and Seeps

BUFrS = Broadleaved Upland Forest	MshSw = Marshes and Swamps
CCFrS = Closed-Cone Conifer Forest	PJWld = Pinyon and Juniper Woodland
Chprl = Chaparral	Plyas = Playas
ChScr = Chenopod Scrub	RpFrS = Riparian Forest
Cmwld= Cismontane Woodland	RpScr = Riparian Scrub
CoDns = Coastal dunes	RpWld = Riparian Woodland
CoPrr = Coastal Prairie	SCFrS = Subalpine Conifer Forest
CoScr = Coastal Scrub	UCFrS = Upper Montane Conifer Forest
GBGrS = Great Basin grassland	VFGrs = Valley and Foothill Grassland
GBScr = Great Basin Scrub	VnPls = Vernal Pools

## **Bundle 15: Merced River**

### ***Merced Falls (FERC 2467)***

The Merced River Bundle includes the Merced Falls Project, FERC 2467. The Merced Falls Project is on the Merced River straddling the border of Mariposa and Merced Counties. While the Merced River headwaters reach elevations of up to 11,000 feet in the Sierra Nevada, the project is located in California's Central Valley. The portion of the Merced River within the project boundary runs from 800 feet to 300 feet in elevation. Climate at the project is typically hot and dry in the summer and cool and wet in the winter.

***Vegetation Communities.*** Table 4.5-47 outlines the habitats found within the Merced Falls project. Vegetation communities are generally dominated by blue oak, canyon live oak, interior live oak, foothill pine and cropland. Understory vegetation is often comprised of annual grasses and forbs such as brome-grasses, wild oat, and other annual wildflowers; shrubs include ceanothus, manzanita, California buckeye, and poison oak (CDFG, 1988b). Valley foothill riparian habitat does exist throughout the project and supports an extensive network of riparian vegetation such as willow, cottonwood, dogwood, and blue elderberry.

Habitats on the Merced Falls Project are typical of those found in California's Central Valley. The Valley itself is characterized by agriculture. Cropland is prevalent and includes a variety of vegetation, wildlife and growing patterns. Soils are generally fertile and moist and are located on flat or gently rolling terrain. Climate in the project is usually hot in the summer and frost-free for most of the year. Most of the project is surrounded by annual grassland habitat within the 100-year floodplain of the Merced River. Many of the grasses found in this vegetation community are introduced non-native species, although there are some remnants of untouched California prairie in isolated locations (CDFG, 1988b). Annual grassland also supports many varieties of annual and perennial wildflowers and can be highly influenced by cattle grazing.

**Table 4.5-47 Bundle 15 – Merced River Vegetation Communities of the Merced Falls Project (FERC 2467)**

Project Features	Foothill Communities		Water Elements	
	AGS	CRP	RIV	LAC
<b>Generation Facilities</b>				
Merced Falls powerhouse	X	X	X	
Transmission Lines and Access Roads				
<b>Project Waterways</b>				
Merced Falls Reservoir, McSwain Reservoir and Merced River	X		X	X
<b>Watershed Lands – No Watershed Lands</b>				

**NOTES:**

**Generation Facilities:** Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc.

**Project Waterways:** Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations.

**Watershed Lands:** Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Wildlife Resources.** The WHR program model indicates that habitats within the Merced Falls Bundle may support five invertebrates, three amphibians, seven reptile species, up to 32 bird species and 14 mammal species. Species common to the area and these habitats include California tiger salamander (*Ambystoma tigrinum*), western spadefoot, coachwhip snake (*Masticophis flagellum*), California horned lizard (*Phrynosoma coronatum frontale*), great egret (*Casmerodius albus*), white-tailed kite (*Elanus leucurus*), sharp-shinned hawk (*Accipiter striatus*), northern harrier (*Circus cyaneus*), golden eagle, Yuma myotis, Townsend's big-eared bat, California vole, ringtail cat (*Bassariscus astutus*), and brush rabbit, to name a few. A complete list of special status species is shown in Table 4.5-48.

Vernal pool crustaceans are of great concern in the Central Valley. Habitat for the listed vernal pool crustaceans does not occur in or in the vicinity of land within the project boundary. Those species would not be affected by project activities and therefore are not addressed in this document.



**Table 4.5-48 Bundle 15 – Merced River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Merced Falls Project (FERC 2467)**

Common Name and Scientific Name	Status: USFWS/State/ Other	Habitat	Facilities
<b>Invertebrates</b>			
Bohart's blue butterfly <i>Philotiella speciosa bohartorum</i>	SOC/--/--	LAC, RIV, VRI	Merced Falls powerhouse, transmission lines and access roads; Merced Falls Reservoir, McSwain Reservoir, Merced River
Merced canyon shoulderband <i>Helminthoglypta allynsmithi</i>	SOC/--/--	LAC, RIV	Merced Falls powerhouse, Merced Falls Reservoir, McSwain Reservoir, Merced River
Molestan blister beetle <i>Lytta molesta</i>	SOC/--/--	AGS	Merced Falls transmission lines and access roads; Merced Falls Reservoir, McSwain Reservoir, Merced River
Wengerors' cave amphiod <i>Stygobromus wengerorum</i>	SOC/--/--	RIV	Unknown
Yosemite mariposa sideband (snail) <i>Monadenia yosemitensis</i>	SOC/--/--	LAC, RIV	Merced Falls powerhouse, Merced Falls Reservoir, McSwain Reservoir, Merced River
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/--	VRI, RIV, LAC	Merced Falls powerhouse, transmission lines and access roads; Merced Falls Reservoir, McSwain Reservoir, Merced River
California tiger salamander <i>Ambystoma tigrinum</i>	FC/SSC, CFP /--	AGS, BOW, VRI	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Western spadefoot <i>Scaphiopus hammondi</i>	SOC/SSC, CFP /BLM	AGS, BOW, BOP, LAC, RIV	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
<b>Reptiles</b>			
California horned lizard <i>Phrynosoma coronatum frontale</i>	SOC/SSC, CFP /BLM	MHC	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Giant garter snake <i>Thamnophis gigas</i>	FT/ST, CFP/--	AGS, LAC, RIV, VRI, WTM	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SOC/SSC/FSS	VRI, MRI, RIV, LAC	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Southwestern pond turtle <i>Clemmys marmorata pallida</i>	SOC/SSC /FSS, BLM	VRI, RIV, LAC	Merced Falls powerhouse, transmission lines and access roads; Merced Falls Reservoir, McSwain Reservoir, Merced River
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FPD, FT /SE, CFP/FSS	RIV, LAC	Merced River, Merced powerhouse, McSwain Reservoir, Merced Falls Reservoir
Burrowing owl <i>Athene cunicularia</i>	SOC/SSC/BLM	BOW, BOP, PPN, MCP, BAR	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Cooper's hawk <i>Accipiter cooperii</i>	--/SSC/--	VRI, MRI, BOW, BOP, MHW, MHC	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	LAC, RIV, BAR	Merced River, Merced powerhouse, McSwain Reservoir, Merced Falls Reservoir
Ferruginous hawk <i>Buteo regalis</i>	SOC/SSC/--	BOW, BOP, AGS	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River

**Table 4.5-48 Bundle 15 – Merced River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Merced Falls Project (FERC 2467)**

Common Name and Scientific Name	Status: USFWS/State/ Other	Habitat	Facilities
Golden eagle <i>Aquila chrysaetos</i>	--/SSC, CFP /CDF	BOW, BOP, MHW, MHC, PPN, MCP, DFR, BAR	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Great blue heron <i>Ardea herodias</i>	--/--/CDF	CRP, MRI, WTM	Merced Falls transmission lines and access roads
Great egret <i>Casmerodius albus</i>	--/--/CDF	BOW, BOP, LAC, RIV	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Horned lark <i>Eremophila alpestris</i>	--/SSC/--	AGS, MCH, BOW, BOP, BAR	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Loggerhead shrike <i>Lanius ludovicianus</i>	SOL/SSC/--	VRI, BOW, BOP, CRP	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Long-billed curlew <i>Numenius americanus</i>	--/SSC/--	CRP, AGS, BAR	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Long-eared owl <i>Asio otus</i>	--/SSC/--	VRI, MRI, BOW, BOP, MHW, MHC	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, PPN, MHW, MHC, LAC, AGS	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Northern harrier <i>Circus cyaneus</i>	--/SSC/--	BOW, BOP, MHW, CRP, AGS, VRI	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	AGS, CRP, WTM, BAR, DFR	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Purple martin <i>Progne subis</i>	--/SSC/--	BOW, MHW, BOP, MHC, VRI, PPN	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	PPN, JPN, MRI, VRI, BOW, BOP, DFR	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Short-eared owl <i>Asio flammeus</i>	--/SSC/--	AGS, CRP, WTM	Merced Falls transmission lines and access roads, McSwain Reservoir, Merced Falls Reservoir, Merced River
Swainson's hawk <i>Buteo swainsonii</i>	--/ST/--	BOW, BOP, MHW, MHC, PPN, MCP, BAR	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/--	VRI, RIV, AGS, CRP	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
White-tailed kite <i>Elanus leucurus</i>	--/CFP/--	AGS, CRP, MCH	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Yellow warbler <i>Dendroica petechia</i>	--/SSC/--	MRI, MCP, PPN, SMC, VRI	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
<b>Mammals</b>			
Merced kangaroo rat <i>Dipodomys heermanni dixonii</i>	SOC/--/--	AGS, MCH, MCP, BOP, BOW	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLM	AGS, MHW, MHC, SMC, BAR	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River

**Table 4.5-48 Bundle 15 – Merced River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Merced Falls Project (FERC 2467)**

Common Name and Scientific Name	Status: USFWS/State/ Other	Habitat	Facilities
Ringtail <i>Bassariscus astutus</i>	--/--/CPF	WTM, VRI, BOW, BOP, MRI	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	FE/SE/--	MCP, MCH, CRC, AGS, VRI, DFR	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir
Riparian woodrat <i>Neotoma fuscipes riparia</i>	FPE/SSC/--	BOW, BOP, MHW, MHC, SMC, MCP, DFR	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
San Joaquin pocket mouse <i>Perognathus inornatus</i>	SOC/--/BLM	AGS, CRP	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SOC/SSC /FSS, BLM	AGS, WTM, BOW, BOP, MRI	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Western mastiff bat <i>Eumops perotis californicus</i>	SOC/SSC/BLM	BOP, BOW, AGS, MCH, MRI, WTM	Merced Falls transmission lines and access roads; McSwain Reservoir, Merced Falls Reservoir, Merced River
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLM	AGS, BOW, BOP, MCH, MRI, PPN, SMC, VRI	Merced Falls powerhouse, transmission lines, and access roads; Merced Falls Reservoir, McSwain Reservoir

Notes: Scientific names are based on the following sources:

Special-Status Species:

Federal:

FE = Federally listed as endangered  
 FT = Federally listed as threatened  
 SOC = Federal species of concern  
 FC = Federal Candidate species

State:

SE = State listed as endangered  
 ST = State listed as threatened  
 SSC = State species of special concern  
 CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species  
 BLM = Bureau of Land Management sensitive species  
 CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

Amphibians and reptiles are highly environmentally sensitive species and are of special concern with this project because of the potential for fluctuating river and reservoir levels. Habitat exists

throughout the project for several species of amphibians and reptiles. California newt, ensatinas, salamanders, bullfrogs and western pond turtles are all expected within the project land.

Bats can occupy powerhouses or other structures and are likely to occupy Merced River Bundle project features. Pacific Gas and Electric Company has not conducted bat surveys to document roosting and/or species identifications, but there is still the potential for them to occur.

Special status species that may occur in the area, according to CNDDB, and USFWS, and identified by the WHR program, are listed in Table 4.5-48. The Merced Falls project does not border any USFS or BLM lands, so no USFS Sensitive species or BLM sensitive species are addressed.

**Botanical Resources.** The Bundle 15 project area (Merced Falls Project [FERC 2467]) is located on the border of two regions, the Great Central Valley region, and the Sierra Nevada region. On the west side of the project area, the Great Central Valley region, more specifically the San Joaquin Valley subregion, is predominantly agricultural. Once supporting California prairie, marshes, riparian woodlands, and valley-oak savanna, the other regions of the California Floristic Province surround it (Hickman, 1993). The San Joaquin Valley subregion is characterized as hot and dry and has some desert elements of the southern regions (Hickman, 1993). The Sierra Nevada region, specifically the Sierra Nevada foothills subregion and Central Sierra Nevada foothills district, is on the east sided of the project area. Elevation ranges from 1,640 feet to 2,624 feet, and is characterized by blue oak-foothill pine woodlands and dotted with serpentine soils (Hickman, 1993).

Valley foothill riparian habitat provides for well-developed riparian vegetation. Riparian areas are important habitats to many species of rare plants because they provide the healthy, sometimes moist, and almost always undisturbed soils that plants need.

Table 4.5-49 lists the special status plants that are found, or potentially could occur in Bundle 15. This list was compiled using CNDDB, BLM sensitive plant lists, related documents of the project area, and a CNPS model projecting plants that could occur related to the habitats and elevations of project facilities.

**Table 4.5-49 Bundle 15 – Merced Falls Special-Status Plant Species That Occur or Potentially Could Occur Within the Merced Falls Project (FERC 2467)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Agrostis hendersonii</i> Henderson's bent grass	SOC/-/3/-	VFGrs (mesic) VNPIs	Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Atriplex cordulata</i> heartscale	SOC/-/1B/BLMS	ChScr, VFGrs (sandy) / saline or alkaline	Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Atriplex depressa</i> brittlescale	-/-/1B/-	ChScr, Plyas, VFGrs/ alkaline or clay	Merced Falls Reservoir, McSwain Reservoir and Merced River

**Table 4.5-49 Bundle 15 – Merced Falls Special-Status Plant Species That Occur or Potentially Could Occur Within the Merced Falls Project (FERC 2467)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/ Other	Habitat	Facilities
<i>Atriplex joaquiniana</i> San Joaquin spearscale	SOC/-/1B/-	ChScr, Medws, VFGrS alkaline	Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Atriplex minuscula</i> lesser saltscale	-/-/1B/-	ChScr, Plyas, VFGrS alkaline	Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Atriplex vallicola</i> Lost Hills crownscale	SOC/-/1B/BLMS	ChScr, VFGrS, VnPls / alkaline	Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	-/-/1B/BLMS	CmWld, VFGrS, sometimes serpentine	Merced Powerhouse, Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Calycadenia hooveri</i> Hoover's calycadenia	SOC/-/1B/-	CmWld, VFGrS/rocky	Merced Powerhouse, Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Clarkia rostrata</i> beaked clarkia	SOC/-/1B/BLMS	CmWld, VFGrS	Merced Powerhouse, Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Cordylanthus mollis</i> ssp. <i>hispidus</i> hispid bird's-beak	SOC/-/1B/BLMS	Medws (alkaline), Plyas	Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Delphinium recurvatum</i> recurved larkspur	SOC/-/1B/BLMS	ChScr, CmWld, VFGrS / alkaline	Merced Powerhouse, Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Monardella leucocephala</i> Merced monardella	SOC/-/1A/-	VFGrS (sandy)	Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Navarretia nigelliformis</i> ssp. <i>radians</i> shining navarretia	-/-/1B/-	CmWld, VFGrS, VnPls	Merced Powerhouse, Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Phacelia ciliata</i> var. <i>opaca</i> Merced phacelia	SOC/-/1B/-	VFGrS (clay)	Merced Falls Reservoir, McSwain Reservoir and Merced River
<i>Trichocoronis wrightii</i> var. <i>wrightii</i> Wright's trichocoronis	-/-/2/-	Medws, MshSw, RpFrS, VnPls / alkaline	Merced Powerhouse, Merced Falls Reservoir, McSwain Reservoir and Merced River

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californian status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

**CNPS:** California Native Plant Society listing.

- 1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.
- 2 = Plants rare, threatened or endangered in California but more common elsewhere.
- 3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

Habitats:

AlpBR =	Alpine Boulder and Rock Field	LCFrS =	Lower Montane Conifer Forest
BgFns =	Bogs and Fens	Medws =	Meadows and Seeps
BUFrS =	Broadleaved Upland Forest	MshSw =	Marshes and Swamps
CCFrS =	Closed-Cone Conifer Forest	PJWld =	Pinyon and Juniper Woodland
Chprl =	Chaparral	Plyas =	Playas
ChScr =	Chenopod Scrub	RpFrS =	Riparian Forest
Cmwld =	Cismontane Woodland	RpScr =	Riparian Scrub
CoDns =	Coastal dunes	RpWld =	Riparian Woodland
CoPrr =	Coastal Prairie	SCFrS =	Subalpine Conifer Forest
CoScr =	Coastal Scrub	UCFrS =	Upper Montane Conifer Forest
GBGrS =	Great Basin grassland	VFGrs =	Valley and Foothill Grassland
GBScr =	Great Basin Scrub	VnPls =	Vernal Pools

#### 4.5.4.5 Kings Crane – Helms Regional Bundle

##### Regional Setting

The southern-most Regional Bundle of projects extends from the Sierra Nevada north of Fresno, California, to the Kern River drainage, northeast of Bakersfield, California. The area encompassed by these projects lies on the western slope of the Sierra Nevada in the Sierra Nevada Floristic Province, and includes five local facility bundles, Bundles 16-20. North of Fresno, Bundle 16 includes the Crane Valley project, which has an elevation drop of approximately 6,500 feet between Chilkoot Lake to the north and Kerckhoff Reservoir to the south. Bundle 17 includes the Kerckhoff project, south of Bundle 16. It lies between 600 and 1,000 feet elevation and is just above the San Joaquin Valley floor. Bundle 18 includes the Pacific Gas and Electric Company facilities within the Kings River drainage that extend from Courtright Lake and the Helms Pump-Storage project near Wishon Reservoir to the Kings River Powerhouse near the confluence of the Kings River with Pine Flat Reservoir. Bundle 19 includes the Tule River facilities located on the Tule River north of Visalia, California, and is located at about 4,000 feet. The Kern River Facilities, Bundle 20, are located at the mouth of the Kern River below 1,000 feet elevation, approximately 15 miles from Bakersfield. The Tule River and Kern River bundle facilities are run-of-the-river and have little or no water storage capabilities. The Helms Project is a pumped-storage facility that exchanges water between Courtright Lake and Wishon Reservoir. All other facilities operate in the typical hydroelectric mode, using water storage and diversions to the powerhouses for generation.

The climate of the area includes dry, hot summers, with generally cold, wet winters. In higher project elevations, winter snows are common. General habitat types range from oak woodlands and annual grasslands at the lower elevations to chaparral and mixed coniferous forests in the mid

elevations to coniferous forests, mountain meadows and associated habitat types at the upper elevations.

### Local Regulations and Policies

Table 4.5-50 presents local regulations and policies relevant to the operations of the projects in this regional bundle.

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Fresno County Plan	Fish and Wildlife Habitat	OS-E-1	Support efforts to avoid net loss of important habitat	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E2	Require buffer zones between construction and significant wildlife resources	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E3	Development in valuable wildlife habitat to be carefully planned	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E4	Encourage private land owners to adopt sound wildlife habitat management plans	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E5	Support preservation of habitats of rare, threatened, endangered, and/or other special status species	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OE-E6	Ensure the conservation of large, continuous expanses of native vegetation to provide suitable habitat for maintaining abundant and diverse wildlife	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E7	Closely monitor pesticide use in areas adjacent to habitats of special status species	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E9	Require a biological resource evaluation of a project site by a qualified biologist	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E10	Support State and Federal Programs to acquire fish and wildlife habitat for preservation	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E11	Protect significant aquatic habitats against excessive water withdrawal that could endanger special status species	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E12	Ensure protection of fish and wildlife habitats from environmentally degrading effluents from mining and construction activities	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E13	Protect wetlands, riparian and meadow habitats	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E14	Seek to protect wildlife corridors along the San Joaquin River	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E16	Preserve significant wildlife migration routes such as the North Kings Deer Herd migration corridor and fawn production areas	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E17	High value fish and wildlife propagation areas should be preserved	17, 18
Fresno County Plan	Fish and Wildlife Habitat	OS-E18	Preserve areas defined as habitats for rare or endangered animal and plant species in a natural state	17, 18

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Fresno County Plan	Fish and Wildlife Habitat	OS-E19	Preserve areas identified as habitats for rare or endangered plant and animal species primarily through use of open space elements and zoning restrictions	17, 18
Sequoia NF Land and Resource Management Plan	Forest Goals 'Wilderness'	4.b.1	Provide for wilderness use, protection of the wilderness resource, and reduction of conflict between the uses of wilderness and the wilderness values of solitude and naturalness, and the ecological, geological, and similar features of scientific, educational, or historical value	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest Goals 'Wildlife, Fish and Plants'	4.b.1	Maintain and improve habitat for endangered and threatened plant and animal species on Federal and State lists to meet objectives set forth in their recovery and management plans	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest Goals 'Wildlife, Fish and Plants'	4.b.2	Provide well distributed habitat diversity on each Ranger District for all indigenous wildlife species	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest Goals 'Wildlife, Fish and Plants'	4.b.3	Maintain or increase habitat capabilities to support viable populations of wildlife and fish species in cooperation with the California Department of Fish and Game.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest Goals 'Wildlife, Fish and Plants'	4.b.4	Provide increased quality and quantity of opportunities for enjoyment of consumptive and nonconsumptive uses of the wildlife, fish and plant resources.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest Goals 'Wildlife, Fish and Plants'	4.b.5	Increase the diversity of plant and animal communities.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'General'	4.f.7.a	Maintain habitat to insure all native fish, wildlife, and plant species will have adequate population levels and distribution to provide for their continued existence throughout their current range.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'General'	4.f.7.a	Follow recovery and management plans for the following species: California Condor, peregrine falcon, bald eagle, and Little Kern Golden trout.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'General'	4.f.7.a	Emphasize habitat management for wildlife species that utilize riparian, hardwood, snags, and down log habitats	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'General'	4.f.7.a	Protect fishery streams by specifying minimum flows necessary to maintain fisheries habitat and allowing removal of no more than 50 percent of the flow at any time.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'General'	4.f.7.a	Maintain the current program of direct habitat improvement by submitting requests for funds to appropriate county, state, and federal agencies.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'General'	4.f.7.a	Give high priority to meadows and riparian areas when funding fish and wildlife habitat projects through timber sales	18, 19, 20



**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'General'	4.f.7.a	Focus on habitats outside the planned timber sales when funding habitat improvement projects from sources other than timber sales.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'General'	4.f.7.a	Use approved cooperative deer herd management plans as a guide to deer habitat management.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Fish, Wildlife and Plant Habitat Coordination'	4.f.7.b	Protect sensitive, proposed for listing, and California species of special concern with the long-term objective for removal from Federal listing or to prevent them from being listed.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Fish, Wildlife and Plant Habitat Coordination'	4.f.7.b	Restore and enhance fisheries habitat through implementation of "Rise to the Future" (an action plan for the National fisheries program)	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Fish, Wildlife and Plant Habitat Coordination'	4.f.7.b	Participate with the Regional Office, the USDI Fish and Wildlife Service, and the California Department of Fish and Game in the development of recovery or management plans for species listed in Chapter 3, Section C8 of the Plan	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Old Growth Habitat'	4.f.7.c	Provide habitat for wildlife species associated with late-successional and old-growth forest stands by retaining five percent of old-growth outside of riparian area habitats, well dispersed over the forest.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Old Growth Habitat'	4.f.7.c	Maintain a network of 40 Spotted Owl Habitat Areas. Manage 1,000 acres of suitable habitat plus approximately 650 acres of replacement habitat for each network site using a "No Scheduled Timber Harvest" prescription. Manage according to the Regional Spotted Owl Guidelines.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Old Growth Habitat'	4.f.7.c	Areas for which existing habitat and/or replacement acres have not been identified will receive no vegetation management that might be detrimental to spotted owl habitat within a 1.5 mile radius of the nest or center of the core area until existing and replacement acres have been identified, mapped, and verified on the ground.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Old Growth Habitat'	4.f.7.c	Activities within the network spotted owl habitat acres will not occur until a spotted owl management plan has been prepared, approved and signed by the Forest Supervisor.	18, 19, 20

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Old Growth Habitat'	4.f.7.c	Include in spotted owl management plans: a) Mapping and field verification of existing suitable habitat and specific replacement stands within a 1.5 mile radius of the nest or the center of the core area; b) direction to be compatible with the objective of maintaining habitat for a reproductive pair of spotted owls at the site; c) direction for the amount and frequency of vegetation manipulation that will be needed for the purpose of maintaining or enhancing habitat conditions for the spotted owls	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Old Growth Habitat'	4.f.7.c	Maintain goshawk habitat according to LMP direction in the Regional Guide. Provide a total of 1,050 acres of habitat for at least 21 pairs.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Snag and Down Log management'	4.f.7.d	Provide habitat for wildlife species dependent on down logs and snags in timber harvested areas.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Snag and Down Log management'	4.f.7.d	Maintain a minimum average of 1.5 snags per acre in each compartment	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Snag and Down Log management'	4.f.7.d	Retain approximately 132 cubic feet per acre of well-dispersed down logs. Ideal size of log is 20 inches in diameter and 20 feet in length	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Oak Management'	4.f.7.e	Maintain mast-producing oaks on lands tentatively suitable for timber management in numbers proportional to the current inventory. Where hardwoods and conifers coexist, the goal is to increase conifers subject to leaving at least a minimum of 20 sf/a basal area of oak hardwoods dispersed over each timber compartment.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and guidelines 'Oak Management'	4.f.7.e	Provide hardwoods management for key areas of those indicator species highly dependent on hardwoods.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Riparian Areas'	4.f.8	Within riparian area, protect stream courses and adjacent vegetation to maintain or improve overall wildlife and fish habitat, water quality, and recreational opportunities	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Riparian Areas'	4.f.8	Give preferential consideration to riparian area dependent resources over other non-dependent resources in case of unresolvable conflicts	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Riparian Areas'	4.f.8	Delineate and evaluate riparian areas prior to implementing any project activity	18, 19, 20

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Riparian Areas'	4.f.8	Monitor the effectiveness of the Sequoia NF's Riparian Standards and Guidelines.	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Meadows'	4.f.9	Maintain or enhance all meadows	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Meadows'	4.f.8	Consider meadows smaller than two acres as part of the riparian areas	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Meadows'	4.f.8	Develop Meadow Management Standards and Guidelines	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Sensitive Plants'	4.f.9	Manage sensitive plants to prevent the need for Federal listing as threatened and endangered	18, 19, 20
Sequoia NF Land and Resource Management Plan	Forest-wide Standards and Guidelines 'Sensitive Plants'	4.f.9	Conserve all sensitive plants on the Regional Forester's Sensitive Plant list	18, 19, 20
Sequoia NF Land and Resource Management Plan	Management Area Prescription	4.g.OW2	None other than Forest-wide Standards and Guidelines	18, 19, 20
Sequoia NF Land and Resource Management Plan	Management Area Prescription	4.g. MC2	None other than Forest-wide Standards and Guidelines	18, 19, 20
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.33	Generally, riparian management areas will extend 100 feet horizontally from the edge of perennial streams, lakes and reservoirs, except along those streams designated as essential habitat in the Interagency Agreement for <i>Collomia rawsoniana</i> where the zone will be 150 feet.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.34	Maintain or increase current forest-wide program of direct habitat improvement.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.35	Annually submit requests for habitat improvement funds to: (1) appropriate county commissions that disperse fish and game fine money, and (2) State agencies that disperse Senate bill/State proposition money.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.36	Annually update 3-year habitat improvement plans for each Ranger District in cooperation with California Department of Fish and Game.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.37	For fish and wildlife habitat projects funded through timber sales, give highest priority to meadows and riparian areas in sales areas.	16, 17, 18

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.38	For habitat improvement projects funded from sources other than timber sales, focus on habitats outside the timber planning compartment.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.40	For each Class 1 watershed, timber sale planning compartment and other appropriate land management areas, select fish and wildlife species or guilds that will become the area's target animals for management. Establish habitat objectives for all target species during the next planning cycle.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.41	Seek flows and habitat conditions below new hydroelectric projects that maintain fishery and wildlife resources near naturally occurring (pre-project) conditions.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.42	During relicensing of hydroelectric projects, seek flows and habitat more favorable to fish and wildlife on projects where they have obviously been degraded by the project.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.43	When watering roads for dust abatement, protect fishery streams by: a) Allowing no drafting unless immediate downstream discharge from drafting site is maintained at 1.5 cfs or greater. b) Permitting water drafting to remove no more than 50 percent of any stream's ambient discharge that is over 1.5 cfs.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.44	Minimize, during July, management activity, such as logging and vehicular traffic, in deer population centers 2, 3, 4, 5, 7, 10, 12, 14, 15, 16, 22, 24 and 29. (See Wildlife Element Map)	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.45	Minimize management activity in deer holding areas 2, 3, 4, 6 and 10- 18 during the following periods (See Wildlife Element Map): a) Holding areas above 5,000 feet elevation - May 15 to June 15 and October 1 to November 30. b) Holding areas below 5,000 feet elevation - May 1 to June 1 and October 15 to November 30.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.46	Keep vehicle travel at low levels in deer winter ranges 2,5,6 and 7 from December 1 through April. (See Wildlife Element Map)	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.47	In key wildlife areas, regulate road use through seasonal or permanent closures. Do not close roads needed for permanent public use. (See Wildlife Element Map)	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.48	In key deer areas, reduce disturbance from normal traffic by leaving a screen of vegetation <u>immediately</u> adjacent to maintenance Level III, IV and V roads, where feasible and practical. Where screening does not exist or when existing screening cannot be protected during routine management activities, carry out subsequent management in a manner that will not impede the development of adequate screening.	16, 17, 18

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.49	Within deer holding areas 2,3,4,6,10-18 and deer population centers 2, 3, 4, 5, 7, 10, 12, 14, 15, 16, 22, 24 and 29. (See Wildlife Element Map): a) The average regeneration unit will be no greater than ten acres, unless sizes and shapes are organized to optimize the usable area for deer. b) Plant conifers on a 6' x 12' spacing, with widest distance along contour. Release from grass, forb and shrub competition will be allowed until plantations are certified as acceptably stocked (typically 3 years). d) Grasses, forbs and shrubs may be planted after plantations are certified as acceptably stocked.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.50	Seed skid trails, landings and temporary roads, where desirable and feasible, with species favored by wildlife.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.51	Use the management plans for the North Kings, San Joaquin, Huntington, Oakhurst and Yosemite deer herds as deer habitat management guides.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.52	Cooperate with private landowners to encourage resource protection on private lands.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.53	Protect nests and dens of all sensitive wildlife species until young are gone. Arrange harvest units and other management activities to preserve nests and dens.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.54	Protect Forest's 6 identified superior nest sites for peregrine falcons.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.55	Protect important roost trees and feeding areas for wintering bald eagles at Shaver, Redinger, and Bass Lakes, and Pine Flat Reservoir.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.56	No new management activities will be approved within goshawk nest site areas until a Forest Goshawk Network is approved. Nest site areas may encompass up to 50 acres of suitable goshawk habitat. Occupied nest sites found within areas where management activities have already been authorized shall be protected as described in 4.5.2.5.53	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.57	Provide 24 California spotted owl habitat areas (SOHAs) outside wilderness areas, each with at least 1,000 acres of suitable core habitat and 650 acres of replacement.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.58	Manage marten and fisher habitat management areas with the goal of maintaining sufficient amounts of habitat and habitat characteristics that contribute to the viability of these species.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.59	Continue existing Forest uses in marten and fisher management areas when such activity will not directly or indirectly preclude use of the areas by marten and fisher.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.60	Permit limited-timber yield harvests and other new activities in marten and fisher habitat management areas when supported by a biological evaluation and habitat management plan.	16, 17, 18

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.61	Prepare biological evaluations for proposed new activities in management areas with the objectives of maintaining sufficient amounts and distribution of marten and fisher habitat and habitat characteristics to contribute to a viable population and sustain the health and vigor of timber stands.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.62	For connectivity, manage a minimum of 600-foot-wide travelways, identified and mapped as part of the planning record, to provide linkage between marten and fisher habitat management areas. Allow new management activities in travelways when they will not directly or indirectly preclude use by marten and fisher as determined by a biological evaluation.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.63	Manage all marten and fisher reproductive sites, located outside designated habitat management areas, to retain suitable habitat attributes. Include 120 acres of suitable habitat if adjacent to mature timber stands or 500 acres if adjacent to open canopy areas. Permit no new management activities in any reproductive site that will preclude use of the area by marten and fisher for reproduction.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64	Manage snag and down logs within each timber planning compartment as follows in a-j	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.a	Maintain an average Of 1.5 hard snags/acre in sizes 15-24" DBH x 20' or larger in height in all time periods.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.b	Maintain an average of 0.5 hard snags/acre in sizes 25" or greater DBH x 20' or larger in height in all time periods.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.c	Maintain a sufficient number of live trees (replacement snags) in the compartment to sustain average densities in a. and b.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.d	Retain approximately 3 down logs/acre measuring at least 20" diameter x 20' in various stages of decomposition.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.e	Snags used to meet the average should be comprised of hardwood and softwood trees	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.f	Snags should be managed in small clumps of 5 or 6 that are well distributed through the compartment, and down logs should be uniformly distributed, where feasible.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.g	Cedar snags should not be used to meet prescribed snag densities.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.h	Snags used to meet the average should be concentrated more in the vicinity of streams, meadows, and the edges of openings.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.i	Leave all snags and downed logs in riparian areas, where consistent with public safety and fisheries habitat objectives.	16, 17, 18

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.64.j	If the conditions in items a., b. and c. are not met in a compartment, the compartment should meet these conditions when project activity is completed.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.65	On CAS timber land, forestwide, maintain and grow mast-producing oaks in numbers proportional to current inventory. However, where hardwoods and conifers coexist, the goal is to increase conifers, subject to limits imposed to protect oaks. Opportunity to increase conifers in regeneration units will be evaluated on a stand-by-stand basis, while targets for oak management will be evaluated by timber compartment or planning area.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.66	Manage oaks where they occur naturally as follows: a. In harvest units and other treatment areas within key deer winter ranges, migration corridors, holding areas, and population centers, the abundance of oaks on CAS land should not be less than half the existing average oak crown closure of mast producing oaks on all CAS land within the deer areas, or 20 percent crown closure, whichever is greater. b) For other harvest units and treatment areas, the abundance of oaks should not be less than one-quarter of existing average crown closure of mast producing oaks for all CAS land within the compartment or ten percent crown closure, whichever is greater. Where regenerated stands average less than ten percent before regeneration, retain all oaks to the extent practical. c) In <u>noncommercial</u> areas, retain all oaks for wildlife needs, except in existing and proposed shaded fuel break areas. Where desirable and feasible, undertake direct habitat improvement measures to increase the number of oaks.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.67	Develop sensitive plant species management guides to identify population goals and compatible management activities that will maintain viability.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.5.68	Manage sensitive plant species to avoid future listing as threatened and endangered. Ensure maintenance of genetic and geographic diversity and viable populations.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.69	Give primary management emphasis in riparian areas to protect and enhance the riparian ecosystem, riparian vegetation, water quality, soils, fish and wildlife resources.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.70	Riparian area protection and Streamside Management Zone determination will be based on methods described in FSH 2509.22, Sierra Supplement 1 which gives specific direction for width determinations.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.71	In the absence of on-site riparian area protective width determinations, riparian areas will extend 100 feet horizontally from the edge of perennial streams, lakes and reservoirs. Deviations resulting from on-site evaluations will be documented in project environmental assessments.	16, 17, 18

**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.72	When on-site project evaluations identify the need to afford protection to intermittent and/or ephemeral drainages, the protection zone widths will be defined in accordance with the Forest Streamside Management Zone determination process as described in the FSH 2509.22, Sierra Supplement 1.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.73	Riparian areas in the Forest will be mapped, inventoried, and monitored during the current planning cycle.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.74	Manage vegetation in designated riparian areas so existing forestwide diversity is maintained in all periods.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.75	Maintain or enhance productivity of Forest meadows to accommodate wildlife and range resources.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.76	In stream reaches occupied by fish, any activity that results in trampling and chiseling of stream banks should not exceed 20 percent of any given stream reach. Controls such as re-routing trails, relocating dispersed campsites, and/or fencing of areas will be used to manage activities and improve riparian conditions in identified areas not meeting this standard.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.77	Protect stream side zones by locating new roads outside of riparian areas, except at stream crossings	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.78	Avoid constructing new roads within the perimeter of meadows and other riparian areas where opportunities exist to relocate or obliterate existing roads.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.79	When existing routes through riparian areas and meadows are not compatible with riparian dependent resources, consider re-routing.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.80	Allow picketing or tethering of stock in meadows and overnight tie-ups no closer than 100 feet of lakes and streams.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.81	Seek flows below new hydroelectric projects that maintain riparian resources at adequate levels (near current, pre-project conditions) so as to protect water quality.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.2.6.82	During relicensing of hydroelectric projects, seek flows favorable to riparian resources on projects obviously degraded by the project; when it doesn't conflict with instream flows recommended for the fishery resource.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.23.328	Projects will be planned to consider management of chaparral and associated ecosystems to increase multi-resource benefits, while continuing with reduction of wildfire conflagrations.	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.24.333	Restrict overnight camping to designated sites at Redinger and Kerckhoff Lakes.	16, 17, 18



**Table 4.5-50 Local Policies for the Kings Crane-Helms Regional Bundle**

Adopted Plan Document	Document Section	Document Numeric Reference	Policy/Plan	Associated Bundle #
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.6.255	Increase day-use parking capacity 50 percent	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.6.256	Increase overnight campground capacity to 2,500 PAOT	16, 17, 18
Sierra NF Land and Resource Management Plan	Forestwide Standards and Guidelines	4.5.6.259	Construct a public day-use site for picnicking, swimming and fishing in the Willow Creek area	16, 17, 18

**Bundle 16: Crane Valley*****Crane Valley (FERC 1354)***

The Crane Valley Bundle consists of Pacific Gas and Electric Company hydroelectric facilities in the Crane Valley and includes the area from Chilkoot Lake to Willow Creek and Bass Lake down through Kerckhoff reservoir. There are five powerhouses within the Crane Valley Bundle: Crane Valley, San Joaquin No. 3, San Joaquin No. 2, San Joaquin No. 1A, and A.G. Wishon Powerhouse.

The Crane Valley Powerhouse is located at the base of the Crane Valley Dam on Bass Lake. Bass Lake is northeast of Fresno and just east of Oakhurst in Madera County. Crane Valley has an elevation of 3,264 feet and supports Sierran mixed conifer, Jeffrey pine, and ponderosa pine vegetation communities. San Joaquin No. 3 powerhouse is just upstream from Manzanita Lake in Madera County. San Joaquin No. 2 powerhouse is south of the town of North Fork in Madera County. San Joaquin No. 1A powerhouse is adjacent to Lake Corrine in Madera County. The A.G. Wishon powerhouse is on the shore of Kerckhoff Reservoir in Madera County. The San Joaquin 3, 2, 1A and A.G. Wishon powerhouses are at a lower elevation than Crane Valley; they support a drier community of annual grasses, blue oak-foothill pine and blue oak woodland.

The Crane Valley bundle has an elevation range of approximately 6,500 feet. Because of this wide range in elevation, there are numerous wildlife habitat types found throughout the Crane Valley bundle: valley foothill riparian, Sierran mixed conifer, ponderosa pine, lodgepole pine, white fir, blue-oak pine. Table 4.5-51 shows the various habitats within this project boundary.

***Vegetation Communities.*** Vegetation communities contained in this bundle are identified in Table 4.5-51. Vegetation communities were derived from the California Gap Analysis Project. Table 4.5-51 provides vegetation communities determined through field reconnaissance.

**Table 4.5-51 Bundle 16 – Crane Valley Vegetation Communities Associated With the Crane Valley Project (FERC 1354)**

Project Features	Foothill Communities			Transition Communities							Water Elements	
	AGS	BOP	BOW	MCH	MHW	VRI	SMC	JPN	PPN	MRI	RIV	LAC
<b>Generation Facilities</b>												
Bass Lake Complex				X			X	X	X		X	X
San Joaquin No. 3 Facilities	X	X	X			X	X				X	X
San Joaquin No. 1A Facilities	X	X	X								X	X
<b>Project Waterways</b>												
A.G. Wishon Facilities	X	X	X	X		X						X
Chilkoot Creek										X	X	
Chiquita Creek										X	X	
North and South Fork Willow Creek						X					X	
Chilkoot Lake										X	X	X
Bass Lake						X					X	X
Lake Corrine						X						X
Manzanita Lake (San Joaquin No. 3 Afterbay)						X						X
<b>Watershed Lands</b>												
Watershed Lands		X			X				X			

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Wildlife Resources.** The variety of habitats supports 17 reptile and amphibian, 43 bird, and 24 mammal species. There are also several game animals that occur within the project, including California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), brush rabbit (*Sylvilagus bachmani*), western gray squirrel (*Sciurus gruseus*) and deer (*Odocoileus spp.*).

Waterfowl use Chilkoot and Bass lakes and most other important bundle water bodies during spring and fall migration, while some species are present year-round.

Bass Lake is maintained at a high level during the summer recreation season. The high lake level with concomitant high recreational boating on the lake causes considerable bank erosion. In a number of areas around the lake, bank erosion has resulted in loss of shoreline habitat including large, mature conifers. Pacific Gas and Electric Company has installed riprap along a significant portion of the shoreline, but the problem continues where riprap is not present. Beaches suitable for western pond turtle (*Clemmys marmorata*) nesting are continuously bathed in water from wind and boating-induced wave action. Western pond turtles used to be resident to the lake but have not been recorded in recent years (Colton, Strand personal communications). A shoreline survey of the lake in late May 2000 did not find pond turtles. Similarly, foothill yellow-legged frog (*Rana boyleii*) occurred in Bass Lake in the past; it was last recorded there in 1994 (CNDDDB). The high level of recreation is suspected to be an important cause of the frog's apparent disappearance from Bass Lake. For the nesting bald eagle pair (*Haliaeetus leucocephalus*) at Bass Lake, lake level and recreation activity does not appear to disturb the birds as they have successfully fledged chicks for the past couple of years.

Additionally, the area within the Crane Valley bundle supports the Oakhurst Deer Herd. Pacific Gas and Electric Company conducted studies of this herd in 1985 to assess deer mortality caused by three project canals (Thelander, Miller, Orloff and Kucera 1985), as summarized below.

1. The No. 2 canal is 2.91 miles in length and carries water from Manzanita Lake to the No. 2 Forebay below the confluence of the North Fork Willow Creek and the South Fork Willow Creek. The canal capacity is 160 cfs and is six feet wide and five feet deep. Habitat along the canal is montane hardwood-conifer with a mixture of black oak, canyon live oak, interior live oak, incense cedar and some ponderosa pine.
2. The No. 3 canal is 3.58 miles long and its width varies between four and 13.5 feet. It conveys water to San Joaquin Powerhouse No. 3 and has a capacity of 160 cfs. Habitat along this canal includes montane hardwood-conifer, valley riparian and annual grassland.
3. The Browns Creek canal is 2.58 miles in length and transports water from the South Fork Willow Creek to Bass Lake. It has an operating capacity of 86 cfs and a maximum flow of 100 cfs. It is between six and ten feet in width and 3.5 feet deep. Habitats along this conduit include a mixture of ponderosa pine forest and montane hardwood-conifer. Rock outcrops and mountain meadows also are present.

The study developed mean deer activity indices for each canal segment over a monitoring period of ten months – August 1984 – May 1985. Fourteen wildlife bridges existed on the Browns Canal and 22 on the No. 3 Canal during this period. None existed on the No. 2 Canal. All 21 of these bridges were monitored, as were areas between bridges.

Special-status wildlife species that may occur in the area are listed in Table 4.5-52. As the table shows, habitat for a number of special-status species occurs on Bundle 16 lands. Of the special-status species listed in this table, the western pond turtles are known to inhabit most stream areas

within the project boundary. They are recorded as present in the North and South Forks of Willow Creek, Kerckhoff Reservoir, and Manzanita Lake (Strand, personal communications). Chilkoot Lake is potential mountain yellow-legged frog (*Rana muscosa*) habitat; however, there are no records of it being there. Foothill yellow-legged frogs occurred in Willow Creek in the 1970s, but there are no recent records for them in this area. The abundance of predatory fish and bullfrogs reduce the possibility of the foothill yellow-legged frog occurring in these waters. The reduced water flows and sediment accumulation below Bass Lake further degrade potential habitat for this frog.

Bald eagles currently nest and winter on Bass Lake. Ospreys (*Pandion halicetus*) also nest and forage throughout the Bass Lake area (Colton, personal communication). The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) inhabits blue elderberry shrubs (*Sambucus mexicanus*) and is documented as occurring in the foothills north of Fresno. This insect has not been documented within the Bundle 16 project boundaries (CNDDDB); however, it is likely to occur there.

During Pacific Gas and Electric Company's 1986 surveys, Sierra Nevada red fox (*Vulpes vulpes nector*) were seen in the project facility near Bass Lake, but no sightings have been recorded in the area since. Chilkoot Lake would provide good habitat for the Sierra Nevada red fox (PG&E Co., 1986). Bats also occupy a number of Pacific Gas and Electric Company's powerhouses north of Fresno and are likely to occupy Bundle 16 powerhouses, tailrace tunnels and other project features. Pacific Gas and Electric Company has not conducted bat surveys to document roosting and/or species identifications. Extensive surveys and bird calling failed to find the willow flycatcher (*Empidonax traillii*) within the project.

**Table 4.5-52 Bundle 16 – Crane Valley Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Crane Valley Project (FERC 1354)**

Common Name and Scientific Name	USFWS/State/Other	Habitat	Facilities
<b>Invertebrates</b>			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/--	BOW, BOP, VRI, VOW	Tule River project area
<b>Amphibians</b>			
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/CFP/FSS, BLMS	AGS, BOW, BOP, MCP, MRI, PPN, RIV, VRI, WTM, WFR	Lower Bass Lake, Bass Lake Complex, Bass Lake Waterway
Mountain yellow-legged frog <i>Rana muscosa</i>	SOC/CFP, SSC/FSS	JPN, LAC, LPN, MRI, PPN, RF, RIV, SMC, PPN, WTM, WFR	Upper Bass Lake, Bass Lake Complex, Lower Bass Lake
Mt. Lyell salamander <i>Hydromantes platycephalus</i>	SOC/CFP, SSC/FSS	AGS, B, LPN, RFR, SMC, PPN, SMC, PPN, WTM, WFR	Upper Bass Lake, Bass Lake Complex, Bass Lake Waterway
California red-legged frog <i>Rana aurora draytonii</i>	FT/CFP, SSC/FSS	AGS, BOW, BOP, LAC, SMC, PPN, MCP, MRI PPN, RIV, WTM	Lower Bass Lake, Bass Lake Complex, Bass Lake Waterway
Relictual slender salamander <i>Batrachoseps relictus</i>	SOC/SSC/FSS	AGS, BOW, BOP, MCP, MRI, PPN, RIV, SMC, PPN, VRI, WFR	Lower Bass Lake, Bass Lake Complex, Bass Lake Waterway

**Table 4.5-52 Bundle 16 – Crane Valley Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Crane Valley Project (FERC 1354)**

Common Name and Scientific Name	USFWS/State/ Other	Habitat	Facilities
Southwestern pond turtle <i>Clemmys marmorata pallida</i>	SOC/SSC, CFP/FSS	AGS, BOW, BOP, LAC, MCP, MRI, PPN, RIV, SMC, PPN, VRI, WTM, WFR	Bass Lake Waterway, Bass Lake Complex, Lower Bass Lake
Yosemite toad <i>Bufo canorus</i>	SOC/CFP, SSC/FSS	JPN, LAC, LPN, RFR, RIV, SMC, PPN, WTM	Upper Bass Lake, Bass Lake Complex, Bass Lake Waterway
<b>Reptiles</b>			
Two-striped garter snake <i>Thamnophis hammondi</i>	--/CFP, SSC /FSS, BLMS	AGS, BOW, BOP, JPN, LAC, MCP, MRI, PPN, RIV, VRI, WTM	Lower Bass Lake, Bass Lake Waterway
<b>Birds</b>			
American white pelican <i>Pelecanus erythrorhynchos</i>	--/SSC/--	LAC, RIV	Bass Lake Waterway
Bald eagle <i>Haliaeetus leucocephalus</i>	FPD, FT/CFP, SE	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MRI, PPN, RFR, RIV, SMC, PPN, VRI, WTM, WFR	Bass Lake Complex
Bank swallow <i>Riparia riparia</i>	--/ST/--	AGS, LAC, MRI, RIV, VRI, WTM	Lower Bass Lake
Black swift <i>Cypseloides niger</i>	--/SSC/--	AGS, BOW, BOP, JPN, LAC, LPN, MCP PPN, MRI, PPN RFR, RDR, RIV, SMC, PPN, VRI, WTM, WFR	Lower Bass Lake, Bass Lake
Black-capped chickadee <i>Poecile atricapillus</i>	--/SSC/--	MRI, RFR	Bass Lake Complex
Burrowing owl <i>Athene cunicularia</i>	SOC/SSC/ BLMS	AGS, BOW, BOP, MCP, PPN, VRI, WTM	Lower Bass Lake
California condor <i>Gymnogyps californianus</i>	FE / SE / CFP, CDF	AGS, BOW, BOP, JPN, MCP, PPN, RF, SMC, PPN, WFR	Bass Lake Complex
Common loon <i>Gavia immer</i>	--/SSC/--	LAC, RIV	Bass Lake Waterway
Cooper's hawk <i>Accipiter cooperii</i>	--/SSC/--	AGS, BOW, BOP, JPN, MCP, MRI, PPN, RFR, SMC, PPN, VRI, WFR	Bass Lake Complex
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	LAC, RIV	Bass Lake Waterway
Fulvous whistling duck <i>Dendrocygna bicolor</i>	SOC/SSC/--	LAC, RIV	Bass Lake Waterway
Golden eagle <i>Aquila chrysaetos</i>	--/CFP, SSC /CDF	AGS, BOW, BOP, JPN, LPN, MCP, MRI, PPN, RFR, RDR, SMC, PPN, VRI, WTM, WFR	Bass Lake Complex
Great gray owl <i>Strix nebulosa</i>	--/SE/FSS, CDF	LPN, RFR, SMC, PPN, WTM, WFR	Upper Bass Lake
Horned lark <i>Eremophila alpestris</i>	--/SSC/--	AGS, BOW, BOP, VRI, WTM	Lower Bass Lake
Loggerhead shrike <i>Lanius ludovicianus</i>	SOC/SSC/--	AGS, BOW, BOP, JPN, MRI	Lower Bass Lake

**Table 4.5-52 Bundle 16 – Crane Valley Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Crane Valley Project (FERC 1354)**

Common Name and Scientific Name	USFWS/State/Other	Habitat	Facilities
Long-eared owl <i>Asio otus</i>	--/SSC/--	AGS, A, BOW, BOP, MCP, MRI, RIV, PPN, VRI, WTM, WFR	Bass Lake Complex, Lower Bass Lake
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, LAC, MCP, MRI, PPN, RDR, RIV, SMC, PPN, VRI, WTM, WFR	Bass Lake Complex
Mountain plover <i>Charadrius montanus</i>	FPT/SSC/--	AGS	Upper Bass Lake, Bass Lake
Northern goshawk <i>Accipiter gentiles</i>	SOC/SSC/ CDF, FSS	BOW, BOP, JPN, MCP, MRI, PPN, RFR, SMC, PPN, VRI, WFR	Upper Bass Lake, Bass Lake Complex
Osprey <i>Pandion haliaetus</i>	--/SSC/CDF	AGS, BOW, BOP, JPN, LAC, LPN, MRI, PPN, RF, RIV, SMC, PPN, VRI, WFR	Bass Lake Waterway
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/CDF	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MRI, PPN, RFR, RDR, RIV, SMC, PPN, VRI, WTM, WFR	Bass Lake Complex, Bass Lake Waterway
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	AGS, BOW, BOP, JPN, LPN, MCP, MRI, PPN, RF, RW, SMC, PPN, VRI, WTM, WFR	Bass Lake Complex, Bass Lake Waterway, Upper Bass Lake
Purple martin <i>Progne subis</i>	--/SSC/--	AGS, BOW, BOP, LAC, MRI, RDR, RIV, SMC, PPN, VRI, WTM, WFR	Bass Lake Complex, Bass Lake Waterway, Lower Bass Lake Complex, Lower Bass Lake Waterway
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	AGS, BOW, BOP, JPN, LPN, MCP, MRI, PPN, RFR, SMC, PPN, VRI, WTM, WFR	Bass Lake Complex
Short-eared owl <i>Asio flammeus</i>	--/SSC/--	AGS, BOW, BOP, JPN, MRI, PPN, SMC, PPN, VRI, WTM, WFR	Lower Bass Lake
California spotted owl <i>Strix occidentalis occidentalis</i>	--/SSC/FSS	BOP, JPN, LPN, MRI, PPN, RFR, RDR, SMC, PPN, VRI, WFR	Bass Lake Complex, Bass Lake Waterway, Upper Bass Lake
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--	AGS, BOW, BOP, MCP, PPN, VRI, WTM	Bass Lake Complex
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/--	AGS, VRI, WTM	Lower Bass Lake
Vaux's swift <i>Chaetura vauxi</i>	--/SSC/--	BOP, JPN, LAC, PPN, MRI, PPN, RFR, RDR, RIV, SMC, PPN, VRI, WTM, WFR	Lower Bass Lake, Bass Lake
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	MRI, VRI, WTM	Lower Bass Lake, Bass Lake
Yellow-breasted chat <i>Icteria virens</i>	--/SSC/--	VRI	Lower Bass Lake
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST, CFP/FSS	JPN, LPN, MRI, RFR, SMC, PPN, WTM, WFR	Bass Lake Complex, Bass Lake Waterway
Greater Western mastiff bat <i>Eumops perotis californicus</i>	SOC/SSC/ BLMS	AGS, BOW, BOP, MCP, MRI, PPN, VRI, VOW, WTM	Bass Lake Complex, Lower Bass Lake, Bass Lake Waterways

**Table 4.5-52 Bundle 16 – Crane Valley Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Crane Valley Project (FERC 1354)**

Common Name and Scientific Name	USFWS/State/Other	Habitat	Facilities
Little brown myotis <i>Myotis lucifugus</i>	SOC/SSC/--	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MRI, PPN, RF, RIV, SMC, PPN, VRI, VOW, WTM, WFR	Bass Lake Complex, Lower Bass Lake, Bass Lake Waterway
Lodgepole chipmunk <i>Tamias speciosus</i>	SOC/--/--	JPN, LPN, RFR, SMC, PPN, WFR	Bass Lake Complex
Mountain beaver <i>Aplodontia rufa</i>	SOC/SSC/--	JPN, LPN, MRI, PPN, RF, SMC, PPN, WTM, WFR	Bass Lake Complex, Bass Lake Waterway
Pacific fisher <i>Martes pennant pacificai</i>	SOC/SSC/FSS, BLMS	JPN, LPN, MRI, PPN, RFR, SMC, PPN, WFR	Bass Lake Complex, Bass Lake Waterway
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLMS	AGS, BOW, BOP, JPN, LPN, MCP, MRI, PPN, RF, VOW, RIV, SMC, PPN, VRI, WTM, WFR	Bass Lake Complex, Lower Bass Lake, Bass Lake Waterways
Pine marten <i>Martes americana</i>	--/--/FSS	JPN, LPN, MRI, PPN, RFR, SMC, PPN, WTM, WFR	Bass Lake Complex, Bass Lake Waterway
Ringtail <i>Bassariscus astutus</i>	--/CFP/--	WFR, WTM, VOW, VRI, SMC, PPN, PPN, AGS, BOW, BOP, JPN, MCP, MRI	Bass Lake Complex, Lower Bass Lake, Bass Lake Waterways
San Joaquin kit fox <i>Vulpes macrotis</i>	FE/ST/--	AGS, BOW, BOP, VRI, VOW	Lower Bass Lake
Sierra Nevada red fox <i>Vulpes vulpes</i>	SOC/ST/FSS	WFR, SMC, PPN, AGS, JPN, LPN, MCP, MRI, PPN, RFR, WTM	Bass Lake Complex, Lower Bass Lake, Bass Lake Waterway
Sierra Nevada snowshoe hare <i>Lepus americanus tahoensis</i>	SOC/SSC/--	JPN, LPN, MRI, RIV, SMC, PPN, WFR	(possible in Madera) Bass Lake Complex, Lower Bass Lake, Bass Lake Waterway
Spotted bat <i>Euderma maculatum</i>	SOC/SSC/--	AGS, BOW, BOP, JPN, MRI, PPN, RIV, SMC, PPN, VRI, VOW, WTM, WFR	Bass Lake Complex, Lower Bass Lake, Bass Lake Waterway
Townsend's Western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/FSS, BLMS	AGS, RIV, BOW, BOP, JPN, LPN, MCP, MRI, PPN, RFR, WTM, WFR, VOW, SMC, PPN	Bass Lake Complex, Lower Bass Lake
Western red bat <i>Lasiurus blossevillei</i>	--/SSC/FSS	AGS, BOW, BOP, JPN, LAC, MCP, MRI, PPN, RIV, SMC, PPN, VRI, VOW, WTM, WFR	Bass Lake Complex, Lower Bass Lake, Bass Lake Waterway
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/ BLMS	AGS, BOW, BOP, JPN, LPN, MCP, MRI, PPN, RFR, RIV, SMC, PPN, VRI, VOW, WTM, WFR	Bass Lake Complex, Lower Bass Lake, Bass Lake Waterway

Notes: Scientific names are based on the following sources:

Special-Status Species:

Federal:

FE Federally listed as endangered

FT Federally listed as threatened

SOC Federal species of concern

FC Federal Candidate species

State:

SE State listed as endangered

ST State listed as threatened

SSC State species of special concern

CFP California Fully Protected species

Other:

#### 4.5 Terrestrial Biology

FSS Forest Service sensitive species  
 BLM Bureau of Land Management sensitive species  
 CDF California Department of Forestry and Fire Protection sensitive species

##### Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRJ = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Botanical Resources.** Table 4.5-53 presents special-status plant species which may occur in Bundle 16.

**Table 4.5-53 Bundle 16 – Crane Valley Special-Status Plant Species That Occur or Potentially Could Occur Within the Crane Valley Project (FERC 1354)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/Other	Habitat	Facilities
<i>Calyptidium pulchellum</i> Mariposa pussypaws	T/-/1B/-	Chprl, CmWld / sandy or gravelly, granitic	Watershed lands
<i>Carpenteria californica</i> tree-anemone	SOC/T/1B/-	Chprl, CmWld / usually granitic	Watershed lands
<i>Clarkia australis</i> Small's southern clarkia	-/-/1B/FSS	CmWld, LCFrs	Bass Lake Complex, Manzanita Lake Complex, Watershed lands
<i>Collomia rawsoniana</i> flaming trumpet	SOC/-/1B/FSS	LCFrs, Medws, RpFrs / mesic	Lake Corrine, Bass Lake Complex, Manzanita Lake Complex, Watershed lands
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	-/-/1B/FSS	MshSw (lake margins), VnPls / clay	Lake Corrine, Bass Lake Complex, Manzanita Lake Complex, Watershed lands
<i>Linanthus serrulatus</i> Madera linanthus	-/-/1B/-	CmWld, LCFrs	Lake Corrine, Bass Lake Complex, Manzanita Lake Complex, Watershed lands
<i>Lupinus citrinus</i> var. <i>citrinus</i> orange lupine	SOC/-/1B/FSS	Chprl, CmWld, LCFrs / granitic	Lake Corrine, Bass Lake Complex, Manzanita Lake Complex, Watershed lands
<i>Mimulus acutidens</i> Kings River monkeyflower	-/-/3/-	CmWld, LCFrs	Lake Corrine, Bass Lake Complex, Manzanita Lake Complex, Watershed lands

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.



- PE = Proposed endangered.  
PT = Proposed threatened.  
C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.  
SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.  
State: Californai status.  
E = Endangered; Species whose continued existence in California is jeopardized.  
T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.  
R = Rare  
CNPS: California Native Plant Society listing.  
1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.  
2 = Plants rare, threatened or endangered in California but more common elsewhere.  
3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.  
Other: Forest Service and Bureau of Land Management designations.  
FSS = Forest Service Sensitive Species  
BLMS = Bureau of Land Management Special Status Plants  
Habitats:  
AlpBR = Alpine Boulder and Rock Field      LCFrs = Lower Montane Conifer Forest  
BgFns = Bogs and Fens      Medws = Meadows and Seeps  
BUFrS = Broadleaved Upland Forest      MshSw = Marshes and Swamps  
CCFrS = Closed-Cone Conifer Forest      PJWld = Pinyon and Juniper Woodland  
Chprl = Chaparral      Plyas = Playas  
ChScr = Chenopod Scrub      RpFrS = Riparian Forest  
Cmwld = Cismontane Woodland      RpScr = Riparian Scrub  
CoDns = Coastal dunes      RpWld = Riparian Woodland  
CoPrr = Coastal Prairie      SCFrS = Subalpine Conifer Forest  
CoScr = Coastal Scrub      UCFrs = Upper Montane Conifer Forest  
GBGrS = Great Basin grassland      VFGrs = Valley and Foothill Grassland  
GBScr = Great Basin Scrub      VnPls = Vernal Pools

### **Bundle 17: Kerckhoff**

#### ***Kerckhoff (FERC 0096)***

The Kerckhoff project is located in lower elevation western slope Sierra Nevada habitats. Project components are located on the main stem of the San Joaquin River between 600 and 1,000 feet msl. The area experiences hot summer temperatures that are often greater than 100°F. Annual precipitation is about 30 inches per year. Table 4.5-54 shows the various habitats in this project. These habitats are typical of the lower elevations of the western slope of the Sierra Nevada – oak (*Quercus* spp.) dominated overstory with an annual grassland and shrub understory.

***Vegetation Communities.*** Vegetation communities contained in this bundle are identified in Table 4.5-54.

**Table 4.5-54 Bundle 17 – Kerckhoff Vegetation Communities Associated With the Kerckhoff Project (FERC 0096)**

Project Features	Foothill Communities			Transition Communities			Water Elements	
	AGS	BOP	BOW	MCH	MHW	VRI	RIV	LAC
<b>Generation Facilities</b>								
Kerckhoff Complex		X	X	X		X		X
<b>Recreation Facilities</b>								
Smalley Cove Campground and Day Use Area	X	X	X	X		X		X
<b>Project Waterways</b>								
San Joaquin River						X	X	
Kerckhoff Reservoir						X		X
Millerton Lake						X		X
<b>Watershed Lands</b>								
Watershed Lands		X			X			

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC. Recreation Facilities: Campgrounds, day use areas, picnic areas, that are owned by Pacific Gas and Electric Company and are part of the proposed project.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Wildlife Resources.** The WHR program model of the habitats within the Kerckhoff Bundle area indicates that the habitats identified in Table 4.5-55 supports 12 amphibian species, 24 reptile species, up to 230 bird species and 73 mammal species. Species common to the area and these habitats include western fence lizard (*Sceloporus occidentalis*), side-blotch lizard (*Uta stansburiana*), northern alligator lizard (*Gerrhonotus coeruleus*), racers, coachwhip (*Masticophis flagellum*), California kingsnake (*Lampropeltis getulus californiae*), western rattlesnake (*Crotalus viridis*), brown towhee (*Pipilo fuscus*), several species of sparrow, finches, acorn woodpeckers (*Melanerpes formicivorus*), several raptor species, turkey vulture (*Cathartes aura*), scrub jay

(*Aphelocoma coerulescens*), deer mouse, wood rat (*Neotoma spp.*), California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latra*), and deer. Cattle are present throughout this project.

Game animals that occur in the area of this project include California quail, mourning dove, ring-necked pheasant (*Phasianus colchicus*), band-tailed pigeon (*Columba fasciata*), brush rabbit, western gray squirrel and deer. Abundant waterfowl use Kerckhoff Reservoir and Millerton Lake during the spring and fall migratory seasons, while some are present during the non-migratory seasons. The Kerckhoff area supports a limited residential deer population and also serves as a winter range for non-residential deer. The current status of the deer herds is not known because CDFG is no longer conducting population trend studies (Colton, personal communications). Deer must compete for food with cattle, particularly in winter and spring when grass is an important element of the deer's diet (Pacific Gas and Electric Company Exhibit S, 1977).

Special-status wildlife species that may occur in the area, as identified by the WHR and CNDDB programs, are listed in Table 4.5-55. Table 4.5-56 lists the special status plant species that may occur on lands within Bundle 17.

Table 4.5-55 shows that habitat for a number of special-status species occurs on Kerckhoff Bundle lands. Of the special-status species listed in this table, western pond turtles are known to inhabit Kerckhoff Reservoir, Millerton Lake and the San Joaquin River. There is overlap between the southwestern pond turtle (*Clemmys marmorata pallida*) and northwestern pond turtle (*Clemmys marmorata marmorata*) subspecies within the project boundary; therefore, the turtles in Kerckhoff Reservoir and Millerton are generally referred to as western pond turtles (Strand, personal communications). California red-legged frogs (*Rana aurora draytonii*) and foothill yellow-legged frogs have not been sighted in the project waters. The presence of predatory fish and an abundant population of bullfrogs in the area may have a negative effect on the ability of these sensitive frogs to occupy project waters.

Bald eagle and golden eagle (*Aquila chrysaetos*) are known to use Kerckhoff Reservoir and Millerton Lake for feeding and occasionally for nesting (Pacific Gas and Electric Company PEA). The valley elderberry longhorn beetle inhabits blue elderberry shrubs and is documented as occurring in the foothills north of Fresno. While this federally threatened insect has not been documented within the boundaries of Bundle 17, it is likely to occur there.

Bats occupy a number of Pacific Gas and Electric Company's powerhouses north of Fresno and are likely to occupy Bundle 17 powerhouses, tailrace tunnels, adits and other project features. Pacific Gas and Electric Company has not conducted bat surveys to document roosting and/or species identifications.

**Table 4.5-55 Bundle 17 – Kerckhoff Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Kerckhoff Project (FERC 0096)**

Wildlife Species	USFWS/State/Other	Habitat	Facilities
<b>Invertebrates</b>			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/--	BOW, BOP, VRI, VOW	Tule River project area
<b>Amphibians</b>			
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/CFP/FSS, BLMS	AGS, BOW, BOP, DFN, MCP, MHC, MRI, PPN, RIV, VFR, WTM, WFN	Kerckhoff Complex, Kerckhoff Waterway
California red-legged frog <i>Rana aurora draytonii</i>	FT/CFP, SSC /FSS	AGS, BOW, BOP, FEW, LAC, MCP, MHC, MRI, PGS, PPN, RIV, WTM	Kerckhoff Complex, Kerckhoff Waterway
Relictual slender salamander <i>Batrachoseps relictus</i>	SOC/SSC/FSS	AGS, BOW, BOP, MCP, MHS, MRI, PPN, RIV, SMC, VFR, WFN	Kerckhoff Complex, Kerckhoff Waterway
Western spadefoot toad <i>Scaphiopus hammondi</i>	SOC/CFP, SSC/BLMS	AGS, BOW, BOP, FEW, LAC, PGS, RIV	Kerckhoff Complex, Kerckhoff Waterway
<b>Reptiles</b>			
Coast horned lizard <i>Phrynosoma coronatum blainvillei</i>	SOC/CFP, SSC/FSS	AGS, BOW, BOP, MHC, PGS, PPN, VFR	Kerckhoff Complex
Two-striped garter snake <i>Thamnophis hammondi</i>	--/CFP, SSC /FSS	AGS, BOW, BOP, FEW, JPN, LAC, MCP, MCH, MRI, PPN, RIV, VFR, WTM	Kerckhoff Complex, Kerckhoff Waterway
Western pond turtle <i>Clemmys marmorata</i>	SOC/CFP, SSC/FSS	AG, BOW, BOP, LAC, FEW, MC, MHC, MRI, PG, PP, RIV, SMC, VFR, WM, WF	Kerckhoff Complex, Kerckhoff Waterway
<b>Birds</b>			
American white pelican <i>Pelecanus erythrorhynchos</i>	--/SSC/--	B, LAC, RIV	Kerckhoff Waterway
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/CFP, SE/FSS	AGS, BOW, BOP, FEW, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RIV, SMC, VFR, WTM, WFN	Kerckhoff Waterway
Bank swallow <i>Riparia riparia</i>	--/ST/--	AGS, FEW, LAC, MRI, PGS, RIV, VFR, WTM	Kerckhoff Complex, Kerckhoff Waterway
Black swift <i>Cypseloides niger</i>	--/SSC/--	AGS, BOW, BOFP, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDR, RIV, SMC, VFR, WTM, WFR	Kerckhoff Complex
Burrowing owl <i>Athene cunicularia</i>	SOC/SSC/ BLMS	AGS, BOW, BOP, MCP, PGS, PPN, VFR, WTM	Kerckhoff Complex, Kerckhoff Waterway
California condor <i>Gymnogyps californianus</i>	FE/SE, CFP /CDF	AGS, BAR, BOW, BOP, JPN, MCP, MHC, PGS, PN, RFR, SMC, WTF	Kerckhoff Complex
California Spotted owl <i>Strix occidentalis occidentalis</i>	--/SSC/FSS	BOP, JPN, LPN, MHC, MRI, PPN, RFN, RDR, SMC, VFR, WFR	Kerckhoff Complex, Kerckhoff Waterway
California thrasher <i>Toxostoma redivivum</i>	--/ST/--	BOW, BOP, MCP, MHC, MRI, VFR	Kerckhoff Complex

**Table 4.5-55 Bundle 17 – Kerckhoff Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Kerckhoff Project (FERC 0096)**

Wildlife Species	USFWS/State/Other	Habitat	Facilities
Common loon <i>Gavia immer</i>	--/SSC/--	FEW, LIV, RIV	Kerckhoff Waterway
Cooper's hawk <i>Accipiter cooperii</i>	--/SSC/--	AG, BOW, BOP, JP, MC, MHC, MRI, PG, PP, RF, SMC, RW, VFR, WF	Kerckhoff Waterway
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	BAR, LAC, RIV	Kerckhoff Waterway
Ferruginous hawk <i>Buteo regalis</i>	SOC/SSC/--	AGS, BOW, BOP, FEW, PGS, VFR, WTM	Kerckhoff Complex
Fulvous whistling duck <i>Dendrocygna bicolor</i>	SOC/SSC/--	FEW, LAC, RIV	Kerckhoff Waterway
Golden eagle <i>Aquila chrysaetos</i>	--/CFP, SSC/CDF	AGS, BOW, BOP, FEW, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFF, SMC, VFR, WTM, WFN	Kerckhoff Complex
Horned lark <i>Eremophila alpestris</i>	--/SSC/--	AGS, BOW, BOP, PGS, VFR, WTM	Kerckhoff Complex, Kerckhoff Waterway
Loggerhead shrike <i>Lanius ludovicianus</i>	SOC/SSC/--	AGS, BOW, BOP, JPN, MHC, MRI, PGS	Kerckhoff Complex
Long-eared owl <i>Asio otus</i>	--/SSC/--	AGS, A, BOW, BOP, MCP, MHC, MRI, PGS, RIV, SMC, VFR, WTM, WFR	Kerckhoff Complex, Kerckhoff Waterway
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, FEW, LAC, MCP, MHC, MRI, PGS, PPN, RWR, RIV, SMC, VFR, WTM, WFR	Kerckhoff Complex
Mountain plover <i>Charadrius montanus</i>	FPT/SSC/--	AGS, PGS	Kerckhoff Complex
Northern goshawk <i>Accipiter gentiles</i>	SOC/SSC, CDF/FSS	BOW, BOP, JPN, MCP, MHC, MRI, PPN, RFR, SMC, RFR, WFR	Kerckhoff Complex
Northern harrier <i>Circus cyaneus</i>	--/SSC/--	AG, BOW, BOP, FEW, JP, L, MC, PG, R, SMC, VFR, WM	Kerckhoff Waterway
Osprey <i>Pandion haliaetus</i>	--/SSC/CDF	AGS, BOW, BOP, FEW, JPN, LAC, LPN, MHC, MRI, PPN, RFR, RIV, SMC, VFR, WFR	Kerckhoff Waterway
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/CDF	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PP,N RFR, RDR, RIV, SMC, VFR, WTM, WFN	Kerckhoff Complex, Kerckhoff Waterway
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	AGS, BOW, BOP, FEW, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDR, SMC, SFR, VFR, WTM, WFR	Kerckhoff Complex
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	AG, BOW, BOP, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFR, SMC, VFR, WTM, WFN	Kerckhoff Waterway
Short-eared owl <i>Asio flammeus</i>	--/SSC/--	AGS, BOW, BOP, FEW, JPN, MHC, MRI, PGS, PPN, RDR, SMC, VFR, WTM, WFN	Kerckhoff Complex

**Table 4.5-55 Bundle 17 – Kerckhoff Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Kerckhoff Project (FERC 0096)**

Wildlife Species	USFWS/State/Other	Habitat	Facilities
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--	AGS, BOW, BOP, MCP, MHC, PGS, PPN, VFR, WTM	Kerckhoff Complex
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/--	AG, FEW, PG, VFR, WM	Kerckhoff Waterway
Vaux's swift <i>Chaetura vauxi</i>	--/SSC/--	BOFP, FEW, JPN, LAC, MCP, MHC, MRI, PGS, PPN, RFR, RDR, RIV, SMC, VFR, WM, WFR	Kerckhoff Complex, Kerckhoff Waterway
White-faced ibis <i>Plegadis chihi</i>	SOC/SSC/--	AGS, FEW, LAC, RIV, WTM	Kerckhoff Waterway
White-tailed kite <i>Elanus leucurus</i>	--/CFP/--	AGS, BOW, BOP, FEW, PGS, WTM, VFR	Kerckhoff Waterway
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	MRI, VFR, WTM	Kerckhoff Complex, Kerckhoff Waterway
Wood stork <i>Mycteria americana</i>	--/SSC/--	LAC, RIV	Kerckhoff Waterway
Yellow-breasted chat <i>Icteria virens</i>	--/SSC/--	VFR	Kerckhoff Complex
<b>Mammals</b>			
Greater western mastiff bat <i>Eumops perotis californicus</i>	SOC/SSC/ BLMS	AGS, BOW, BOP, MCH, MRI, PPN, VFR, VOW, WTM	Kerckhoff Complex, Kerckhoff Waterways
Little brown myotis <i>Myotis lucifugus</i>	SOC/SSC/--	AGS, BOW, BOP, JPN, LAC, LPN, MCH, MRI, PPN, RFR, SMC, VFR, VOW, WTM, WFR	Kerckhoff Complex, Kerckhoff Waterway
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLMS	AGS, BOW, BOP, JPN, LPN, MCH, MRI, PPN, RFR, VOW, RIV, SMC, VFR, WTM, WFR	Kerckhoff Complex
Ringtail <i>Bassariscus astutus</i>	--/CFP/--	WFR, WTM, VOW, VFR, SMC, PPN, AGS, BOW, BOP, JPN, MCH, MRI	Kerckhoff Complex and Waterway
San Joaquin kit fox <i>Vulpes macrotis</i>	FE/ST/--	AGS, BOW, BOP, VFR, VOW	Kerckhoff Complex
Sierra Nevada Red fox <i>Vulpes vulpes</i>	SOC/ST/FSS	WFR, SMC, AGS, JPN, LPN, MCH, MRI, PPN, RFR, WTM	Kerckhoff Complex
Sierra Nevada snowshoe hare <i>Lepus americanus tahoensis</i>	SOC/SSC/--	JPN, LPN, MRI, RIV, SMC, WFN	Kerckhoff Complex, Kerckhoff Waterway
Spotted bat <i>Euderma maculatum</i>	SOC/SSC/--	AGS, BOW, BOP, JPN, MRI, PPN, RIV, SMC, VFR, VOW, WTM, WFR	Kerckhoff Complex, Kerckhoff Waterway
Townsend's Western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/FSS, BLMS	AGS, RIV, BOW, BOP, JPN, LPN, MCH, MRI, PPN, RFR, WTM, WFR, VOW, SMC	Kerckhoff Complex and Waterway
Western red bat <i>Lasiurus blossevillii</i>	--/SSC/FSS	AGA, BOW, BOP, JPN, LAC, MCH, MRI, PPN, RIV, SMC, VFR, VOW, WTM, WFR	Kerckhoff Complex, Kerckhoff Waterways

**Table 4.5-55 Bundle 17 – Kerckhoff Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Kerckhoff Project (FERC 0096)**

Wildlife Species	USFWS/State/Other	Habitat	Facilities
Yuma myotis <i>Myotis yumanensis</i>	SOC/SSC/BLMS	AGS, BOW, BOP, JPN, LPN, MCH, MRI, PPN, RFR, RIV, SMC, VFR, VOW, WTM, WFR	Kerckhoff Complex, Kerckhoff Waterway

Notes: Scientific names are based on the following sources:

Special-Status Species:

Federal:

FE Federally listed as endangered

FT Federally listed as threatened

SOC Federal species of concern

FC Federal Candidate species

State:

SE State listed as endangered

ST State listed as threatened

SSC State species of special concern

CFP California Fully Protected species

Other:

FSS Forest Service sensitive species

BLM Bureau of Land Management sensitive species

CDF California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

DFR = Douglas-Fir

FEW = Fresh Emergent Wetland

JPN = Jeffrey Pine

LAC = Lacustrine

LPN = Lodgepole Pine

LSG = Low Sagebrush

MCP = Montane Chaparral

MCH = Mixed Chaparral

MHC = Montane Hardwood-Conifer

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

SCN = Subalpine Conifer

SGB = Sagebrush

SMC = Sierra Mixed Conifer

VOW = Valley Oak Woodland

VRI = Valley Foothill Riparian

WFR = White Fir

WTM = Wet Meadow

**Botanical Resources.** Table 4.5-56 presents special-status species that may occur in Bundle 17.

**Table 4.5-56 Bundle 17 – Kerckhoff Special-Status Plant Species That Occur or Potentially Could Occur Within the Kerckhoff Project (FERC 0096)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/Other	Habitat	Facilities
<i>Atriplex cordulata</i> heartscale	SOC/--/1B/ BLMS	ChScr, Medws, VFGrS (sandy) / saline or alkaline	Smalley Cove Campground
<i>Atriplex depressa</i> brittlescale	--/--/1B/ BLMS	ChScr, Medws, Plyas, VFGrS, VnPls / alkaline, clay	Smalley Cove Campground
<i>Atriplex inuscula</i> lesser saltscale	--/--/1B/ BLMS	ChScr, Plyas, VFGrS / alkaline, sandy	Smalley Cove Campground
<i>Atriplex vallicola</i> Lost Hills crownscale	SOC/--/1B/ BLMS	ChScr, VFGrS, VnPls / alkaline	Smalley Cove Campground

**Table 4.5-56 Bundle 17 – Kerckhoff Special-Status Plant Species That Occur or Potentially Could Occur Within the Kerckhoff Project (FERC 0096)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/Other	Habitat	Facilities
<i>Calycadenia hooveri</i> Hoover's calycadenia	SOC/-/1B/ BLMS	CmWld, VFGrS / rocky	Smalley Cove Campground
<i>Carpenteria californica</i> tree-anemone	SOC/T/1B/ FSS, BLMS	Chprl, CmWld / usually granitic	Smalley Cove Campground
<i>Caulanthus californicus</i> California jewel-flower	E/E/1B/ BLMS	ChScr, PJWld, VFGrS / sandy	Smalley Cove Campground
<i>Cordylanthus palmatus</i> palmate-bracted bird's-beak	E/E/1B/ BLMS	ChScr, VFGrS (alkaline)	Smalley Cove Campground
<i>Delphinium recurvatum</i> recurved larkspur	SOC/-/1B/ BLMS	ChScr, CmWld, VFGrS / alkaline	Kerckoff Complex, Smalley Cove Campground, Watershed lands
<i>Eriogonum nudum</i> var. <i>regirivum</i> Kings River buckwheat	--/-/1B/FSS, BLMS	CmWld (carbonate)	Kerckoff Complex, Smalley Cove Campground, Watershed lands
<i>Eryngium spinosepalum</i> spiny-sepaled button-celery	SOC/-/1B/ BLMS	VFGrS, VnPls	Smalley Cove Campground
<i>Hemizonia halliana</i> Hall's tarplant	--/-/1B/ BLMS	ChScr, CmWld, VFGrS / clay	Kerckoff Complex, Smalley Cove Campground, Watershed lands
<i>Hordeum intercedens</i> vernal barley	--/-/3/--	VFGrS, CoDns (saline flats and depressions), vernal pools	Smalley Cove Campground
<i>Layia heterotricha</i> pale-yellow layia	SOC/-/1B/ BLMS	CmWld, PJWld, VFGrS / alkaline or clay	Smalley Cove Campground
<i>Layia munzii</i> Munz's tidy-tips	--/-/1B/ BLMS	ChScr, VFGrS (alkaline clay)	Kerckoff Complex, Smalley Cove Campground, Watershed lands
<i>Lembertia congdonii</i> San Joaquin woollythreads	E/-/1B/ BLMS	ChScr, VFGrS (sandy)	Smalley Cove Campground
<i>Lepidium jaredii</i> ssp. <i>album</i> Panoche pepper-grass	SOC/-/1B/ BLMS	VFGrS (alluvial fans, washes)	Smalley Cove Campground
<i>Linanthus serulatus</i> Madera linanthus	--/-/1B/ BLMS	CmWld, LCFrs	Kerckoff Complex, Smalley Cove Campground, Watershed lands
<i>Madia radiata</i> showy madia	--/-/1B/ BLMS	CmWld, VFGrS	Kerckoff Complex, Smalley Cove Campground, Watershed lands
<i>Malacothamnus aboriginum</i> Indian Valley bush mallow	--/-/1B/ BLMS	Chprl, CmWld / rocky, often in burned areas	Kerckoff Complex, Smalley Cove Campground, Watershed lands
<i>Mimulus acutidens</i> Kings River monkey flower	--/-/3/--	CmWld, LCFrs	Kerckoff Complex, Smalley Cove Campground, Watershed lands
<i>Navarretia nigelliformis</i> ssp. <i>radians</i> shining navarretia	--/-/1B/ BLMS	CmWld, VFGrS, VnPls	Kerckoff Complex, Smalley Cove Campground, Watershed lands



**Table 4.5-56 Bundle 17 – Kerckhoff Special-Status Plant Species That Occur or Potentially Could Occur Within the Kerckhoff Project (FERC 0096)**

Scientific Name Common Name	Status: USFWS/State/ CNPS/Other	Habitat	Facilities
<i>Pseudobahia bahiifolia</i> Hartweg's golden sunburst	E/E/1B/ BLMS	CmWld, VFGrS / clay	Kerckhoff Complex, Smalley Cove Campground, Watershed lands
<i>Pseudobahia peirsonii</i> San Joaquin adobe sunburst	T/E/1B/ BLMS	CmWld, VFGrS / adobe clay	Kerckhoff Complex, Smalley Cove Campground, Watershed lands
<i>Senecio aphanactis</i> rayless ragwort	--/2/--	Chprl, CmWld, CoScr / alkaline	Kerckhoff Complex, Smalley Cove Campground, Watershed lands
<i>Sidalcea keckii</i> Keck's checkerbloom	PE/--/1B/BLMS	CmWld, VFGrS / serpentine, clay	Kerckhoff Complex, Smalley Cove Campground, Watershed lands
<i>Sphenopholis obtusata</i> prairie wedge grass	--/2/--	CmWld, Medws / mesic	Kerckhoff Complex, Smalley Cove Campground, Watershed lands

NOTES: Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

**E** = Federally listed as endangered.

**T** = Federally listed as threatened.

**PE** = Proposed endangered.

**PT** = Proposed threatened.

**C** = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

**SOC** = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

**E** = Endangered; Species whose continued existence in California is jeopardized.

**T** = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

**R** = Rare

**CNPS:** California Native Plant Society listing.

**1B** = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.

**2** = Plants rare, threatened or endangered in California but more common elsewhere.

**3** = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

**Other:** Forest Service and Bureau of Land Management designations.

**FSS** = Forest Service Sensitive Species

**BLMS** = Bureau of Land Management Special Status Plants

**Habitats:**

**AlpBR** = Alpine Boulder and Rock Field

**BgFns** = Bogs and Fens

**BUFrS** = Broadleaved Upland Forest

**CCFrS** = Closed-Cone Conifer Forest

**Chprl** = Chaparral

**ChScr** = Chenopod Scrub

**LCFrS** = Lower Montane Conifer Forest

**Medws** = Meadows and Seeps

**MshSw** = Marshes and Swamps

**PJWld** = Pinyon and Juniper Woodland

**Plyas** = Playas

**RpFrS** = Riparian Forest

Cmwld= Cismontane Woodland  
CoDns = Coastal dunes  
CoPrr = Coastal Prairie  
CoScr = Coastal Scrub  
GBGrS = Great Basin grassland  
GBScr = Great Basin Scrub

RpScr = Riparian Scrub  
RpWld = Riparian Woodland  
SCFrS = Subalpine Conifer Forest  
UCFrS = Upper Montane Conifer Forest  
VFGrs = Valley and Foothill Grassland  
VnPls = Vernal Pools

### **Bundle 18: Kings River**

#### ***Helms Pumped Storage (FERC 2735), Haas-Kings River (FERC 1988), Balch (FERC 0175)***

This bundle comprises Pacific Gas and Electric Company hydroelectric facilities in three projects in the Kings River drainage. Within Bundle 18 there are three FERC Projects: Helms Pumped Storage (FERC 2735), Haas-Kings River (FERC 1988) and Balch (FERC 0175). This bundle extends from Pine Flat Reservoir east of Fresno, at an elevation of about 1000 feet msl, to Courtright Reservoir at approximately 8,200 feet msl.

The Kings River Powerhouse is located along the shore of Pine Flat reservoir at the confluence of the Kings River, and Courtright Reservoir is a water storage lake for the Helms Pumped Storage Project.

The area around the Kings River Powerhouse includes steep hillsides vegetated with blue oak woodland and blue oak-foothill pine woodland. Riverine habitat is present along the Kings River below the powerhouse. The area is dry and hot during the summer.

Balch facilities lie at mid-elevation for Bundle 18. Habitats generally consist of shrub, chaparral and valley foothill riparian. Conifers are present where suitable conditions exist, for example, along river and stream areas.

The Haas and Helms facilities comprise upper mid-range and higher elevation habitats that comprise conifers, firs and cedars along with well developed understories of shrubs, including ceanothus (*Ceanothus* spp.), manzanita (*Arctostaphylos* spp.), wild current (*Ribes* spp.), and gooseberry (*Ribes* spp.).

***Vegetation Communities.*** Tables 4.5-57, 4.5-58 and 4.5-59 outline the habitats found within the boundaries of each FERC project in this bundle.

Habitats at the lower elevations are generally dominated by blue oak (*Quercus douglasii*). Other oaks (*Q. chrysolepis* and *Q. agrifolia*) and foothill pine (*Pinus sabiniana*) may also be important habitat constituents. Understory vegetation is often comprised of annual grasses and forbs and varying amounts of shrubs. Common associated shrubs include ceanothus, manzanita, California buckeye (*Aesculus californica*), coffeeberry (*Rhamnus californica*) and poison oak (*Toxicodendron diversilobum*). At mid-elevations, shrub habitat – termed mixed chaparral – more generally dominate the area. Around the Kings River Powerhouse, the habitats are oak-dominated and are comprised of blue oak woodland and blue oak - foothill pine woodland.

**Table 4.5-57 Bundle 18 – Kings River Vegetation Communities Associated With the Helms Pump-Storage Project (FERC 2735)**

Project Features	Transition Communities				Montane Communities						Water Elements	
	SMC	JPN	PPN	MRI	LPN	WFR	RFR	JUN	WTM	MCP	RIV	LAC
<b>Generation Facilities</b>												
Helms Powerhouse Complex (Wishon Dam, access roads, powerhouse and switchyard)	X	X				X	X					
Housing and Support Facilities	X	X		X		X	X		X			
Wildlife Habitat Management Area												
Transmission and Pole Lines	X	X			X			X				
<b>Project Waterways</b>												
Helms Creek				X							X	
Lost Canyon	X			X							X	
North Fork Kings River	X			X							X	
Courtright Lake		X	X	X	X		X	X		X	X	X
Wishon Reservoir		X	X	X	X		X	X		X	X	X
<b>Watershed Lands</b>												
Watershed Lands		X					X					

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRJ = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Table 4.5-58 Bundle 18 – Kings River Vegetation Communities Associated With the Haas-Kings River Project (FERC 1998)**

Project Features	Foothill Communities				Transition Communities							Montane Communities				Water Elements	
	AGS	VOW	BOP	BOW	MCH	VRI	MHW	SMC	JPN	PPN	MRI	LPN	RFR	JUN	MCP	RIV	LAC
<b>Generation Facilities</b>																	
Access Roads, tunnel, switchyard			X	X	X			X	X	X	X						
Haas Powerhouse					X			X	X								
Siphon			X	X		X											
Kings River Powerhouse	X					X		X			X						
Spillway Day Use Area			X	X													
<b>Project Waterways</b>																	
Lost Canyon											X					X	
Helms Creek											X					X	
North Fork Kings River						X					X					X	
Pine Flat Reservoir						X										X	X
Wishon Reservoir									X	X	X	X	X	X	X	X	X
Courtright Lake									X	X	X	X	X	X	X	X	X
<b>Watershed Lands</b>																	
Watershed Lands				X			X										

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow

**Table 4.5-59 Bundle 18 – Kings River Vegetation Communities Associated With the Balch Project (FERC 0175)**

Project Features	Foothill Communities		Transition Communities				Montane Communities		Water Elements	
	BOP	BOW	MCH	VRI	JPN	PPN	MRI	JUN	RIV	LAC
<b>Generation Facilities</b>										
Weir Creek Diversion							X			
Black Rock Creek Diversion							X			
Balch Powerhouse Penstock			X							
Balch No. 1&2 Powerhouse		X		X						
Access Roads	X	X		X		X		X		
Balch Camp	X	X		X						
<b>Project Waterways</b>										
Black Rock Creek							X			
Weir Creek							X			
Black Rock Reservoir										X
Powerhouse Afterbay				X					X	X
<b>Watershed Land</b>										
No Watershed Lands associated with this license.										

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

At the upper elevations of this project bundle, the habitat changes to a conifer-dominated habitat with a generally well-developed understory of shrubs and forbs such as manzanita, ceanothus, bitter cherry (*Prunus emarginata*), and wild current and gooseberry.

The addition of foothill pines changes the blue oak woodland habitat, which also results in a somewhat different plant community understory association. Depending upon slope, exposure and aspect, the density of overstory trees in the blue oak woodland habitat is quite variable and varies between a very open grassland savannah type habitat with a thin scatter of oaks, to a relatively dense association of trees where percent overstory cover is 100 percent. The habitats at the lower elevations are generally dominated by blue oak. Other oaks and foothill pine are also important habitat constituents, depending on exposure and habitat conditions. Understory vegetation is comprised of annual grasses and forbs and varying amounts of shrubs. Common associated shrubs include ceanothus, manzanita, California buckeye, coffeeberry and poison oak.

The grasslands within the blue oak woodland consist mainly of non-native, European grasses such as brome (*Bromus* spp.), wild oat (*Avena fatua*), foxtail (*Alopecurus* spp.), forbs, including filaree (*Erodium* spp.), and mariposa lily (*Calochortus* spp.). Many of the grasses and forbs common to the blue oak woodland also occur in the blue oak – foothill pine woodland, particularly in the open areas and along road cuts, etc.

The Kings River portion of the waterways of this drainage basin supports valley foothill riparian vegetation. The habitat is generally well developed with a three-tiered structure and includes an overstory of cottonwood (*Populus* spp.) and sycamore (*Platanus racemosa*), an intermediate tier of willow (*Salix* spp.), ash (*Fraxinus* sp.), white alder (*Alnus rhombifolia*), and button bush (*Cephalanthus occidentalis*). The understory consists of sedges (*Carex* spp.), wild grape (*Vitius californica*), rush (*Juncus* spp.), poison oak, and in some locations, wild blackberry (*Rubus* spp.).

There have been two comprehensive studies of riparian vegetation in the project. One covered the North Fork Kings River (NFKR) above Lake Wishon and between Long Meadow Creek and Black Rock Reservoir, including several tributaries (Jones and Stokes Associates 1984). The other covered the NFKR from Black Rock Reservoir to the Kings River Powerhouse (Taylor and Davilla 1986). Both studies included prediction of existing and future operational impacts on riparian vegetation.

On the NFKR between Long Meadow Creek and Black Rock Reservoir, the dominant riparian community is white alder forest. Approximately 45 percent of this reach is barren rock from Black Rock Reservoir to the Kings River confluence. The dominant riparian community is also white alder but canopy complexity increases in a downstream direction. Nearest the confluence, the community includes sycamore and willow as co-dominants. There are about 215 acres of riparian vegetation on NFKR and about eight acres of white alder riparian vegetation on the tributaries.

The habitat along Pine Flat Reservoir near the Kings River Powerhouse is variable and is related to the proximity of the water to the riparian belt. Water fluctuations related to spring runoff affects the proximity of the riparian vegetation to the water. The vegetation mix is also related to scouring, sedimentation, grazing and other factors. Generally, the riparian consists of willow, sycamore and cottonwood.

The Balch Camp area, located at about 1,400 feet msl, comprises mixed chaparral and ecotonal communities between the mixed chaparral and blue oak – foothill woodland. Along the river, the community is typically valley foothill riparian that is well developed two and three-tiered habitat. This water-edge habitat grades into ecotonal habitats as it integrates with drier habitats of mixed chaparral.

These habitats are influenced by cattle grazing, particularly along road cuts and disturbed areas where grassland and similar meadow-like conditions are present.

Forest stands around and above the Black Rock Reservoir/Haas Powerhouse area are a patchwork of coniferous forest habitats dominated by white fir (*Abies concolor*), red fir (*Abies magnifica*), western juniper (*Juniperus occidentalis*), ponderosa pine (*Pinus ponderosa*), Jeffrey pine (*Pinus jeffreyi*), and other mixed conifers. The various forest habitats represent a range of habitat complexity, species diversity, and cover density. The habitat near the river and lakes show effects of man-caused disturbances, but away from these areas the forests and habitats are in relatively pristine condition.

**Wildlife Resources.** Of considerable interest to hydroelectric projects are sensitive, protected and species of special concern, particularly where significant use of water may potentially affect aquatic and riparian-associated and riparian-dependent wildlife species. Based on the WHR model, CNDDB and on known habitat types and conditions within the FERC Licensed Projects in the Kings River drainage, Table 4.5-60 indicates the numbers of species of amphibians, reptiles, birds and mammals expected in the Bundle 18 area.

Common species likely to be found at all elevations include Pacific tree frog (*Hyla regilla*), western toad (*Bufo boreas*), western aquatic garter snake (*Thamnophis couchi*), California mountain kingsnake (*Lampropeltis zonata*), common kingsnake (*Lampropeltis getulus*), western rattlesnake, turkey vulture, mourning dove, belted kingfisher (*Ceryle alcyon*), California towhee (*Pipilo crissalis*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), Botta's pocket gopher (*Thomomys botlae*), deer mouse, mule deer, gray fox (*Urocyon cinereoargenteus*), California ground squirrel, and black bear (*Ursus americanus*).

Habitats within the Kings River Bundle support a number of game species including mourning dove, California quail, mountain quail (*Oreortyx pictus*), several species of waterfowl, band-tailed pigeon, ring-neck pheasant, brush rabbit, raccoon (*Procyon lotor*), gray fox, coyote, western gray squirrel, black bear, and deer. Game hunting represents an important recreation in the area.

Mule deer (*Odocoileus hemionus californicus*) have been the subject of Pacific Gas and Electric Company studies because they are the most important game animals of the area (Pacific Gas and Electric Company Helms Project Exhibit S). The North Kings Deer Herd uses much of the project land as summer range, particularly in the upper reaches above 4,500 feet msl. The lower reaches between Balch Camp and Pine Flat Reservoir are used as winter range by this herd.

**Table 4.5-60 Wildlife Species Diversity Predicted to Occur Within Broad Elevation Bands in the Kings River Drainage (As Measured by Number of Different Species)**

Elevation Range	Amphibians	Reptiles	Birds	Mammals	Total Species
Lower	16	31	235	85	367
Mid	16	31	254	93	394
Upper	16	30	256	97	399

Of particular concern are potential effects of project operations on deer movement patterns, particularly spring and fall migration. Several historic deer migratory corridors cross the Helms Project in a general east-west orientation. These corridors, and deer movement in the area, were studied by Pacific Gas and Electric Company to identify potential project impacts to deer use and movement patterns in the area.

Surveys for threatened and endangered species within the project boundary were conducted prior to its relicensing application in 1985. Pacific Gas and Electric Company conducted surveys for California condor (*Gymnogyps californianus*), peregrine falcon (*Falco peregrinus*), bald eagle, and San Joaquin kit fox (*Vulpes macrotis mutica*). The special-status wildlife species that occur or potentially occur in Bundle 18 are listed Table 4.5-61.

The 1985 survey indicated that bald eagles occur in the project as winter migrants but do not nest in the area. Peregrine falcons may occur in the project boundary as migrants or as residents, but no data was available to confirm this. The California condor may occur within the project boundary in its quest for food but not as a resident of the area. No evidence was found that the San Joaquin kit fox was resident to the area, and no habitat for the blunt-nosed leopard lizard was noted in the project. A golden eagle nest occurred one mile from Camp Wishon in 1984. The project land was considered to be too low in elevation to be optimal habitat for northern goshawk (*Accipiter gentiles*). California spotted owl (*Strix occidentalis occidentalis*) nests were confirmed within the project boundaries. The Federally threatened northern spotted owl (*Strix occidentalis caurina*) does not occur this far south in the Sierra Nevada.

Bats have inhabited the powerhouse in the past. Pacific Gas and Electric Company constructed barriers in the upper reaches of the powerhouse to prevent them from using the powerhouse as a roost site. The bats are considered nuisances because they create unsanitary conditions that the facility managers may wish to eliminate. Bat surveys have not been conducted; therefore, the species of bats that have used the facility are unknown.

Western terrestrial garter snake (*Thamnophis elegans*), two-striped garter snake (*Thamnophis couchi hammondi*), coachwhip, tiger salamander (*Ambystoma tigrinum*), and western pond turtles are expected within the project boundary. Habitat exists for the foothill yellow-legged frog, but it has not been confirmed as occurring in the area.



**Table 4.5-61 Bundle 18 – Kings River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Helms Pumped Storage Project (FERC 2735); Haas-Kings River Project (FERC 1998); and Balch Project (FERC 0175)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Invertebrates</b>			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/--	BOW, BOP, VRI, VOW	Tule River project area
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC, CFP/--	AGS, BOW, BOP, FEW, LAC, MCH, MHC, MRI, PGS, PPN, RIV, WTM	Haas Waterway, Balch Complex and Waterway, Kings River Waterway
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/CFP/FSS, BLMS	AGS, BOW, BOP, DFN, MCH, MHC, MRI, PPN, RIV, VRI, WTM, WFN	Haas Waterway, Balch Complex Waterway, Kings River Waterway
Mountain yellow-legged frog <i>Rana muscosa</i>	SOC/CFP, SSC/FSS	JPN, FEW, LAC, LPN, MHC, MRI, PPN, RFR, RIV, SAC, SMC, WTM, WFN	Haas Waterway, Balch Complex and Waterway, Helms Waterway
Mt. Lyell salamander <i>Hydromantes platycephalus</i>	SOC/CFP, SSC/FSS	ASP, BAR, FEW, LPN, RFR, SMC, SMC, WTM, WFN	Helms Complex and Waterway, Haas Waterway
Relictual slender salamander <i>Batrachoseps relictus</i>	SOC/SSC/FSS	AGS, BOW, BOP, MCH, MHC, MRI, PPN, RIV, SMC, VRI, WFR	Haas Waterway, Balch Complex and Waterway
Yosemite toad <i>Bufo canorus</i>	SOC/CFP, SSC/FSS	JPN, LAC, LPN, RFR, RIV, SMC, WTM	Helms Complex and Waterway
<b>Reptiles</b>			
California legless lizard <i>Anniella pulchra nigra</i> <i>A.p. pulchra</i>	SOC/CFP, SSC/FSS	BOW, BOP, PGS, VRI	Haas Complex, Balch Complex, Kings River Powerhouse
Coast horned lizard <i>Phrynosoma coronatum frontale</i>	SOC/CFP, SSC/FSS	AGS, BOW, BOP, MHC, PGS, PPN, VRI	Kings River Powerhouse
Two-striped garter snake <i>Thamnophis hammondi</i>	--/CFP, SSC/FSS	AGS, BOW, BOP, FEW, JPN, LAC, MCP, MCH, MRI, PPN, RIV, VRI, WTM	Haas Complex and Waterway, Balch Complex and Waterway, Helms Complex
Western pond turtle <i>Clemmys marmorata</i>	SOC/CFP, SSC/FSS	AGS, BOW, BOP, LAC, FEW, MCH, MHC, MRI, PGS, PPN, RIV, SMC, VRI, WTM, WFN	Haas Waterway, Balch Complex and Waterway, Kings River Powerhouse and Waterway

**Table 4.5-61 Bundle 18 – Kings River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Helms Pumped Storage Project (FERC 2735); Haas-Kings River Project (FERC 1998); and Balch Project (FERC 0175)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Birds</b>			
American white pelican <i>Pelecanus erythrorhynchos</i>	--/SSC/--	BAR, LAC, RIV	Haas Waterway, Helms Waterway
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/CFP, SE/CDF	AGS, BOW, BOP, FEW, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RIV, SMC, VRI, WTM, WFR	Helms Complex, Haas Complex, Kings River Waterway
Bank swallow <i>Riparia riparia</i>	--/ST/--	AGS, FEW, LAC, MRI, PGS, RIV, VRI, WTM	Haas Complex and Waterway, Balch Complex and Waterway, Kings River Complex and Waterway
Black swift <i>Cypseloides niger</i>	--/SSC/--	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDW, RIV, SMC, VRI, WTM, WFR	Helms Complex and Waterway, Haas Complex and Waterway, Balch Complex and Waterway
Black-capped chickadee <i>Poecile atricapillus</i>	--/SSC/--	MRI, RDW	Balch, Haas and Helms complexes
Burrowing owl <i>Athene cunicularia</i>	SOC/SSC/BLMS	AGS, BOW, BOP, MC, PGS, PPN, VRI, WTM	Haas Complex, Kings River Complex
California condor <i>Gymnogyps californianus</i>	FE/SE, CFP/CDF	AGS, BAR, BOW, BOP, JPN, MCP, MHC, PGS, PPN, RFR, SMC, WTF	Helms Complex, Haas Complex, Balch Complex, Kings River Complex
California Spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS	BOP, JPN, LPN, MHC, MRI, PPN, RFR, RDW, SMC, VRI, WFR	Helms Complex and Waterway, Haas Complex and Waterway, Balch Complex and Waterway
Common loon <i>Gavia immer</i>	--/SSC/--	FEW, LAC, RIV	Haas Waterway, Balch Waterway
Cooper's hawk <i>Accipiter cooperii</i>	--/SSC/--	AGS, BOW, BOP, JPN, MCP, MHC, MRI, PGS, PPN, RFR, SMC, RW, VRI, WTM	Helms Complex, Haas Complex, Balch Complex, Kings River Complex
Double-crested cormorant <i>Phalacrocorax auritus</i>	--/SSC/--	BAR, LAC, RIV	Haas Waterway, Helms Waterway
Ferruginous hawk <i>Buteo regalis</i>	SOC/SSC/--	AGS, BOW, BOP, FEW, PGS, VRI, WTM	Haas Complex, Balch Complex, Kings River Complex
Fulvous whistling duck <i>Dendrocygna bicolor</i>	SOC/SSC/--	FEW, LAC, RIV	Haas Waterway, Balch Waterway

**Table 4.5-61 Bundle 18 – Kings River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Helms Pumped Storage Project (FERC 2735); Haas-Kings River Project (FERC 1998); and Balch Project (FERC 0175)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Golden eagle <i>Aquila chrysaetos</i>	--/CFP, SSC/CDF	AGS, BOW, BOP, FEW, JPN, LPN, MC, MHC, MRI, PGS, PPN, RFR, SMC, VRI, WTM, WFR	Helms Complex, Haas Complex, Balch Complex, Kings River Complex
Great gray owl <i>Strix nebulosa</i>	--/SE/CDF, FSS	LPN, RFR, SMC, WTM, WFR	Helms Complex and Waterway, Haas Complex and Waterway
Horned lark <i>Eremophila alpestris</i>	--/SSC/--	AGS, BOW, BOP, PGS, VRI, WTM	Kings River Complex
Loggerhead shrike <i>Lanius ludovicianus</i>	SOC/SSC/--	AGS, BOW, BOP, JPN, MHC, MRI, PGS	Kings River Complex
Long-eared owl <i>Asio otus</i>	--/SSC/--	AGS, ASP, BOW, BOP, MCP, MHC, MRI, PGS, RIV, SMC, VRI, WTM, WFR	Haas Complex and Waterway, Balch Complex and Waterway, Kings River Complex and Waterway
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, FEW, LAC, MCP, MHC, MRI, PGS, PPN, RDW, RIV, SMC, VRI, WTM, WFR	Helms Complex, Haas Complex, Haas Waterway, Balch Complex, Kings River Complex
Mountain plover <i>Charadrius montanus</i>	FPT/SSC/--	AGS, PGS	Kings River Complex
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC/CDF, FSS	BOW, BOP, JPN, MCP, MHC, MRI, PPN, RFR, SMC, VRI, WFR	Helms Complex, Haas Complex
Northern harrier <i>Circus cyaneus</i>	--/SSC/--	AGS, BOW, BOP, FEW, JPN, LAC, MCP, PGS, RIV, SMC, VRI, WTM	Haas Complex, Balch Complex, Kings River Complex
Osprey <i>Pandion haliaetus</i>	--/SSC/CDF	AGS, BOW, BOP, FEW, JPN, LAC, LPN, MHC, MRI, PPN, RFR, RIV, SMC, VRI, WFR	Helms Waterway, Haas Waterway, Kings River Waterway
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/CDF	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDW, RIV, SMC, VRI, WTM, WFR	Haas Complex, Haas Waterway, Balch Complex, Balch Waterway, Kings River Complex
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	AGS, BOW, BOP, FEW, JPN, LPN, MC, MHC, MRI, PGS, PPN, RFR, RDW, SMC, SFR, VRI, WTM, WFR	Helms Complex and Waterway, Haas Complex and Waterway, Balch Complex and Waterway, Kings River Complex

**Table 4.5-61 Bundle 18 – Kings River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Helms Pumped Storage Project (FERC 2735); Haas-Kings River Project (FERC 1998); and Balch Project (FERC 0175)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Purple martin <i>Progne subis</i>	--/SSC/--	AGS, BOW, BOP, FEW, LAC, MHC, MRI, PGS, RDW, RIV, SMC, VRI, WTM, WFN	Helms Complex and Waterway, Haas Complex and Waterway, Balch Complex and Waterway, Kings River Complex and Waterway
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	AGS, BOW, BOP, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFR, SMC, VRI, WTM, WFR	Helms Complex, Haas Complex, Balch Complex, Kings River Complex
Short-eared owl <i>Asio flammeus</i>	--/SSC/-	AGS, BOW, BOP, FEW, JPN, MHC, MRI, PGS, PPN, RDW, SMC, VRI, WTM, WFR	Balch Complex, Tule Complex, Kern Complex, Haas Complex
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--	AGS, BOW, BOP, MCP, MHC, PGS, PPN, VRI, WTM	Helms Complex, Haas Complex, Balch Complex, Kings River Complex
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/--	AGS, FEW, PGS, VRI, WTM	Haas Complex and Waterway, Balch Complex and Waterway, Kings River Complex and Waterway
Vaux's swift <i>Chaetura vauxi</i>	--/SSC/--	BOP, FEW, JPN, LAC, MCP, MHC, MRI, PGS, PPN, RFR, RDW, RIV, SMC, VRI, WTM, WFN	Helms Complex, Helms Waterway, Haas Complex and Waterway, Balch Complex and Waterway
White-faced ibis <i>Plegadis chihi</i>	SOC/SSC/--	AGS, FEW, LAC, RIV, WTM	Haas Waterway, Kings River Waterway
White-tailed kite <i>Elanus leucurus</i>	--/CFP/--	AGS, BOW, BOP, FEW, PGS, WTM, VRI	Haas Waterway, Kings River Complex
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	MRI, VRI, WTM	Helms Complex and Waterway, Haas Complex and Waterway, Balch Complex and Waterway, Tule Complex, Kings River Waterway
Wood stork <i>Mycteria americana</i>	--/SSC/--	LAC, RIV	Haas Waterway, Helms Waterway and Kings River Waterway
Yellow-breasted chat <i>Icteria virens</i>	--/SSC/--	VRI	Haas Waterway, Balch Waterway, Kings River Waterway
<b>Mammals</b>			
California wolverine <i>Gulo gulo luteus</i>	SOC/ST/FSS	JPN, LPN, MRF, RFR, SMC, WTM, WFR	Helms Complex, housing facilities, Haas Complex and Recreation areas
Greater western mastiff bat <i>Eumops californicus</i>	SOC/SSC/BLMS	AGS, BOW, BOP, MCH, MRI, PPN, VRI, VOW, WTM	Helms Project Waterways, Haas and Balch projects Waterways, Kings River Complex

**Table 4.5-61 Bundle 18 – Kings River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Helms Pumped Storage Project (FERC 2735); Haas-Kings River Project (FERC 1998); and Balch Project (FERC 0175)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Pacific fisher <i>Martes pennanti pacifica</i>	SOC/SSC/FSS, BLMS	JPN, LPN, MRI, PPN, RFR, SMC, WFR	Helms Complex, and Waterways, Haas Complex, Waterways, Black Rock Campground, Williams Creek day use area, Chilkoot Creek, Chiquita Creek, Chilkoot Lake
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLMS	AGS, BOW, BOP, JPN, LPN, MCH, MRI, PPN, RFR, VOW, RIV, SMC, VRI, WTM, WF	Helms Powerhouse Complex and housing facilities; Haas Complex and Recreation Facilities, Balch Complex and Camp, Kings River Complex
San Joaquin kit fox <i>Vulpes macrotis</i>	FE/ST/--	AGS, BOW, BOP, VRI, VOW	Kings River Complex, Haas siphon, Balch 1&2 Complex and Balch Camp
Sierra Nevada red fox <i>Vulpes vulpes</i>	SOC/ST/FSS	WFR, SMC, AGS, JPN, LPN, MCH, MRI, PPN, RFR, WTM	Helms Complex and Waterways, Haas Complex, Recreation Facilities, North Fork Kings River
Townsend's Western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/FSS, BLMS	AGS, RIV, BOW, BOP, JPN, LPN, MCH, MRI, PPN, RFR, WM, WFR, VOW, SMC	Kings River Complex, Helms Powerhouse Complex and Waterways, housing facilities; Haas Complex and Recreation Facilities, Haas siphon, Balch 1&2 Complex and Camp
Western red bat <i>Lasiurus blossevillii</i>	--/SSC/FSS	AGS, BOW, BOP, JPN, LAC, MCH, MRI, PPN, RIV, SMC, VRI, VOW, WM, WF	Helms Complex and housing facilities and Waterways, Haas Complex and Recreation Facilities, Kings River Complex and Waterways

Notes: Scientific names are based on the following sources:

Special-Status Species:

Federal:

FE = Federally listed as endangered  
 FT = Federally listed as threatened  
 SOC = Federal species of concern  
 FC = Federal Candidate species

State:

SE = State listed as endangered  
 ST = State listed as threatened  
 SSC = State species of special concern  
 CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species  
 BLM = Bureau of Land Management sensitive species  
 CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian

#### 4.5 Terrestrial Biology

MCP = Montane Chaparral  
MCH = Mixed Chaparral  
MHC = Montane Hardwood-Conifer

WFR = White Fir  
WTM = Wet Meadow

**Botanical Resources.** Table 4.5-62 presents special-status plant species which may occur in Bundle 18.

**Table 4.5-62 Bundle 18 – Kings River Special-Status Plant Species That Occur or Potentially Could Occur Within the Helms Pumped Storage Project (FERC 2735); Haas-Kings River Project (FERC 1988); and Balch Project (FERC 0175)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Atriplex depressa</i> brittlescale	--/--/1B/BLMS	ChScr, Medws, Plyas, VFGrS, VnPls / alkaline, clay	King River Powerhouse
<i>Atriplex vallicola</i> Lost Hills crownscale	SOC/--/1B/BLMS	ChScr, VFGrS, VnPls / alkaline	King River Powerhouse
<i>Botrychium minganense</i> Mingan moonwort	--/--/2/--	LCFrS (mesic)	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Calyptidium pulchellum</i> Mariposa pussypaws	T/--/1B/--	Chprl, CmWld / sandy or gravelly, granitic	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Camissonia benitensis</i> San Benito evening-primrose	T/--/1B/--	Chprl, CmWld / serpentine alluvium. Clay or gravelly	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Camissonia sierrae</i> ssp. <i>alticola</i> Mono Hot Springs evening-primrose	SOC/--/1B/FSS	LCFrS, UCFrS / granitic, gravel and sand pans	Pine, Flat Reservoir, Kings River Powerhouse, Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Carex limosa</i> shore sedge	--/--/2/--	BgFns, LCFrS, MshSw, UCFrS	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse, North Fork Kings River, Pine Flat, Helms Creek, Lost Canyon, King River Powerhouse
<i>Carex tompkinsii</i> Tompkins' sedge	--/R/4/--	Chprl, CmWld, LCFrS, Medws, MshSw, UCFrS / sometimes granitic	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse, North Fork Kings River, Pine Flat, Helms Creek, Lost Canyon, King River Powerhouse
<i>Carpenteria californica</i> tree-anemone	SOC/T/1B/FSS, BLMS	Chprl, CmWld / usually granitic	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Caulanthus californicus</i> California jewel-flower	E/E/1B/BLMS	ChScr, PJWld, VFGrS / sandy	King River Powerhouse
<i>Chorizanthe biloba</i> var. <i>immemora</i> San Benito spineflower	SOC/--/1B/--	Chprl, CmWld	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse

**Table 4.5-62 Bundle 18 – Kings River Special-Status Plant Species That Occur or Potentially Could Occur Within the Helms Pumped Storage Project (FERC 2735); Haas-Kings River Project (FERC 1988); and Balch Project (FERC 0175)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Delphinium recurvatum</i> recurved larkspur	SOC/-/1B/BLMS	ChScr, CmWld, VFGrS / alkaline	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Epilobium howellii</i> subalpine fireweed	-/-/1B/FSS	Medws, SCFrS / mesic	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Eriastrum hooveri</i> Hoover's woollystar	T/-/4/-	ChScr, PJWld, VFGrS	King River Powerhouse
<i>Erigeron aequifolius</i> Hall's daisy	-/-/1B/BLMS	BUFrS, LCFrS, PJWld, UCFrS / rocky, granitic	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Erigeron inornatus</i> var. <i>keilii</i> Keil's daisy	-/-/1B/-	LCFrS, Medws	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Erigonum nudum</i> var. <i>regirivum</i> Kings River buckwheat	-/-/1B/FSS, BLMS	CmWld (carbonate)	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	-/-E/1B/FSS	MshSw (lake margins), VnPls / clay	Pine Flat Reservoir, Wishon Reservoir, Courtright Lake
<i>Hemizonia halliana</i> Hall's tarplant	-/-/-/BLMS	ChScr, CmWld, VFGrS / clay	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Hordeum intercedens</i> Vernal barley	-/-/3/-	VFGrS (saline flats and depressions), VnPls	Kings River Powerhouse
<i>Layia discoidea</i> rayless layia	SOC/-/1B/BLMS	Chprl, CmWld, LCFrS / serpentine, talus and alluvial terraces	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Layia heterotricha</i> pale-yellow layia	SOC/-/1B/BLMS	CmWld, PJWld, VFGrS / alkaline or clay	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Layia munzii</i> Munz's tidy-tips	-/-/1B/BLMS	ChScr, VFGrS (alkaline clay)	Kings River Powerhouse
<i>Lembertia congdonii</i> San Joaquin woollythreads	E/-/1B/BLMS	ChScr, VFGrS (sandy)	Kings River Powerhouse
<i>Lewisia congdonii</i> Congdon's lewisia	-/-R/1B/FSS	Chprl, CmWld, LCFrS, UCFrS / granitic or metamorphic, rocky, mesic	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Lewisia disepala</i> Yosemite lewisia	-/-/1B/FSS	LCFrS, PJWld, UCFrS /granitic sandy	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse, Kings River Powerhouse
<i>Linanthus serrulatus</i> Madera linanthus	-/-/1B/FSS, BLMS	CmWld, LCFrS	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Lupinus citrinus</i> var. <i>citrinus</i> orange lupine	SOC/-/1B/FSS	Chprl, CmWld, LCFrS / granitic	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Lupinus lepidus</i> var. <i>culbertsonii</i> Hockett Meadows lupine	-/-/1B/-	Medws, UCFrS (mesic, rocky)	Haas Powerhouse, Kings River Powerhouse

**Table 4.5-62 Bundle 18 – Kings River Special-Status Plant Species That Occur or Potentially Could Occur Within the Helms Pumped Storage Project (FERC 2735); Haas-Kings River Project (FERC 1988); and Balch Project (FERC 0175)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Madia radiata</i> showy madia	--/--/1B/BLMS	CmWld, VFGrS	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Malacothamnus aboriginum</i> Indian Valley bush mallow	--/--/1B/BLMS	Chprl, CmWld / rocky, often in burned areas	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Mimulus acutidens</i> Kings river monkeyflower	--/--/3/FSS	CmWld, LCFrs	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Mimulus norrisii</i> Kaweah monkeyflower	--/--/1B/BLMS	Chprl, CmWld / carbonate, rocky	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Navarretia nigelliformis</i> ssp. <i>radians</i> shining navarretia	--/--/1B/BLMS	CmWld, VFGrS, VnPls	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse, Kings River Powerhouse
<i>Pseudobahia peironii</i> San Joaquin adobe sunburst	T/E/1B/BLMS	CmWld, VFGrS / adobe clay	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Sagittaria sanfordii</i> Sanford's arrowhead	SOC/--/1B/BLMS	MshSw (assorted shallow freshwater)	Pine Flat Reservoir, Wishon Reservoir, Courtright Lake
<i>Senecio aphanactis</i> rayless ragwort	--/--/2/--	Chprl, CmWld, CoScr / alkaline	Watershed lands, Wishon Reservoir, Courtright Lake, Haas Powerhouse
<i>Sidalcea keckii</i> Keck's checkerbloom	PE/--/1B/BLMS	CmWld, VFGrS / serpentine, clay	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Sphenopholis obtusata</i> prairie wedge grass	--/--/2/--	CmWld, Medws / mesic	Watershed lands, Wishon Reservoir, Courtright Lake
<i>Streptanthus fenestratus</i> Tehipite Valley jewel-flower	--/--/1B/FSS	LCFrs, UCFrs	All facilities
<i>Viola pinetorum</i> ssp. <i>grisea</i> grey-leaved violet	--/--/1B/FSS	SCFrs, UCFrs	All facilities

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.



T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

CNPS: California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

Habitats:

AlpBR = Alpine Boulder and Rock Field      LCFrs = Lower Montane Conifer Forest

BgFns = Bogs and Fens      Medws = Meadows and Seeps

BUFRs = Broadleaved Upland Forest      MshSw = Marshes and Swamps

CCFRs = Closed-Cone Conifer Forest      PJWld = Pinyon and Juniper Woodland

Chprl = Chaparral      Plyas = Playas

ChScr = Chenopod Scrub      RpFRs = Riparian Forest

Cmwld = Cismontane Woodland      RpScr = Riparian Scrub

CoDns = Coastal dunes      RpWld = Riparian Woodland

CoPrr = Coastal Prairie      SCFRs = Subalpine Conifer Forest

CoScr = Coastal Scrub      UCFrs = Upper Montane Conifer Forest

GBGrS = Great Basin grassland      VFGrs = Valley and Foothill Grassland

GBScr = Great Basin Scrub      VnPls = Vernal Pools

## Bundle 19: Tule River

### *Tule River (FERC 1333)*

The Tule River Bundle consists of a single, run-of-the-river Pacific Gas and Electric Company hydroelectric facility located on the Middle Fork of the North Fork of the Tule River. As a run-of-the-river facility, this FERC project does not have significant water storage capability, nor does it have operational flexibility because it is the first powerhouse on the Tule. The Middle Fork of the North Fork of the Tule River is the principal tributary of the Tule River. The Middle Fork and South Fork converge just below the Tule Powerhouse. Most of the project is located below 4,000 feet msl. The area receives a mean of 40 inches of precipitation per year, and most of this is received between November and March. A combination of geomorphic, hydrologic, and soils and climate contribute to the formation of the habitat communities listed in the Table 4.5-63.

**Table 4.5-63 Bundle 19 – Tule River Vegetation Communities Associated With the Tule River Project (FERC 1333)**

Project Features	Foothill Communities		Transition Communities			Water Elements	
	BOP	BOW	MCP	SMC	VRI	RIV	LAC
<b>Generation Facilities</b>							
Tule River Diversion Dam					X	X	
Hossack Creek Diversion					X	X	
Doyle Springs Diversion					X		

**Table 4.5-63 Bundle 19 – Tule River Vegetation Communities Associated With the Tule River Project (FERC 1333)**

Project Features	Foothill Communities		Transition Communities			Water Elements	
	BOP	BOW	MCP	SMC	VRI	RIV	LAC
Wishon Pump Station			X		X	X	
Access Roads	X	X	X		X		
<b>Project Waterways</b>							
Doyle Springs	X	X	X		X		
Middle Fork of the North Fork of the Tule River					X	X	
Hossack Creek					X		
<b>Watershed Lands</b>							
Watershed Lands		X		X			

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Vegetation Communities.** Habitat types that occur within Bundle 19 are outlined in Table 4.5-63. These communities are common and expected along the lower elevations of the Western Sierra Nevada. Except for the valley foothill riparian as discussed further below, the other communities are dominated by various species of oak. The oak-dominated habitats comprise blue oak woodland and blue oak - foothill pine woodland. The addition of foothill pines changes the blue oak woodland habitat, which results in a somewhat different understory. Depending upon slope, exposure, and aspect, the density of overstory trees in the blue oak woodland habitat is quite variable and varies between a very open grassland-savannah type habitat with a thin scatter of oaks, to a relatively dense association of trees where percent overstory cover may be as high as 60 percent. The habitats at the lower elevations are generally dominated by blue oak. Other oaks and foothill pine are also important habitat constituents, depending on exposure and habitat conditions. Understory vegetation is comprised of annual grasses and forbs and varying amounts of

shrubs. Common associated shrubs include ceanothus, manzanita, California buckeye, coffeeberry, and poison oak.

The grasslands within the blue oak woodland consist mainly of non-native, European grasses such as brome, wild oat, foxtail, forbs including filaree, and mariposa lily. Many of the grasses and forbs common to the blue oak woodland also occur in the blue oak – foothill pine woodland, particularly in the open areas and along road cuts.

The waterways of this drainage basin support valley foothill riparian habitat. The habitat is generally well developed with a two-tiered structure and includes an overstory tier of willow, ash, white alder, and button bush. The understory consists of sedges, wild grape, rush, poison oak, and in some locations, wild blackberry.

Four stream reaches are distinguished, including one on the Middle Fork of the North Fork Tule River (MFNFTR) above the Pacific Gas and Electric Company diversion structure. There are an estimated 35 acres of riparian vegetation on lands within the project boundary. Approximately 0.5 acre of riparian habitat has been created upstream of diversion dams on the MFNFTR. Substrate in MFNFTR ranges from gravel and cobble to boulder surficial deposits over granitic bedrock. The riparian type here is almost exclusively dominated by alder with limited ponderosa pine, dogwood (*Cornus* spp.), sycamore, ash and cottonwood.

**Wildlife Resources.** The Wildlife Habitat Relationships model was run to determine the number of wildlife species expected in the Tule River Hydroelectric Project. Table 4.5-64 lists the numbers of amphibians, reptiles, birds and mammals expected to occur within the area.

Common species likely to be found within Bundle 19 include Pacific tree frog, western toad, western aquatic garter snake, common kingsnake, western fence lizard, western rattlesnake, turkey vulture, mourning dove, belted kingfisher, California towhee, common raven, red-tailed hawk, Botta's pocket gopher, deer mouse, mule deer, gray fox, California ground squirrel, and black bear.

The Tule River project is both summer and winter range for mule deer. However, some of the resident deer do not move to higher elevation during summer periods. The area also supports an abundant mountain quail population, which is considered an important upland game species for this area. Other game species present in the area, but of lesser importance, are mourning dove, band-tail pigeon, and quail.

**Table 4.5-64 Wildlife Species Diversity Predicted to Occur Within the Tule River Project (As Measured By Number of Different Species)**

Project	Amphibians	Reptiles	Birds	Mammals	Total
Tule River Project	10	28	222	72	332

#### 4.5 Terrestrial Biology

Pacific Gas and Electric Company conducted surveys for threatened and endangered species within the project boundaries prior to its relicensing application in 1985. Pacific Gas and Electric Company conducted surveys for bald eagles, peregrine falcon, California condor, San Joaquin kit fox, and blunt-nosed leopard lizards. Surveys were also conducted for special-status species and included golden eagles, northern goshawk, and California spotted owls. The special-status species listed in Table 4.5-65, and not included in Pacific Gas and Electric Company's surveys, are species that have been added to the various categories of concern and sensitivity since 1985.

**Table 4.5-65 Bundle 19 – Tule River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Tule River Project (FERC 1333)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Invertebrates</b>			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/--	BOW, BOP, VRI, VOW	Tule River project area
<b>Amphibians</b>			
California red-legged frog <i>Rana aurora draytonii</i>	FT/CFP, SSC /FSS	AGS, BOW, BOP, FEW, LAC, MCP, MHC, MRI, PGS, PPN, RIV, WTM	Tule Complex and Waterway
California tiger salamander <i>Ambystoma californiense</i>	FC/CFP, SSC /--	AGS, BOW, BOP, RIV, VRI, VOW	Lower Bass Lake, Kerckhoff Complex and Waterway, Haas Waterway, Balch Complex and Waterway, Tule Complex and Waterway, Kern Complex and Waterway
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/CFP/FSS, BLMS	AGS, BOW, BOP, DFN, MCP, MHC, MRI, PPN, RIV, VRI, WTM, WFR	Tule Complex and Waterway
Relictual slender salamander <i>Batrachoseps relictus</i>	SOC/SSC/FSS	AGS, BOW, BOP, MCP, MHC, VRI, PPN, RIV, SMC, VRI, WFR	Tule Complex and Waterway
Western spadefoot <i>Scaphiopus hammondi</i>	--/CFP, SSC /BLMS	AGS, BOW, BOP, FEW, LAC, PGS, RIV	Tule River Project Complex
<b>Reptiles</b>			
California legless lizard <i>Anniella pulchra nigra</i> <i>A.p. pulchra</i>	SOC/CFP, SSC /FSS	BOW, BOP, PGS, VRI	Tule Complex
Coast horned lizard <i>Phrynosoma coronatum blainvillei</i>	SOC/CFP, SSC /FSS	AGS, BOW, BOP, MHC, PGS, PPN, VRI	Tule Complex
Two-striped garter snake <i>Thamnophis hammondi</i>	--/CFP, SSC /FSS	AGS, BOW, BOP, FEW, JPN, LAC, MCP, MCH, MRI, PPN, RIV, VRI, WTM	Tule Complex and Waterway
Western pond turtle <i>Clemmys marmorata</i>	SOC/CFP, SSC/FSS	AGS, BOW, BOP, LAC, FEW, MCP, MHC, MRI, PGS, PPN, RIV, SMC, VRI, WTM, WFR	Tule Complex and Waterway

**Table 4.5-65 Bundle 19 – Tule River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Tule River Project (FERC 1333)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/CFP, SE/CDF	AGS, BOW, BOP, FEW, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RIV, SMC, VRI, WTM, WFR	Tule Complex
Bank swallow <i>Riparia riparia</i>	--/ST/--	AGS, FEW, LAC, MRI, PGS, RIV, VRI, WTM	Tule Complex and Waterway
Black swift <i>Cypseloides niger</i>	--/SSC/--	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDW, RIV, SMC, VRI, WTM, WFR	Tule Complex and Waterway
California condor <i>Gymnogyps californianus</i>	FE/SE, CFP/CDF	AGS, BAR, BOW, BOP, JPN, MCP, MHC, PGS, PPN, RFR, SMC, WTF	Tule Complex
California spotted owl <i>Strix occidentalis occidentalis</i>	SOC/SSC/FSS	BOP, JPN, LPN, MHC, MRI, PPN, RFR, RDW, SMC, VRI, WFR	Tule Complex and Waterway
Common loon <i>Gavia immer</i>	--/SSC/--	FEW, LAC, RIV	Tule River Waterway
Cooper's hawk <i>Accipiter cooperii</i>	--/SSC/--	AGS, BOW, BOP, JP, MCP, MHC, MRI, PGS, PPN, RFR, SMC, RDW, VRI, WFR	Tule Complex
Ferruginous hawk <i>Buteo regalis</i>	SOC/SSC/--	AGS, BOW, BOP, FEW, PGS, VRI, WTM	Tule Complex
Fulvous whistling duck <i>Dendrocygna bicolor</i>	--/SSC/--	FEW, LAC, RIV	Tule River Waterway
Golden eagle <i>Aquila chrysaetos</i>	--/CFP, SSC/CDF	AGS, BOW, BOP, FEW, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDW, SMC, VRI, WTM, WFR	Tule Complex
Horned lark <i>Eremophila alpestris</i>	--/SSC/--	AGS, BOW, BOP, PGS, VRI, WTM	Tule Complex
Loggerhead shrike <i>Lanius ludovicianus</i>	SOC/SSC/--	AGs, BOW, BOP, JPN, MHC, MRI, PGS	Tule Complex
Long-eared owl <i>Asio otus</i>	--/SSC/--	AGS, ASP, BOW, BOP, MCP, MHC, MRI, PGS, RIV, SMC, VRI, WTM, WFR	Tule Complex and Waterway
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, FEW, LAC, MCP, MHC, MRI, PGS, PPN, RDW, RIV, SMC, VRI, WTM, WFR	Tule Complex, Tule Waterway
Mountain plover <i>Charadrius montanus</i>	FPT/SSC/--	AGS, PGS	Tule Complex

**Table 4.5-65 Bundle 19 – Tule River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Tule River Project (FERC 1333)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
Northern goshawk <i>Accipiter gentilis</i>	SOC/SSC/ CDF, FSS	BOW, BOP, JPN, MC, MHC, MRI, PPN, RFR, SMC, YFR, WF	Upper Bass Lake, Bass Lake Complex, Kerckhoff Complex, Helms Complex, Haas Complex
Northern harrier <i>Circus cyaneus</i>	--/SSC/--	AGS, BOW, BOP, FEW, JPN, LAC, MCP, PGS, RIV, SMC, VRI, WTM	Tule Complex
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/CDF	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDW, RIV, SMC, VRI, WTM, WFR	Tule Waterway
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	AGS, BOW, BOP, FEW, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDW, SMC, VRI, WTM, WFR	Tule Complex and Waterway
Purple martin <i>Progne subis</i>	--/SSC/--	AGS, BOW, BOP, FEW, LAC, MHC, MRI, PGS, RDW, RIV, SMC, VRI, WTM, WFR	Tule Complex, Tule Waterway
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	AGS, BOW, BOP, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFR, SMC, VRI, WTM, WFR	Tule Complex
Short-eared owl <i>Asio flammeus</i>	--/SSC/--	AGS, BOW, BOP, FEW, JPN, MHC, MRI, PGS, PPN, RDW, SMC, VRI, WTM, WFR	Tule Complex
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--	AG, BOW, BOP, MCP, MHC, PGS, PPN, VRI, WTM	Tule Complex
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/--	AGS, FEW, PGS, VRI, WTM	Tule Waterway
Vaux's swift <i>Chaetura vauxi</i>	--/SSC/--	BOP, FEW, JPN, LAC, MCP, MHC, MRI, PGS, PPN, RFR, RWR, RIV, SMC, VRI, WTM, WFR	Tule Complex and Waterway
Western burrowing owl <i>Athene cunicularia</i>	SOC/SSC/ BLMS	AGS, BOW, BOP, MCP, PGS, PPN, VRI, WTM	Tule Complex
White-faced ibis <i>Plegadis chihi</i>	SOC/SSC/--	AGS, FEW, LAC, RIV, WTM	Kerckhoff Waterway, Haas Waterway
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	MRI, VRI, WTM	Tule Complex and Waterway
Wood stork <i>Mycteria americana</i>	--/SSC/--	L, R	Tule Waterway
Yellow-breasted chat <i>Icteria virens</i>	--/SSC/--	VRI	Tule Waterway

**Table 4.5-65 Bundle 19 – Tule River Special-Status Wildlife Species That Occur or Potentially Could Occur Within the Tule River Project (FERC 1333)**

Common Name and Scientific Name	Status: USFWS/State/Other	Habitat	Facilities
<b>Mammals</b>			
Greater western mastiff bat <i>Eumops perotis californicus</i>	--/SSC/--	AGS, BOW, BOP, MCH, MRI, PPN, VRI, VOW, WTM	Tule River PH, Access Roads and Waterway
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS	AG, BOW, BOP, JPN, LPN, MHC, MRI, PPN, RFR, VOW, RIV, SMC, VRI, WTM, WFR	Tule River Complex
Ringtail <i>Bassariscus astutus</i>	--/CFP/--	WFR, WTM, VOW, VRI, SMC, PPN, AGS, BOW, BOP, JPN, MCH, MRI	Tule River Complex and Waterways
San Joaquin kit fox <i>Vulpes macrotis</i>	FE/ST/--	AGS, BOW, BOP, VRI, VOW	Tule River PH, Access Roads
Townsend's Western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SOC/SSC/FSS, BLMS	AG, R, BOW, BOP, JPN, LPN, MCH, MRI, PPN, RFR, WTM, WFR, VOW, SMC	Tule River PH, Access Roads
Western red bat <i>Lasiurus blossevillei</i>	--/SSC/FSS	AGS, BOW, BOP, JPN, LAC, MCP, MRI, PPN, RIV, SMC, VRI, VOW, WTM, WFR	Tule River Complex

Notes: Scientific names are based on the following sources:

Special-Status Species:

Federal:

FE = Federally listed as endangered  
 FT = Federally listed as threatened  
 SOC = Federal species of concern  
 FC = Federal Candidate species

State:

SE = State listed as endangered  
 ST = State listed as threatened  
 SSC = State species of special concern  
 CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species  
 BLM = Bureau of Land Management sensitive species  
 CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

Bald eagles occur in the project as winter migrants but do not nest in the area. Peregrine falcons may occur as migrants or as residents; however, no data was available to confirm this. The California condor may occur in its quest for food but not as a resident of the area. No evidence was found that the San Joaquin kit fox was resident to the area. A golden eagle nest occurred one mile from Camp Wishon in 1984. The project land was considered too low in elevation to be optimal habitat for the northern goshawk. California spotted owl nests were confirmed within the project boundaries. The Northern spotted owl does not occur this far south in the Sierra Nevada. It can be noted in the special-status species Table 4.5-65 that habitat exists for a number of the sensitive avian species.

Bats have inhabited the powerhouse in the past. Pacific Gas and Electric Company constructed barriers in the upper reaches of the powerhouse to prevent them using the powerhouse as a roost site. The bats are considered nuisances because they create unsanitary conditions that the facility managers wish to eliminate. Bat surveys have not been conducted; therefore, the species of bats that have used the facility are unknown.

Western garter snake, two-striped garter snake, coachwhip, tiger salamander, California newt (*Taricha torosa*), ensatina (*Ensatina eschscholtzi*) and western pond turtles are expected within the project boundary. Habitat exists for the foothill yellow-legged frog, although its presence has not been recorded for this area.

**Botanical Resources.** Table 4.5-66 presents special-status plant species that may occur in Bundle 19.

**Table 4.5-66 Bundle 19 – Tule River Special-Status Plant Species That Occur or Potentially Could Occur Within the Tule River Project (FERC 1333)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/Other	Habitat	Facilities
<i>Brodiaea insignis</i> Kaweah brodiaea	SOC/E/1B/--	CmWld, LCFrs / mesic	Access Roads, Doyle Springs, Watershed lands
<i>Calochortus striatus</i> alkali mariposa lily	SOC/--/1B/BLMS	Chprl, ChScr, MDScr, Medws (alkaline, mesic)	Wishon Pump Station, Access Roads, Doyle Springs
<i>Clarkia springvillensis</i> Springville clarkia	T/E/1B/--	Chprl, CmWld, VFGrS / granitic	Access Roads, Doyle Springs, Watershed lands
<i>Cupressus arizonica</i> ssp. <i>nevadensis</i> Piute cypress	--/--/1B/BLMS	CCFrS, Chprl, CmWld, PJWld	Wishon Pump Station, Access Roads, Doyle Springs, Watershed lands
<i>Eriogonum nudum</i> var. <i>murinum</i> mouse buckwheat	SOC/--/1B/BLMS	Chprl, CmWld, VFGrS / sandy	Access Roads, Doyle Springs, Watershed lands
<i>Fritillaria striata</i> striped adobe-lily	SOC/T/1B/--	CmWld, VFGrS/ usually clay	Access Roads, Doyle Springs, Watershed lands
<i>Linanthus serrulatus</i> Madera linanthus	--/--/1B/BLMS	CmWld, LCFrs	Access Roads, Doyle Springs, Watershed lands



**Table 4.5-66 Bundle 19 – Tule River Special-Status Plant Species That Occur or Potentially Could Occur Within the Tule River Project (FERC 1333)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/Other	Habitat	Facilities
<i>Mimulus acutidens</i> Kings River monkeyflower	--/3/FSS	CmWld, LCFrs	Access Roads, Doyle Springs, Watershed lands
<i>Mimulus norrisii</i> Kaweah monkeyflower	--/1B/BLMS	Chprl, CmWld / carbonate, rocky	Wishon Pump Station, Access Roads, Doyle Springs, Watershed lands
<i>Mimulus pictus</i> calico monkeyflower	--/1B/BLMS	BUFRs, CmWld / granitic	Access Roads, Doyle Springs, Watershed lands
<i>Navarretia setiloba</i> Piute Mtns. navarretia	SOC/1B/BLMS	CmWld, PJWld, VFGrS / clay or gravelly loam	Access Roads, Doyle Springs, Watershed lands
<i>Pseudobahia peirsonii</i> San Joaquin adobe sunburst	T/E/1B/BLMS	CmWld, VFGrS / adobe clay	Access Roads, Doyle Springs, Watershed lands
<i>Sphenopholis obtusata</i> prairie wedge grass	--/2/--	CmWld	Access Roads, Doyle Springs, Watershed lands

NOTES: Scientific names are based on the following sources: Hickman 1993.

Status: Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

USFWS: United States Fish and Wildlife Service status.

E = Federally listed as endangered.

T = Federally listed as threatened.

PE = Proposed endangered.

PT = Proposed threatened.

C = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

SOC = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

State: Californai status.

E = Endangered; Species whose continued existence in California is jeopardized.

T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

R = Rare

CNPS: California Native Plant Society listing.

1B = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.

2 = Plants rare, threatened or endangered in California but more common elsewhere.

3 = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

Other: Forest Service and Bureau of Land Management designations.

FSS = Forest Service Sensitive Species

BLMS = Bureau of Land Management Special Status Plants

Habitats:

AlpBR = Alpine Boulder and Rock Field

BgFns = Bogs and Fens

BUFRs = Broadleaved Upland Forest

CCFRs = Closed-Cone Conifer Forest

Chprl = Chaparral

ChScr = Chenopod Scrub

Cmwld = Cismontane Woodland

LCFRs = Lower Montane Conifer Forest

Medws = Meadows and Seeps

MshSw = Marshes and Swamps

PJWld = Pinyon and Juniper Woodland

Plyas = Playas

RpFRs = Riparian Forest

RpScr = Riparian Scrub

CoDns = Coastal dunes	RpWld = Riparian Woodland
CoPrr = Coastal Prairie	SCFrS = Subalpine Conifer Forest
CoScr = Coastal Scrub	UCFrS = Upper Montane Conifer Forest
GBGrS = Great Basin grassland	VFGrs = Valley and Foothill Grassland
GBScr = Great Basin Scrub	VnPls = Vernal Pools

### **Bundle 20: Kern Canyon**

#### ***Kern Canyon (FERC 0178)***

The Kern Canyon Powerhouse is located at the mouth of Kern Canyon, approximately 15 miles from Bakersfield. All facilities are located below 1,000 feet msl. This project is a run-of-the-river facility and consequently is not able to significantly change operational methods.

The area encompassing the project is rather dry and its natural setting is influenced by its proximity to the southern San Joaquin Valley, the Tehachapi Mountains, Mojave Desert, and the southern Sierra Nevada.

***Vegetation Communities.*** A project tunnel traverses Sequoia National Forest lands, while the powerhouse is located on private lands. The tunnel is underground on the very steep south-facing slope above the Kern River. The steepness of the hillside plus the amount of exposed bedrock and talus suggests the hillside is rather unstable and not of significant value to resident wildlife. The lower Kern watershed in the southern Sierra Nevada is an area influenced by its proximity to the Tehachapi Mountains to the southwest, the San Joaquin Valley to the west, and the Mojave Desert to the southeast. In this floristic mixture, the habitats are primarily Sierran, but also transitional. The habitat is a mix of disturbed, non-native grasslands with some species of saltbush scrub and chaparral present (Table 4.5-67). A thin, intermittent strip of valley foothill riparian habitat is present along the Kern River and consists mostly of sycamore trees and a few willows.

The Kern Canyon project consists of a powerhouse located downstream from Southern California Edison Company (SCE) power generating facilities. As such, it is a run of the river facility operating on return flows and dependent ultimately on Lake Isabella. The diverted reach is about 1.6 miles long. The stream is incised into a very steep-walled canyon. It has a mostly boulder and cobble substrate, with a gradient of two to three percent and an average floodplain width of 200 feet. Highway 178 parallels the stream throughout and encroaches on its floodplain in several locations.

Field reconnaissance during the summer of 2000 indicated that conditions on lands within the project boundary are similar to the upstream SCE project land that has been studied extensively due to recent relicensing procedures. Riparian vegetation consists of a narrow tree or shrub corridor of sycamore, willow, and occasional oak or cottonwood on limited fluvial deposits and on the boundary between the stream channel and upland slopes. It does not readily fall into any riparian class of Holland (1986) or Harris (1989). The corridor varies from continuous to patchy and riparian patch size is small (< 0.01 acres).

**Table 4.5-67 Bundle 20 – Kern Canyon Vegetation Communities Associated With the Kern Canyon Project (FERC 0178)**

Project Features	Foothill Communities	Transition Communities	Montane Communities	Water Elements
	AGS	VRI	RFR	RIV
<b>Generation Facilities</b>				
Kern River Diversion Dam	X	X		
Kern Canyon Tunnel	X			
Powerhouse	X			
<b>Project Waterways</b>				
Kern River		X		X
<b>Watershed Lands</b>				
Watershed Lands	X			

**NOTES:** Generation Facilities: Those human-made facilities that are directly related to power generation and are not part of the natural landscape. Includes powerhouses, penstocks, forebays, afterbays, canals, flumes, etc. Project Waterways: Waterways (e.g., lakes, reservoirs, rivers, and creeks) in which water levels are affected by Pacific Gas and Electric Company power generation operations. Watershed Lands: Pacific Gas and Electric Company lands that are not regulated by FERC.

**Habitats:**

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
DFR = Douglas-Fir	RIV = Riverine
FEW = Fresh Emergent Wetland	SCN = Subalpine Conifer
JPN = Jeffrey Pine	SGB = Sagebrush
LAC = Lacustrine	SMC = Sierra Mixed Conifer
LPN = Lodgepole Pine	VOW = Valley Oak Woodland
LSG = Low Sagebrush	VRI = Valley Foothill Riparian
MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

Near the tunnel spillway, there is a small cluster of fan palm next to the river. The riparian corridor is most dense at the upper and lower ends of the reach.

Riparian vegetation studies upstream from the Kern River project concluded that the factors limiting riparian vegetation in the Kern River corridor include substrate, flooding, recreation and grazing (Exhibit E, FERC 1930, 1994). Flow diversion was not considered to have significant impacts on riparian vegetation. In the Kern River Project, grazing does not occur and recreation is limited due to access. Substrate availability is the main factor limiting the extent and diversity of riparian vegetation.

**Wildlife Resources.** A query of CNDDDB and WHR results are included in Table 4.5-68 and show the special status wildlife species that may potentially occur within the Kern Canyon Project.

The simple hillside habitat structure, dry conditions, and unstable slope are not conducive to the formation of suitable habitat for special-status species. The limited riparian habitat along the river also is not conducive to establishment of populations of special-status species. The area may be visited by transient species, particularly birds and bats. Bats may occur in the powerhouse and in nearby rock outcroppings and trees. Surveys have not been conducted in the area for sensitive bat species; however, the western pond turtle occurs within the Kern River drainage, but suitable habitat, particularly for nesting, is limited below Democrat Dam, which is upstream of Pacific Gas and Electric Company's facilities. Sensitive garter snakes are also likely to occur further upstream where suitable habitat is present.

**Table 4.5-68 Bundle 20 – Kern Canyon Special-Status Species That Occur or Potentially Could Occur Within the Kern Canyon Project (FERC 0178)**

Common Name and Scientific Name	Status: Fed/State/Other	Habitat	Facilities
<b>Amphibians</b>			
California tiger salamander <i>Ambystoma californiense</i>	FC/CFP, SSC/--	AGS, BOW, BOP, RIV, VFR, VOW	Tule Complex and Waterway
Foothill yellow-legged frog <i>Rana boylei</i>	SOC/CFP/FSS, BLMS	AGS, BOW, BOP, MCP, MHC, MRI, PPN, RIV, VFR, WTM, WFN	Kern Complex and Waterway
Kern Canyon slender salamander <i>Batrachoseps simatus</i>	SOC/CFP, ST/FSS	BOW, BOFP, MCP, MRI, VFR, VOW	Kern Complex and Waterway
Tehachapi slender salamander <i>Batrachoseps stebbinsi</i>	SOC/CFP, ST/FSS	BOW, BOP, MRI, VFR	Kern Complex and Waterway
Western spadefoot <i>Spea hammondi</i>	SOC/CFP, SSC/BLMS	AGS, BOW, BOP, FEW, LAC, PGS, RIV	Kern River Waterway
<b>Reptiles</b>			
California legless lizard <i>Anniella pulchra pulchra</i>	SOC/CFP, SSC/FSS	BOW, BOP, PG, VFR	Kern Complex
Coast horned lizard <i>Phrynosoma coronatum blainvillei</i>	SOC/CFP, SSC/FSS	AGS, BOW, BOP, MHC, PGS, PPN, VFR	Kern River Complex
Two-striped garter snake <i>Thamnophis hammondi</i>	--/CFP, SSC/FSS	AGS, BOW, BOP, FEW, JPN, LAC, MCP, MCH, MRI, PPN, RIV, VFR, WTM	Kern Complex and Waterway
Western pond turtle <i>Clemmys marmorata</i>	SOC/CFP, SSC/FSS	AGS, BOW, BOP, LAC, FEW, MCP, MHC, MRI, PGN, PPN, RIV, SMC, VFR, WTM, WFN	Kern Complex and Waterway
<b>Birds</b>			
Bald eagle <i>Haliaeetus leucocephalus</i>	FT/CFP, SE/CDF	AGS, BOW, BOP, FEW, JPN, LAV, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RIV, SMC, VFR, WTM, WFN	Tule Complex, Kern Complex

**Table 4.5-68 Bundle 20 – Kern Canyon Special-Status Species That Occur or Potentially Could Occur Within the Kern Canyon Project (FERC 0178)**

Common Name and Scientific Name	Status: Fed/State/Other	Habitat	Facilities
Black swift <i>Cypseloides niger</i>	--/SSC/--	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDR, RIV, SMC, VFR, WTM, WFN	Kern Complex, Kern Waterway
Cooper's hawk <i>Accipiter cooperii</i>	--/SSC/--	AGS, BOW, BOP, JPN, MCP, MHC, MRI, PGS, PPN, RFN, SMC, RWR, VFR, WFN	Kern Complex
Golden eagle <i>Aquila chrysaetos</i>	--/CFP, SSC/CDF	AGS, BOW, BOP, FEW, JPN, LPN, MCP, RFR, RDR, SMC, VFR, WTM, WFN	Kern Complex
Horned lark <i>Eremophila alpestris</i>	--/SSC/--	AGS, BOW, BOP, PGS, VFR, WTM	Kern Complex
Loggerhead shrike <i>Lanius ludovicianus</i>	SOC/SSC/--	AGS, BOW, BOP, JPN, MHC, MRI, PGS	Kern Complex
Long-eared owl <i>Asio otus</i>	--/SSC/--	AGS, BOW, BOP, MCP, MHC, MRI, PGS, RIV, SMC, VFR, WTM, WFN	Kern Waterway
Merlin <i>Falco columbarius</i>	--/SSC/--	BOW, BOP, FEW, LAC, MCP, MHC, MRI, PGS, PPN, RDR, RIV, SMC, VFR, WTM, WFN	Kern Waterway
Peregrine falcon <i>Falco peregrinus</i>	--/SE, CFP/CDF	AGS, BOW, BOP, JPN, LAC, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDR, RIV, SMC, VFR, WTM, WFN	Kern Waterway
Prairie falcon <i>Falco mexicanus</i>	--/SSC/--	AGS, BOW, BOP, FEW, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFR, RDR, SMC, SFR, VFR, WTM, WFN	Tule Complex and Waterway
Purple martin <i>Progne subis</i>	--/SSC/--	AGS, BOW, BOP, FEW, LAC, MHC, MRI, PGS, RIV, SMC, VFR, WTM, WFN	Kern Waterway
Sharp-shinned hawk <i>Accipiter striatus</i>	--/SSC/--	AGS, BOW, BOP, JPN, LPN, MCP, MHC, MRI, PGS, PPN, RFR, SMC, VFR, WTM, WFN	Kern Complex
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--	AGS, BOW, BOP, MCP, MHC, PGS, PPN, VFR, WTM	Kern Complex
Tricolored blackbird <i>Agelaius tricolor</i>	SOC/SSC/--	AGS, FEW, PGS, VFR, WTM	Kern Complex and Waterway
Vaux's swift <i>Chaetura vauxi</i>	--/SSC/--	BOP, FEW, JPN, LAC, MCP, MHC, MRI, PGS, PPN, RFR, RDR, RIV, SMC, VFR, WTM, WFN	Kern Complex, Kern Waterway
Willow flycatcher <i>Empidonax traillii</i>	--/SE/FSS	MRI, VFR, WTM	Kern Complex, Kern Waterway
Yellow-breasted chat <i>Icteria virens</i>	--/SSC/--	VFR	Kern Waterway

**Table 4.5-68 Bundle 20 – Kern Canyon Special-Status Species That Occur or Potentially Could Occur Within the Kern Canyon Project (FERC 0178)**

Common Name and Scientific Name	Status: Fed/State/Other	Habitat	Facilities
<b>Mammals</b>			
Greater western mastiff bat <i>Emops perotis californicus</i>	SOC/SSC/BLMS	AGS, BOW, BOP, MCH, MRI, PPN, VFR, VOW, WTM	Kern Canyon Complex and Waterway
Pallid bat <i>Antrozous pallidus</i>	--/SSC/FSS, BLMS	AGS, BOW, BOP, JPN, LPN, MCH, MRI, PPN, RFR, VOW, RIV, SMC, VFR, WTM, WFN	Kern Canyon Complex
Ringtail <i>Bassariscus astutus</i>	--/CFP/--	WFN, WTM, VOW, VFR, SMC, PPN, AGS, BOW, BOP, JPN, MCH, MRI	Kern Canyon Complex
San Joaquin kit fox <i>Vulpes macrotis</i>	FE/ST/--	AGS, BOW, BOP, VFR, VOW	Kern Canyon Complex
Townsend's big-eared bat <i>Plecotus tonsendii</i>	SOC/SSC/FSS, BLMS	AGS, RIV, BOW, BOP, JPN, LPN, MCH, MRI, PPN, RFR, WTM, WFR, VOW, SMC	Kern Canyon Complex
Western red bat <i>Lasiurus blossevillei</i>	--/SSC/FSS	AGS, BOW, BOP, JPN, LIV, MCH, MRI, PPN, RIV, SMC, VFR, VOW, WTM, WFN	Kern Canyon Tunnel, Kern Canyon PH

Notes: Scientific names are based on the following sources:

Special-Status Species:

Federal:

FE = Federally listed as endangered  
 FT = Federally listed as threatened  
 SOC = Federal species of concern  
 FC = Federal Candidate species

State:

SE = State listed as endangered  
 ST = State listed as threatened  
 SSC = State species of special concern  
 CFP = California Fully Protected species

Other:

FSS = Forest Service sensitive species  
 BLM = Bureau of Land Management sensitive species  
 CDF = California Department of Forestry and Fire Protection sensitive species

Habitats:

AGS = Annual Grassland	MHW = Montane Hardwood
BOP = Blue Oak-Foothill Pine	MRI = Montane Riparian
BOW = Blue Oak Woodland	PPN = Ponderosa Pine
CRC = Chamise-Redshank Chaparral	RFR = Red Fir
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MCP = Montane Chaparral	WFR = White Fir
MCH = Mixed Chaparral	WTM = Wet Meadow
MHC = Montane Hardwood-Conifer	

**Botanical Resources.** Table 4.5-69 presents special-status plant species which may occur in Bundle 20.

**Table 4.5-69 Bundle 20 – Kern Canyon Special-Status Plant Species That Occur or Potentially Could Occur Within the Kern Canyon Project (FERC 0178)**

Scientific Name and Common Name	Status: USFWS/State/CNPS/ Other	Habitat	Facilities
<i>Calycadenia villosa</i> dwarf calycadenia	--/1B/--	ChrpI, CmWld, Medws, VFGrS / rocky	Kern River Diversion Dam, Kern Canyon Tunnel and Powerhouse
<i>Delphinium recurvatum</i> recurved larkspur	SOC/--/1B/BLMS	ChScr, CmWld, VFGrS / alkaline	Kern River Diversion Dam, Kern Canyon Tunnel and Powerhouse
<i>Fritillaria striata</i> striped adobe-lily	SOC/T/1B/--	CmWld, VFGrS / usually clay	Kern River Diversion Dam, Kern Canyon Tunnel and Powerhouse
<i>Heterotheca villosa</i> var. <i>shevockii</i> Shevock's hairy golden-aster	--/--/BLMS	Chprl, CmWld / sandy	Kern River Diversion Dam, Kern Canyon Tunnel and Powerhouse
<i>Layia heterotricha</i> pale-yellow layia	SOC/--/1B/BLMS	CmWld, PJWld, VFGrS/ alkaline or clay	Kern River Diversion Dam, Kern Canyon Tunnel and Powerhouse

**NOTES:** Scientific names are based on the following sources: Hickman 1993.

**Status:** Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

**USFWS:** United States Fish and Wildlife Service status.

**E** = Federally listed as endangered.

**T** = Federally listed as threatened.

**PE** = Proposed endangered.

**PT** = Proposed threatened.

**C** = As of February 28, 1996 (Federal Register Vol. 61, No. 40), the USFWS has reclassified former Candidate Category, 2, and 3 species as "Candidates." Species formerly considered Category 1 are generally now considered Candidate species. Species formerly considered Category 2 and 3 are of concern to the agency but have no specific status with regard to the Federal Endangered Species Act.

**SOC** = Species of Concern, May be endangered or Threatened. Not enough biological information has been gathered to support listing at this time.

**State:** Californai status.

**E** = Endangered; Species whose continued existence in California is jeopardized.

**T** = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.

**R** = Rare

**CNPS:** California Native Plant Society listing.

**1B** = Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. Plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.

**2** = Plants rare, threatened or endangered in California but more common elsewhere.

**3** = Plants about which we need more information-a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them if lacking.

**Other:** Forest Service and Bureau of Land Management designations.

**FSS** = Forest Service Sensitive Species

**BLMS** = Bureau of Land Management Special Status Plants

**Habitats:**

**AlpBR** = Alpine Boulder and Rock Field

**BgFns** = Bogs and Fens

**BUFrS** = Broadleaved Upland Forest

**CCFrS** = Closed-Cone Conifer Forest

**Chprl** = Chaparral

**ChScr** = Chenopod Scrub

**Cmwld** = Cismontane Woodland

**CoDns** = Coastal dunes

**CoPrr** = Coastal Prairie

**CoScr** = Coastal Scrub

**LCFrS** = Lower Montane Conifer Forest

**Medws** = Meadows and Seeps

**MshSw** = Marshes and Swamps

**PJWld** = Pinyon and Juniper Woodland

**Plyas** = Playas

**RpFrS** = Riparian Forest

**RpScr** = Riparian Scrub

**RpWld** = Riparian Woodland

**SCFrS** = Subalpine Conifer Forest

**UCFrS** = Upper Montane Conifer Forest

GBGrS = Great Basin grassland  
GBScr = Great Basin Scrub

VFGrs = Valley and Foothill Grassland  
VnPls = Vernal Pools

### 4.5.5 STANDARDS OF SIGNIFICANCE

Table 4.5-70 identifies the standards of significance used to analyze potential impacts to wetlands and terrestrial biological resources. Standards of significance were developed through a review of pertinent environmental regulations pertaining to biological resources, including: CEQA; California Fish and Game Code; Federal Endangered Species Act, California Endangered Species Act; and the Federal Clean Water Act (40 CFR 230 Section 404[b][1]). Relevant regional policies and databases from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and U.S. Forest Service were also considered, as were local general plan policies and ordinances that have been adopted by cities and counties on land within project boundaries. The standards of significance for impact criteria that do not correlate to existing regulations and policies (e.g., habitat fragmentation), were developed using the best professional judgment of the project team based on specific project site conditions.

### 4.5.6 ANALYTICAL METHODS

This section provides a discussion on the analytical methodologies that were used when assessing wetlands and terrestrial biological resources within the lands associated with the project

#### 4.5.6.1 Establishing the Environmental Baseline

Development of the setting was based on review of biologically related reports that were developed for the facilities of the various bundles within this watershed. The reports included discussions with resource agency biologists and other biologists knowledgeable of the area; facility visits with Pacific Gas and Electric Company management personnel; field reconnaissance surveys; and personal knowledge of the area.

The project team, along with representatives from Pacific Gas and Electric Company, conducted a series of reconnaissance-level site visits to each of the regional bundles in May 2000. The purpose of these site visits was to familiarize the project team with the physical and geographical features of the project land and to generally characterize vegetative communities and biological characteristics of the region. This visit included viewing some or all of the major facilities (powerhouses, dams, reservoirs, etc.) in each license and bundle.

The California Gap Analysis Project (Biogeography Lab - UC Santa Barbara 1998) was primarily used to identify habitat within and associated with the project lands and facilities. Habitat types are based on the classification system described in Mayer and Laudenslayer, Jr. [1988] *A Guide to Wildlife Habitat*. Riparian communities are also described as per the *Riparian Communities of the Sierra Nevada and Their Environmental Relationships and Impacts of Hydroelectric Development on Riparian Vegetation in the Sierra Nevada Region, California, USA* (Harris 1992.)



**Table 4.5-70 Significance Criteria Table – Wetlands and Terrestrial Biological Resources**

Impact Statement	Method to Measure By	Significance Criteria	Justification
1. Land use alteration may result in adverse effects to listed wildlife and plant species and species proposed for listing species under the Federal Endangered Species Act and/or California Endangered Species Act.	Loss of any known habitat or potential habitat	Greater than 0 acres	Federal Endangered Species Act; California Endangered Species Act; CEQA (Article 5, Section 15065)
2. Land use alteration may result in adverse effects to non-listed special-status wildlife and plant species (i.e., species of concern, BLM and USFS sensitive) and associated habitat.	Qualitative assessment based on specific site conditions habitat (active raptor nests, swallow nests, bat roosts)	Any loss of raptor nests Any loss of non-listed special-status plant species Any loss of aquatic habitats that could support non-listed special-status wildlife	Best Professional Judgment CEQA (Article 5, Section 15065); California Fish & Game Code (Section 3503.5); Migratory Bird Treat Act (16 U.S.C. 703-711); California Fish & Game Code Sections 1900-1913 (California Native Plant Protection Act)
3. Land development and management changes may result in habitat degradation as measured by potential habitat fragmentation and disruption to migration corridors.	Presence of important deer herd areas within impact area  Configuration of land area to public lands	Any development on these parcels  Any fragmentation which results in the formation of biogeographical islands or removes a habitat linkage between public land holdings	CEQA (Article 5, Section 15065)
4. Land use alterations may result in adverse effects to sensitive native plant communities including wetlands and riparian corridors.	Loss of known populations or potential habitat	Greater than 0 acres or 0 individuals	CEQA (Article 5, Section 15065); California Fish & Game Code Sections 1900-1913 (California Native Plant Protection Act); Clean Water Act (40 CFR, 230 Section 404[b](1)) CEQA (Appendix G)
5. Changes in hydroelectric operations could result in adverse effects to non-fisheries biotic resources including riparian and lacustrine vegetation communities.	Hydrological change resulting in alteration in existing habitat or populations	Any change in existing habitat or species populations	CEQA (Article 5, Section 15065)

Botanical species potentially occurring within the project lands and facilities lists were derived through California Department of Fish and Game (CDFG) consultation, California Natural Diversity Database (CNDDDB), United States Forest Service (USFS) consultation and sensitive species lists, California Native Plant Society's (CNPS) Electronic Inventory modeling, Pacific Gas and Electric Company's Proponents Environmental Assessment (PEA), and FERC license Exhibit E, Exhibit S, and Exhibit W.

Terrestrial species potentially occurring within the project lands and facilities lists were derived using CDFG's California Wildlife and Habitat Relationships (WHR) modeling; California Natural Diversity Data Base (CNDDB); USFS consultations and sensitive species lists; FERC license Exhibit E Exhibit S, and Exhibit W; Pacific Gas and Electric Company's PEA; United States Fish and Wildlife Service (USFWS) Correspondence PPN 2715 *Species List, Pacific Gas and Electric Company (PG&E) Valuation and Divestiture of Hydroelectric Generation and Related Assets, California* August 29, 2000, CDFG's Special Animals List, and a series of reports received from Pacific Gas and Electric Company through formal data requests. Those species whose regional distribution or suitable habitats are not located near project facilities were eliminated from further study. Specific agency personnel were contacted to assist in identifying the special-status species within the area of the project facilities and watershed lands, Pacific Gas and Electric Company's hydrologic operations, grazing leases, timber harvest plans, and local deer herd information. Contacts included:

- Representatives of the Lassen and Shasta-Trinity National Forests
- Representatives of the Nevada City District of the USFS Tahoe National Forest
- Representatives of the Placerville Ranger District biologist,
- Representatives of the El Dorado National Forest,
- Representatives of the Amador Ranger District
- Representatives of Stanislaus National Forest
- Representatives California Department of Forestry and Fire Protection
- Representatives Sierra Pacific Industries
- Representatives CDFG Deer Management Program
- Representatives of the USFWS

All of the resources and resource locations identified through the above methods were digitized to an electronic format and placed in a Geographic Information Systems (GIS) project file.

##### **4.5.6.2 Project Impact Analysis**

Chapter 3 presents assumptions of the five primary project actions including potential land development activities on non-FERC lands, potential timber activities on project lands, potential mineral activities on project lands, potential water rights and contract changes, and future changes to operation and maintenance of hydroelectric facilities. These basic project assumptions were evaluated for potential to create impacts within and adjacent to the project boundaries.

Potential land development activities on non-FERC lands, potential timber activities, and mineral activities on project lands were digitized and placed into the GIS project file which allowed the identification of resources or potential resources within and adjacent to the project lands and facilities. Thresholds of significance were applied to the project impacts to determine the significance of the impact.

As discussed in Agricultural Resources Section 4.8, no additional grazing activities beyond current levels are contemplated and no impacts to biological resources associated with grazing activities were assumed.

Impacts to special-status species and riparian habitat due to altered daily and seasonal flows were qualitatively analyzed based on hydrological modeling data and potential for hydroelectric operations flexibility, compared against both known and potential species occurrence information for a specific reach of water. Impacts associated with fluctuating reservoir levels were assessed qualitatively based on hydrological modeling data compared against known both known and potential species occurrence information for a specific water body.

#### **4.5.7 INTRODUCTION TO IMPACTS AND MITIGATION MEASURES**

For Terrestrial Biology, the following impacts have been identified:

- Impact 5-1: The project may result in adverse effects to wildlife and plant species listed and proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act. (Significant)
- Impact 5-2: The project may result in adverse effects to non-listed special-status wildlife and plant species (i.e., species of concern, BLM, and USFS sensitive) and associated habitats. (Significant)
- Impact 5-3: The project could result in habitat degradation as measured by potential habitat fragmentation and disruption to migration corridors. (Significant)
- Impact 5-4: The project may result in adverse effects to sensitive native plant communities, including wetlands and riparian corridors. (Significant)

Where impacts are significant, mitigation measures are recommended at the conclusion of the analysis of each impact.

#### **4.5.8. IMPACT 5-1: IMPACT, ANALYSIS, AND MITIGATION MEASURES**

**Impact 5-1: The project may result in adverse effects to wildlife and plant species listed and proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act. (Significant)**

##### **4.5.8.1 Impact 5-1: Shasta Regional Bundle**

The project may result in the permanent loss of habitats that support species protected by the California and Federal Endangered Species Acts. Species listed under these two acts are provided with a high level of protection because they are at risk of extinction. Any impact to these species is therefore considered significant.

##### **Bundle 1: Hat Creek - Hat Creek 1 and 2 (FERC 2661)**

There are several habitats and sensitive species in the vicinity of Bundle 1. Please see Figures 4.5-3 and 4.5-7 for mapped information.

##### ***Land Development***

Land use development in Chapter 3 identifies development for the Hat Creek land area as resulting in approximately 594 equivalent dwelling units (EDUs) built on 2,969 acres in the land area. The resulting development could substantially degrade the habitat value within the land area and result in impacts to all TES using this habitat.

Future residential development in the vicinity of Hat Creek could result in a variety of adverse effects that would contribute to a *significant impact* to listed invertebrate species, including the potential loss of individuals of Shasta crayfish and designated critical habitat for the species, as well as the loss of individuals of valley elderberry longhorn beetle. Specific adverse effects contributing to this *significant impact* include point source pollution, increased erosion, fugitive dust, and direct habitat loss.

No listed amphibian or reptile species have the potential to occur within the Hat Creek Bundle boundary; therefore, land development changes will have *no impact* to these species.

Of the eight listed bird species with potential to occur on lands within the Hat Creek Bundle, three were observed during a 1997 bird survey: bald eagle, bank swallow, and greater sandhill crane. Pacific Gas and Electric Company is currently a participant in the Bald Eagle Nesting Territory management plan for Baum Lake. Future actions associated with residential development by a new owner could be in conflict with conservation measures contained in this plan, which would be significant. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) could also have an effect on one or more listed bird species, particularly the three species which have been recently observed within the Hat Creek Bundle area. Increased residential development and use in areas adjacent to Hat Creek, Crystal Lake, Baum Lake, and Cassel Pond could disrupt both nesting and/or foraging activities of bald eagle, greater sandhill crane, and bank swallow. Both loss and degradation of habitat, increased noise levels, and introduction of feral animals/pets that could prey on nesting birds are the primary adverse effects that could occur. These adverse effects could result in a *significant impact* to listed bird species.

Increased development in the Hat Creek vicinity, particularly adjacent to Hat Creek, Crystal Lake, Baum Lake, and Cassel Pond, could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) that would subsequently affect listed mammal species that use these habitats. Both loss and degradation of habitat, increased noise and light levels, and introduction of feral animals/pets that could disrupt the nocturnal foraging patterns of listed species such as California wolverine and Sierra Nevada red fox (Table 4.5-71). These adverse effects could result in a *significant impact* to a listed special-status mammal species.

The three listed plant species with potential to occur in the Hat Creek land area are Bogg's Lake hedge-hyssop, slender orcutt grass, and Red Mountain catchfly. Based on the level of future recreational and residential development that is expected and the proximity to suitable habitats, there is potential for future development on non-FERC lands associated with the Hat Creek land area to result in a potentially *significant impact* to listed special-status plant species such as Bogg's Lake hedge-hyssop, slender orcutt grass, and Red Mountain catchfly.

### ***Timber Harvest***

There are no parcels associated with Hat Creek Bundle that have been identified for aggressive harvest. Therefore, *no impacts* to listed species is expected.

### ***Mineral Extraction***

Mining for diatomaceous earth may occur in the vicinity of the Hat Creek 2 Powerhouse (See Section 4.16 Geology, Soils, and Minerals).

A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) would also impact Shasta crayfish and designated critical habitat for the species, as defined by the USFWS. Effects of particular concern include point source pollution, fugitive dust, increased habitat degradation from human activity and erosion, and direct habitat loss. This would be considered a *significant impact*. Although valley elderberry longhorn beetle has not been observed within the Bundle 1 project boundary, suitable habitat for the species may exist which could be subjected to the same adverse effects described for Shasta crayfish.

No listed amphibian or reptile species have potential to occur within Bundle 1; therefore the land management changes will result in no impact to these species.

Future increased mineral extraction activities could result in a *significant impact* to listed special-status bird species. Bird species known to occur in the area could be subjected to the following adverse effects: point source pollution, noise and fugitive dust, habitat degradation due to erosion, direct habitat loss, and habitat fragmentation. These adverse effects would result in significant disturbance of both nesting and foraging activities, particularly to bald eagle, willow flycatcher, and bank swallow.

Future increased mineral extraction activities could result in a *significant impact* to listed mammal species such as California wolverine and Sierra Nevada red fox. Both of these species have potential to occur in the area and could be subjected to the following adverse effects: point source pollution, noise and fugitive dust, habitat degradation due to erosion, direct habitat loss, edge

**Table 4.5-71 State/Federally-Listed Wildlife Species/Associated Vegetation Community Matrix  
Shasta Region**

Species	Known	VRI	BOW	MHW	PAS	PGS	DGC	WFR	MRI	RIV	PPN	MCH	PPN	AGS	JUN	LAC	SMC
<b>Invertebrates</b>																	
Shasta crayfish	Yes								1 2	1 2							
Valley elderberry longhorn beetle	No	3 4		1 2 3 4					1 2 3 4								
Vernal pool fairy shrimp	No													4			
Vernal pool tadpole shrimp	No													4			
<b>Amphibians</b>																	
California red Legged frog	No	3 4							3 4							3 4	
Shasta salamander	No		2										2				2
<b>Birds</b>																	
Bald eagle	Yes							2	1 2 3 4	1 2 3 4						1 2 3 4	
Bank swallow	Yes	3 4				1 2			1 2 3 4	1 2 3 4				2			
Black swift	Yes							2	1 2 3 4	1 2 3 4		1 2			2		
Great gray owl	No																2 3 4
Northern spotted owl	Yes			1 2				2	1 2 3 4		1 2	2 3 4					2 3 4
Peregrine falcon	Yes	3 4	1 4	1 2	1 2	1 2	2	2	1 2 3 4	1 2 3 4	3 4	1 2	2 3 4	2	2	1 2 3 4	2 3 4
Sandhill crane	Yes				1 2	1 2	2									1 2 3 4	
Swainson's hawk	No	3 4	1 4		1 2									2			
Willow flycatcher	No	3 4							1 2 3 4								
<b>Mammals</b>																	
California wolverine	Yes							2	1 2 3 4			1 2	2 3 4				2 3 4

**Table 4.5-71 State/Federally-Listed Wildlife Species/Associated Vegetation Community Matrix  
Shasta Region**

Species	Known	VRI	BOW	MHW	PAS	PGS	DGC	WFR	MRI	RIV	PPN	MCH	PPN	AGS	JUN	LAC	SMC
<b>Mammals</b>																	
Sierra Nevada red fox	Yes							2	1 2 3 4			1 2	2 3 4				2 3 4

NOTES: The above table represents species that occur per bundle by habitat type. Numbers refer to Local Bundles.

Habitats:

AGS	Annual Grassland
BOP	Blue Oak-Foothill Pine
BOW	Blue Oak Woodland
CRC	Chamise-Redshank Chaparral
CRP	Croplands
DFR	Douglas-fir
FEW	Fresh Emergent Wetland
JPN	Jeffrey Pine
LAC	Lacustrine
MCP	Montane Chaparral
MHC	Montane Hardwood-Conifer
MRI	Montane Riparian
PPN	Ponderosa Pine
RFR	Red Fir
RIV	Riverine
SCN	Subalpine Conifer Forest
SGS	Sagebrush
SMC	Sierra Mixed Conifer
URB	Urban
VOW	Valley Oak Woodland
VRI	Valley Foothill Riparian
WFR	White Fir
WTM	Wet Meadow

effect, and habitat fragmentation. These adverse effects would result in significant disturbance to foraging activities of both species.

Future increased mineral extraction activities could result in a *significant impact* to listed plant species such as Bogg's Lake hedge-hyssop, slender orcutt grass, and Red Mountain catchfly.

***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company does not conduct any informal practices that would have an effect (positive or negative) on listed species within the Hat Creek Bundle. Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the following Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow Changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific

Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact*.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed action of the Hat Creek Bundle could result in a *significant impact*.

#### **Bundle 2: Pit River**

##### ***Pit 1 (FERC 2687), Pit 3, 4, and 5 (FERC 0233), McCloud-Pit (FERC 2106)***

**Land Development.** The Pit River Bundle contains five land areas that have development potential. These are in the vicinity of Pit 1, McArthur Swamp 3, Pit 3, Lake Britton and McCloud, Black, Pit. There are several habitats and sensitive species in the vicinity of Bundle 2. Please see Figures 4.5-1 and 4.5-6 for mapped information.

According to the land use development in Chapter 3, the potential development in Pit 1 could result in approximately 714 EDUs built on 3,568 acres in the land area, an approximately 17 EDUs built on 6,135 acres in the McArthur Swamp land area, and approximately 736 EDUs built on 3,681 acres in the Pit 3 land area

The potential development intensity for the Lake Britton land area (based upon the land use development in Chapter 3) is 264 EDUs on 2,636 acres. The steep terrain west and southwest of Lake Britton is not developable; nor is the floodplain east of the lake. The flatter parcels around the lake have potential for higher density (two-acre parcels) while the area constrained by topography, access and water levels could be developed in larger lots.

The potential development of the McCloud, Black, Pit land areas could result in approximately 95 EDUs built on 15,162 acres in the land area.

Development in the Pit 1 project, if occurring in the vicinity of Hat Creek and/or the Fall River could result in adverse effects to Shasta crayfish and designated critical habitat for the species. This could result in a *significant impact* to a listed invertebrate species.

As noted in Table 4.5-71, the only listed amphibian species with potential to occur on lands within the Pit River Bundle project is Shasta salamander. Point source pollution, increased predation by feral/domesticated pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss could result from residential development. These effects, if they were to occur within or directly adjacent to blue oak-foothill pine, Sierran mixed conifer, and/or ponderosa pine habitat could result in a *significant impact* to a listed amphibian species such as Shasta salamander.



No listed reptile species have potential to occur within the Pit River Bundle; therefore, land development changes will result in *no impact* to listed reptiles (Table 4.5-71).

As noted in Table 4.5-71, a total of 8 listed bird species have potential to occur within the Pit River Bundle. These species include Swainson's hawk, black swift, willow flycatcher, peregrine falcon, greater sandhill crane, bald eagle, bank swallow, and northern spotted owl. Of these eight species, the following have been observed within or adjacent to the Pit River Bundle in recent years: black swift; peregrine falcon; greater sandhill crane; bald eagle; bank swallow; and northern spotted owl.

There is potential for development on Pit River Bundle lands, specifically around Lake Britton. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) could also affect one or more of these listed bird species. Increased use and development of new and expanded facilities in areas adjacent to Lake Britton could disrupt both nesting and/or foraging activities of bird species that are known to occur in the project vicinity, particularly bald eagle. Pacific Gas and Electric Company is currently a participant in the Pit River Interagency Bald Eagle Management Plan, along with the USFWS, CDFG, BLM, and USFS (Lassen and Shasta-Trinity National Forests). Future actions associated with development by a new owner could be in conflict with conservation measures contained in this plan, which would be significant. Both loss and degradation of habitat, increased noise levels associated with increased boating activity on Lake Britton, and introduction of feral animals/pets that could prey on nesting birds are the primary adverse effects that could occur as a result of future recreational development. Removal of trees could disrupt nesting bird species such as bald eagle, peregrine falcon, and northern spotted owl. Development on open pasture and grasslands in the Fall River Valley could result in loss of important foraging and nesting habitat for greater sandhill crane and bank swallow. These adverse effects could result in a *significant impact* to listed bird species.

As noted in Table 4.5-71, two listed mammal species have potential to occur within the Pit River Bundle, California wolverine and Sierra Nevada red fox. The only recorded occurrence for either species was a 1971 observation of a California wolverine near the Pit 1 fish hatchery.

Construction and development could result in direct habitat loss for listed mammals. In addition, there is potential for habitat fragmentation to occur in areas of extensive development in the Fall River Valley and Lake Britton areas. Fragmentation of montane hardwood-conifer and Sierran mixed conifer habitats in the vicinity of Lake Britton could adversely affect the breeding and foraging patterns of California wolverine and Sierra Nevada red fox. As a result, future development within Pit River Bundle project lands could result in a *significant impact* to listed mammal species.

The two listed plant species with potential to occur in these land areas are Bogg's Lake hedgehyssop, and slender orcutt grass. Based on the level of future development that is expected and the proximity to suitable habitats, there is potential for future development on watershed lands associated with the above land areas to result in a *significant impact* to listed plant species.

**Timber Harvest.** A significant acreage associated with the Pit River Bundle (i.e., over 7,200 acres) has potential for future timber harvesting activities, both even-aged and uneven-aged harvest. Although the majority of the timber harvest is expected to be in the form of select cutting (i.e., uneven-aged harvest), up to 5,715 acres of combined habitat in the form of Sierran mixed conifer, white fir, Douglas fir, and montane-hardwood conifer could be affected. In addition, up to 1,485 acres could be subjected to clear cutting which, if localized, could result in significant habitat fragmentation and edge effect. The majority of future timber harvest activities would occur on lands associated with and adjacent to the Pit 3, 4, and 5 and McCloud-Pit projects.

Timber harvest activities within the Pit River Bundle project boundary are projected to occur within areas that are outside of the known range of Shasta crayfish. These areas are not likely to support elderberry shrubs, an essential habitat element for valley elderberry longhorn beetle. As a result, *no impacts* to listed invertebrate species are expected as a result of future timber harvest activities on Pit River lands.

The majority of future timber harvest activities could occur on lands associated with and adjacent to the Pit 3, 4, and 5 and McCloud-Pit projects, both of which are within the known range of Shasta salamander.

A variety of adverse effects to Shasta salamander can occur as a result of increased timber harvesting activities, as noted in Table 4.5-81, Impacts of Land Use Alterations. Adverse effects of particular concern include habitat degradation due to erosion and point source pollution, especially if timber harvest activities were occurring within preferred habitat for the species (i.e., blue oak-foothill pine, ponderosa pine, and Sierran mixed conifer). These potential adverse effects could result in a *significant impact* to a listed amphibian species associated with Pit River Bundle.

No listed reptile species have potential to occur within the Pit River Bundle project lands; therefore, timber harvest should have *no impact* to listed reptiles.

Effects of specific concern to listed bird species are noise, increased habitat degradation due to human activity, habitat fragmentation in areas of clear-cutting, and direct loss of habitat, including loss of nest trees. Listed bird species known to occur within the Pit River Bundle project boundaries that could be subject to future timber harvesting activities include bald eagle, northern spotted owl, peregrine falcon, bank swallow, willow flycatcher, and black swift. These species could be adversely affected by timber harvesting activities due to direct loss of habitat and disruption of foraging and nesting activities. Northern spotted owls are particularly susceptible to impacts associated with habitat fragmentation. These adverse effects could contribute to a *significant impact* to listed bird species.

Specific adverse effects associated with timber harvesting in the Pit River Bundle project lands which could impact California wolverine and Sierra Nevada red fox include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and

resultant edge effect. Sierran mixed conifer, white fir, Douglas fir, and montane-hardwood conifer are the primary habitat types that would be affected by timber harvesting. Edge effect associated with clear-cutting could indirectly benefit these species by increasing its prey base. Prey animals such as mule deer, black-tailed deer, and hares tend to prefer edge habitats that provide better browse in the form of lower successional vegetation such as montane chaparral. Based on potential effects associated with habitat loss, fragmentation, and degradation, timber harvesting is considered to have a *significant impact* on listed mammal species with potential to occur within the Pit River Bundle.

Future increased timber harvesting activities could result in a *significant impact* to Bogg's Lake hedge-hyssop and slender orcutt grass, both listed plant species.

**Mineral Extraction.** Although a significant portion of Pit River Bundle projects lands (both FERC and non-FERC lands) include lands designated as Mineral Resource Zones (MRZs), the only land with potential for future extraction (i.e., MRZ-2 mineral deposits) are non-FERC lands located west of Big Lake (Pit 1) and Lake Britton (Pit 3, 4, and 5).

New mineral extraction activities in the vicinity of Big Lake, along the Fall River, could result in a variety of adverse effects to Shasta crayfish (see Table 4.5-81, Impacts of Land Use Alterations). Lake Britton is outside of the current known range for the species. Specific adverse effects that could occur as a result of mineral extraction include point source pollution, fugitive dust, habitat degradation due to erosion, soil compaction, and direct habitat loss. These effects could also occur in the vicinity of Lake Britton, which could result in loss of elderberry shrubs. These adverse effects could result in a *significant impact* to a listed invertebrate species.

New mineral extraction activities within or adjacent to blue oak-foothill pine, ponderosa pine, and Sierran mixed conifer habitat adjacent to Lake Britton could result in a variety of adverse effects to Shasta salamander (see Table 4.5-81, Impacts of Land Use Alterations). Suitable habitat for the species is not present in the vicinity of Big Lake. Specific adverse effects that could occur as a result of mineral extraction include point source pollution, fugitive dust, habitat degradation due to erosion, soil compaction, and direct habitat loss. These effects would be exacerbated since they would occur near habitats preferred by the species. These adverse effects would result in a *significant impact* to a listed amphibian species.

No listed reptile species have potential to occur within the Pit River Bundle area, therefore mineral extraction should result in *no impact* to listed reptiles.

Future increased mineral extraction activities could result in a *significant impact* to listed bird species. Species such as bald eagle, peregrine falcon, bank swallow, and northern spotted owl in the Lake Britton area could be subjected to the following adverse effects: point source pollution, noise and fugitive dust, habitat degradation due to erosion, direct habitat loss (including loss of nesting trees), and habitat fragmentation. These adverse effects could result in significant

disturbance of both nesting and foraging activities of these species. Mineral extraction activities on lands just west of Big Lake could result in similar adverse effects that could significantly impact bank swallows, greater sandhill crane, and Swainson's hawk.

Future increased mineral extraction activities within the Pit River Bundle could result in a *significant impact* to the listed mammal species. California wolverine and Sierra Nevada red fox, which have potential to occur in the area, could be subjected to the following adverse effects: point source pollution, noise and fugitive dust, habitat degradation due to erosion, direct habitat loss, edge effect, and habitat fragmentation. These adverse effects could result in significant disturbance to foraging activities of both of these species, as described above for timber harvesting. Mineral extraction could result in *significant impacts* to listed mammals.

Future increased mineral extraction activities could result in a *significant impact* to Bogg's Lake hedge-hyssop, and slender orcutt grass, both listed plant species.

***Informal Agreements/Best Management Practices.*** Pacific Gas and Electric Company currently maintains the following informal agreements with various resource agencies:

- Pacific Gas and Electric Company voluntarily makes a minimum flow release of 200 cfs from the Pit 1 Powerhouse tailrace into the Pit River at all times of the year, per the request of CDFG, USFWS, and SWRCB.
- Pacific Gas and Electric Company has committed to CDFG to release flushing flows from Pit 1 Dam two to three times a year to flush vegetation out of the Fall River Pond.
- Pacific Gas and Electric Company constructed and maintains a fence to keep cattle off project levees on the south side of Big Lake, per an agreement with CDFG, CDF, and USFWS.
- At Iron Canyon Reservoir, Pacific Gas and Electric Company informally maintains the reservoir at a level sufficient to make the Big Bend community boat ramp operational. This agreement also benefits biological resources since reservoir levels would be more stabilized allowing for shoreline emergent wetland vegetation to establish.
- Pacific Gas and Electric Company currently has an informal agreement with CDFG which allows CDFG to conduct surveys for Shasta crayfish in the upper Tule River and Pit River associated with the Pit 1 project. This survey work is considered to be crucial in the recovery efforts for the species.
- Pacific Gas and Electric Company is an active participant in the Lower McCloud Coordinated Resource Management Project (CRMP). A new owner would be expected to take over the responsibilities currently held by Pacific Gas and Electric Company as a member of the CRMP.
- Pacific Gas and Electric Company is a participant in the Pit River Interagency Bald Eagle Management Plan and is currently implementing the mitigation measures prescribed in this plan.

All of the agreements listed above either directly or indirectly benefit biological resources, including listed species with potential to occur within Bundle 2 project lands (Table 4.5-71). Since the current informal agreements have not yet been formalized, a new owner is not legally obligated to comply with them, unless and until they become conditions through the FERC relicensing process, it is assumed that a new owner would not continue to comply with these informal

agreements. (Thus, impacts to listed species, particularly Shasta crayfish and bald eagle, would occur). Discontinuing the minimum flow release from the Pit 1 Powerhouse tailrace into the Pit River could cause desiccation of riparian vegetation, which provides habitat for nesting willow flycatcher and bank swallow. If flushing flows into Fall River Pond were to cease, vegetation would overgrow and the pond would eventually undergo succession. Existing fencing along the levees near the south shore of Big Lake protect the waterway from sedimentation and cattle trampling. If this fence were not properly maintained, there is potential for cattle to break through over time, which would result in adverse effects to water quality and to wildlife species that use the waterway, specifically Shasta crayfish. There is also potential that a new owner would not allow CDFG access to Tule River and Pit River to conduct Shasta crayfish surveys. This survey work is considered to be a crucial element of the recovery plan for the species and the elimination of these studies could affect recovery efforts. Abandonment of the conditions of the bald eagle management plan would have an adverse effect on the local bald eagle population.

Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Pit River Bundle could result in a *significant impact*.

### **Bundle 3: Kilarc-Cow Creek (FERC 0606)**

#### ***Land Development***

There are several habitats and sensitive species in the vicinity of Bundle 3. Please see Figures 4.5-9 for mapped information.

The potential development for the Kilarc-Cow Creek land area is based upon the land use development assumed in Chapter 3. Potential development would result in approximately 20 EDUs built on 2,603 developable acres in the land area. The resulting development would degrade the habitat value within the land area and result in impacts to all TES using these habitats.

The only listed invertebrate species with potential to occur within the Kilarc-Cow Bundle is the valley elderberry longhorn beetle. Although no known occurrence has been recorded, recent surveys have not been conducted within the Kilarc-Cow Creek project. As a result, there is potential for these species to occupy this area and for future development to result in the loss and/or

degradation of elderberry shrubs, an essential habitat element for valley elderberry longhorn beetle. This would be considered a *significant impact*.

The only listed amphibian species with potential to occur on lands within the Kilarc-Cow Bundle is California red-legged frog. No critical habitat, as designated by the USFWS, is located within the Kilarc-Cow Bundle. Although no known occurrences of red-legged frog have been recorded, recent surveys have not been conducted within the Kilarc-Cow Creek project. As a result, there is potential for these species to occupy this area and for future development to occur in the vicinity of suitable habitat for the species. Potential adverse effects of this new development on red-legged frog could include point source pollution, increased predation by feral/domesticated pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss. These adverse effects could result in a *significant impact* to a listed amphibian species.

No listed reptile species have the potential to occur on lands within the Bundle 3 project boundary; therefore, *no impact* to a listed reptile species could occur.

Nine listed bird species have been identified as having potential to occur within the Kilarc-Cow Bundle. These species include Swainson's hawk, willow flycatcher, peregrine falcon, greater sandhill crane, bald eagle, and bank swallow. Regardless of the lack of recent species occurrence data for the Kilarc-Cow Bundle, there is potential for these species to occupy this area. Therefore future development could result in a *significant impact* to listed special-status bird species, particularly nesting individuals of bald eagle, peregrine falcon, willow flycatcher, and bank swallow. Primary adverse effects of development on these species include; direct loss of nesting habitat and fugitive noise during the nesting season.

Two listed mammal species have been identified as having potential to occur within the Kilarc-Cow Bundle, California wolverine and Sierra Nevada red fox. Due to the transitory nature of these species, their preference for remote habitat areas, and the low density of future development anticipated, future development within the Kilarc-Cow Bundle could result in a *less than significant impact* to a listed mammal species.

The two listed plant species with potential to occur in this land area are Bogg's Lake hedge-hyssop, and slender orcutt grass. Based on the level of future development that is expected and the proximity to suitable habitats, there is potential for future development to result in a *significant impact* to listed special-status plant species.

#### ***Timber Harvest***

Up to 350 acres of non-FERC lands associated with Kilarc-Cow Bundle have medium to high potential for future timber harvesting activities. The majority of this projected timber harvest is expected to occur in the form of select cutting, with large tracts of clear-cutting. Habitat types which may be affected by up to 300 acres of select cutting include Sierran mixed conifer and

montane-hardwood conifer. In addition, up to 50 acres could be subjected to clear cutting, which, if localized, could result in habitat fragmentation and edge effect.

During timber harvesting activities, there is potential for habitat degradation due to erosion and point source pollution, fugitive dust, and direct loss of habitat (i.e., elderberry shrubs), which could have deleterious effects on valley elderberry longhorn beetle, especially if timber harvesting activities occurred in at lower elevations and near riparian habitat. Irregardless of the lack of recent data for lands within the Kilarc-Cow Bundle, there is potential for these species to occupy this area. Therefore timber harvesting could result in a *significant impact* to listed invertebrate species such as valley elderberry longhorn beetle.

During timber harvesting activities, there is potential for habitat degradation due to erosion and point source pollution, which could have deleterious effects on amphibian species, especially if timber-harvesting activities occurred near riparian habitat. Irregardless of the lack of recent data for the Kilarc-Cow Bundle, there is potential for these species to occupy this area. Therefore, timber harvesting could result in a *significant impact* to listed amphibian species such as California red-legged frog.

Since no listed reptile species have potential to occur within Bundle 3 project lands, *no impact* from timber harvest activities would occur.

Specific adverse effects which could result in impacts to listed bird species include noise, increased habitat degradation due to human activity, and direct loss of habitat. Habitat fragmentation is not considered to be significant since the majority of the timber harvest activity assumed would be select-cut. The relatively minor acreage of clear-cutting that is proposed (i.e., 100 acres) would not result in significant habitat fragmentation. Irregardless of the lack of recent data of the Kilarc-Cow Bundle, there is potential for these species to occupy this area. Therefore timber harvesting could result in a *significant impact* to listed special-status bird species, particularly nesting pairs of bald eagle, peregrine falcon, willow flycatcher, and bank swallow.

Specific adverse effects associated with timber harvesting that could result in impacts to mammal species include noise, increased habitat degradation due to human activity, and direct loss of habitat. Habitat fragmentation is not considered to be significant since the majority of the timber harvest activity assumed would be select-cut. The relatively minor acreage of clear-cutting that is proposed (i.e., 100 acres) would not result in significant habitat fragmentation. Irregardless of the lack of recent data for the Kilarc-Cow Bundle, there is potential for these species to occupy this area. Therefore, timber harvesting could result in a *significant impact* to listed special-status mammal species such as California wolverine and Sierra Nevada red fox.

Future timber harvesting activities could result in a *significant impact* to Bogg's Lake hedgehyssop, and slender orcutt grass, both listed plant species

##### ***Mineral Extraction***

There are no parcels associated with the Kilarc-Cow Bundle project lands that have potential for future mineral extraction activities.

##### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company does not conduct any informal practices that would directly or indirectly benefit listed species that have potential to occur within the Kilarc-Cow Bundle.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Kilarc-Cow Bundle could result in a *significant impact*.

#### **Bundle 4: Battle Creek (FERC 1121)**

##### ***Land Development***

There are several habitats and sensitive species in the vicinity of Bundle 4. Please see Figures 4.5-8 and 4.5-12 for mapped information.

The Battle Creek Bundle contains two land areas that have development potential: Shingletown and Inskip.

***Shingletown.*** Potential development for the Shingletown land area could result in approximately 558 EDUs on 5,528 acres in the land area. Twenty-four units could be developed on large lots (20 acres), 406 units could be developed on two-acre lots near Shingletown, and 16 units could be devoted to timber management (2,258 acres) on the steeper and more remote lands. This development scenario would substantially degrade the habitat value within the land area and result in impacts to all TES using this habitat.

***Inskip Powerhouse.*** Potential development for the Inskip Powerhouse land area could result in approximately 38 EDUs on 1,354 acres in the land area. Twelve units could be developed on large lots (40 acres), 67 units could be developed on two-acre lots near Manton, and five units could be devoted to timber management (2,258 acres) on the steeper and more remote lands. This



development scenario would substantially degrade the habitat value within the land area and result in impacts to all TES using this habitat.

Listed invertebrate species with potential to occur within Battle Creek Bundle project boundaries include valley elderberry longhorn beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp. Although no known occurrences have been recorded, recent surveys have not been conducted within the Battle Creek project. The Shingletown land area is located within an elevation range that would not support elderberry shrubs, an essential habitat element for the valley elderberry longhorn beetle. Significant new development in the Inskip land area could result in a variety of adverse effects that would result in a *significant impact* to valley elderberry longhorn beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp. Specific effects of development with potential to impact these invertebrate species include direct habitat loss, point source pollution, fugitive dust, and habitat loss due to erosion.

The only listed amphibian species with potential to occur within Battle Creek Bundle is California red-legged frog. Although recent surveys for California red-legged frog at Lake Macumber did not verify presence of the species, suitable potential habitat is present on lands within the Battle Creek Bundle project boundary. Potential adverse effects associated with increased development include point source pollution, increase in feral animals, increased habitat degradation from human activity and erosion, and direct habitat loss. This could be considered a *significant impact*.

No listed reptile species have the potential to occur within Battle Creek Bundle; therefore, land development changes would result in *no impact* to listed reptile species.

Seven listed bird species have been identified as having potential to occur in Battle Creek Bundle. These species include northern spotted owl, bank swallow, bald eagle, greater sandhill crane, peregrine falcon, willow flycatcher, and Swainson's hawk. A bald eagle nesting territory is located at Lake Macumber and a northern spotted owl territory has been mapped in the vicinity of North Battle Creek Reservoir.

As noted above for the Battle Creek Bundle amphibian discussion, new development would result in a variety of adverse effects that could result in a *significant impact* to listed bird species. Specific effects of development with potential to impact listed bird species include direct habitat loss, fugitive noise and light, increased predation by feral/domesticated animals, habitat loss due to erosion and point source pollution. Increased development could disrupt both foraging and nesting patterns of any of the seven listed bird species with potential to occur on lands within the Battle Creek Bundle, but particularly bald eagle, which is known to nest in the vicinity of Lake Macumber.

Two listed mammal species have been identified as having potential to occur within Bundle 4 project lands. These are the California wolverine and Sierra Nevada red fox. No recent occurrences of either species have been noted but a wolverine was observed near Shingletown in

1975 and a Sierra Nevada red fox was observed near the community of Viola in 1952. New development would result in a variety of adverse effects that could result in a *significant impact* to listed mammal species. Specific effects of development with potential to impact mammal species include direct habitat loss, habitat fragmentation, light, increased predation by feral/domesticated animals on smaller mammals, and habitat loss due to erosion, particularly within areas that are currently undeveloped.

The two listed plant species with potential to occur in this land area are Bogg's Lake hedge-hyssop, and Red Mountain catchfly. Irregardless of the level of future development that is expected and the proximity to suitable habitats, there is potential for future development on non-FERC lands associated with the above land areas to result in a *significant impact* to listed plant species.

#### ***Timber Harvest***

Up to 800 acres of non-FERC lands associated with Battle Creek Bundle have potential for future timber harvesting activities. The majority of this projected timber harvest is expected to occur in the form of select cutting, with some clear-cutting. Habitat types which may be affected by up to 550 acres of select-cutting include Sierran mixed conifer and montane-hardwood conifer. In addition, up to 250 acres would be subjected to clear cutting which, if localized, could result in habitat fragmentation and edge effect.

During timber harvest activities, there is potential for habitat degradation due to erosion and point source pollution, fugitive dust, and direct loss of habitat (i.e., elderberry shrubs) which could have deleterious effects on valley elderberry longhorn beetle, especially if timber harvesting activities occurred at lower elevations and in relative proximity to riparian habitat. Vernal pools are not expected to occur in areas that would be subject to timber harvesting. Based on the lack of recent data for Bundle 4, there is potential that timber harvesting could result in a *significant impact* to listed invertebrate species such as valley elderberry longhorn beetle.

The majority of the projected timber harvest is expected to occur in the form of select cutting, however, there still is potential for habitat degradation due to erosion and point source pollution which could have deleterious effects on California red-legged frog, especially if timber harvesting activities occurred near riparian habitat. Based on the lack of recent data for Bundle 4, there is potential that timber harvesting could result in a *significant impact* to a listed amphibian species.

Since no listed reptile species have potential to occur on lands within the Battle Creek Bundle project boundaries, *no impact* from timber harvesting would occur.

Specific adverse effects from timber harvesting which could result in impacts to listed bird species include noise, increased habitat degradation due to human activity, and direct loss of habitat. Habitat fragmentation is not considered to be significant since the majority of the timber harvest activity assumed would be select-cut. The amount of clear-cutting that is proposed (i.e., 200 acres)

would not result in significant habitat fragmentation. Based on the lack of recent data for Battle Creek Bundle, there is potential that timber harvesting could result in a *significant impact* to listed bird species, particularly nesting northern spotted owl and bald eagle.

Specific adverse effects associated with timber harvesting that could result in impacts to listed mammal species include noise, increased habitat degradation due to human activity, and direct loss of habitat. Habitat fragmentation is not considered to be significant since the majority of the timber harvest activity assumed would be select-cut. The clear-cutting that is proposed (i.e., 200 acres) would not result in significant habitat fragmentation. Based on the lack of recent data for Bundle 4, there is a potential for these species to occupy this area. Therefore, timber harvesting could result in a *significant impact* to listed special-status mammal species such as California wolverine and Sierra Nevada red fox.

Future timber harvesting activities could result in a *significant impact* to Indian Valley brodiaea, Bogg's Lake hedge-hyssop, slender orcutt grass, Red Mountain catchfly, and Greene's tuctoria, all listed plant species.

#### ***Mineral Extraction***

There are no parcels associated with Battle Creek Bundle that have potential for future mineral extraction activities. Therefore *no impact* to listed species is expected.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company has an informal agreement with the CDFG that ensures that the reservoir level at Macumber Reservoir does not drop below 12 feet. Although this informal agreement was made to protect fish species, it also benefits other aquatic species such as California red-legged frog. In addition, more stabilized reservoir levels maintains the fresh emergent wetland vegetation that is present along the shoreline of Macumber Reservoir. This wetland vegetation provides important habitat for fish, amphibians, aquatic snakes, as well as the species that prey on them (i.e., herons, egrets). Since this current agreement has not been formalized, it is assumed that a new owner would not comply with this informal agreement. As a result, a *significant impact* to a listed species could.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Battle Creek Bundle could result in a *significant impact*.

#### **Summary of Impact to Entire Shasta Regional Bundle**

The project could result in *significant adverse impacts* to wildlife and plant species that are listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act in the Shasta Regional Bundle.

#### **4.5.8.2 DeSabra Regional Bundle**

##### **Bundle 5: Hamilton Branch (non-FERC)**

There are several habitats and sensitive species in the vicinity of Bundle 5. Please see Figures 4.5-13 for mapped information.

#### ***Land Development***

Development is predicted to occur in the Hamilton Branch Bundle primarily along the southwest shoreline and in watershed lands (see Section 4.1 Land Use). According to the land use development assumed in Chapter 3, 19 equivalent dwelling units (EDUs) on 1,912 acres, including a boat launch and dwellings, are predicted within the Mountain Meadows Reservoir area, and 16 EDUs are predicted in the 239 acres of the Hamilton Branch powerhouse area. This level of development could result in impacts to listed wildlife and plant species by eliminating breeding, cover and foraging habitat or reduce habitat values by introducing noise and other human-induced disturbance. These impacts could result in direct mortality of listed species or displacement as a result of diminished habitat values.

No listed invertebrate, amphibian, or reptile species have potential to occur on lands within the Hamilton Branch Bundle project boundary, therefore *no impacts* to these species due to land development changes are expected.

Of the five listed bird species with potential to occur within the Hamilton Branch Bundle project lands, the following are known to occur: bald eagle (project vicinity) and greater sandhill crane (Mountain Meadows reservoir). As discussed below, Pacific Gas and Electric Company has entered into formal agreements for wetland habitat enhancement and waterfowl breeding production. Potential development by a new owner could be in conflict with conservation measures contained in this plan, which would be significant. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) would also have an effect on one or more listed bird species, particularly the species that have been recently observed in the project, such as, bald eagle. Increased development and use in areas adjacent to Mountain Meadows reservoir could disrupt both nesting and/or foraging activities of bald eagles

and greater sandhill crane. Both loss and degradation of habitat, increased noise levels, and introduction of feral animals/pets that could prey on nesting birds are the primary adverse effects that could occur. These adverse effects could result in a *significant impact* to listed bird species.

Listed mammals known to, or potentially occurring within the Hamilton Branch Bundle include the wolverine and Sierra Nevada red fox. Both species are highly secretive species that occur infrequently in the Sierra Nevada but are especially susceptible to human disturbance. Development within or directly adjacent to montane hardwood-conifer, sierran mixed conifer, montane riparian, and wet meadow habitats could result in a *significant impact* to these species. Direct habitat loss and increased access to remote areas would be the primary factors contributing to this impact.

No special-status plant species have been recorded within a two-mile radius of Mountain Meadow. However the potential for special-status plant species is high. Robbers Creek and Mountain Meadows Creek both considered jurisdictional waters of the U.S. flow through the parcels. Development of these parcels may result in a *significant impact* to special-status plant species.

### ***Timber Harvest***

Selective timber harvest is predicted within the Hamilton Branch Bundle over a small area. This would result in the selective removal of trees within a THP over approximately 80 acres within the FERC Bundles, contiguous and watershed lands.

No listed invertebrate, amphibian or reptile species have potential to occur within the Hamilton Branch Bundle and therefore *no impacts* to these species due to timber harvest are expected.

Six listed bird species have the potential to occur, or are known to occur, within the Hamilton Branch Bundle project boundary. Of these, the great gray owl and willow flycatcher could be impacted by timber harvest activities. Impacts could include direct loss of breeding (great gray owl) and foraging (great gray owl and willow flycatcher) habitat, direct impacts to riparian vegetation as a result of new access roads or water quality degradation in streams, and indirect impacts associated with the affects of activities described in Table 4.5-81, Impacts of Land Use Alterations. Any effect on these bird species through changes in timber management would be *significant*.

Listed mammals known to, or potentially occurring within Hamilton Branch Bundle include the wolverine and Sierra Nevada red fox. Both species are highly secretive species that occur at very low densities in the Sierra Nevada but are especially susceptible to human disturbance. Timber harvest activities within commercially valuable timber stands sierran mixed conifer, montane riparian, and wet meadow habitats could result in a *significant impact* to these species. Direct habitat loss and increased access to remote areas would be the primary factors contributing to this impact.

Development of the Hamilton Branch Powerhouse Area for timber harvesting may result in a *significant impact* to special-status plant species and sensitive communities.

##### ***Mineral Extraction***

An increase in mineral extraction and mining activities as a result of the proposed divestiture are not anticipated in Hamilton Branch Bundle therefore *no impacts* to threatened and endangered species are expected.

##### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company has a formal agreement with the State of California, Wildlife Conservation Board and California Waterfowl Association for wetlands enhancement activities to improve the quality and quantity of habitat for migratory at Mountain Meadows Reservoir. This agreement would be transferred to a new owner therefore impacts to listed species as a result of ownership change are not expected.

Pacific Gas and Electric Company does not conduct any informal practices that would have an effect (positive or negative) on listed species within Hamilton Branch Bundle project lands.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Hamilton Branch Bundle could result in a *significant impact*.

##### **Bundle 6: Upper North Fork Feather River (FERC 2105), Rock-Creek-Cresta (FERC 1962), Poe (FERC 2107)**

There are several habitats and sensitive species in the vicinity of Bundle 6. Please see Figures 4.5-14 and 4.5-19 for mapped information.

##### ***Land Development***

The Upper North Fork Feather River Bundle contains eight land areas that have development potential: North Lake Almanor, West Lake Almanor/Prattville, Southeast Lake Almanor, Butt

Valley reservoir, Caribou to Belden, Humbug Valley, Rock Creek-Cresta, and Poe. Impacts for each potential development area are described below.

According to the land use development assumed in Chapter 3, 87 EDUs, primarily resorts and park units, are predicted within the 866 acres in the North Lake Almanor area; and 615 EDUs, primarily recreational dwellings, are predicted in the 1,230 acres of the Southeast Lake Almanor area. In the 276 acres within the West Lake Almanor/Prattville area, 276 EDUs are predicted which are primarily resorts and outdoor recreation. Ninety-two EDUs, primarily resorts and outdoor recreation units, are predicted within the 920 acres in the Butt Valley Reservoir area. The Caribou to Belden land area has potential for 16 EDUs on 370 acres, and the Humbug Valley land area has potential development of 240 EDUs on 2,402 acres. The land use development in Chapter 3 also assumes 19 EDUs on 1,175 acres in the Rock Creek-Cresta land area, and 31 EDUs on 3,823 acres in the Poe land area.

Large amounts of development are predicted within the eight land development areas. Most development would be focused around existing recreational areas that could be expanded to provide infrastructure and services for new recreational and resort facilities.

The valley elderberry longhorn beetle is known to occur in the vicinity of the Poe powerhouse and could occur on associated watershed lands in either the Poe or Belden projects. Despite a BMP that directly addresses protection of the blue elderberry, this invertebrate's host plant, new ownership could result in changes to existing BMPs that could, in turn, result in impacts to the valley elderberry longhorn beetle. In addition, any impact to this species would be considered a *significant impact*.

The only listed amphibian species with potential to occur on lands within the Bundle 6 project boundary is the California red-legged frog. Point source pollution, increased predation by feral/domesticated pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss could result from development. These effects, if they were to occur within or directly adjacent to riverine, montane riparian, lacustrine, valley-foothill riparian, wet meadow, or fresh water emergent wetland habitat could result in a *significant impact* to this species.

No listed reptile species have potential to occur within the Upper North Fork Feather River Bundle and therefore *no impacts* to listed reptiles from land development activities are expected.

Seven listed bird species have potential to occur within the Upper North Fork Feather River Bundle project boundary. These species include the greater sandhill crane, great gray owl, bald eagle, peregrine falcon, Swainson's hawk, bank swallow, and willow flycatcher. Of these seven species only the bald eagle has been observed within or adjacent to the Upper North Fork Feather River Bundle project lands in recent years.

There is potential for development on the Upper North Fork Feather River Bundle lands; specifically around Lake Almanor and Butt Valley reservoir. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) could affect one or more of these listed bird species. Increased recreational use and development of new and expanded recreational facilities in areas adjacent to Lake Almanor and Butt Valley reservoir could disrupt both nesting and/or foraging activities of bird species that are known to occur in the project vicinity, particularly bald eagles. Both direct habitat loss and the indirect effects of increased noise levels associated with increased boating activity on Lake Almanor and predation on resident birds from feral animals/pets would reduce habitat suitability. Removal of trees associated with development could reduce breeding efforts for bald eagles, great gray owls, and other tree nesting species.

Although recreational development is predicted in close proximity to existing facilities, rural residential and vacation home development could occur on open pasture and grasslands in the vicinity of Mountain Meadows reservoir which would result in loss of important foraging and nesting habitat for greater sandhill cranes. These adverse effects could result in a *significant impact* to a listed bird species.

Listed mammals known to occur, or potentially occurring, within Bundle 6 include the wolverine and Sierra Nevada red fox. Both species are highly secretive species that occur at very low densities in the Sierra Nevada and are especially susceptible to human disturbance. Development within or directly adjacent to montane hardwood-conifer, sierran mixed conifer, montane riparian, and wet meadow habitats could result in a *significant impact* to these species. Direct habitat loss and increased access to remote areas would be the primary factors contributing to this impact.

The West Lake Almanor/Prattville Area parcels are comprised of sierra mixed conifer, and Douglas fir. Slender orcutt grass is known to occur within one mile of the parcels. Development of these parcels may result in a *significant impact* to this listed plant species.

#### ***Timber Harvest***

Timber harvest is anticipated within the Upper North Fork Feather River Bundle. Approximately 600 acres (300 acres even-aged and 300 acres of uneven-aged management) of new THPs are predicted within the Upper North Fork Feather River projects and approximately 250 acres (80 acres even-aged and 170 acres of uneven-aged management) are predicted for the Poe project. In addition, 300 acres are projected for harvest in the Humbug Valley area which is associated with the Rock Creek-Cresta Project.

The valley elderberry longhorn beetle is known to occur in the vicinity of the Poe powerhouse and could occur on associated watershed lands in either the Poe or Belden projects. The host plant of this species, blue elderberry is found in the Central Valley and low foothills of the Sierra Nevada and does not occur as an understory component in commercial timberlands. However, ground



disturbing activities related to logging including removing and transporting logs, sediment control along streams, and creation of new access roads could indirectly impact this species by loss or degradation of the host plant. Impacts to this species as a result of timber harvest activities are considered *significant*.

The only listed amphibian species with potential to occur in the Upper North Fork Feather River Bundle area is the California red-legged frog. Ground disturbing activities associated with logging, including removing and transporting logs, sediment control along streams, and creation of new access roads could indirectly impact this species by loss or degradation of aquatic habitat. These effects, if they were to occur within or directly adjacent to riverine, montane riparian, lacustrine, valley-foothill riparian, wet meadow, or fresh water emergent wetland habitat could result in a *significant impact* to this species.

No listed reptile species have potential to occur within the Upper North Fork Feather River Bundle and therefore *no impacts* to listed reptiles are expected.

Seven listed bird species have the potential to occur, or are known to occur, within the Upper North Fork Feather River Bundle project lands. These species include the greater sandhill crane, great gray owl, bald eagle, peregrine falcon, Swainson's hawk, bank swallow, and willow flycatcher. Of these seven species, the bald eagle has been observed within or adjacent to the Bundle 6 area in recent years. The great gray owl and willow flycatcher could be adversely affected by timber harvest activities as a result of direct loss of breeding (great gray owl) and foraging (great gray owl and willow flycatcher) habitat, direct impacts to riparian vegetation as a result of new access roads or water quality degradation in streams, and indirect impacts associated with the affects of activities described in Table 4.5-81, Impacts of Land Use Alterations. Impacts to these species are considered *significant*.

Listed mammals known to occur, or potentially occurring, within the Upper North Fork Feather River Bundle include the wolverine and Sierra Nevada red fox. Both species are highly secretive species that occur at very low densities in the Sierra Nevada and are especially susceptible to human disturbance. Timber harvest activities within commercially valuable timber stands sierran mixed conifer, montane riparian, and wet meadow habitats could result in a *significant impact* to these species. Direct habitat loss and increased access to remote areas would be the primary factors contributing to this impact.

Timber harvest may result in a *significant impact* to listed plant species.

### ***Mineral Extraction***

An increase in mineral extraction and mining activities as a result of the proposed divestiture are not anticipated in the Upper North Fork Feather River Bundle therefore *no impacts* to listed species are expected.

### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company is currently a party to the following informal agreements related to protection or conservation of threatened and endangered species:

- Pacific Gas and Electric Company is involved in the Coordinated Resource Management Plan (CRMP) work being done in the Feather River Basin. Pacific Gas and Electric Company has been a voluntary contributor to erosion control and stream restoration projects associated with CRMP.
- Pacific Gas and Electric Company agrees bald eagle nest location information is included in biological survey work, and the new owner shall be provided information on location of sensitive biological resources.

These informal agreements either directly or indirectly benefit biological resources, including listed species with potential to occur within the Upper North Fork Feather River Bundle project boundary (Table 4.5-72). Since current informal agreements have not yet been formalized, a new owner is not legally obligated to comply with them, unless they become conditions in the new FERC licenses. Discontinuance of current participation and implementation of the CRMP could result in direct and adverse affects to listed terrestrial species. Impacts could range from direct habitat loss, in the case of reduced minimum stream flows affecting riparian habitat, to indirect affects including intrusion into sensitive wildlife areas, nest disturbance, and reductions in habitat suitability due to increased human disturbance. These affects would be considered a *significant impact*.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

**Table 4.5-72 State/Federally-Listed Wildlife Species/Associated Vegetation Community Matrix - DeSabra Region**

Species	Known	RFR	Cropland	PPN	Orchard & Vineyard	MCH	WFR	JPN	DFR	LAC	MRI	FEW	URB	RIV	MCP	SMC	AGS	BOP	MHW	WTM
<b>Invertebrates</b>																				
Vernal pool tadpole shrimp	Yes											8					8			
Valley elderberry longhorn beetle	No										6									

**Table 4.5-72 State/Federally-Listed Wildlife Species/Associated Vegetation Community Matrix - DeSabra Region**

Species	Known	RFR	Cropland	PPN	Orchard & Vineyard	MCH	WFR	JPN	DFR	LAC	MRI	FEW	URB	RIV	MCP	SMC	AGS	BOP	MHW	WTM
<b>Amphibians</b>																				
California red-legged frog	No			6, 7		7, 8				5, 6, 7, 8	6, 7, 8	5, 6, 7, 8		5, 6, 7, 8	8		7, 8	7, 8		6, 7, 8
<b>Birds</b>																				
Bald eagle	Yes	5, 7		6, 7, 8		6, 7, 8	5, 6	5		5, 6, 7, 8	6, 7, 8	6, 7, 8		5, 6, 7, 8	6, 7, 8	6, 7, 8		6, 7, 8		6, 7, 8
Bank swallow	No					6				5, 6	5, 6	5		5, 6			6, 8			5, 6
Black swift	No	5, 7					5, 6	5	6		5, 6, 7, 8			5, 6, 7, 8	6	5, 6, 7, 8			6, 8	
Greater sandhill crane	Yes		5, 8							6, 7		5, 6, 7					6, 7			5, 6, 7
Great gray owl	Yes															5, 6, 7, 8				5, 6, 7, 8
Peregrine falcon	No	5, 7	5, 8	6, 7			5, 6	5	6	5, 6, 7, 8	5, 6, 7, 8	5, 6	5, 6, 8	5, 6, 7, 8	6	5, 6, 7, 8	8	6, 8	6, 8	6
Spotted owl	No	5, 7		6, 7			5, 6	5									6, 8			
Swainson's hawk	Yes			6, 7									5, 6, 8		6		6, 8			5, 6
Willow flycatcher	No										5, 6, 7									5, 6, 7
<b>Mammals</b>																				
California wolverine	No	5, 7					5, 6	5			6, 7, 8				6, 7, 8	5, 6, 7, 8				5, 6, 7, 8
Sierra Nevada red fox	Yes			6, 8							5, 6, 8				6, 8	5, 6, 8				5, 6, 8

Notes: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

**Habitats:**

AGS = Annual Grassland  
 BOP = Blue Oak-Foothill Pine  
 BOW = Blue Oak Woodland  
 CRC = Chamise-Redshank Chaparral  
 DFR = Douglas-Fir  
 FEW = Fresh Emergent Wetland  
 JPN = Jeffrey Pine

LAC	=	Lacustrine
LPN	=	Lodgepole Pine
LSG	=	Low Sagebrush
MCP	=	Montane Chaparral
MCH	=	Mixed Chaparral
MHC	=	Montane Hardwood-Conifer
MHW	=	Montane Hardwood
MRI	=	Montane Riparian
PPN	=	Ponderosa Pine
RFR	=	Red Fir
RIV	=	Riverine
SCN	=	Subalpine Conifer
SGB	=	Sagebrush
SMC	=	Sierra Mixed Conifer
VOW	=	Valley Oak Woodland
VRI	=	Valley Foothill Riparian
WFR	=	White Fir
WTM	=	Wet Meadow

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Upper North Fork Feather River Bundle could result in a *significant impact*.

#### **Bundle 7: Bucks Creek (FERC 0619)**

There are several habitats and sensitive species in the vicinity of Bundle 7. Please see Figures 4.5-17 for mapped information.

#### ***Land Development***

According to the land use development assumed in Chapter 3, approximately 244 EDUs, primarily recreation facilities and seasonal units, are predicted for the 1,222 acres in the Bucks Creek and Bucks Lake area.

The valley elderberry longhorn beetle could occur on lands in the Bucks Creek project. Despite a BMP that directly addresses protection of the blue elderberry, this invertebrate's host plant, new ownership could result in changes to existing BMPs, which could, in turn, result in impacts to the valley elderberry longhorn beetle. In addition, any impact to this species would be considered a *significant impact*.

The only listed amphibian species with potential to occur within the Bucks Creek Bundle project boundary is the California red-legged frog. Point source pollution, increased predation by feral/domesticated pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss could result from development. These effects, if they were to occur within or directly adjacent to riverine, montane riparian, lacustrine, valley-foothill riparian, wet meadow, or fresh water emergent wetland habitat could result in a *significant impact* to this species.

No listed reptile species have potential to occur on lands within the Bucks Creek Bundle project boundary and therefore *no impacts* to listed reptiles are expected.

Eight listed bird species have potential to occur within the Bucks Creek Bundle. These species include the greater sandhill crane, great gray owl, bald eagle, peregrine falcon, Swainson's hawk, bank swallow, black swift, and willow flycatcher. Of these eight species the bald eagle, peregrine falcon, and willow flycatcher are known to occur within Bundle 7 project land. There is potential for development on the Bucks Creek Bundle lands; specifically around Bucks Lake and Bucks Creek. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) could affect one or more of these listed bird species. Increased use and development of new and expanded facilities in areas adjacent to Bucks Creek could disrupt both nesting and/or foraging activities of bird species that are known to occur in the project vicinity, particularly bald eagles. Removal or degradation of riparian habitat along Bucks Creek could also adversely affect willow flycatchers. Both direct habitat loss and the indirect effects of increased noise levels associated with increased activity near Bucks Lake and predation on resident birds from feral animals/pets would reduce habitat suitability. Removal of trees associated with development could reduce breeding efforts for bald eagles, great gray owls, and other tree nesting species. These adverse effects could result in a *significant impact* to listed bird species.

Listed mammals known to, or potentially occurring within the Bucks Creek Bundle include the wolverine, Sierra Nevada red fox, and northern river otter. Except for the river otter, these are highly secretive species that occur at very low densities in the Sierra Nevada and are especially susceptible to human disturbance. Although northern river otters have not been observed in the Bucks Lake or Bucks Creek area, habitat to support this species exists. Development within or directly adjacent to montane hardwood-conifer, sierran mixed conifer, montane riparian, lacustrine, and wet meadow habitats could result in a *significant impact* to these species. Direct habitat loss and increased access to remote areas would be the primary factors contributing to this impact.

Development of these parcels may result in a *significant impact* to listed plant species.

### ***Timber Harvest***

Timber harvest is anticipated within the Bucks Creek Bundle lands. Approximately 500 acres (250 acres even-aged and 250 acres of uneven-aged management) of new THPs are predicted within the Bucks Creek project.

The only listed amphibian species with potential to occur within the Bucks Creek Bundle project land is the California red-legged frog. Ground disturbing activities associated with logging, including removing and transporting logs, sediment control along streams, and creation of new access roads could indirectly impact this species by loss or degradation of aquatic habitat. These effects, if they were to occur within or directly adjacent to riverine, montane riparian, lacustrine,

valley-foothill riparian, wet meadow, or fresh water emergent wetland habitat could result in a *significant impact* to this species.

There are no listed reptile species with potential to occur within the Bucks Creek Bundle project boundary and therefore *no impacts* to these species are expected.

Eight listed bird species have potential to occur within the Bucks Creek Bundle project land. These species include the greater sandhill crane, great gray owl, bald eagle, peregrine falcon, Swainson's hawk, bank swallow, black swift, and willow flycatcher. Of these eight species the bald eagle, peregrine falcon, and willow flycatcher are known to occur within the Bucks Creek Bundle lands.

The great gray owl and willow flycatcher could be adversely affected by timber harvest activities as a result of direct loss of breeding (great gray owl) and foraging (great gray owl and willow flycatcher) habitat, direct impacts to riparian vegetation as a result of new access roads or water quality degradation in streams, and indirect impacts associated with the affects of activities described in Table 4.5-81, Impacts of Land Use Alterations. Impacts to these species are considered *significant*.

Listed mammals known to, or potentially occurring within the Bucks Creek Bundle include the wolverine and Sierra Nevada red fox. Both species are highly secretive species that occur at very low densities in the Sierra Nevada and are especially susceptible to human disturbance. Timber harvest activities within commercially valuable timber stands sierran mixed conifer, montane riparian, and wet meadow habitats could result in a *significant impact* to these species. Direct habitat loss and increased access to remote areas would be the primary factors contributing to this impact.

Timber harvesting of this land area may result in a *significant impact* to listed plant species.

#### ***Mineral Extraction***

An increase in mineral extraction and mining activities as a result of the proposed divestiture is not anticipated in the Bucks Creek Bundle, therefore *no impact* to listed species is expected.

#### ***Informal Agreements/Best Management Practices***

No informal agreements related to protection or conservation of TES in the Bucks Creek project have been identified. Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination

with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Bucks Creek Bundle could result in a *significant impact*.

**Bundle 8: Butte Creek - DeSabra-Centerville (FERC 0803), Lime Saddle (non-FERC), Coal Canyon (non-FERC)**

There are several habitats and sensitive species in the vicinity of Bundle 8. Please see Figures 4.5-19 and 4.5-23 for mapped information.

***Land Development***

Some rural development is predicted within the Butte Creek project area. Approximately 66 rural residential units are predicted within the 2,471 acre DeSabra-Centerville area while 378 suburban residential units are predicted within the Coal Canyon/Thermalito Diversion Pool area. Development within the Coal Canyon/Thermalito Diversion Pool area would be adjacent to existing residential development and is expected to be higher intensity.

The vernal pool tadpole shrimp is known to occur in the immediate vicinity of the Butte Creek project. Habitat conservation lands in the vicinity of the project were developed to conserve and preserve northern volcanic vernal pool habitat that supports this species. Development in the vicinity of the DeSabra-Centerville project could result in direct impacts to this species as a result of loss of vernal pools or hydrological features essential for maintaining sustained pool water levels. In addition, indirect impacts including a reduction in water quality from urban run-off could adversely affect this species and its habitat. For the reasons described above, these affects would be considered a *significant impact*.

The only listed amphibian species with potential to occur on lands within the Butte Creek Bundle project boundary is the California red-legged frog. Point source pollution, increased predation by feral/domesticated pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss could result from development. These effects, if they were to occur within or directly adjacent to riverine, montane riparian, lacustrine, valley-foothill riparian, wet meadow, or fresh water emergent wetland habitat could result in a *significant impact* to this species.

No listed reptile species have potential to occur within the Butte Creek Bundle project land and therefore *no impacts* to listed reptiles are expected.

Seven listed bird species have potential to occur in the Butte Creek Bundle. These species include the greater sandhill crane, great gray owl, bald eagle, peregrine falcon, Swainson's hawk, bank

swallow, and black swift. Of these seven species the bald eagle is known to occur in the project area and the great gray owl likely occurs as supported by an unconfirmed sighting near Philbrook Reservoir.

There is potential for development on Bundle 8 lands; specifically near the DeSabra-Centerville and Coal Canyon/Thermalito Diversion Pool areas. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) could affect one or more of these listed bird species. Increased residential and urban uses and development of new and expanded recreational facilities in the project area could disrupt both nesting and/or foraging activities of bird species that are known to occur in the project vicinity, particularly bald eagles. Removal or degradation of riparian habitat could also adversely affect bank swallows. Direct habitat loss and the indirect effects of increased noise levels associated with increased recreation activity and predation on resident birds by feral animals/pets would reduce habitat suitability. Removal of trees associated with recreational development could reduce breeding efforts for bald eagles, great gray owls, Swainson's hawks and other tree nesting species. These adverse effects could result in a *significant impacts* to listed bird species.

Listed mammals known to, or potentially occurring within the Butte Creek Bundle include the wolverine and Sierra Nevada red fox. The Sierra Nevada red fox is known to occur in the vicinity of the project. Both species are highly secretive species which occur at very low densities in the Sierra Nevada and are especially susceptible to human disturbance. Residential development within or directly adjacent to montane hardwood-conifer, sierran mixed conifer, montane riparian, lacustrine, and wet meadow habitats could result in a *significant impact* to these species. Direct habitat loss and increased access to remote areas would be the primary factors contributing to this impact.

Development of these parcels may result in a *significant impact* to listed plant species.

#### ***Timber Harvest***

Light timber harvest is anticipated within the Butte Creek Bundle lands. Approximately 50 acres of even-aged management and 150 acres of uneven-aged management THPs are predicted within the Butte Creek project.

The vernal pool tadpole shrimp could be adversely affected by timber harvest activities. Activities associated with creation of new access roads, crossing streams or other water features, and transporting logs could adversely affect water quality resulting in degraded pool water quality or loss of pools from damage to soils or geologic features which support vernal pools. These effects would be considered a *significant impact*.

The only listed amphibian species with potential to occur within the Butte Creek Bundle project lands is the California red-legged frog. Ground disturbing activities associated with logging,



including removing and transporting logs, sediment control along streams, and creation of new access roads could indirectly impact this species by loss or degradation of aquatic habitat. These effects, if they were to occur within or directly adjacent to riverine, montane riparian, lacustrine, valley-foothill riparian, wet meadow, or fresh water emergent wetland habitat could result in a *significant impact* to this species.

No listed reptile species have potential to occur within the Butte Creek Bundle project boundary and therefore *no impacts* to listed reptiles are expected.

Seven listed bird species have potential to occur within the Butte Creek Bundle project land. These species include the greater sandhill crane, great gray owl, bald eagle, peregrine falcon, Swainson's hawk, bank swallow, and black swift. Of these seven species the bald eagle is known to occur in the project area and the great gray owl likely occurs as supported by an unconfirmed sighting near Philbrook reservoir.

The great gray owl could be adversely affected by timber harvest activities as a result of direct loss of breeding and foraging habitat, direct impacts to riparian vegetation as a result of new access roads or water quality degradation in streams, and indirect impacts associated with the affects of activities described in Table 4.5-81, Impacts of Land Use Alterations. Impacts to this species are considered *significant*.

Listed mammals known to occur, or potentially occurring, within the Butte Creek Bundle include the wolverine and Sierra Nevada red fox. Both species are highly secretive species that occur at very low densities in the Sierra Nevada and are especially susceptible to human disturbance. Timber harvest activities within commercially valuable timber stands, Sierran mixed conifer, montane riparian, and wet meadow habitats could result in a *significant impact* to these species. Direct habitat loss and increased access to remote areas would be the primary factors contributing to this impact.

Timber harvesting activities could result in *significant impacts* to listed plants.

### ***Mineral Extraction***

No increase in mineral extraction and mining activities as a result of the proposed divestiture is anticipated in the Butte Creek Bundle therefore *no impacts* to listed species are expected.

### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company is currently a party to the following informal agreements related to protection or conservation of threatened and endangered species:

- Small instream releases to W. Branch Feather River at Miocene Diversion. No regulatory requirement to do so.

- Pacific Gas and Electric Company's FERC license requirements for instream flow releases at Lower Centerville Diversion Dam is normally 40 cfs, but allows for a reduction to 10 cfs in dry years. Downstream reaches of the stream provide salmon habitat, and in the past years Pacific Gas and Electric Company informally agreed with CDFG not to exercise this reduction.

The agreements listed above directly or indirectly benefit biological resources, including listed species with potential to occur on lands within the Bundle 8 project boundary (Table 4.5-72). Since current informal agreements have not yet been formalized, a new owner is not legally obligated to comply with them, unless they become conditions in the new FERC licenses. Discontinuing current participation and implementation of CRMP's could result in direct and adverse affects to listed terrestrial species. Impacts could range from direct habitat loss, in the case of reduced minimum stream flows affecting riparian habitat, to indirect affects including intrusion into sensitive wildlife areas, nest disturbance, and reductions in habitat suitability from increased human disturbance. These affects would be considered a *significant impact*.

Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Butte Creek Bundle could result in a *significant impact*.

#### **Summary of Impact to Entire DeSabra Regional Bundle**

The project could result in *significant adverse impacts* to wildlife and plant species that are listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act in the DeSabra Regional Bundle.

##### **4.5.8.3 Drum Regional Bundle**

#### **Bundle 9: North Yuba River - Narrows (FERC 1403)**

There are several sensitive habitats and special-status species in the vicinity of Bundle 9. Please see Figures 4.5-34 for mapped information.

Pacific Gas and Electric Company lands within the North Yuba River Bundle contain habitat known to support bald eagle (see Table 4.5-73). In addition, there is a potential for other threatened and endangered species such as, spiny rhyacophilan caddisfly, valley elderberry longhorn beetle,

California red-legged frog, great egret, Peregrine falcon, and willow flycatcher. Although these threatened and endangered species have not been observed within the North Yuba River Bundle project boundary, suitable habitat for the species may exist. In addition, threatened and endangered species occurring on adjacent lands may be affected by the project. Table 4.5-73 presents the threatened and endangered species that are associated with the habitats in the North Yuba River Bundle.

### ***Land Development***

Land use development assumed in Chapter 3 states that the Narrows-Lake Englebright land area has the potential development of three equivalent dwelling units (EDUs) on 64 acres in the land area. Large developments could not occur, due to the land area consisting of fairly steep topography that constrains access. Yuba County supports growth; however, citizens are fairly vocal about curbing growth and development. In addition, Nevada County and its citizens generally favor resource protection over growth and development. Given these constraints, development is expected to have minimal adverse effects to this land area. However, because there is habitat for a number of threatened and endangered species within the project area there could be a *significant impact* to these species and their habitat.

Although valley elderberry longhorn beetle has not been observed within the North Yuba River Bundle project boundaries, suitable habitat for the species may exist. A variety of adverse effects associated with habitat loss and degradation could occur due to development (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to potential habitat for these species, could result in a *significant impact* to a listed invertebrate species such as valley elderberry longhorn beetle.

The only listed amphibian species with potential to occur within the North Yuba River Bundle is California red-legged frog. Significant negative effects, such as those listed in Table 4.5-81, could result from development. These effects, if they were to occur within or directly adjacent to lacustrine habitat, could result in a *significant impact* to a listed amphibian species such as California red-legged frog.

**Table 4.5-73 State/Federally-Listed Wildlife Species that are found in each Vegetation Community for the Drum Region**

Species	Known	AGS	SCN	BOW	BOP	DFR	JPN	LAC	MHW	PPN	RFR	SMC	MCH	SGB	BAR	MCP	URB	WTM	WFR	VOW
Invertebrates																				

**Table 4.5-73 State/Federally-Listed Wildlife Species that are found in each Vegetation Community for the Drum Region**

Species	Known	AGS	SCN	BOW	BOP	DFR	JPN	LAC	MHW	PPN	RFR	SMC	MCH	SGB	BAR	MCP	URB	WTM	WFR	VOW
Valley elderberry longhorn beetle				9 11 12						9 11 12		9 11 12								
<b>Amphibian</b>																				
California red-legged frog								9 10												
<b>Birds</b>																				
Bald eagle	9 10 11							9 10 11 12												
Greater sandhill crane																	9 11 12			
Peregrine falcon	11	11	11	10 11 12	9 11 12	11	11	12	9 11 12	10 11 12	11		10	11	11	11	10 11	11	11	10
Swainson's Hawk	11			11	11				11	11						11				
Willow flycatcher	11																9 11 12			
<b>Mammals</b>																				
California wolverine												11				11				

NOTES: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

**Habitats:**

AGS = Annual Grassland  
 BOP = Blue Oak-Foothill Pine  
 BOW = Blue Oak Woodland  
 CRC = Chamise-Redshank Chaparral  
 DFR = Douglas-Fir  
 FEW = Fresh Emergent Wetland  
 JPN = Jeffrey Pine  
 LAC = Lacustrine  
 LPN = Lodgepole Pine  
 LSG = Low Sagebrush  
 MCP = Montane Chaparral  
 MCH = Mixed Chaparral  
 MHC = Montane Hardwood-Conifer  
 MHW = Montane Hardwood  
 MRI = Montane Riparian  
 PPN = Ponderosa Pine  
 RFR = Red Fir  
 RIV = Riverine  
 SCN = Subalpine Conifer  
 SGB = Sagebrush

SMC = Sierra Mixed Conifer  
VOW = Valley Oak Woodland  
VRI = Valley Foothill Riparian  
WFR = White Fir  
WTM = Wet Meadow

There are no threatened or endangered reptile species that occur or that have the potential to occur within the North Yuba River Bundle. Therefore, there would be *no impact* to these species in the North Yuba River Bundle.

Wintering bald eagle occurrences are associated with this land area. Although no nesting activity of bald eagle has ever been reported at Englebright Reservoir, the possibility of future nesting activity at the reservoir cannot be discounted. Three factors combine to produce high quality bald eagle habitat: an adequate and exploitable food supply; forested habitat for nesting; perching, and roosting; and freedom from human disturbance. In addition to the bald eagle, suitable habitat for other threatened or endangered bird species does occur within the North Yuba River Bundle project boundary. A variety of adverse effects associated with habitat loss and degradation of listed bird species could occur due to development (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to lacustrine, blue oak-foothill pine, wet meadow, and montane hardwood habitat types could result in a *significant impact* to a listed bird species such as bald eagle.

There are no threatened or endangered mammal species that occur or that have the potential to occur within the North Yuba River Bundle. Therefore, there would be *no impact* to these species in the North Yuba River Bundle.

No listed plant species have potential to occur in the Narrows-Lake Englebright land area, therefore *no impact* would occur.

#### ***Timber Harvest***

There are no anticipated potential timber harvest plans for the North Yuba River Bundle project lands. As a result, *no impact* to listed species is anticipated due to timber harvesting.

#### ***Mineral Extraction***

There are no projected mineral extraction activities for the Narrows-Lake Englebright land area. As a result, *no impact* to listed species is anticipated.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to the protection of threatened or endangered species in the North Yuba River –Narrows Bundle.

Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the North Yuba River Bundle could result in a *significant impact*.

#### **Bundle 10: Potter Valley (FERC 0077)**

There are several sensitive habitats and special-status species in the vicinity of Bundle 10. Please see Figures 4.5-33 for mapped information.

Two land areas within the Potter Valley Bundle have been identified as having development potential: Potter Valley-Van Arsdale Reservoir/Potter Valley Powerhouse and Pillsbury Reservoir.

Pacific Gas and Electric Company lands within the Potter Valley Bundle contain habitat that is known to support bald eagle. In addition, there is a potential for these lands to support other threatened or endangered species such as the California red-legged frog, and peregrine falcon. Although the above threatened and endangered species have not been observed within the Potter Valley Bundle, suitable habitat for the species may exist. Table 4.5-73 presents the threatened and endangered species that are associated with the habitats in the Potter Valley Bundle.

#### ***Land Development***

The land use development assumed in Chapter 3 identifies that the Van Arsdale Reservoir/Potter Valley Powerhouse land area has the potential for 13 EDUs on a total of 2,057 acres. Construction of these units could result in direct loss of threatened and endangered species or their habitat. As a result, *significant impacts* to threatened and endangered species and their habitats can be anticipated due to development.

The only listed amphibian species with potential to occur on lands within the Potter Valley Bundle project boundary is California red-legged frog. Effects, such as those listed in Table 4.5-81, could result from development. These effects, if they were to occur within or directly adjacent to

lacustrine or riparian habitat could result in a *significant impact* to a listed amphibian species such as California red-legged frog.

There are no threatened or endangered reptile species that occur or that have the potential to occur within the Potter Valley Bundle. Therefore, there would be *no impact* to these species in the Potter Valley Bundle.

The bald eagle is known to winter in the Eel River drainage and has been sighted within the Van Arsdale Reservoir/Potter Valley Powerhouse land area. Although no nesting activity of bald eagle has ever been reported at Van Arsdale Reservoir, the possibility of future nesting activity at the reservoir cannot be discounted. Three factors combine to produce high quality bald eagle habitat: adequate and exploitable food supply, forested habitat for nesting sites, perching, roosting, and freedom from human disturbance. In addition to the bald eagle, suitable habitat for other threatened or endangered species does occur within the Potter Valley Bundle. A variety of adverse effects associated with habitat loss and degradation of listed bird species could occur due to development in the land area. Adverse effects contributing to this significant impact are listed in Table 4.5-81. Future development could result in the removal of trees that provide nesting habitat for listed bird species. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a significant impact, and if significant development could occur here, it is highly likely that any or all of these raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

There are no threatened or endangered mammal species that occur or that have the potential to occur within the Potter Valley Bundle. Therefore, there would be *no impact* to these species in the Potter Valley Bundle.

Five listed plant species have the potential to occur within the Van Arsdale Reservoir land area. These plant species are McDonald's rock cress, Baker's meadowfoam, Milo Baker's lupine, Lake County stonecrop, and showy Indian clover. Based on the level of future development that is expected, and the proximity to suitable habitats, there is potential for future development on watershed lands associated with this land area to result in a *significant impact* to listed special-status plant species.

**Lake Pillsbury.** The Lake Pillsbury land area, according to land use development assumed in Chapter 3, has potential for 188 EDUs on a total of 3,765 acres in the land area. At this density of development, it is assumed that the habitat value would be substantially reduced, resulting in significant adverse effects to all TES that use this land area. As a result, potentially significant impacts to threatened or endangered species can be anticipated due to the density of development. Parcels immediately adjacent to Van Arsdale Reservoir and the northern region of Lake Pillsbury could most likely be developed for outdoor recreational uses. Construction of new facilities on Lake Pillsbury and Van Arsdale Reservoir would increase the level of activity and could lead to

increased noise and disturbance to species using shoreline habitat (e.g., waterfowl, osprey, bald eagle). This also would cause adverse effects to TES within the Bundle 10 project boundary.

The only listed amphibian species with potential to occur within the Potter Valley Bundle is California red-legged frog. Effects, such as those listed in Table 4.5-81, could result from development. These effects, if they were to occur within or directly adjacent to lacustrine or riparian habitat, could result in a *significant impact* to California red-legged frog.

There are no threatened and endangered reptile species that occur or that have the potential to occur within the Potter Valley Bundle. Therefore there would be *no impact* to these species within the Potter Valley Bundle project land.

Bald eagle is a known to occur within this land area. The nest is located at Lake Pillsbury and has been documented since 1967. Mendocino National Forest has established primary and secondary management zones to protect the nest. It is also common for bald eagles to winter in the Eel River drainage and they have been sighted near the Cape Horn Dam. In addition to the bald eagle, suitable habitat for other threatened or endangered species does occur within the Potter Valley Bundle project boundary. A variety of adverse effects associated with habitat loss and degradation of listed bird species could occur due to development in the land area (see Table 4.5-81). Future development could result in the removal of trees that provide nesting habitat for listed bird species. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a *significant impact*, and if significant residential development could occur here, it is highly likely that any or all of these raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

There are no threatened and endangered mammal species that occur or that have the potential to occur within the Potter Valley Bundle. Therefore there would be *no impact* to these mammal species within the Potter Valley Bundle project land.

One listed plant species has the potential to occur within the Lake Pillsbury land area. This plant species is Lake County stonecrop. Based on the level of future development that is expected and the proximity to suitable habitats, there is potential for future development on watershed lands associated with this land area to result in a *significant impact* to this listed plant species.

#### ***Timber Harvest***

Aggressive timber harvesting is possible for the two land areas in the Potter Valley Bundle. The aggressive harvest scenario presents timber harvest activities that could potentially occur under a new owner. According to the aggressive harvest scenario 2,900 acres (20,000 MBF) of the 3,400 acres of available commercial forest land could be harvested over the next five years. Under this assumption, the even-age method would be used on 275 acres (6,875 MBF) and the uneven-age method would be used on 2,625 acres (13,125 MBF), which is 85 percent of the total acres treated.



Potential effects associated with timber harvest include direct habitat loss, particularly with even-aged harvesting, as well as habitat degradation due to erosion. In areas subjected to even-age harvest there is a potential for habitat fragmentation, depending upon the size and location of the harvest. For example, if even-age harvest is spread out over several parcels within the Bundle 10 project boundary, the potential impact is reduced. Should even-age harvest occur in a concentrated area in a transition zone between two habitat types (e.g., ponderosa pine and montane hardwood), the potential would be much greater. If direct loss of habitat should occur due to timber harvesting, this could result in a *significant impact* to threatened or endangered species within these land areas.

The only listed amphibian species with potential to occur on lands within the Potter Valley Bundle project boundary is California red-legged frog. Effects, such as those listed in Table 4.5-81, could result from timber harvesting. Adverse effects of particular concern include habitat degradation due to erosion and point source pollution, especially if timber harvest activities were occurring within preferred habitat for the California red-legged frog (i.e., lacustrine, riparian, and riverine). These adverse effects could result in a *significant impact* to a listed amphibian species in the Potter Valley Bundle.

There are no threatened or endangered reptile species that occur or that have the potential to occur within the Potter Valley Bundle. Therefore, there would be *no impact* to these species in the Potter Valley Bundle.

Bald eagle is known to occur within these land areas. Nests have been sighted at Lake Pillsbury as well as near the Eel River drainage. It is also common for bald eagle to winter in the Eel River drainage and they have been sighted near the Cape Horn Dam. In addition to the bald eagle, suitable habitat for other threatened or endangered species such as peregrine falcon, does exist within the Potter Valley Bundle project boundary. A variety of adverse effects associated with habitat loss and degradation of listed bird species could occur due to timber harvesting (see Table 4.5-81). Effects of specific concern to listed bird species are noise, increased habitat degradation due to human activity, habitat fragmentation in areas of clear-cutting, and direct loss of habitat, including loss of nest trees. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a *significant impact*, and if significant timber harvesting could occur here, it is highly likely that any raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

There are no threatened or endangered mammal species that occur or that have the potential to occur within the Potter Valley Bundle. Therefore, there would be *no impact* to these species in the Potter Valley Bundle.

Five listed plant species have the potential to occur within the Van Arsdale Reservoir land area. These plant species are McDonald's rock cress, Baker's meadowfoam, Milo Baker's lupine, Lake County stonecrop, and showy Indian clover. Based on the level of future development that is expected, and the proximity to suitable habitats, there is potential for future development on

watershed lands associated with this land area to result in a *significant impact* to listed special-status plant species.

#### ***Mineral Extraction***

No mineral extraction activity on lands within the Potter Valley Bundle project boundary is predicted. As a result, *no impact* to threatened or endangered species is anticipated due to new mining.

#### ***Informal Agreements/ Best Management Practices***

Pacific Gas and Electric Company has several informal agreements associated with the Potter Valley project that provide support for TES and their habitats.

- Pacific Gas and Electric Company's Timber Harvest Plan, approved by the California Department of Forestry, for the Trout Creek area was withdrawn in 1989 due to concerns expressed by Friends of Trout Creek about potential impacts to old growth and virgin stands, and archeological sites existing in the Trout Creek area. A new owner might choose not to continue this informal agreement and therefore choose to harvest the Trout Creek area. Effects of timber harvest would be similar to the above discussion under land management changes.
- Pacific Gas and Electric Company participates in bald eagle monitoring at Lake Pillsbury
- Pacific Gas and Electric Company donates \$500 annually to the Mendocino County 4-H Club to clean up the Eel River from Van Arsdale Dam to the Mendocino County Line. Pacific Gas and Electric Company provides lunch to the volunteers in addition to the donation. This practice is purely informal and is not required under Pacific Gas and Electric Company FERC license or other regulatory requirements.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Potter Valley Bundle could result in a *significant impact*.

### **Bundle 11: South Yuba River - Drum-Spaulding (FERC 2310)**

There are several sensitive habitats and special-status species in the vicinity of South Yuba River Bundle. Please see Figures 4.5-35 and 4.5-41 for mapped information.

Ten land areas within the South Yuba River Bundle have been identified as having development potential: Kidd Lake/Cascade Lakes, Meadow Lake/Fordyce Lake/Lake Sterling/White Rock Lake, Rock Lake/Lindsey Lakes, Lake Valley Reservoir, Lake Spaulding/Drum Penstock Forebay, Dutch Flat-Bear River North of Rollins Reservoir, Rollins Reservoir/Bear River, Halsey Forebay/Lake Arthur, Rock Creek Lake/Auburn, and Folsom Lake.

Pacific Gas and Electric Company lands within the South Yuba River Bundle contain habitat that is known to support bald eagle. In addition, there is a potential for these lands to support other threatened or endangered species such as, valley elderberry longhorn beetle, peregrine falcon, Swainson's hawk, willow flycatcher, and California wolverine to name a few. Although these threatened or endangered species have not been observed within the South Yuba River Bundle project boundaries, suitable habitat for the species may exist. In addition, threatened or endangered species occurring on adjacent lands may be affected by the project. Table 4.5-73 presents the threatened or endangered species that are associated with the habitats in the South Yuba River Bundle.

#### ***Land Development***

Land use development assumed in Chapter 3 states the following development intensities, expressed in EDUs, for each land area in the South Yuba River Bundle. Kidd Lake/Cascade Lakes land area has a development intensity of 38 EDUs on 192 acres. Rock Lake/Lindsey Lakes and Lake Valley Reservoir land areas have potential for development of five EDUs on 763 acres, and 329 EDUs on 1,645 acres respectively. Meadow Lake/Fordyce Lake/Lake Sterling/White Rock Lake land area could develop seven EDUs on 1,167 acres. Lake Spaulding/Drum Penstock Forebay land area has potential for 2,396 EDUs on 9,585 acres; Dutch Flat - Bear River North of Rollins Reservoir land area has potential for 517 EDUs on 2,067; Rollins Reservoir/Bear River land area could develop 12 EDUs on 47 acres; Halsey Forebay/Lake Arthur land area has potential for 357 EDUs on 713 acres; Rock Creek Lake/Auburn land area could develop 198 EDUs on 198 acres; and the Folsom Lake land area has potential for four EDUs on 19 acres. Construction of these units could result in direct loss of TES or their habitat. To accommodate these levels of development would require grading and tree removal. At this density, it is assumed that the habitat value would be substantially reduced resulting in significant adverse effects to all threatened or endangered species that use this land area. As a result, *significant impacts* to threatened or endangered species can be anticipated.

Although valley elderberry longhorn beetle (Table 4.5-74) has not been observed within the South Yuba River Bundle project lands, suitable habitat for this species does exist. A variety of adverse

effects associated with habitat loss and degradation could occur due to residential development in the land area (see Table 4.5-81). Of particular concern for this species are riparian habitats where elderberry bush could occur. Removal or degradation to this bush would result in direct habitat loss for the valley elderberry longhorn beetle. These effects, if they were to occur within or directly adjacent to potential habitat of these species, could result in a *significant impact* to the valley elderberry longhorn beetle.

There is no known occurrence of threatened or endangered reptile or amphibian species within the South Yuba River Bundle. Therefore there would be *no impact* to these species due to development.

According to Tahoe National Forest surveys, the lakes and reservoirs of this region are used by the bald eagle for nesting and foraging habitat. In addition to the bald eagle, suitable habitat for other threatened or endangered bird species such as greater sandhill crane, peregrine falcon, Swainson's hawk, and willow flycatcher does occur within the South Yuba River Bundle project boundaries (see Table 4.5-73). A variety of adverse effects associated with habitat loss and degradation of listed bird species could occur due to development in the land area (see Table 4.5-81). Any development could result in the removal of trees that provide nesting and foraging habitat for sensitive bird species. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a significant impact, and if significant development occurred here, it is highly likely that these raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The California wolverine has the potential to occur within the South Yuba River Bundle based on habitat type and species range information. The habitat types this species is associated with are typical of high-elevation Sierran coniferous communities such as, Sierran mixed conifer and montane chaparral. Sierran mixed conifer forests can be found along the entire western range of South Yuba River Bundle. Construction and development could result in direct habitat loss for the California wolverine. In addition, there is potential for habitat fragmentation to occur in areas of extensive development in the South Yuba River Bundle (see Table 4.5-81). Fragmentation of montane chaparral and Sierran mixed conifer habitats in the vicinity of these land areas could adversely affect the breeding and foraging patterns of California wolverine. As a result, future development within South Yuba River Bundle project lands could result in a *significant impact* to this listed mammal species.

No listed plant species have potential to occur in the South Yuba River Bundle land areas with the exception of the Rollins Reservoir-Bear River land area. The listed plant species with potential to occur in the Rollins Reservoir/ Bear River land area is Scadden Flat checkerbloom. Based on the level of future development that is expected and the proximity to suitable habitats, there is potential for future development on lands associated with the Rollins Reservoir/ Bear River land area that could result in a *significant impact* to listed special-status plant species such as Scadden Flat checkerbloom.

### ***Timber Harvest***

Aggressive timber harvesting is a possibility for the South Yuba River Bundle project land. The aggressive harvest scenario presents timber harvest activities that could potentially occur under a new owner. According to the aggressive harvest scenario 5,378 acres of commercial forestland could be harvested over the next five years, which would result in an 85 percent of the total acres in the South Yuba River bundle. Under this assumption, the even-age method would encompass 950 acres and the uneven-age method 4,428 acres.

Potential effects associated with timber harvest include direct habitat loss, particularly with even-aged harvesting, as well as habitat degradation due to erosion. In areas subjected to even-age harvest there is a potential for habitat fragmentation, depending upon the size and location of the harvest. For example, if even-age harvest is spread out over several parcels within the South Yuba River Bundle project boundary, the potential for habitat fragmentation is remote. Should even-age harvest occur in a concentrated area in a transition zone between two habitat types (i.e., ponderosa pine and montane hardwood), the potential for habitat fragmentation would be much greater.

Although valley elderberry longhorn beetle (Table 4.5-74) has not been observed within the South Yuba River Bundle project lands, suitable habitat for this species does exist. A variety of adverse effects associated with habitat loss and degradation could occur due to timber harvesting (see Table 4.5-81). Of particular concern for this species are riparian habitats where elderberry bush could occur. Removal or degradation to this bush would result in direct habitat loss for the valley elderberry longhorn beetle. These effects, if they were to occur within or directly adjacent to potential habitat of these species, could result in a *significant impact* to the valley elderberry longhorn beetle.

There is no known occurrence of threatened or endangered reptile or amphibian species within the South Yuba River Bundle. Therefore there would be *no impact* to these species due to timber harvest.

According to Tahoe National Forest surveys, the lakes and reservoirs of this region are used by the bald eagle for nesting and foraging habitat. In addition to the bald eagle, suitable habitat for other threatened or endangered bird species such as greater sandhill crane, peregrine falcon, Swainson's hawk, and willow flycatcher does occur within the South Yuba River Bundle project boundaries (see Table 4.5-73). A variety of adverse effects associated with habitat loss and degradation of listed bird species could occur due to timber harvesting (see Table 4.5-81). Effects of specific concern to listed bird species are noise, increased habitat degradation due to human activity, habitat fragmentation in areas of clear-cutting, and direct loss of habitat, including loss of nest trees. Any level of timber harvest could result in the removal of trees that provide nesting and foraging habitat for sensitive bird species. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a significant impact, and if significant timber harvest occurred here, it is highly likely

raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The California wolverine has the potential to occur within the South Yuba River Bundle based on habitat type and species range information. Specific adverse effects associated with timber harvesting in the South Yuba River Bundle project lands which could impact California wolverine include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and resultant edge effect (see Table 4.5-81). Fragmentation of montane chaparral and Sierran mixed conifer habitats in the vicinity of these land areas could adversely affect the breeding and foraging patterns of California wolverine. As a result, timber harvesting within South Yuba River Bundle project lands could result in a *significant impact* to this listed mammal species.

No listed plant species have potential to occur in the South Yuba River Bundle land areas with the exception of the Rollins Reservoir-Bear River land area. The listed plant species with potential to occur in the Rollins Reservoir/ Bear River land area is Scadden Flat checkerbloom. Based on the level of future development that is expected and the proximity to suitable habitats, there is potential for future development on lands associated with the Rollins Reservoir/ Bear River land area that could result in a *significant impact* to listed special-status plant species such as Scadden Flat checkerbloom.

#### ***Mineral Extraction***

There will be no mineral extraction activity for lands within the South Yuba River Bundle project boundary. As a result, *no impact* to listed species is anticipated due to new mining.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to protection of threatened or endangered species in the South Yuba River Bundle.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the South Yuba River Bundle could result in a *significant impact*.

#### **Bundle 12: Chili Bar (FERC 2155)**

There are several sensitive habitats and species in the vicinity of the Chili Bar Bundle. Please see Figures 4.5-42 for mapped information.

Pacific Gas and Electric Company lands within the Chili Bar Bundle have habitat types to support threatened or endangered species such as, valley elderberry longhorn beetle, bald eagle, great egret, greater sandhill crane, peregrine falcon, and willow flycatcher. In addition, threatened or endangered species on adjacent lands may be affected by the project. Table 4.5-73 presents the threatened or endangered species that are associated with the habitats in the Chili Bar Bundle.

#### ***Land Development***

Land use development assumed in Chapter 3 states the American River-Chili Bar/Slab Creek Reservoirs land area has development intensity of four EDUs for 158 acres in the land area. Construction of these units could result in direct loss of TES or their habitat. In addition, recreational development in the Chili Bar Reservoir and Slab Creek Reservoir land area would increase the level and intensity of recreational activity that could lead to increased noise and disturbance to species using shoreline habitat (e.g., waterfowl, osprey, bald eagle). As a result, *significant impacts* to threatened or endangered species can be anticipated due to the density of development.

There are no listed invertebrate species that have been observed within the Chili Bar Bundle project boundaries. However, suitable habitat for species such as the valley elderberry longhorn beetle exists. A variety of adverse effects associated with habitat loss and degradation could occur due to land development (see Table 4.5-81). Of particular concern for this species are riparian habitats where elderberry bush could occur. Removal or degradation to this bush would result in direct habitat loss for the valley elderberry longhorn beetle. These effects, if they were to occur within or directly adjacent to potential habitat of these species, could result in a *significant impact* to the valley elderberry longhorn beetle.

There is no known occurrence of a threatened or endangered amphibian, reptile, or mammal species on lands within the Chili Bar Bundle. Therefore there would be *no impact* to these species due to land development.

There is no known occurrence of a listed bird species within the Chili Bar Bundle project land. However, there is the potential for several listed bird species to occur within the project area based on habitat types and species range information. Bald eagle, greater sandhill crane, peregrine falcon, and willow flycatcher all have the potential to occur within the Chili Bar Bundle. A variety

of adverse effects associated with habitat loss and degradation of listed bird species could occur due to land development (see Table 4.5-81). Development could also result in the removal of trees that provide nesting habitat for listed bird species. For purposes of this analysis, any loss or abandonment of a known raptor nest is considered a significant impact, and if significant development occurred here, it is highly likely that any or all of these raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

Four listed plant species have potential to occur in the Chili Bar Bundle, Stebbin's morning glory, Pine Hill ceanothus, El Dorado bedstraw, and Layne's ragwort. Based on the level of future development that is expected and the proximity to suitable habitats, there is potential for future development on watershed lands associated with the Chili Bar bundle to result in a *significant impact* to listed plant species

#### ***Timber Harvest***

According to the forestry assumptions in Section 4.2, there will be no timber harvest plans for the Chili Bar Bundle. As a result, *no impact* to listed species is anticipated.

#### ***Mineral Extraction***

There is no mineral extraction activity anticipated for the Chili Bar Bundle project lands. As a result, *no impact* to listed species is anticipated.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to the protection of threatened or endangered species in the Chili Bar Bundle.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Chili Bar Bundle could result in a *significant impact*.



### **Summary of Impact to Entire Drum Regional Bundle**

The project could result in *significant adverse impacts* to wildlife and plant species that are listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act in the Drum Regional Bundle.

#### **4.5.8.4 Motherlode Regional Bundle**

##### **Bundle 13: Mokelumne River (FERC 0137)**

There are several habitats and sensitive species in the vicinity of Bundle 13. Please see Figures 4.5-24 and 4.5-27 for mapped information.

The five land areas within the Mokelumne River Bundle are identified as having development potential: Tiger Creek Reservoir and Facilities; Electra Tunnel/West Point Powerhouse; Lake Tabeaud/Electra Powerhouse; Bear River Reservoir/Lower Bear River Reservoir/Salt Springs; and Upper and Lower Blue Lakes/Meadow Lake/Twin Lake.

#### ***Land Development***

##### ***Tiger Creek Reservoir and Facilities***

Land use development in Chapter 3 identifies development for the Tiger Creek Reservoir and Facilities land area as resulting in approximately 11 equivalent development units (EDUs) for 1,752 acres in the land area. Construction of these units could result in direct loss of TES or their habitat. As a result, *significant impacts* to TES and their habitats can be anticipated due to development.

Valley elderberry longhorn beetle is the only listed invertebrate that has been documented in the Tiger Creek area. Future development in the vicinity of Tiger Creek would result in a variety of adverse effects that would contribute to a *significant impact* to listed invertebrate species.

The only listed amphibian species with potential to occur within the Tiger Creek land area is California red-legged frog. Effects listed in Table 4.5-81, Impacts of Land Use Alterations could result in a *significant impact* to a listed amphibian species such as California red-legged frog.

There are no listed reptile species with potential to occur in the Tiger Creek land area. Therefore, there are *no impacts* to listed reptiles as a result of development.

Bald eagle, great gray owl, peregrine falcon, and willow flycatcher are the four listed bird species that would be expected to occur in this land area. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) could also affect one or more of these listed bird species.

**Table 4.5-74 State/Federal Listed Wildlife Species That Are Found In Each Vegetation Community For The Motherlode Region**

Species	Known	MRI	CRP	RIV	VRI	CRC	AGS	SCN	BAR	BOP	DFR	JPN	LAC	MHW	PPN	RFR	SMC	MHC
<b>Invertebrates</b>																		
Valley elderberry longhorn beetle	Yes	13 14			13 14													
<b>Amphibians</b>																		
California red-legged frog	No			13 14 15	13 14 15								13 14 15					
<b>Reptiles</b>																		
Giant garter snake	No			13 14 15	13 15		15			13 14			13 14 15	13 14	13 14			13 14
<b>Birds</b>																		
Bald eagle	Yes			13 14 15									13 14 15					
Bank swallow	No			15														
Great gray owl	Yes														13 14	13 14	13 14	
Peregrine falcon	Yes								13 14							13	13 14	13 14
Swainson's hawk	Yes						15			15				15	15			15
Willow flycatcher	Yes	13 14		13 14														
<b>Mammals</b>																		
California wolverine	Yes	13 14						13 14								13 14	13 14	
Riparian brush rabbit	No				15	15	15											
Riparian woodrat	No									13 14 15				13 14 15			13 14 15	13 14 15
Sierra Nevada red fox	Yes	13 14						13 14							13 14	13 14	13 14	13 14

Notes: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

Habitats:

AGS = Annual Grassland  
BOP = Blue Oak-Foothill Pine

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BOW	=	Blue Oak Woodland
CRC	=	Chamise-Redshank Chaparral
DFR	=	Douglas-Fir
FEW	=	Fresh Emergent Wetland
JPN	=	Jeffrey Pine
LAC	=	Lacustrine
LPN	=	Lodgepole Pine
LSG	=	Low Sagebrush
MCP	=	Montane Chaparral
MCH	=	Mixed Chaparral
MHC	=	Montane Hardwood-Conifer
MHW	=	Montane Hardwood
MRI	=	Montane Riparian
PPN	=	Ponderosa Pine
RFR	=	Red Fir
RIV	=	Riverine
SCN	=	Subalpine Conifer
SGB	=	Sagebrush
SMC	=	Sierra Mixed Conifer
VOW	=	Valley Oak Woodland
VRI	=	Valley Foothill Riparian
WFR	=	White Fir
WTM	=	Wet Meadow

Removal of trees associated with development could disrupt these nesting birds. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a significant impact, and if significant development could occur here, it is highly likely that these raptors would abandon their nests in search of quieter habitat. This is considered a *significant impact* for listed bird species.

Listed mammal species for the Tiger Creek land area include California wolverine, riparian woodrat, and Sierra Nevada red fox. Development could result in direct habitat loss for listed mammals, and fragmentation of those habitats. Fragmentation could adversely affect the breeding and foraging patterns of California wolverine and Sierra Nevada red fox. As a result, this is considered a *significant impact* for listed mammal species.

No listed plant species have potential to occur in the Tiger Creek Reservoir and Facilities land area, therefore *no impact* would occur. Likewise, no listed plant species have potential to occur in the Electra Tunnel/ West Point Power House land area, therefore *no impact* would occur.

***Lake Tabeaud/Electra Powerhouse, Bear River Reservoir/Lower Bear River Reservoir/Salt Springs.*** Land use development in Chapter 3 identifies development for the Lake Tabeaud/Electra Powerhouse, Bear River Reservoir/Lower Bear River Reservoir/Salt Springs land areas as resulting in approximately 150 EDUs on 752 acres, and 38 EDUs on 1,506 acres, respectively, in the land area. With this development, it is assumed that the habitat value would be substantially reduced, resulting in significant adverse effects to all TES that use this land area.

Valley elderberry longhorn beetle (VELB) is the only listed invertebrate for these land areas, and has been documented in the West Point area. Future development in the vicinity of this land area

would result in a variety of adverse effects (see Table 4.5-81) that would contribute to a *significant impact* to listed invertebrate species, primarily VELB.

The only listed amphibian species with potential to occur within these land areas is California red-legged frog. Point source pollution, increased predation by feral/domesticated pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss could result from residential development. These effects could result in a *significant impact* to a listed amphibian species such as California red-legged frog.

The only listed reptile species with potential to occur in these land areas, specifically the Lake Tabaud/Electra Powerhouse land area, is giant garter snake. Giant garter snake is a resident of the Central Valley and would be expected to occur in this land area. Effects to giant garter snake (see Table 4.5-81), as a result of future development, could result in a *significant impact* to listed special-status reptile species such as giant garter snake.

Bald eagle, great gray owl, peregrine falcon, and willow flycatcher are the four listed bird species that would be expected to occur in these land areas. Adverse effects to listed bird species are noted in the Bundle 1. There is the potential for development, and it therefore considered a *significant impact* for listed bird species.

Listed mammal species for these land areas include California wolverine, riparian woodrat, and Sierra Nevada red fox. Development could result in direct habitat loss for listed mammals, and fragmentation of those habitats as well as the other effects listed in Table 4.5-81. As a result, this is considered a *significant impact* for listed mammal species.

The only listed plant species with potential to occur in the Lake Tabaud/ Electra Powerhouse land area is lone manzanita. Based on the level of future development that is expected and the proximity to suitable habitats, there is potential for future development on watershed lands associated with the Lake Tabaud/ Electra Powerhouse land area to result in a *significant impact* to listed plant species such as lone manzanita.

No listed plant species have potential to occur in the Bear River Reservoir/Lower Bear River Reservoir/ Salt Springs land area, therefore *no impact* would occur.

***Upper and Lower Blue Lakes/Meadow Lake/Twin Lake.*** The Upper and Lower Blue Lakes/Meadow Lake/Twin Lake land area has a development potential of 67 EDUs to be constructed on 1,338 acres in this land area. Effects to TES as a result of development are listed in Table 4.5-81. As a result, *significant impacts* to threatened or endangered species can be anticipated due to development.

Because VELB does not occur above 3,000 feet in elevation, it will not occur within this land area. Therefore, there are *no impacts* to listed invertebrate species in this land area for development.

The only listed amphibian species with potential to occur within this land area is California red-legged frog. Point source pollution, increased predation by feral/domesticated pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss could result from development. These effects could result in a *significant impact* to a listed amphibian species such as California red-legged frog.

There are no listed reptile species with potential to occur in this land area. Therefore, there are *no impacts* to listed reptiles in this land area as a result of development.

Bald eagle, great gray owl, peregrine falcon, and willow flycatcher are the four listed bird species that would be expected to occur in this land area. Adverse effects to listed bird species are stated in Bundle 1. Therefore, these effects are considered a *significant impact* for listed bird species.

Listed mammal species for this land area include California wolverine. The California wolverine has been documented in this land area. Development could result in direct habitat loss for listed mammals, and fragmentation of those habitats as well as the other effects listed in Table 4.5-81. As a result, this is considered a *significant impact* for listed mammal species.

No listed plant species have potential to occur in the Upper and Lower Blue Lakes/ Meadow Lake/ Twin Lake land area, therefore *no impact* would occur.

### ***Timber Harvest***

A significant acreage associated with the Mokelumne River Bundle (i.e., over 850 acres of a total 2,100, or 40 percent total commercial forest lands) has potential for future aggressive timber harvesting activities, both even-aged and uneven-aged harvest. Although the majority of the timber harvest is expected to be in the form of select cutting (i.e., uneven-aged harvest), over 820 acres of combined habitat in the form of Sierran mixed conifer, white fir, Douglas fir, and montane-hardwood conifer would be affected. In addition, over 30 acres could be subjected to clear cutting which, if localized, could result in significant habitat fragmentation and edge effect. The majority of future timber harvest activities would occur on lands associated with the Tiger Creek Reservoir and Facilities land area, the Electra Tunnel/West Point Powerhouse land area, and the Upper and Lower Blue Lakes/Meadow Lake/Twin Lake land area.

VELB is the only listed invertebrate for the Mokelumne River Bundle, and has been documented in the Tiger Creek and West Point areas. Aggressive timber development in the vicinity could result in a variety of adverse effects that would contribute to a *significant impact* to VELB.

The only listed amphibian species with potential to occur within the Mokelumne River Bundle project boundary is California red-legged frog. Point source pollution, erosion, soil compaction, and direct habitat loss could result from aggressive timber harvest. These effects could result in a *significant impact* to California red-legged frog.

The only listed reptile species with potential to occur in the Mokelumne River Bundle is giant garter snake. Giant garter snake is a resident of the Central Valley and is not expected to occur in the areas of the Mokelumne River Bundle that are being considered for aggressive timber harvest. Therefore, there would be *no impact* to giant garter snake as a result of aggressive timber management.

Bald eagle, great gray owl, peregrine falcon, and willow flycatcher are the four listed bird species that would be expected to occur in this the Mokelumne River Bundle. There is the potential for take of a raptor nest during timber harvest, and it therefore considered a *significant impact* for listed bird species.

Listed mammal species for the Mokelumne River Bundle include California wolverine, riparian woodrat, and Sierra Nevada red fox. Additional timber harvest could result in direct habitat loss for listed mammals, and fragmentation of those habitats as well as the other effects listed in Table 4.5-81. As a result, this is considered a *significant impact* for listed mammal species.

No listed plant species have potential to occur in the Tiger Creek Reservoir and Facilities or Electra Tunnel/ West Point Power House land area, therefore *no impact* would occur.

#### ***Mineral Extraction***

No additional mineral extractions are expected to occur on lands associated with the Mokelumne River Bundle. As a result, *no impacts* to TES or their habitats are anticipated.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company honors several informal agreements associated with the Mokelumne River project.

- Tiger Creek Afterbay is voluntarily kept at two feet above normal minimum operating elevation in order to provide water for the Amador County Water Agency (AWCA).
- Pacific Gas and Electric Company holds Upper and Lower Blue Lakes, Twin Lake, Meadow Lakes and Lake Tabeaud at near full through the summer.
- Pacific Gas and Electric Company imposes voluntary ramping rates below Salt Springs Dam, Tiger Creek Afterbay, and Electra Diversion for public safety.
- Pacific Gas and Electric Company has revised its operating procedures for Tiger Creek and West Point powerhouse to prevent sudden surges and fluctuations.

All of the above agreements directly or indirectly benefit biological resources within the Mokelumne River Bundle project land. Since these current agreements have not yet been formalized, a new owner is not legally obligated to comply with them, unless they become conditions in the new FERC licenses. Non-transference of these informal agreements could negatively impact aquatic wildlife that rely on stable, slow-moving water systems (such as

amphibians and reptiles). Those species that rely on reservoir levels to remain high for foraging, such as bald eagle, may suffer negative impacts if reservoir levels were drawn down too low to support a healthy fish population. Other species that use riparian vegetation for some or all of their life cycle, or that have territories that overlap the river (such as furbearers) may experience negative impacts if river levels became too high and habitat became degraded, or movement through the territory was impaired. Negative impacts may also occur if ramping or flushing suddenly increased river levels, and these species became trapped in the river. Therefore, this would be considered a *significant* impact.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the following Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Mokelumne River Bundle could result in a *significant impact*.

#### **Bundle 14: Stanislaus River - Spring Gap-Stanislaus (FERC 2130), Phoenix (FERC 1061)**

There are several habitats and sensitive species in the vicinity of Bundle 14. Please see Figures 4.5-28 and 4.5-31 for mapped information.

#### ***Land Development***

Land use development assumed in Chapter 3 states that the Stanislaus River and Lyons Reservoir/Phoenix Reservoir land areas have development potential of 37 EDUs on 1,362 acres and ten EDUs on 347 acres, respectively. With this development, it is assumed that the habitat value would be reduced, resulting in significant adverse effects to all TES that utilize this land area. As a result, *significant impacts* to threatened or endangered species can be anticipated due to the density of development.

Development in the Stanislaus River Bundle, if occurring in the vicinity of the Middle Fork Stanislaus River or South Fork Stanislaus River, could result in adverse effects to valley elderberry

longhorn beetle and/or habitat for the species. This would result in a *significant impact* to a listed invertebrate species.

As noted in Table 4.5-74, the only listed amphibian species with potential to occur on lands within the Stanislaus River Bundle project boundary is California red-legged frog. Point source pollution, increased predation by feral/domesticated pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss could result from development. These effects could result in a *significant impact* to a listed amphibian species such as California red-legged frog.

As noted in Table 4.5-74, the only listed reptile species with potential to occur in the Stanislaus River Bundle is giant garter snake. Based on the level of future development that is expected and the proximity to suitable habitats, there is potential for future development on watershed lands in the Lyons Reservoir/Phoenix Reservoir Land Area to result in a *significant impact* to listed TES such as giant garter snake.

As noted in Table 4.5-74, a total of 4 listed bird species have potential to occur within the Stanislaus River Bundle project lands. These species include bald eagle, willow flycatcher, peregrine falcon, and great gray owl. Of these four species, the following have been observed adjacent to, or within one mile of, Bundle 14 project boundaries in recent years: bald eagle, peregrine falcon, and great gray owl.

There is potential for development on the Stanislaus River Bundle lands, specifically around the Kennedy Meadows area and Lyons Reservoir. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) could also affect one or more of these listed bird species. Removal of trees associated with development could disrupt these nesting bird species. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a significant impact, and if significant development occurred here, it is highly likely that any or all of these raptors would abandon their nests in search of quieter habitat. These adverse effects could result in a *significant impact* to a listed bird species.

As noted in Table 4.5-74, three listed mammal species have potential to occur on lands within the Stanislaus River Bundle project boundary, California wolverine, riparian woodrat, and Sierra Nevada red fox. Recorded occurrences of California wolverine are at Relief Reservoir and Lyons Reservoir, and Sierra Nevada red fox has been recorded along the Middle Fork Stanislaus River above Donnell Lake and below Relief Reservoir. Development could result in direct habitat loss for listed mammals, and fragmentation of those habitats. Fragmentation could adversely affect the breeding and foraging patterns of California wolverine and Sierra Nevada red fox. As a result, future development within the Stanislaus River Bundle project lands would result in a *significant impact* to listed mammal species.

The two listed plant species with potential to occur in the Stanislaus River land area are Layne's ragwort, and Yosemite onion. Based on the level of future development that is expected and the



proximity to suitable habitats, there is potential for future development on watershed lands associated with the Stanislaus River land area to result in a *significant impact* to listed special-status plant species such as Layne's ragwort and Yosemite onion.

### ***Timber Harvest***

A significant acreage associated with the Stanislaus River Bundle (i.e., over 580 acres of a total 800, or 73 percent of the total commercial forest lands) has potential for future aggressive timber harvesting activities, both even-aged and uneven-aged harvest. Although the majority of the timber harvest is expected to be in the form of select cutting (i.e., uneven-aged harvest), 500 acres of combined habitat in the form of Sierran mixed conifer, white fir, Douglas fir, and montane-hardwood conifer would be affected. In addition, over 80 acres could be subjected to clear cutting which, if localized, could result in significant habitat fragmentation and edge effect. The majority of future timber harvest activities would occur on lands associated with the Stanislaus River land area.

Timber harvest in the Stanislaus River Bundle, if occurring in the vicinity of the Middle Fork Stanislaus River or South Fork Stanislaus River, could result in adverse effects to valley elderberry longhorn beetle and/or habitat for the species. This would result in a *significant impact* to a listed invertebrate species.

As noted in Table 4.5-74, the only listed amphibian species with potential to occur within the Stanislaus River Bundle project boundary is California red-legged frog (CRLF). Point source pollution, erosion, soil compaction, and direct habitat loss could result from aggressive timber practices. These effects could result in a *significant impact* to CRLF.

As noted in Table 4.5-74, the only listed reptile species with potential to occur in the Stanislaus River Bundle is giant garter snake. Aggressive timber practices could result in adverse effects (such as those listed for amphibians above) to giant garter snake. This would result in a *significant impact*.

As noted in Table 4.5-74, a total of 4 listed bird species have potential to occur within the Stanislaus River Bundle project boundary. These species include bald eagle, willow flycatcher, peregrine falcon, and great gray owl. Of these four species, the following have been observed adjacent to, or within one mile of the Stanislaus River Bundle project area in recent years: bald eagle, peregrine falcon, and great gray owl. Adverse effects to bird species include, most importantly, direct loss of a raptor nest. Aggressive timber harvest, therefore, is considered a *significant impact* to listed bird species.

As noted in Table 4.5-74, three listed mammal species have potential to occur within the Stanislaus River Bundle project boundary, California wolverine, riparian woodrat, and Sierra Nevada red fox. Recorded occurrences of California wolverine are at Relief Reservoir and Lyons Reservoir, and

Sierra Nevada red fox has been recorded along the Middle Fork Stanislaus River above Donnell Lake and below Relief Reservoir. Potential negative effects to listed mammal species are listed in the Mokelumne River Bundle. As a result, future aggressive timber practices within the Stanislaus River Bundle project lands would result in a *significant impact* to listed mammal species.

The two listed plant species with potential to occur in the Stanislaus River land area are Layne's ragwort, and Yosemite onion. Based on the level of future aggressive timber management that is expected and the proximity to suitable habitats, there is potential to result in a *significant impact* to listed special-status plant species such as Layne's ragwort and Yosemite onion.

#### ***Mineral Extraction***

The opportunities and constraints land use modeling analysis (Land Use, Section 4.1) has identified one location in the Stanislaus River Land Area, located near the Stanislaus forebay and powerhouse, that has potential for additional quartz mining.

New mineral extraction activities in the vicinity of Stanislaus forebay and powerhouse, could result in potential effects to VELB. While VELB is not currently known to occur in this vicinity, it has suitable habitat available in this area. Specific adverse effects that could occur as a result of mineral extraction include habitat degradation due to erosion, soil compaction, and direct habitat loss. These adverse effects would result in a *significant impact* to VELB.

New mineral extraction activities in the vicinity of Stanislaus forebay and powerhouse could result in negative impacts to California red-legged frog (see Table 4.5-81, Impacts of Land Use Alterations). Specific adverse effects that could occur as a result of mineral extraction include point source pollution, fugitive dust, habitat degradation due to erosion, soil compaction, and direct habitat loss. These effects would be exacerbated since they would occur near habitats preferred by the species. Suitable habitat for California red-legged frog exists near the Stanislaus forebay and powerhouse, and these adverse effects would still result in a *significant impact* to California red-legged frog.

Giant garter snake is the only listed reptile to occur in the Stanislaus River Bundle. This species does not usually occur above the Central Valley floor, and likely would not be present in the Stanislaus forebay and powerhouse area. Therefore, there will be *no impact* to giant garter snake resulting from additional mineral extraction.

Similar to the amphibian discussion above, future increased mineral extraction activities could result in negative effects to listed bird species. Species such as bald eagle, peregrine falcon, and great gray owl in the Stanislaus forebay and powerhouse area could be subjected to the following adverse effects: point source pollution, fugitive noise and dust, habitat degradation due to erosion, direct habitat loss (including loss of nesting trees), and habitat fragmentation. These adverse effects would result in a *significant impact* to these TES.

Future increased mineral extraction activities within the Stanislaus River Bundle project land could result in negative impacts to listed mammal species. Sierra Nevada red fox has the potential to occur in the area, and could be subject to the following adverse effects: point source pollution, fugitive noise and dust, habitat degradation due to erosion, direct habitat loss, edge effect, and habitat fragmentation. These adverse effects would result in a *significant impact* to these TES.

The two listed plant species with potential to occur in the Stanislaus River land area are Layne's ragwort, and Yosemite onion. Based on the level of future mineral extraction activities that is expected and the proximity to suitable habitats, there is potential to result in a *significant impact* to listed special-status plant species such as Layne's ragwort and Yosemite onion.

#### ***Informal Agreements/ Best Management Practices***

Currently there are no informal agreements associated with the Stanislaus River Bundle that would adversely affect TES if they were not transferred. Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Mokelumne River Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Stanislaus River Bundle could result in a *significant impact*.

#### **Bundle 15: Merced River - Merced Falls (FERC 2467)**

There are several habitats and sensitive species in the vicinity of Bundle 15. Please see Figures 4.5-32 for mapped information.

#### ***Land Development***

Land use development in Chapter 3 identifies that the Merced Falls land area has development potential of one EDU on eight acres in the land area. Construction of these units could result in direct loss of TES or their habitat. As a result, *significant impacts* to TES and their habitats can be anticipated due to development.

There are no listed invertebrates that have the potential to occur within the Merced River Bundle project boundaries. Therefore, there will be *no impact* to listed invertebrates as a result of additional development.

CRLF is the only listed amphibian that has the potential to occur in the Merced River Bundle. Point source pollution, increased predation by feral/domestic pets, increased habitat degradation due to human activity and erosion, soil compaction, and direct habitat loss could result from development. These effects result in a *significant impact* to CRLF.

Giant garter snake has the potential to occur within the Merced River Bundle project boundaries. Impacts to this species would be similar to amphibians, as Stated above. Therefore, there are *significant impacts* to giant garter snake.

Three listed bird species have potential to occur within the Merced River Bundle. Bald eagle, bank swallow, and Swainson's hawk may all experience negative effects as described in the residential discussion for the Stanislaus River Bundle. Swainson's hawk has been known to nest within the vicinity of the Merced Falls project, and negative effects resulting from development would have a *significant impact* to nesting raptors.

Riparian brush rabbit and riparian woodrat are the only two listed mammal species that could occur in the Merced River Bundle. Negative effects to mammals resulting from development are listed in the Stanislaus River Bundle. While these species have not been documented within the project area, they still may experience *significant impacts* due to development.

No listed plant species have potential to occur in the Merced Falls land area, therefore no impact would occur.

##### ***Timber Harvest***

No additional timber harvest is expected to occur on lands associated with the Merced River Bundle. As a result, *no impacts* to TES or their habitats are anticipated.

##### ***Mineral Extraction***

No additional mineral extraction is expected to occur on lands associated with the Merced River Bundle. As a result, *no impacts* to TES or their habitats are anticipated.

##### ***Informal Agreements/Best Management Practices***

Currently there are no informal agreements associated with the Merced River Bundle that would adversely affect TES if they were not transferred. Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Mokelumne River Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs

may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Merced River Bundle could result in a *significant impact*.

### **Summary of Impact to Entire Motherlode Regional Bundle**

The project could result in *significant adverse impacts* to wildlife and plant species that are listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act in the Motherlode Regional Bundle.

#### **4.5.8.5 Kings Crane-Helms Regional Bundle**

##### **Bundle 16: Crane Valley (FERC 1354)**

There are several habitats and sensitive species in the vicinity of the Crane Valley Bundle. Please see Figures 4.5-43 and 4.5-45 for mapped information.

#### ***Land Development***

Land use development in Chapter 3 identifies four land areas within the Crane Valley Bundle. Bass Lake land area has the potential for 104 equivalent dwelling units (EDUs) to be developed on 208 acres within the land area. Manzanita Lake land area has the potential for 246 EDUs to be developed on 492 acres within the land area. San Joaquin Powerhouse 2 land area has potential for 24 EDUs to be developed within 243 acres in the land area. Finally, AG Wishon Powerhouse land area has the potential for six EDUs to be developed on 61 acres within the land area.

There are no listed invertebrate species that occur or that have the potential to occur within the Crane Valley Bundle. Therefore, there would be *no impact* to listed invertebrate species due to new development within the Crane Valley Project land.

The California red-legged frog is the only listed amphibian species that has the potential to occur within the Crane Valley Bundle. Development could result habitat degradation and complete loss of habitat, which could have adverse effects on special-status amphibian species (see Table 4.5-81). Of particular concern are areas located near or adjacent to riparian habitat. There is potential that development of these lands could result in a *significant impact* to listed amphibian species such as California red-legged frog within the vicinity of the Crane Valley Bundle.

There are no listed reptile species that occur or that have the potential to occur within the Crane Valley Bundle. Therefore, there would be *no impact* due to development to listed reptile species within the Crane Valley Project land.

There are several listed bird species that have the potential to occur with the Crane Valley Bundle. Please see Table 4.5-75 for a complete list. The bald eagle and willow flycatcher are the two listed bird species that are known to occur within the vicinity of the project. Potential adverse effects to biological resources associated with land development are noted in Table 4.5-81, Impacts of Land Use Alterations. Effects of specific concern to bird species are noise, increased habitat degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nesting trees. The listed bird species associated with this project could be adversely affected by land development due to direct loss of habitat and disruption of foraging and nesting activities. These adverse effects could contribute to a *significant impact* to listed bird species within the vicinity of the project.

The San Joaquin kit fox, Sierra Nevada red fox, and wolverine are the three listed mammal species that are known to occur within the Crane Valley Bundle. Specific adverse effects associated with land development that could impact these mammal species include fugitive noise, increased habitat degradation due to human activity, directs habitat loss, habitat fragmentation and edge effect (see Table 4.5-81). Based on these potential effects, future development is considered to have a *significant impact* on listed mammal species such as the San Joaquin kit fox, Sierra Nevada red fox, and wolverine.

Three listed plant species with the potential to occur in the Crane Valley Bundle are tree-anemone, Boggs Lake hedge-hyssop, and Mariposa pussypaws. Based on the level of future development that is expected and the proximity to suitable habitat, there is potential for future development on non-FERC lands associated with the Crane Valley Bundle to result in a *significant impact* to listed plant species.

### Timber Harvest

Timber harvest is anticipated in the Crane Valley bundle. Approximately 100 acres of selection harvest are predicted within the Crane Valley Project.

There are no listed invertebrate species that occur or that have the potential to occur within the Crane Valley Bundle. Therefore, there would be *no impact* to listed invertebrate species within the Crane Valley Project land.

**Table 4.5-75 State/Federal Listed Wildlife Species That Are Found In Each Vegetation Community For the Kings Crane-Helm Region**

Species	Known	MRI	RIV	WTM	URB	BOW	VOW	LPN	VRI	AGS	BOP	JPN	LAC	MCH	MHC	PPN	WFR	RFR	SMC
Valley elderberry longhorn beetle	Yes					17/18/19	17/18/19		17/18/19		17/18/19								

**Table 4.5-75 State/Federal Listed Wildlife Species That Are Found In Each Vegetation Community For the Kings Crane-Helm Region**

Species	Known	MRI	RIV	WTM	URB	BOW	VOW	LPN	VRI	AGS	BOP	JPN	LAC	MCH	MHC	PPN	WFR	RFR	SMC
<b>Amphibians</b>																			
California red legged frog	No	16/ 17/ 18/ 19	16/ 17/ 18/ 19	16/ 17/ 18/ 19		16/ 17/ 18/ 19			16/ 19	16/ 17/ 18/ 19	16/ 17/ 18/ 19		17/ 18/ 19	16/ 17/ 18/ 19	17/ 18/ 19	16/ 17/ 18/ 19			
Kern Canyon slender salamander	No	20				20	20		20		20			20					
<b>Birds</b>																			
Bald eagle	Yes	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20
Bank swallow	No	16/ 17/ 18/ 19	16/ 17/ 18/ 19	16/ 17/ 18/ 19					16/ 17/ 18/ 19	16/ 17/ 18/ 19			16/ 17/ 18/ 19						
California condor	No					16/ 17/ 18/ 19				16/ 17/ 18/ 19	16/ 17/ 18/ 19	16/ 17/ 18/ 19		16/ 17/ 18/ 19		16/ 17/ 18/ 19	16/ 17/ 18/ 19	16/ 17/ 18/ 19	16/ 17/ 18/ 19
Great gray owl	No			16/ 18				16/ 18								16/ 18	16/ 18	16/ 18	16/ 18
Mountain plover	No									16/ 17/ 18/ 19									
Peregrine falcon	No	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20
Rufous crowned sparrow	No								17/ 18/ 19	17/ 18/ 19	17/ 18/ 19			17/ 18/ 19					
Swainson's Hawk	No			16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20			16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20			16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20			
Willow flycatcher	Yes	16/ 17/ 18/ 19/ 20		16/ 17/ 18/ 19/ 20					16/ 17/ 18/ 19/ 20										

Mammals

**Table 4.5-75 State/Federal Listed Wildlife Species That Are Found In Each Vegetation Community For the Kings Crane-Helm Region**

Species	Known	MRI	RIV	WTM	URB	BOW	VOW	LPN	VRI	AGS	BOP	JPN	LAC	MCH	MHC	PPN	WFR	RFR	SMC
San Joaquin kit fox	Yes					16/ 17/ 18/ 19/ 20			16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20	16/ 17/ 18/ 19/ 20								
Sierra Nevada red fox	Yes	16/ 17/ 18		16/ 17/ 18				16/ 17/ 18		16/ 17/ 18		16/ 17/ 18		16/ 17/ 18		16/ 17/ 18	16/ 17/ 18	16/ 17/ 18	16/ 17/ 18
California wolverine	Yes	16/ 18		16/ 18				16/ 18				16/ 18				16/ 18	16/ 18	16/ 18	16/ 18

NOTES: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

Habitats:

AGS	=	Annual Grassland
BOP	=	Blue Oak-Foothill Pine
BOW	=	Blue Oak Woodland
CRC	=	Chamise-Redshank Chaparral
DFR	=	Douglas-Fir
FEW	=	Fresh Emergent Wetland
JPN	=	Jeffrey Pine
LAC	=	Lacustrine
LPN	=	Lodgepole Pine
LSG	=	Low Sagebrush
MCP	=	Montane Chaparral
MCH	=	Mixed Chaparral
MHC	=	Montane Hardwood-Conifer
MHW	=	Montane Hardwood
MRI	=	Montane Riparian
PPN	=	Ponderosa Pine
RFR	=	Red Fir
RIV	=	Riverine
SCN	=	Subalpine Conifer
SGB	=	Sagebrush
SMC	=	Sierra Mixed Conifer
VOW	=	Valley Oak Woodland
VRI	=	Valley Foothill Riparian
WFR	=	White Fir
WTM	=	Wet Meadow

The California red-legged frog is the only listed amphibian species that has the potential to occur within the Crane Valley Bundle. During timber harvesting activities, there is potential for habitat degradation due to erosion and point sources pollution, which could have adverse effects on special-status amphibian species. Of particular concern are areas located near or adjacent to riparian habitat. There is potential that timber harvesting could result in a *significant impact* to listed amphibian species such as California red-legged frog within the vicinity of the Crane Valley Bundle.



There are no listed reptile species that occur or that have the potential to occur within the Crane Valley Bundle. Therefore, there would be *no impact* to listed reptile species within the Crane Valley Project land.

There are several listed bird species that have the potential to occur with the Crane Valley Bundle. Please see Table 4.5-75 for a complete list. The bald eagle and willow flycatcher are the two listed bird species that are known to occur within the vicinity of the project. Potential adverse effects to biological resources associated with timber harvesting are noted in Table 4.5-81, Impacts of Land Use Alterations. Effects of specific concern to bird species are noise, increased habitat degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nesting trees. The listed bird species associated with this project could be adversely affected by timber harvesting due to direct loss of habitat and disruption of foraging and nesting activities. These adverse effects could contribute to a *significant impact* to listed bird species within the vicinity of the project.

The San Joaquin kit fox, Sierra Nevada red fox, and wolverine are the three listed mammal species that are known to occur within the Crane Valley Bundle. Specific adverse effects associated with timber harvesting which could impact these mammal species include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and edge effect. Based on these potential effects timber harvesting is considered to have a *significant impact* on listed mammal species such as the San Joaquin kit fox, Sierra Nevada red fox, and wolverine.

#### ***Mineral Exaction***

No mining is expected, therefore no impacts will occur to TES species.

#### ***Informal Agreements/ Best Management Practices***

Any change in the Miller – Lux agreement will not impact any TES species. Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Crane Valley Bundle could result in a *significant impact*.

#### **Bundle 17: Kerckhoff (FERC 0096)**

There are several habitats and sensitive species in the vicinity of Bundle 17. Please see Figures 4.5-45 for mapped information.

Pacific Gas and Electric Company lands within the Kerckhoff Bundle contain habitat that can support valley elderberry longhorn beetle, California red-legged frog, bald eagle, California condor, peregrine falcon, rufus-crowned sparrow, willow flycatcher, California vole, and San Joaquin kit fox.

#### ***Land Development***

Land use development in Chapter 3 identifies three land areas in the Kerckhoff Bundle that could support future development. The Kerckhoff Reservoir land area as having a potential for 91 EDUs to be developed on a total of 182 acres the land area. The Auberry Service Center could potentially develop two EDUs on a total of 18 acres within the land area. Development of this land would require bringing in public services and utilities and it is unlikely that more than two units would be developed. The construction of these two units and associated public services could result in direct loss of TES or their habitat. As a result, significant impacts to TES and their habitat can be anticipated due to residential development.

The valley elderberry longhorn beetle (Table 4.5-75) is known to occur within the Kerckhoff Bundle. A variety of adverse effects associated with habitat loss and degradation could occur due to residential development in these land areas (see Table 4.5-81). Of particular concern for this species are riparian habitats where elderberry bush could occur. Removal or degradation to this bush would result in direct habitat loss for the valley elderberry longhorn beetle. These effects, if they were to occur within or directly adjacent to potential habitat of these species, could result in a *significant impact* to the valley elderberry longhorn beetle.

There is no known occurrence of threatened or endangered reptile species within the Kerckhoff Bundle. Therefore there would be *no impact* to these species due to development.

California red-legged frog has the potential to occur within the Kerckhoff Bundle. A variety of adverse effects to this listed species can occur as a result of increased development, as noted in Table 4.5-81, Impacts of Land Use Alterations. Adverse effects of particular concern include habitat degradation due to erosion and point source pollution, especially if the development were to occur within preferred habitat for this species (i.e., riparian, lacustrine, and riverine). These potential adverse effects could result in a *significant impact* to a listed amphibian species associated with Kerckhoff Bundle.

Bald eagle and willow flycatcher are known to occur with the Kerckhoff Bundle. In addition to these species, suitable habitat for other threatened or endangered bird species such as bank swallow, peregrine falcon, and Swainson's hawk does occur within the Kerckhoff Bundle project boundaries (see Table 4.5-75). A variety of adverse effects associated with habitat loss and degradation of listed bird species could occur due to development in the land area (see Table 4.5-81). Any development could result in the removal of trees that provide nesting and foraging habitat for sensitive bird species. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a significant impact, and if significant development occurred here, it is highly likely that these raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The San Joaquin kit fox and Sierra Nevada red fox have the potential to occur within the Kerckhoff Bundle based on habitat type and species range information. Construction and development could result in direct habitat loss for these species. In addition, there is potential for habitat fragmentation to occur in areas of extensive development in the Kerckhoff Bundle (see Table 4.5-81). Fragmentation of critical habitats in the vicinity of these land areas could adversely affect the breeding and foraging patterns of San Joaquin kit fox and Sierra Nevada red fox. As a result, future development within Kerckhoff Bundle project lands could result in a *significant impact* to this listed mammal species.

Seven listed plant species with the potential to occur in the Kerckhoff Bundle are San Joaquin woollythreads, Hartweg's golden sunburst, San Joaquin adobe sunburst, and Keck's checkerbloom. Based on the level of future development that is expected and the proximity to suitable habitat, there is potential for future development on non-FERC lands associated with the Kerckhoff Bundle to result in a *significant impact* to listed plant species such as San Joaquin woollythreads, Hartweg's golden sunburst, San Joaquin adobe sunburst, tree-anemone, California jewel-flower, palmate-bracted bird's beak, and Keck's checkerbloom.

#### ***Timber Harvest***

No change in timber harvesting is expected, therefore no impacts will occur to TES species.

#### ***Mineral Extraction***

No mining is expected, therefore no impacts will occur to TES species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a

*significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Kerckhoff Bundle could result in a *significant impact*.

**Bundle 18: Kings River - Helms Pumped Storage (FERC 2735), Haas-Kings River (FERC 1988), Balch (FERC 0175)**

There are several habitats and sensitive species in the vicinity of Bundle 18. Please see Figures 4.5-46 and 4.5-48 for mapped information.

Pacific Gas and Electric Company lands within the Kings River Bundle contain habitat that is can support valley elderberry longhorn beetle, California red-legged frog, bald eagle, California condor, peregrine falcon, rufus-crowned sparrow, willow flycatcher, and San Joaquin kit fox.

***Land Development***

Land use development in Chapter 3 identifies the Wishon Reservoir land area as having a development intensity of 150 EDUs within 750 acres on the total land area. The Keller Ranch land area has potential for three EDUs on 121 acres within the land area. Current road conditions are poor and public service and utilities are not available for this area. However, construction of these units and public services could result in direct loss of TES or their habitat. As a result, significant impacts to TES and their habitat can be anticipated due to residential development.

Valley elderberry longhorn beetle is known to occur within the Kings River Bundle. A variety of adverse effects associated with habitat loss and degradation could occur due to land development on the project land (see Table 4.5-81). Of particular concern for this species are riparian habitats where elderberry bush could occur. Removal or degradation to this bush would result in direct habitat loss for the valley elderberry longhorn beetle. These effects, if they were to occur within or directly adjacent to potential habitat of this species, could result in *significant impact* to the valley elderberry longhorn beetle.

The California red-legged frog is the only listed amphibian species that has the potential to occur within the Kings River Bundle. During land development activities, there is potential for habitat degradation due to erosion and point sources pollution, which could have adverse effects on special-status amphibian species. Of particular concern are areas located near or adjacent to riparian habitat. There is potential that land development could result in a *significant impact* to listed amphibian species such as California red-legged frog within the vicinity of the Kings River Bundle.

There are no listed reptile species that occur or that have the potential to occur within the Kings River Bundle. Therefore, there would be *no impact* to listed reptile species within the Helms project land.

There are several listed bird species that have the potential to occur with the Kings River Bundle. Please see Table 4.5-75 for a complete list. The bald eagle and willow flycatcher are listed bird species that are known to occur within the vicinity of the project. Potential adverse effects to biological resources associated with land development are noted in Table 4.5-81, Impacts of Land Use Alterations. Effects of specific concern to bird species are noise, increased habitat degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nesting trees. The listed bird species associated with this project could be adversely affected by land development due to direct loss of habitat and disruption of foraging and nesting activities. These adverse effects could contribute to a *significant impact* to listed bird species within the vicinity of the project.

The San Joaquin kit fox, Sierra Nevada red fox, and wolverine are mammal species that are known to occur within the Kings River Bundle. Specific adverse effects associated with land development that could impact these mammal species include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and edge effect. Based on these potential effects land development is considered to have a *significant impact* on listed mammal species such as the San Joaquin kit fox, Sierra Nevada red fox, and wolverine.

Eleven listed plant species have the potential to occur in the Kings River Bundle. They are San Benito evening-primrose, San Joaquin adobe sunburst, San Joaquin woollythreads, Tompkin's sedge, Bogg's Lake hedge-hyssop, tree anemone, California jewel-flower, Congdon's lewisia, Hoover's eriastrum, Keck's checkerbloom, and Mariposa pussypaws. Based on the level of future development that is expected and the proximity to suitable habitat, there is potential for future development on non-FERC lands associated with the Kings River Bundle to result in a *significant impact* to listed plant species such as San Benito evening-primrose, San Joaquin adobe sunburst, San Joaquin woollythreads, Tompkin's sedge, tree anemone, California jewel-flower, Congdon's lewisia, Bogg's Lake hedge-hyssop, Hoover's eriastrum, Keck's checkerbloom, and Mariposa pussypaws.

### ***Timber Harvest***

Timber harvest is anticipated in the Kings River Bundle. Approximately 100 acres of selective harvest are predicted within the Helms Project area.

Valley elderberry longhorn beetle is known to occur within the Kings River Bundle. A variety of adverse effects associated with habitat loss and degradation could occur due to timber harvesting activities on the project land (see Table 4.5-81). These effects, if they were to occur within or

directly adjacent to potential habitat of this species, could result in *significant impact* to the valley elderberry longhorn beetle.

The California red-legged frog is the only listed amphibian species that has the potential to occur within the Kings River Bundle. During timber harvesting activities, there is potential for habitat degradation due to erosion and point sources pollution, which could have adverse effects on special-status amphibian species. Of particular concern are areas located near or adjacent to riparian habitat. There is potential that timber harvesting could result in a *significant impact* to listed amphibian species such as California red-legged frog within the vicinity of the Kings River Bundle.

There are no listed reptile species that occur or that have the potential to occur within the Kings River Bundle. Therefore, there would be *no impact* to listed reptile species within the Helms project land.

There are several listed bird species that have the potential to occur with the Kings River Bundle. Please see Table 4.5-75 for a complete list. The bald eagle and willow flycatcher are listed bird species that are known to occur within the vicinity of the project. Potential adverse effects to biological resources associated with timber harvesting are noted in Table 4.5-81, Impacts of Land Use Alterations. Effects of specific concern to bird species are noise, increased habitat degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nesting trees. The listed bird species associated with this project could be adversely affected by timber harvesting due to direct loss of habitat and disruption of foraging and nesting activities. These adverse effects could contribute to a *significant impact* to listed bird species within the vicinity of the project.

The San Joaquin kit fox, Sierra Nevada red fox, and wolverine are mammal species that are known to occur within the Kings River Bundle. Specific adverse effects associated with timber harvesting which could impact these mammal species include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and edge effect. Based on these potential effects timber harvesting is considered to have a *significant impact* on listed mammal species such as the San Joaquin kit fox, Sierra Nevada red fox, and wolverine.

#### ***Mineral Extraction***

No mining is expected, therefore no impacts will occur to TES species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. In Pacific Gas and Electric Company's General Guidelines for Protection of Sensitive Species &

Habitat Areas/Environmental Planning, specific management practices are issued to protect the Valley Elderberry Longhorn Beetle. Changes in land management practices affect the valley elderberry longhorn beetle in the lower elevation habitats where elderberry occurs — between Balch Powerhouses and Kings River Powerhouse. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Kings River Bundle could result in a *significant impact*.

#### **Bundle 19: Tule River (FERC 1333)**

There are several habitats and sensitive species in the vicinity of Bundle 19. Please see Figures 4.5-49 for mapped information.

Pacific Gas and Electric Company lands within the Tule River Bundle contain habitat that may support the valley elderberry longhorn beetle, California red-legged frog, bald eagle, California condor, peregrine falcon, rufus-crowned sparrow, willow flycatcher, and San Joaquin kit fox.

#### ***Land Development***

Land use development in Chapter 3 identifies the Tule River land area as having a development intensity of 45 EDUs on a total of 45 acres within the land area. Although Doyle Springs Homeowners Association has offered to buy the property and maintain it as open space, there is potential for development of a new residential area. The construction of these units and public services could result in direct loss of TES or their habitat. As a result, there could be significant impacts to TES and their habitat can be anticipated due to residential development.

Valley elderberry longhorn beetle is known to occur within the Tule River Bundle. A variety of adverse effects associated with habitat loss and degradation could occur due to land development on the project land (see Table 4.5-81). Of particular concern for this species are riparian habitats where elderberry bush could occur. Removal or degradation to this bush would result in direct habitat loss for the valley elderberry longhorn beetle. These effects, if they were to occur within or directly adjacent to potential habitat of this species, could result in *significant impact* to the valley elderberry longhorn beetle.

The California red-legged frog is the only listed amphibian species that has the potential to occur within the Tule River Bundle. During land development activities, there is potential for habitat degradation due to erosion and point sources pollution, which could have adverse effects on special-status amphibian species. Of particular concern are areas located near or adjacent to riparian

habitat. There is potential that land development could result in a *significant impact* to listed amphibian species such as California red-legged frog within the vicinity of the Tule River Bundle.

There are no listed reptile species that occur or that have the potential to occur within the Tule River Bundle. Therefore, there would be *no impact* to listed reptile species.

There are several listed bird species that have the potential to occur with the Tule River Bundle. Please see Table 4.5-75 for a complete list. The bald eagle and willow flycatcher are listed bird species that are known to occur within the vicinity of the project. Potential adverse effects to biological resources associated with land development are noted in Table 4.5-81, Impacts of Land Use Alterations. Effects of specific concern to bird species are noise, increased habitat degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nesting trees. The listed bird species associated with this project could be adversely affected by land development due to direct loss of habitat and disruption of foraging and nesting activities. These adverse effects could contribute to a *significant impact* to listed bird species within the vicinity of the project.

The San Joaquin kit fox is known to occur within the Tule River Bundle. Specific adverse effects associated with land development that could impact this mammal species include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and edge effect. Based on these potential effects land development is considered to have a *significant impact* on listed mammal species such as the San Joaquin kit fox.

The four listed plant species that have the potential to occur in the Tule River Bundle are Springville clarkia, striped adobe lily, Kaweah brodiaea, and San Joaquin adobe sunburst. Based on the level of future development that is expected and the proximity to suitable habitat, there is potential for future development on non-FERC lands associated with the Tule River Bundle to result in a *significant impact* to listed plant species such as Springville clarkia, striped adobe lily, Kaweah brodiaea, and San Joaquin

#### ***Timber Harvest***

No change in timber harvesting is expected, therefore *no impacts* will occur to TES species.

#### ***Mineral Extraction***

No mining is expected, therefore no impacts will occur to TES species.

#### ***Informal Agreements/ Best Management Practices***

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's



operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Tule River Bundle could result in a *significant impact*.

#### **Bundle 20: Kern Canyon (FERC 0178)**

There are several habitats and sensitive species in the vicinity of Bundle 20. Please see Figures 4.5-50 for mapped information.

Pacific Gas and Electric Company lands within the Kern Canyon Bundle contain habitat that can support bald eagle, peregrine falcon, willow flycatcher, and San Joaquin kit fox.

#### ***Land Development***

Land use development in Chapter 3 identifies a development potential for the Kern Canyon land area at 30 EDUs on a total of 664 acres.

There are no listed invertebrate species with the potential to occur within the Kern Canyon Bundle area. Therefore, there is *no impact* expected due to land development.

A variety of adverse effects to Kern Canyon slender salamander can occur as a result land development, as noted in Table 4.5-81, Impacts of Land Use Alterations. Adverse effects of particular concern include habitat degradation due to erosion and point source pollution, especially if development were to occur within preferred habitat for the species (i.e., blue oak-foothill pine, ponderosa pine, and Sierran mixed conifer). These potential adverse effects could result in a *significant impact* to a listed amphibian species associated with Kern Canyon Bundle.

There are several listed bird species that have the potential to occur with the Kern Canyon Bundle. Please see Table 4.5-75 for a complete list. The bald eagle and willow flycatcher are listed bird species that are known to occur within the vicinity of the project. Potential adverse effects to biological resources associated with land development are noted in Table 4.5-81, Impacts of Land Use Alterations. Effects of specific concern to bird species are noise, increased habitat degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nesting trees. The listed bird species associated with this project could be adversely affected by land development due to direct loss of habitat and disruption of foraging and nesting activities. These adverse effects could contribute to a *significant impact* to listed bird species within the vicinity of the project.

The San Joaquin kit fox is known to occur within the Kern Canyon Bundle. Specific adverse effects associated with land development that could impact this mammal species include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and edge effect. Based on these potential effects land development is considered to have a *significant impact* on listed mammal species such as the San Joaquin kit fox.

The only listed plant species that has the potential to occur in the Kern Canyon Bundle is striped adobe lily. Based on the level of future development that is expected and the proximity to suitable habitat, there is potential for future development on non-FERC lands associated with the Kern Canyon Bundle to result in a *significant impact* to listed plant species.

#### ***Timber Harvest***

No change in timber harvesting is expected, therefore *no impacts* will occur to TES species.

#### ***Mineral Extraction***

No mining is expected, therefore *no impacts* will occur to TES species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to wildlife and plant species listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act, the proposed auction of the Kern Canyon Bundle could result in a *significant impact*.

#### **Summary of Impact to Entire Kings Crane-Helms Regional Bundle**

The project could result in *significant adverse impacts* to wildlife and plant species that are listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act in the Kings Crane-Helms Regional Bundle.

#### 4.5.8.6 Evaluation of Impact to Entire System

The project could result in *significant adverse impacts* to wildlife and plant species that are listed or proposed for listing under the Federal Endangered Species Act and/or the California Endangered Species Act in the entire system.

#### 4.5.8.7 Impact 5-1: Mitigation Measures

##### Mitigation Measures Proposed as Part of the Project

No proposed mitigation was presented in the PEA for terrestrial biological resources.

##### Mitigation Measures Identified in This Report

**Mitigation Measure 5-1a:** Prior to or concurrent with the transfer of title for the pertinent bundles, the informal agreements/non-binding operating practices listed below shall by written instrument be made binding upon the new owner.

- Pacific Gas and Electric Company voluntarily makes a minimum flow release of 200 cfs from the Pit 1 Powerhouse tailrace into the Pit River at all times of the year, per the request of CDFG, USFWS, and SWRCB.
- Pacific Gas and Electric Company has committed to CDFG to release flushing flows from Pit 1 Dam two to three times a year to flush vegetation out of the Fall River Pond.
- Pacific Gas and Electric Company constructed and maintains a fence to keep cattle off project levees on the south side of Big Lake, per an agreement with CDFG, CDF, and USFWS.
- At Iron Canyon Reservoir, Pacific Gas and Electric Company informally maintains the reservoir at a level sufficient to make the Big Bend community boat ramp operational. This agreement also benefits biological resources since reservoir levels would be more stabilized allowing for shoreline emergent wetland vegetation to establish.
- Pacific Gas and Electric Company currently has an informal agreement with CDFG which allows CDFG to conduct surveys for Shasta crayfish in the upper Tule River and Pit River associated with the Pit 1 project. This survey work is considered to be crucial in the recovery efforts for the species.
- Pacific Gas and Electric Company is an active participant in the Lower McCloud Coordinated Resource Management Project (CRMP). A new owner would be expected to take over the responsibilities currently held by Pacific Gas and Electric Company as a member of the CRMP.
- Pacific Gas and Electric Company is a participant in the Pit River Interagency Bald Eagle Management Plan and is currently implementing the mitigation measures prescribed in this plan.

**Mitigation Measure 5-1b:** Prior to the transfer of title for any bundle, Pacific Gas and Electric Company shall demonstrate that the new owner has received and reviewed the existing Best Management Practices (BMPs) of Pacific Gas and Electric Company for that particular bundle as noted in the preceding section, and the new owner shall either (1) commit in writing to adhere to those pertinent existing BMPs or (2) submit to the CPUC for its review and approval, and obtain

approval of, substitute Best Management Practices that are protective of the environment to an equal or greater degree than Pacific Gas and Electric Company's existing BMPs.

***Mitigation Measure 5-1c:*** Prior to approval of any land use development change, timber harvest plan or additional mineral extraction activities on the Project Lands, the new owner shall undertake the following process:

- Coordinate with the United States Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG) and, when applicable, the United States Forest Service (USFS) and/or Bureau of Land Management (BLM) to determine the status of threatened and endangered species (TES) in the area of the proposed development, harvest or mineral extraction. As part of consultation, necessary surveys to be conducted shall be determined. The purpose of such surveys shall be to determine TES presence or absence in the area of the proposed development, harvest or mineral extraction, and within one mile of the proposed activity. At minimum, the TES listed in Table 4.5-75 shall be considered. Surveys shall conform to then-current USFWS and USFS protocols. A letter report that documents agency consultation, survey methodology, and a proposed means to document survey results shall be prepared by the new owner and submitted to the involved agencies.
  - Surveys shall be undertaken in accordance with the agreed methodology, and shall be conducted over a period of two seasons. Upon completion, they shall be provided to the relevant agencies. The surveys and resulting reports shall also address the following:
    - The potential for interruption of migratory deer corridors or sensitive deer areas (such as fawning areas) for the Salt Springs deer herd and the Railroad Flat deer herd;
    - The potential for interruption of migratory corridors for furbearers;
    - The potential for and effects of habitat fragmentation as a result of the proposed activity;
    - The effects on TES of erosion, slope instability, point source pollution and the introduction of exotic animal and plant species resulting from the proposed activity.
- If, as a result of the surveys, no TES are detected within the area of the proposed activity, or within one mile of the area of proposed activity, no further mitigation for TES shall be required under this measure.
- If TES are detected, prior to receiving approvals for the proposed activity, the new owner shall prepare a Biological Resource Protection Plan outlining the measures that are necessary to reduce impacts to TES to a less than significant level and, as part of implementation of the proposed activity, shall carry out such measures. The Biological Resource Protection Plan shall mandate avoidance of TES and TES habitat to the fullest extent possible. Avoidance measures may include buffer zones and set backs from sensitive species habitat, restricted construction time periods, and seasonal construction restrictions. Where avoidance is not feasible, the Biological Resource Protection Plan shall require that the new owner shall minimize impacts using a combination of on-site and off-site habitat preservation measures, including establishing habitat conservation easements on nearby comparable land, purchase and protection of comparable habitat and habitat enhancement.

***Alternate Mitigation Measure 5-1c:*** As an alternative to Mitigation Measure 5-1c, above, prior to or concurrent with the transfer of title for any bundle, there shall be recorded against the lands within the bundle conservation easements running with the land and (in a form and substance approved by the CPUC) precluding any further land use development, or expansion of timber harvest or mineral extraction activities.

#### 4.5.8.8 Impact 5-1: Level of Significance After Mitigation

Implementation of Mitigation Measures 5-1a, 5-1b and 5-1c would reduce the impact to a *less than significant* level. Alternatively, implementation of Mitigation Measures 5-1a, 5-1b and Alternate Mitigation Measure 5-1c would eliminate the impact altogether.

#### 4.5.9 IMPACT 5-2: IMPACT, ANALYSIS, AND MITIGATION MEASURES

**Impact 5-2 The project may result in adverse effects to non-listed special-status wildlife and plant species (i.e., species of concern, BLM, and USFS sensitive) and associated habitats.**

Habitats within the project support a variety of wildlife and plants species in addition to those identified in Impact 5-1 (i.e. listed as endangered or threatened under the Federal or California Endangered Species Act). Most of these species are common throughout the project and the State.

Some of these species, though, have been afforded special monitoring priority or limited protection by a Federal or State resources agency or private organizations. These species of plants and wildlife are herein termed “non-listed” special-status species. These species include:

- Species designated by the USFWS as “ Federal species of special concern”;
- California State Species of Concern;
- California Fully Protected Species (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], and 5515 [fish]);
- Birds of Prey (Section 3503.5 of the California Fish and Game Code);
- U.S. Forest Service Sensitive Species; (any species of plant or animal that has been recognized by the Regional Forester to need special management in order to prevent them to become threatened or endangered);
- U.S. Forest Service Management Indicator Species (any species of plant or animal that has been identified as a representative for a group of species with special habitat requirements);
- BLM Sensitive Species (BLM Manual Section 6840 defines sensitive species as "... those species that are: (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary; or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats." Existing California-BLM policy concerning the designation of sensitive species identifies two conditions that must be met before a species may be considered as BLM sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species' condition through BLM management); and
- California Native Plant Society List 2 or List 3 species.

Alteration or intensification of existing land uses may result in adverse effects to non-listed special-status wildlife and plant species and their associated habitats. The magnitude of the effects of land use alteration upon species will be largely contingent on the intensity and type of the land use alteration, the species of concern, and the segment of that species' lifecycle that occurs in the habitat.

### 4.5.9.1 Shasta Regional Bundle

Pacific Gas and Electric Company lands within the Shasta Bundle contain many habitats that support non-listed special-status species. The following table identifies the habitats within the Shasta Bundle and the associated special-status species that may occur in those habitats.

#### **Bundle 1: Hat Creek - Hat Creek 1 and 2 (FERC 2661)**

There are several habitats and sensitive species in the vicinity of Bundle 1. Please see Figures 4.5-3 and 4.5-7 for mapped information.

#### ***Land Development***

A complete description of potential future land development changes assumed for the Hat Creek project is discussed under Impact 5-1.

No non-listed special-status invertebrate species are known to occur on lands associated with the Hat Creek Bundle project. As a result, *no impacts* to non-listed special-status invertebrate species are anticipated.

As noted in Table 4.5-76, non-listed special-status amphibian species with potential to occur in the Hat Creek Bundle project are foothill yellow-legged frog, western spadefoot and Cascades frog. These species may inhabit water bodies and waterways within the land area. Development in the vicinity of the project waterways (i.e., Hat Creek, Crystal Lake, Baum Lake, Cassel Pond) could result in several adverse effects to these species. These effects include habitat degradation due to erosion, point source pollution, and direct habitat loss due to site grading. As a result, potential future development could result in a *significant impact* to non-listed amphibian species.

As noted in Table 4.5-76, the only non-listed reptile species with potential to occur in the Hat Creek Bundle is northwestern pond turtle. This is an aquatic reptile. Potential habitat and project effects to this species are similar to those described for amphibians. Thus, future development could result in a *significant impact* to northwestern pond turtle.

A total of 34 non-listed special-status bird species, as noted Table 4.5-76, have been identified as having potential to occur in the Hat Creek Bundle project. Of the 34 species, the following were observed by Pacific Gas and Electric Company biologists during a 1997 bird survey within the Hat Creek Bundle project: American white pelican; double-crested cormorant; Cooper's hawk; golden eagle; osprey; northern harrier; great blue heron rookery; yellow warbler; and yellow-breasted chat. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the 34 non-listed special-status bird species. Adverse effects contributing to this significant impact include disruption of nesting and foraging activities due to direct habitat loss and degradation (including nest sites), and increased adult and egg and nestling predation through introduction of feral animals/pets.

**Table 4.5-76 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Shasta Region**

Species	Known	VRI	BOW	MHW	PAS	PGS	DGC	WFR	MRI	RV	BOP	MCH	PPN	AGS	JUN	LAC	SMC
<b>Amphibians</b>																	
Cascades frog	No								1 2	1 2						1 2	
Foothill yellow-legged frog	No	3 4							1 2 3 4								
Tailed frog	No							2	2								
Western spadefoot	No													2 3 4		1 2 3 4	
<b>Reptiles</b>																	
Northwestern pond turtle	Yes	3 4	1 4							1 2 3 4						1 2 3 4	
<b>Birds</b>																	
American white Pelican	Yes									1 2 3 4						1 2 3 4	
Barrow's goldeneye	No									1 2 3 4						1 2 3 4	
Black swift	Yes							2	1 2 3 4	1 2 3 4		1 2			2		
Black tern	Yes															1 2 3 4	
Black-capped chickadee	Yes								1 2 3 4				2 3 4				2 3 4
Burrowing owl	No		1 4		1 2	1 2	2				3 4			2			
California spotted owl	No			1 2				2				1 2	2 3 4				2

**Table 4.5-76 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Shasta Region**

Species	Known	VRI	BOW	MHW	PAS	PGS	DGC	WFR	MRI	RV	BOP	MCH	PPN	AGS	JUN	LAC	SMC
Common loon	Yes									1 2 3 4						1 2 3 4	
Cooper's hawk	Yes	3 4	1 4	1 2	1 2		2		1 2 3 4		3 4	1 2					
Double- crested cormorant	Yes	3 4								1 2 3 4						1 2 3 4	
Ferruginous hawk	Yes		1 4			1 2								2			
Golden eagle	Yes	3 4	1 4	1 2	1 2	1 2	2	2	1 2 3 4		3 4	1 2	2 3 4	2	2		2 3 4
Great blue heron	Yes	3 4	1 4			1 2	2			1 2 3 4				2		1 2 3 4	
Great egret	Yes	3 4	1 4			1 2	2			1 2 3 4				2		1 2 3 4	
Great gray owl	No																2 3 4
Harlequin duck	No									1 2 3 4						1 2 3 4	
Horned lark	Yes		1 4		1 2	1 2	2				3 4			2			
Least bittern	Yes															1 2 3 4	
Loggerhead shrike	No		1 4		1 2	1 2	2				3 4			2			
Long-billed curlew	No					1 2	2			1 2 3 4				2		1 2 3 4	
Long-eared owl	No	3 4	1 4		1 2	1 2	2				3 4			2			



**Table 4.5-76 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Shasta Region**

Species	Known	VRI	BOW	MHW	PAS	PGS	DGC	WFR	MRI	RV	BOP	MCH	PPN	AGS	JUN	LAC	SMC
Merlin	No	3 4	1 4														
Mountain plover	No				1 2	1 2	2							2			
Northern goshawk	Yes			1 2				2									
Northern harrier	Yes					1 2	2							2			
Osprey	Yes	3 4						2		1 2 3 4						1 2 3 4	
Prairie falcon	Yes	3 4	1 4	1 2	1 2	1 2	2	2	1 2 3 4		3 4	1 2	2 3 4	2	2		2 3 4
Purple martin	No		1 4	1 2	1 2	1 2	2		1 2 3 4	1 2 3 4	3 4			2		1 2 3 4	
Sharp-shinned hawk	Yes	3 4	1 4	1 2	1 2		2	2	1 2 3 4		3 4	1 2	2 3 4				2 3 4
Short-eared owl	No					1 2								2			
Snowy egret	Yes	3 4	1 4			1 2	2			1 2 3 4				2		1 2 3 4	
Tricolored blackbird	Yes						2							2			
Vaux's swift	No																2 3 4
White faced ibis	No				1 2	1 2	2									1 2 3 4	
White-tailed kite	No		1 4		1 2	1 2	2				3 4			2			
Yellow warbler	Yes	3 4	1 4					2	1 2 3 4		3 4						2 3 4

**Table 4.5-76 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Shasta Region**

Species	Known	VRI	BOW	MHW	PAS	PGS	DGC	WFR	MRI	RV	BOP	MCH	PPN	AGS	JUN	LAC	SMC
Yellow-breasted chat	Yes	3 4	1 4					2	1 2 3 4								
<b>Mammals</b>																	
Little brown myotis	No		1 4		1 2		2	2						2		1 2 3 4	2 3 4
Lodgepole chipmunk	No											1 2	2 3 4				2 3 4
Pacific fisher	Yes							2	1 2 3 4			1 2	2 3 4				2 3 4
Pale big-eared bat	Yes		1 4		1 2		2	2						2		1 2 3 4	2 3 4
Pallid bat	No		1 4		1 2		2	2						2		1 2 3 4	
Pine marten	No							2	1 2 3 4			1 2	2 3 4				2 3 4
Ringtail	Yes	3 4	1 4						1 2 3 4								
Sierra Nevada mountain beaver	No							2	1 2 3 4								
Townsend's big-eared bat	No		1 4		1 2		2	2						2		1 2 3 4	2 3 4
Western mastiff bat	No	3 4			1 2	1 2			1 2 3 4					2			
Western red bat	No				1 2	1 2			1 2 3 4								2 3 4

**Table 4.5-76 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Shasta Region**

Species	Known	VRI	BOW	MHW	PAS	PGS	DGC	WFR	MRI	RV	BOP	MCH	PPN	AGS	JUN	LAC	SMC
White-tailed hare	No								1 2 3 4								2 3 4
Yuma myotis	No	3 4	1 4		1 2		2	2						2			

NOTES: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

Habitats:

AGS = Annual Grassland  
 BOP = Blue Oak-Foothill Pine  
 BOW = Blue Oak Woodland  
 CRC = Chamise-Redshank Chaparral  
 DFR = Douglas-Fir  
 FEW = Fresh Emergent Wetland  
 JPN = Jeffrey Pine  
 LAC = Lacustrine  
 LPN = Lodgepole Pine  
 LSG = Low Sagebrush  
 MCP = Montane Chaparral  
 MCH = Mixed Chaparral  
 MHC = Montane Hardwood-Conifer  
 MHW = Montane Hardwood  
 MRI = Montane Riparian  
 PPN = Ponderosa Pine  
 RFR = Red Fir  
 RIV = Riverine  
 SCN = Subalpine Conifer  
 SGB = Sagebrush  
 SMC = Sierra Mixed Conifer  
 VOW = Valley Oak Woodland  
 VRI = Valley Foothill Riparian  
 WFR = White Fir  
 WTM = Wet Meadow

Based on the level of future development that is expected and the proximity of this development to suitable habitats, there is potential for future development on watershed lands associated with the Hat Creek Bundle project to result in a *significant impact* to non-listed special-status bird species.

A total of 14 non-listed special-status mammal species, as noted Table 4.5-76, have been identified as having potential to occur in the Hat Creek Bundle project. Of these 14 species, the following have been observed within the vicinity of the Hat Creek Bundle project: ringtail and Pacific fisher. Increased development in areas adjacent to Hat Creek, Crystal Lake, Baum Lake, and Cassel Pond could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) which would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, and introduction of feral animals/pets could disrupt the nocturnal foraging patterns of species such as ringtail and Pacific fisher, as well as other non-listed special-status mammal species with

potential to occur in the Hat Creek Bundle (Table 4.5-76). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Pubescent needle grass, northern spleenwort, upswept moonwort, Mingan moonwort, western goblin, Butte County morning-glory, dissected-leaved toothwort, bristly sedge, fox sedge, talus collomia, English sundew, vanilla-grass, Howell's lewisia, Engelmann spruce, white-stemmed pondweed, eel grass pondweed, slender bulrush, water bulrush, marsh skullcap, sweet marsh ragwort, western campion, Cascade alpine campion, long-leaved starwort, obtuse starwort, and northern daisy are all non-listed special-status plant species that have the potential to occur in the Bundle 1 project. Based on the level of future development that is expected and the presence of suitable habitats, there is a potential for future development to result in a *significant impact* to these non-listed special-status plant species.

#### ***Timber Harvest***

As discussed under Impact 5-1, there are no land areas within the Hat Creek Bundle with the potential for future timber harvesting activities.

#### ***Mineral Extraction***

Mining for diatomaceous earth may occur in the vicinity of the Hat Creek 2 Powerhouse.

No non-listed special-status invertebrate species are known to occur on lands associated with the Hat Creek Bundle project. Therefore, *no impact* to non-listed special-status invertebrate species is expected to occur within this Bundle.

New mineral extraction activities within or adjacent to Hat Creek could result in a variety of adverse effects to non-listed special-status amphibian species (see Table 4.5-81, Impacts of Land Use Alterations). Specific adverse effects include point source pollution, fugitive dust, habitat degradation due to erosion, and direct habitat loss. These effects would be exacerbated since they would occur in mesic habitats preferred by amphibians. These adverse effects would result in a *significant impact* to non-listed special-status amphibian species.

Similar to the amphibian discussion above, future increased mineral extraction activities could result in a *significant impact* to the northwestern pond turtle.

Non-listed special-status bird species, which occur in the area of mineral extraction activities, could be subjected to direct habitat loss (including nest sites), and habitat degradation through increased exposure to noise and mining activity. These adverse effects would result in significant disturbance of both nesting and foraging activities, particularly to osprey, great blue heron (rookery), yellow warbler, and yellow-breasted chat. Future increased mineral extraction activities could result in a *significant impact* to the non-listed special-status bird species.

Future increased mineral extraction activities could result in a *significant impact* to non-listed special-status mammal species. Mammal species known to occur in the area could be subjected to direct habitat loss, and habitat degradation through increased exposure to noise and mining activity. These effects could result in significant disturbance to foraging activities of species such as ringtail and Pacific fisher.

Future increased mineral extraction activities could result in a *significant impact* to the non-listed special-status plant species listed above.

#### ***Informal Agreements/Best Management Practices***

To the knowledge of the project team, Pacific Gas and Electric Company does not conduct any informal practices that would have an effect (positive or negative) on biological resources within the Hat Creek Bundle project. Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to non-listed special status wildlife and plant species, the proposed auction of the Hat Creek Bundle could result in a *significant impact*.

#### **Bundle 2: Pit River**

There are several habitats and sensitive species in the vicinity of Bundle 2. Please see Figures 4.5-1 and 4.5-6 for mapped information.

##### ***Pit 1 (FERC 2687), Pit 3, 4, and 5 (FERC 0233), McCloud-Pit (FERC 2106)***

***Land Development.*** The Pit River Bundle contains three land areas that have development potential: Pit 1, Pit 3, and Lake Britton. A description of potential future land development changes assumed for the Bundle 2 project is discussed under Impact 5-1.

No non-listed special-status invertebrate species are known to occur on lands associated with the Pit River Bundle projects. As a result, *no impacts* to non-listed special-status invertebrate species are anticipated.

As noted in Table 4.5-76, four non-listed special-status amphibian species have potential to occur in the Pit River Bundle project. These species may inhabit water bodies and waterways within the land areas identified as having potential for development. Future development on these land areas in the vicinity of waterways and wetland habitats would result in several adverse effects to amphibians. Of particular concern would be point source pollution, increased habitat degradation due to human activity and erosion, and direct habitat loss. As a result, potential future development could result in a *significant impact* to non-listed special-status amphibian species.

As noted in Table 4.5-76, the only non-listed special-status reptile species with potential to occur in the Pit River Bundle project is northwestern pond turtle. This is an aquatic reptile. Potential habitat and project effects to this species are similar to those described for amphibians. Thus, future development could result in a *significant impact* to northwestern pond turtle.

As noted in Table 4.5-76, a total of 36 non-listed special-status bird species have potential to occur in the Pit River Bundle project. Out of these 36 species the following have been observed: American white pelican; double-crested cormorant; Cooper's hawk; northern goshawk; osprey; tricolored blackbird; great blue heron rookery; yellow warbler; and yellow-breasted chat. Based on the level of future development that is expected and the proximity to suitable habitats, particularly in the vicinity of Lake Britton, there is potential for future development on watershed lands associated with the Bundle 2 project to result in a *significant impact* to non-listed special-status bird species. Adverse effects contributing to this significant impact include disruption of nesting and foraging activities due to direct habitat loss, habitat degradation due to human encroachment, habitat fragmentation, point source pollution, and introduction of feral animals/pets. Future development could result in the removal of trees that provide nesting habitat for a variety of species including osprey, northern goshawk, Cooper's hawk, and sharp-shinned hawk. Development on open pasture and grasslands in the Fall River Valley would result in loss of important foraging habitat for both resident and wintering raptor species such as ferruginous hawk, northern harrier, and golden eagle.

As noted in Table 4.5-76, several non-listed special-status mammal species have potential to occur in the Pit River Bundle project. Mammal species that have been observed in the Bundle 2 project include pale big-eared bat, Pacific fisher, Pine Marten and ringtail.

Increased development in the Pit River Bundle project could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) that would subsequently affect the mammal species utilizing these habitats. Both loss and degradation of habitat, increased noise and light levels, and introduction of feral animals/pets could disrupt the nocturnal foraging patterns of mammals species such as pale big-eared bat, ringtail, and Pacific fisher, as well as other non-listed special-status mammal species with potential to occur in the Pit River Bundle project (Table 4.5-76). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. Removal of trees associated with expanded facilities could disrupt roosting bat species. In addition, there is potential for habitat fragmentation to occur

in areas of extensive development in the Fall River Valley and Lake Britton areas. Fragmentation of grassland habitats could adversely affect Sierra Nevada red fox, while fragmentation of montane hardwood-conifer and sierran mixed conifer habitats in the vicinity of Lake Britton could adversely affect the breeding and foraging patterns of Pine marten and Pacific fisher. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Northern spleenwort, Butte County morning glory, bristly sedge, fox sedge, English sundew, vanilla-grass, Howell's lewisia, white-stemmed pondweed, eel-grass pondweed, water bulrush, marsh skullcap, western campion, long-leaved starwort, obtuse starwort and northern daisy are non-listed special-status plant species that have the potential to occur in the Bundle 2 project. Based on the level of future development that is expected and the presence of suitable habitats, there is a potential for future development to result in a *significant impact* to these non-listed special-status plant species.

**Timber Harvest.** As discussed under Impact 5-1, over 5,712 acres of lands within the Pit River Bundle project could be subjected to future timber harvesting activities, primarily within the Pit 3, 4, and 5 and McCloud-Pit projects. Potential adverse effects to biological resources associated with timber harvesting are noted in Table 4.5-81, Impacts of Land Use Alterations.

No non-listed special-status invertebrate species are known to occur on lands associated with the Bundle 2 project; therefore, *no impact* would occur.

Minimal occurrence data is available for non-listed special-status amphibian species in the Pit River Bundle, but potential habitat is available for tailed frog, Cascades frog, and foothill yellow-legged frog. A variety of adverse effects can occur as a result of increased timber harvesting activities, as noted in Table 4.5-81, Impacts of Land Use Alterations. Amphibian species are particularly sensitive to soil erosion, in-stream sedimentation and point and non-point source pollution from log harvest and removal. These effects are magnified if timber harvesting activities are occurring near riparian corridors, wet meadows, or other mesic habitats. These potential adverse effects would result in a *significant impact* to non-listed special-status amphibian species associated with the Pit River Bundle.

Projected timber harvesting on lands within the Pit River Bundle could result in a variety of adverse effects to biological resources, as described above under amphibian species. Minimal occurrence data currently exists for non-listed reptile species in the Pit River Bundle but potential habitat does exist for northwestern pond turtle. As a result, there is potential that future timber harvesting activities on the Pit River Bundle lands could result in a *significant impact* to non-listed special status reptile species.

Effects of specific concern to bird species are fugitive noise, increased habitat degradation due to human activity, habitat fragmentation in areas of clear-cutting, and direct loss of habitat, including loss of nest trees. Non-listed special-status bird species known to occur in the Pit River Bundle

project include osprey, great blue heron (rookery), and northern goshawk. These species, as well as several other non-listed special-status bird species with potential to occur in the Pit River Bundle (see Table 4.5-76), could be adversely affected by timber harvesting activities due to loss of habitat and disruption of foraging and nesting activities. This would be considered a *significant impact*.

Specific adverse effects associated with timber harvesting in the Pit River Bundle which could impact mammal species include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and resultant edge effect. Sierran mixed conifer, white fir, Douglas fir, and montane-hardwood conifer are the primary habitat types that would be affected by timber harvesting. Non-listed special-status mammal species associated with these habitat types are listed in Table 4.5-76. Of these species, Pacific fisher and pale big-eared bat are known to occur in the Pit River Bundle. Pine marten and ringtail also have a high potential to occur in the project vicinity. Edge effect associated with clear-cutting could indirectly benefit mountain lion by increasing its prey base. Game wildlife such as mule deer, black-tailed deer, and elk tend to prefer edge habitats that provide better browse in the form of lower successional vegetation such as montane chaparral. Edge effect and habitat fragmentation would have deleterious effects, however, on most other species including Pacific fisher and Pine marten. Direct loss of bat roost trees is another adverse effect associated with timber harvesting. Habitat degradation due to erosion could result in sedimentation and loss of montane riparian vegetation that could disrupt non-listed special-status species patterns in adjacent waterways. Based on these potential effects, timber harvesting is considered to have a *significant impact* on non-listed special-status mammal species with potential to occur in the Pit River Bundle project.

Northern spleenwort, Butte County morning-glory, bristly sedge, fox sedge, English sundew, vanilla-grass, Howell's lewisia, white stemmed pondweed, eel-grass pondweed, water bulrush, marsh skullcap, western campion, obtuse starwort, and northern daisy have the potential to occur in the Pit River Bundle land area. Based on the level of future timber harvesting activities that are predicted and the presence of suitable habitats, there is a potential for future development to result in a *significant impact* to these non-listed special-status plant species.

**Mineral Extraction.** As discussed under Impact 5-1, a significant portion of the Pit River Bundle, primarily on Pit 1 and Pit 3, 4, and 5 project has potential for future mineral extraction activities.

No non-listed special-status invertebrate species are known to occur on lands associated with the Pit River Bundle; therefore, *no impact* would occur.

New mineral extraction activities within or adjacent to Fall River, Pit River, and Lake Britton could result in a variety of adverse effects to non-listed special-status amphibian species (see Table 4.5-81, Impacts of Land Use Alterations). Specific adverse effects include point source pollution, fugitive dust, habitat degradation due to erosion, soil compaction, and direct habitat loss. These effects would be exacerbated since they would occur in mesic habitats preferred by amphibians and would result in a *significant impact* to non-listed special-status amphibian species.



The future increased mineral extraction activities could result in a *significant impact* to the northwestern pond turtle that may occur in Fall River, Pit River, Lake Britton and associated waterways. Other adverse effects such as point source pollution, fugitive dust, and habitat degradation due to erosion would be the primary factors contributing to this impact.

Future increased mineral extraction activities could result in a *significant impact* to the non-listed special-status bird species. Non-listed special-status bird species, which occur in the area of mineral extraction activities, could be subjected to direct habitat loss (including nest sites), and habitat degradation through increased exposure to noise and mining activity. These adverse effects would result in significant disturbance of both nesting and foraging activities, particularly to osprey, northern goshawk, great blue heron (rookery), and tricolored blackbird, all of which occur in the Pit River Bundle.

Future increased mineral extraction activities within the Pit River Bundle could result in a *significant impact* to the non-listed special-status mammal species. Mammal species known to occur in the area could be subjected to increased noise, habitat degradation, or even direct habitat loss. These effects could result in significant disturbance to foraging and nesting activities of species such as ringtail and Pacific fisher.

The plants listed above that could potentially occur in the Pit River Bundle area would be affected by future increased mineral extraction activities. These activities would result in a *significant impact* to these non-listed special-status plant species.

***Informal Agreements/Best Management Practices.*** Pacific Gas and Electric Company currently maintains the following informal agreements with various resource agencies:

- Pacific Gas and Electric Company voluntarily makes a minimum flow release of 200 cfs from the Pit 1 Powerhouse tailrace into the Pit River at all times of the year, per the request of CDFG, USFWS, and SWRCB. It is expected that the new FERC license will have defined flow release requirements.
- Pacific Gas and Electric Company has committed to CDFG to release flushing flows from Pit 1 Dam two to three times a year to flush vegetation out of the Fall River Pond. This action is also likely to be a requirement in the new FERC license.
- Pacific Gas and Electric Company constructed and maintain a fence line to keep cattle off project levees on the south side of Big Lake, per an agreement with CDFG, CDF, and USFWS. Maintenance of this fence needs to continue but may not be included as a new FERC license condition.
- At Iron Canyon Reservoir, Pacific Gas and Electric Company informally maintains the reservoir at a level sufficient to make the Big Bend community boat ramp operational. This agreement also benefits biological resources since reservoir levels would be more stabilized allowing for shoreline emergent wetland vegetation to establish.
- Pacific Gas and Electric Company is an active voluntary participant in the Lower McCloud Coordinated Resource Management Project (CRMP).

All of the agreements listed above either directly or indirectly benefit biological resources, including non-listed special-status species with potential to occur in the Pit River Bundle project (Table 4.5-76). Since the current informal agreements have not yet been formalized, a new owner is not legally obligated to comply with them, unless they become conditions in the new FERC licenses. A *significant impact* to non-listed special-status species would occur in the event that a new owner does not continue to comply with these informal agreements. Non-transference of the minimum flow release from the Pit 1 Powerhouse tailrace into the Pit River could cause desiccation of riparian vegetation, which provides habitat for a number of sensitive species, including nesting yellow warbler and yellow-breasted chat. If flushing flows into Fall River Pond ceased, vegetation would overgrow and the pond would eventually undergo succession. Existing fencing along the levees near the south shore of Big Lake protect the waterway from sedimentation and cattle trampling. If this fence was not properly maintained, there is potential for cattle to break through over time, which would result in adverse effects to water quality and wildlife species utilizing the waterway.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Pit River Bundle could result in a *significant impact*.

#### **Bundle 3: Kilarc-Cow Creek (FERC 0606)**

There are several habitats and sensitive species in the vicinity of Bundle 3. Please see Figures 4.5-9 for mapped information.

#### ***Land Development***

Land development changes anticipated for the Kilarc-Cow Creek Bundle project are described under Impact 5-1.

Non-listed special-status invertebrate species are not known to occur on lands associated with the Kilarc-Cow Creek Bundle. As a result, *no impacts* to non-listed special-status invertebrate species are anticipated.

As noted in Table 4.5-76, the only non-listed special-status amphibian species with potential to occur in the Kilarc Cow Creek project are foothill yellow-legged frog and western spadefoot.

Although no known occurrences for either species have been recorded, recent surveys have not been conducted within the Kilarc-Cow Creek project. A variety of adverse effects may occur to amphibians and their habitat due to development (see discussion under Impact 5-1 Hat Creek). These adverse effects could result in a *significant impact* to a non-listed special-status amphibian species.

As noted in Table 4.5-76, the only non-listed special-status reptile species with potential to occur in the Kilarc-Cow Creek Bundle is northwestern pond turtle. The species is known to occur within the Kilarc-Cow Creek project. Effects of development on this aquatic reptile would be similar to that described for amphibians. These adverse effects could result in a *significant impact* to northwestern pond turtle.

As noted in Table 4.5-76, a total of 31 non-listed special-status bird species have been identified as having potential to occur in the Kilarc-Cow Creek Bundle. A variety of adverse effects may occur to birds and their habitat due to development (see discussion under Impact 5-2 Hat Creek). Therefore, future development in Kilarc-Cow Creek Bundle could result in a *significant impact* to non-listed special-status bird species, particularly nesting individuals.

As noted in Table 4.5-76, several non-listed special-status mammal species have been identified as having potential to occur in the Kilarc-Cow Creek Bundle. Due to the transitory nature of these species and the low density development anticipated, future development within the Kilarc-Cow Creek Bundle would result in a *less than significant impact* to the listed mammal species.

Northern spleenwort, Butte County morning-glory, fox sedge, talus collomia, English sundew, vanilla-grass, Howell's lewisia, Engelmann spruce, white-stemmed pondweed, eel-grass pondweed, water bulrush, marsh skullcap, western campion, Cascades alpine campion, long-leaved starwort, and northern daisy are non-listed special-status species that have the potential to occur in the Kilarc-Cow Creek Bundle land area. Based on the level of future development that is predicted and the presence of suitable habitats, there is a potential for future development to result in a *significant impact* to these non-listed special-status plant species.

### ***Mineral Extraction***

As discussed under Impact 5-1, no future mineral extraction activities are assumed for the Kilarc-Cow Creek Bundle project.

### ***Timber Harvest***

As discussed under Impact 5-1, up to 500 acres of the Kilarc-Cow Creek Bundle lands may be subjected to future timber harvesting activities. Potential adverse effects associated with timber harvesting are noted in Table 4.5-81, Impacts of Land Use Alterations.

Non-listed special-status invertebrate species are not known to occur on lands associated with the Kilarc-Cow Creek Bundle; therefore, *no impact* would occur.

The majority of this projected timber harvest is expected to occur in the form of select cutting, however, there still is potential for habitat degradation due to erosion and point source pollution which could have deleterious effects on amphibian species, especially if timber harvesting activities occurred in relative proximity to riparian habitat. Based on the lack of recent data for the Kilarc-Cow Creek Bundle, there is a potential for non-listed special-status amphibian species to occupy this area. Therefore timber harvesting could result in a *significant impact* to non-listed special-status amphibian species such as foothill yellow-legged frog.

The only potential non-listed special-status reptile species, which occurs in the project, is the northwestern pond turtle. Adverse effects to the pond turtle from timber harvest activities are similar to those described for amphibian species and would be *significant*.

Specific adverse effects which could result in impacts to bird species include fugitive noise, increased habitat degradation due to human activity, and direct loss of habitat. Habitat fragmentation is not considered to be significant since the majority of the timber harvest activity assumed would be select-cut. The relatively minor acreage of clear-cutting that is proposed (i.e., 100 acres) would not result in significant habitat fragmentation. There is potential that timber harvesting could result in a *significant impact* to non-listed special-status bird species, particularly nesting individuals of raptor species such as Cooper's hawk, sharp-shinned hawk, and northern goshawk.

Specific adverse effects associated with timber harvesting that could result in impacts to mammal species include fugitive noise, increased habitat degradation due to human activity, and direct loss of habitat. Habitat fragmentation is not considered to be significant since the majority of the timber harvest activity assumed would be select-cut. The relatively minor acreage of clear-cutting that is proposed (i.e., 100 acres) would not result in significant habitat fragmentation. However, there is potential that timber harvesting could result in a *significant impact* to habitats that support non-listed special-status mammal species, particularly ringtail, Pine marten, Pacific fisher, and bat species which roost in trees.

Sixteen non-listed special-status plant species have the potential to occur in the Kilarc-Cow Creek Bundle land area as listed above. Future timber harvesting activities would result in a *significant impact* to these plant species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company does not conduct any informal practices that would have an effect (positive or negative) on biological resources within the Kilarc-Cow Creek Bundle project. Pacific Gas and Electric Company, as standard operating practices statewide, implements the

various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Kilarc-Cow Creek Bundle could result in a *significant impact*.

#### **Bundle 4: Battle Creek (FERC 1121)**

There are several habitats and sensitive species in the vicinity of Bundle 4. Please see Figures 4.5-8 and 4.5-12 for mapped information.

##### ***Land Development***

Land development changes anticipated for the Battle Creek Bundle project, specifically the Shingletown and Inskip Powerhouse land areas are described under Impact 5-1.

Non-listed special-status invertebrate species are not known to occur on lands associated with the Battle Creek Bundle project. As a result, *no impacts* to non-listed special-status invertebrate species are anticipated.

As noted in Table 4.5-76, the only non-listed special-status amphibian species with potential to occur in the Battle Creek Bundle project are foothill yellow-legged frog and western spadefoot. A variety of adverse effects may occur to amphibians and their habitat due to development (see Table 4.5-81). These adverse effects could result in a *significant impact* to a non-listed special-status amphibian species.

As noted in Table 4.5-76, the only non-listed special-status reptile species with potential to occur in the Battle Creek Bundle project is northwestern pond turtle. Effects of development on this aquatic reptile would be similar to that described for amphibians. These adverse effects could result in a *significant impact* to northwestern pond turtle.

As noted in Table 4.5-76, several non-listed special-status bird species have been identified as having potential to occur in the Battle Creek Bundle project. A variety of adverse effects may occur to birds and their habitat due to development (see Table 4.5-81). Therefore, future development in Bundle 3 could result in a *significant impact* to non-listed special-status bird species, particularly nesting individuals.

As noted in Table 4.5-76, several non-listed special-status mammal species have been identified as having potential to occur in the Bundle 4 project. Although no known occurrences for these species have been recorded, recent surveys have not been conducted in the project. A variety of adverse effects may occur to mammals and their habitat due to development (see Table 4.5-81). These adverse effects could result in a *significant impact* to a non-listed special-status mammal species.

Pubescent needle grass, Henderson's bent grass, northern spleenwort, unswept moonwort, Mingan moonwort, western goblin, Butte County morning-glory, dissected-leaved toothwort, bristly sedge, fox sedge, talus collomia, dwarf downingia, English sundew, four-angled spikerush, vanilla-grass, dubious pea, Howell's lewisia, Engelmann spruce, white-stemmed pondweed, eel-grass pondweed, slender bulrush, water bulrush, marsh skullcap, sweet marsh ragwort, Cascades alpine campion, long-leaved starwort, and northern daisy are non-listed special-status plant species that have the potential to occur in the Battle Creek Bundle. Based on the level of future development that is predicted and the presence of suitable habitats, there is a potential for future development to result in a *significant impact* to these non-listed special-status plant species.

#### ***Mineral Extraction***

As discussed under Impact 5-1, no future mineral extraction activities on lands associated with the Battle Creek Bundle project are assumed. Therefore, no impacts due to mineral extraction are anticipated.

#### ***Timber Harvest***

As discussed under Impact 5-1, up to 1,200 acres of the Battle Creek Bundle may be subjected to future timber harvest activities.

No non-listed special-status invertebrate species are known to occur on lands associated with the Battle Creek Bundle; therefore, *no impact* would occur.

The majority of this projected timber harvest is expected to occur in the form of select cutting, however, there still is potential for habitat degradation due to erosion and point source pollution which could have deleterious effects on amphibian species, especially if timber harvesting activities occurred in relative proximity to riparian habitat (see Table 4.5-81). Based on the lack of recent data for the Battle Creek Bundle, there is a potential for non-listed special-status amphibian species to occupy this area. Therefore timber harvesting could result in a *significant impact* to non-listed special-status amphibian species such as foothill yellow-legged frog.

As stated in Impact 5-1 Pit River Bundle, there is potential that timber harvesting could result in a *significant impact* to non-listed special-status reptile species, particularly northwestern pond turtle.

Specific adverse effects of timber harvest on birds and their habitat are discussed in Impact 5-2 Pit River Bundle. The relatively minor acreage of clear-cutting that is proposed (i.e., 200 acres) would

not result in significant habitat fragmentation. However timber-harvesting operations could result in reduced nesting success to Cooper's hawk, sharp-shinned hawk, and northern goshawk and this would be a *significant impact* to non-listed special-status bird species.

Specific adverse effects of timber harvest on mammals and their habitat are discussed in Impact 5-2 Pit River Bundle. Habitat fragmentation is not considered to be significant since the majority of the timber harvest activity assumed would be select-cut. The relatively minor acreage of clear-cutting that is proposed (i.e., 200 acres) would not result in significant habitat fragmentation. There is, however, a potential that timber harvesting could result in a *significant impact* to habitats that support non-listed special-status mammal species, particularly ringtail, Pine marten, Pacific fisher, and bat species which roost in trees.

Twenty-six non-listed special-status plant species have the potential to occur in the Battle Creek Bundle land area as listed above. Future timber harvesting activities would result in a *significant impact* to these plant species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company has an informal agreement with the CDFG that ensures that the reservoir level at Macumber Reservoir does not drop below 12 feet. Although this informal agreement was made to protect fish species, it also benefits other aquatic species such as frogs and pond turtles. In addition, more stabilized reservoir levels maintains the fresh emergent wetland vegetation that is present along the shoreline of Macumber Reservoir. This wetland vegetation provides important habitat for fish, amphibians, aquatic snakes, as well as the species that prey on them (i.e., herons, egrets). Since this current agreement has not been formalized, a new owner is not legally obligated to recognize this informal agreement. A *significant impact* would occur in the event that a new owner does not continue to implement this informal agreement with CDFG.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Creek Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed special-status wildlife and plant species, the proposed auction of the Battle Creek Bundle could result in a significant impact.

### **Summary of Impact to Entire Shasta Regional Bundle**

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Shasta Regional Bundle could result in *significant impacts*.

#### **4.5.9.2 DeSabra Regional Bundle**

##### **Bundle 5: Hamilton Branch (non-FERC)**

There are several habitats and sensitive species in the vicinity of Bundle 5. Please see Figures 4.5-13 for mapped information.

#### ***Land Development***

Land use development in Chapter 3 identifies potential for increased development around Mountain Meadows reservoir and the Hamilton Branch powerhouse. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) would also have an effect on non-listed sensitive species, particularly point source pollution, increase in feral animals, increased habitat degradation from human activity and erosion, and direct habitat loss. Adverse affects from any of these sources on lacustrine, wet meadow, riverine, freshwater emergent wetland, montane riparian, or sierra mixed conifer habitats would be considered a *significant impact*.

The California floater, an aquatic freshwater mussel, has the potential to occur in the Hamilton Branch Bundle and may be impacted by land development. Development may increase erosion potential that could directly impact riparian habitat as well as waterways. Habitat degradation due to erosion could be a *significant impact* to the California floater.

As noted in Table 4.5-77, non-listed special-status amphibian species with potential to occur in the Hamilton Branch Bundle project include the northern leopard frog, western spadefoot, tailed frog, mountain yellow-legged frog, foothill yellow-legged frog and Cascades frog. Habitat loss, degradation, point source pollution, and introduction of feral animals, as a result of future increased development and use, could result in a *significant impact* to non-listed special-status amphibian species.

Similar to the amphibian discussion above, future increased development and use could result in a *significant impact* to the northwestern pond turtle. Habitat loss, degradation, point source pollution, and introduction of feral animals would be the primary factors contributing to this impact.

A number of non-listed special-status bird species, as noted Table 4.5-77, have been identified as having potential to occur in the Hamilton Branch Bundle project. Included in this group are shore birds, water birds (e.g., egrets), forest habitat species, riparian species, and shrub and grassland species.



**Table 4.5-77 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the DeSabra Region**

Species	Known	RFR	CRP	PPN	ORV	MCH	WFR	JPN	DFR	LAC	MRI	FEW	URB	RV	MCP	SMC	AGS	BOP	MHW	WTM
<b>Invertebrates</b>																				
California floater	No									5				5						
Sacramento valley tiger beetle	Yes										6, 8			8						
<b>Amphibians</b>																				
Cascades frog	No	5,7					5,6			5,6,7,8				5,6,7,8						6
Foothill yellow-legged frog	No			6,7		7, 8	5,6				5,6,7,8			5,6,7,8	7, 8	5, 6, 8	6,7,8	7,8		5,6,7,8
Mountain yellow-legged frog	No	5,7		6,7			5,6	5		5,6,7,8	5,6,7,8									6
Northern leopard frog	No									5, 6,7	5, 6,7	5, 6,7		6		5, 6,7	6			5, 6,7
Tailed frog	No			6,7			5,6	5	6											
Western spadefoot	No					8				5,6,8		5,6,8		5, 6, 8			6, 8	8		
<b>Reptiles</b>																				
California horned lizard	No			6,7,8															6,8	
Northwestern pond turtle	Yes			6,7		7, 8				5,6,7,8	7, 8	5,6,7,8		5,6,7,8	6,7,8	7, 8	6,7,8	7,8		7, 8
<b>Birds</b>																				
Baird's sandpiper	No									5,6,7,8										
Black swift	No	5,7					5,6	5	6		5,6,7,8			5,6,7,8	6	5,6,7,8			6,8	
Black tern	No											5								
California gull	Yes									5,6,7,8		5	5,6,8	5,6,7,8						
California spotted owl	No	5,7		6,7			5,6	5									6,8			
Common yellowthroat	Yes			6,7																
Cooper's hawk	Yes	5,7	5,8	6,7	8		5,6	5			5,6,7,8		5,6,8					6,8	6,8	

**Table 4.5-77 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the DeSabra Region**

Species	Known	RFR	CRP	PPN	ORV	MCH	WFR	JPN	DFR	LAC	MRI	FEW	URB	RIV	MCP	SMC	AGS	BOP	MHW	WTM
Double- crested cormorant	Yes									5,6,7, 8	6	6		6						
Ferruginous hawk	Yes																8			
Golden eagle	No	5,7	5,8	6,7		8	5,6	5	6		5,6,7, 8	5			6	5,6,7, 8		6,8	6,8	6
Great blue heron	Yes		5,8	6,7			5,6			5,6,7, 8		5	5,6,8	5,6,7, 8			8			6
Great egret	Yes		5,8							5,6,7, 8		5	5,6,8	5,6,7, 8			8			
Horned lark	Yes		5,8														8	6,8		6
Little willow flycatcher	No										6									6
Loggerhead shrike	Yes		5,8		8												8	6,8		
Long-billed curlew	Yes		5,8							5,6,7, 8		5		5,6,7, 8			8			6
Long-eared owl	No			6,7		8	5,6				5,6,7, 8						8	6,8		6
Merlin	Yes			6,7			5,6						5,6,8							
Northern goshawk	Yes	5,7		6,7			5,6	5	6		6,7,8			5	6,7,8	5,6,7, 8			6	
Northern harrier	Yes	5,7	5,8	6,7	8		5,6	5				5					8			6
Osprey	Yes	5,7		6,7,8		6,7,8	5,6	5	6	5,6,7, 8	6,7	6,7		5,6,7, 8	6,7	6,7	6,7	6,7		6,7
Prairie falcon	No	5,7	5,8	6,7			5,6	5	6		5,6,7, 8	6			6	5,6,7, 8	8	6,8	6,8	6
Purple martin	No		5,8	6,7	8		5,6		6	5,6,7, 8	5,6,7, 8	5	5,6,8	5,6,7, 8			8	6,8		6
Sharp-shinned hawk	Yes	5,7	5,8	6,7			5,6	5	6		5,6,7, 8		5,6,8		6	5,6,7, 8		6,8	6,8	
Short-eared owl	Yes			6,7			5,6	5				5	5,6,8				8			6
Vaux's swift	Yes	5,7		6,7			5,6	5	6				5,6,8							
White-tailed kite	No		5,8		8	8						5,6	5,6,8				6,8	6,8		6

**Table 4.5-77 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the DeSabra Region**

Species	Known	RFR	CRP	PPN	ORV	MCH	WFR	JPN	DFR	LAC	MRI	FEW	URB	RIV	MCP	SMC	AGS	BOP	MHW	WTM
Yellow warbler	Yes	5,7		6,7			5,6	5			5,6,7,8					5,6,7,8		6,8		
<b>Mammals</b>																				
Fringed myotis	No									5,6,7,8	5,6,7,8			6,7,8	6,7,8	5,6,7,8	6,7,8			
Long-eared myotis	No									5,6,7,8	5,6,7,8	5,6,7,8		5,6,7,8	6,7,8	5,6,7,8				5,6,7,8
Long-legged myotis	No					6,7,8				5,6,7,8	6,7,8			5,6,7,8	6,7,8	5,6,7,8	6,7,8			5,6,7,8
Mountain beaver	No						5,6		6		5,6,7,8									
Mountain lion	Yes	5,7		6,7		8	5,6	5	6											
Pacific fisher	No	5,7		6,7,8			5,6	5	6		5,6,7,8					5,6,7,8				
Pallid bat	No	5,7	5,8	6,7	8	8	5,6	5	6		5,6			6	6	5,6	6,8	6		6
Pine marten	No	5,7		6,7			5,6	5	6		5,6,7					5,6,7				6,7
Ringtail	Yes			6,7		8		5	6		6				6	6	6	6		6
Sierra Nevada snowshoe hare	Yes	5,7					5,6	5	6		5,6,8					5,6,8				6,8
Small-footed myotis	No									6,7,8	6,7,8	6,7,8		6,7,8	6,7,8	6,7,8	6,7,8			6,7,8
Spotted bat	No			6,7		6,7		5			6,7			6,7	6,7	6,7	6,7	6,7		6,7
Townsend's western big-eared bat	No										5,6,7					5,6,7				
Western mastiff bat	Yes			6,7							5,6,7,8	5,6,7,8			6,7,8		6,7,8			6,7,8
Yuma myotis	No	5,7	5,8	6,7,8	8	6,8	5,6	5	6	5,6,8	5,6,7,8	5		5,6,8	6,7,8	5,6,7,8	6,8	6,8		5,6,7,8

Notes: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

**Habitats:**

AGS = Annual Grassland  
 BOP = Blue Oak-Foothill Pine  
 BOW = Blue Oak Woodland  
 CRC = Chamise-Redshank Chaparral  
 DFR = Douglas-Fir

#### 4.5 Terrestrial Biology

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FEW	=	Fresh Emergent Wetland		
JPN	=	Jeffrey Pine		
LAC	=	Lacustrine		
LPN	=	Lodgepole Pine		
LSG	=	Low Sagebrush		
MCP	=	Montane Chaparral		
MCH	=	Mixed Chaparral		
MHC	=	Montane Hardwood-Conifer	SGB	= Sagebrush
MHW	=	Montane Hardwood	SMC	= Sierra Mixed Conifer
MRI	=	Montane Riparian	VOW	= Valley Oak Woodland
PPN	=	Ponderosa Pine	VRI	= Valley Foothill Riparian
RFR	=	Red Fir	WFR	= White Fir
RIV	=	Riverine	WTM	= Wet Meadow
SCN	=	Subalpine Conifer		

Review of county general plan information, breeding bird survey results, and county bird lists revealed that many species such as common yellowthroat, Cooper's hawk, and horned lark are known to occur in the vicinity of the project and probably occur on Pacific Gas and Electric Company lands. A variety of adverse effects associated with land development (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the non-listed special-status bird species. Increased use and development of new and expanded facilities in areas adjacent to Mountain Meadows and the Hamilton Branch powerhouse could disrupt both nesting and/or foraging activities of bird species that are known to occur in the project vicinity. Both loss and degradation of habitat, increased noise levels, and introduction of feral animals/pets that could prey on nesting birds are the primary adverse effects that could occur. These adverse effects could result in a *significant impact* to non-listed special-status bird species.

A number of non-listed special-status mammal species, as noted in Table 4.5-77, have been identified as having potential to occur in the Hamilton Branch Bundle project. Of these species, the following have been observed within the vicinity of the Hamilton Branch Bundle project: Sierra Nevada snowshoe hare and Pacific fisher.

Increased use and development of new and expanded facilities in areas adjacent to Mountain Meadows and the Hamilton Branch powerhouse could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) this would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, and introduction of feral animals/pets could disrupt the nocturnal foraging patterns of species such as ringtail, Pacific fisher, and American marten, as well as other non-listed special-status mammal species with potential to occur in the Hamilton Branch Bundle (Table 4.5-77). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Hillside arnica, silver-leaved milk-vetch, shore sedge, Liddon's sedge, Sheldon's sedge, northern coralroot, English sundew, Aleppo avens, Nuttall's pondweed, slender-leaved pondweed, eel-grass pondweed, gray willow, American scheuchzeria, water bulrush, marsh skullcap, western campion, smooth goldenrod, and Siskiyou Mountains huckleberry are non-listed special-status plant species that have the potential to occur in the Hamilton Branch Bundle land area. Future development would have a *significant impact* on these plant species.

### ***Mineral Extraction***

An increase in mineral extraction and mining activities as a result of the proposed divestiture are not anticipated in the Hamilton Branch Bundle therefore *no impacts* to non-listed special-status species are expected.

##### ***Timber Harvest***

Selective timber harvest is predicted within the Hamilton Branch Bundle over a small area. This would result in the selective removal of trees within a THP over approximately 80 acres within the Hamilton Branch Bundle lands.

The California floater, an aquatic freshwater mussel, has the potential to occur in the Hamilton Branch Bundle and may be impacted by increased timber harvest activities. Timber harvest activities increase erosion potential that could directly impact riparian habitat as well as waterways. Habitat degradation due to erosion could be a *significant impact* to the California floater.

As noted in Table 4.5-77, non-listed special-status amphibian species with potential to occur in the Hamilton Branch Bundle include the northern leopard frog, western spadefoot, tailed frog, mountain yellow-legged frog, foothill yellow-legged frog and Cascades frog.

Despite light anticipated timber harvest levels, there is potential for adverse affects to the amphibian species predicted to occur in the vicinity of the Hamilton Branch Bundle. A variety of adverse effects associated with timber harvesting (see Table 4.5-81, Impacts of Land Use Alterations) would also have an effect on these species, particularly point source pollution, increased habitat degradation from human activity and erosion, and direct habitat loss. These species may experience indirect impacts from reduced water quality as a result of construction of new roads or stream crossings, from log skidding or ground disturbance associated with transporting logs and down timber across the landscape. Although THPs typically require measures to minimize these affects, impacts remain from salvage harvest activities and incomplete or ineffective implementation of mitigation measures. Adverse affects from any of these sources on lacustrine, wet meadow, riverine, freshwater emergent wetland, montane riparian, or sierra mixed conifer habitats would be considered a *significant impact*.

As noted in Table 4.5-77, the only non-listed special-status reptile species with potential to occur in the Hamilton Branch Bundle is northwestern pond turtle. Similar to the amphibian discussion above, increased timber harvest could result in a *significant impact* to the northwestern pond turtle. Unlike amphibians, reptiles could be directly impacted by harvest activities as a result of ground disturbance from vehicular traffic or tree removal. Habitat loss, degradation, and point source pollution would be the primary factors contributing to this impact

As previously noted a number of non-listed special-status bird species have been identified as having potential to occur in the Hamilton Branch Bundle. Included in this group are shore birds, water birds (e.g., egrets), forest habitat species, riparian species, and shrub and grassland species.

Review of county general plan information, breeding bird survey results, and county bird lists revealed that many of these species such as common yellowthroat, Cooper's hawk, and horned lark are known to occur in the vicinity of the project and probably occur on Pacific Gas and Electric

Company lands. A variety of adverse effects associated with timber harvesting (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the non-listed special-status bird species. Increased timber harvest activities within the project would result in reduced water quality, reduced cover and refuge opportunities, loss of nesting opportunities or a reduction in nesting habitat suitability from changes in forest structure, loss of productivity from increased human disturbance, increased access from new road construction resulting in higher human activity levels, and habitat changes favoring local colonization by nest predators and other resource competitors. These adverse effects could result in a *significant impact* to non-listed special-status bird species.

As previously stated, a number of non-listed special-status mammal species have been identified as having potential to occur in the Hamilton Branch Bundle. Of these species, the following have been observed within the vicinity of the Hamilton Branch Bundle: Sierra Nevada snowshoe hare and Pacific fisher.

Increased timber harvest activities could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) which would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, increased human activity as a result of new access roads, direct loss of breeding and cover (snags) elements, a reduction in prey abundance from direct and indirect affects, and reduced habitat suitability from changes in forest canopy cover and structure could adversely affect species such as ringtail, Pacific fisher, and Pine marten, as well as other non-listed special-status mammal species with potential to occur in the Hamilton Branch Bundle (Table 4.5-77). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Hillside arnica, silver-leaved milk-vetch, shore sedge, Liddon's sedge, Sheldon's sedge, northern coralroot, English sundew, Aleppo avens, Nuttall's pondweed, slender-leaved pondweed, eel-grass pondweed, gray willow, American scheuchzeria, water bulrush, marsh skullcap, western campion, smooth goldenrod, and Siskiyou Mountains huckleberry are non-listed special-status plant species that have the potential to occur in the Hamilton Branch Bundle land area. Future timber development would have a *significant impact* on these plant species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company has a formal agreement with the State of California, Wildlife Conservation Board and California Waterfowl Association for wetlands enhancement activities to improve the quality and quantity of habitat for migratory at Mountain Meadows Reservoir. This agreement would be transferred to a new owner. Therefore impacts to non-listed, special-status species as a result of ownership change are not expected.

Pacific Gas and Electric Company does not conduct any informal practices that would have an effect (positive or negative) on non-listed, special-status species within the Hamilton Branch Bundle. Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a significant impact because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed special-status wildlife and plant species, the proposed auction of the Hamilton Branch Bundle could result in a *significant impact*.

**Bundle 6: Upper North Fork Feather River (FERC 2105), Rock Creek-Cresta (FERC 1962), Poe (FERC 2107)**

There are several habitats and sensitive species in the vicinity of Bundle 6. Please see Figures 4.5-14 and 4.5-19 for mapped information.

***Land Development***

Land development changes anticipated for the Upper North Fork Feather River Bundle project are described under Impact 5-1.

The Sacramento valley tiger beetle is the only sensitive invertebrate species predicted to occur in the Upper North Fork Feather River Bundle project. This terrestrial invertebrate may occur in riparian and riverine habitat in the lower elevation (Rock Creek-Cresta) projects within this bundle. Occurrence of this species was documented in the Rock Creek-Rio Oso transmission line corridor associated with the Rock Creek-Cresta project.

Although little or no development is predicted in this project, any impact to riverine or montane riparian habitat could adversely affect this species. Increased human use of riparian areas could result in degradation of riparian vegetation upon which this species depends. This would be considered a *significant impact*.

As noted in Table 4.5-77, non-listed special-status amphibian species with potential to occur in the Upper North Fork Feather River Bundle include the northern leopard frog, western spadefoot, tailed frog, mountain yellow-legged frog, foothill yellow-legged frog and Cascades frog. Also



noted in Table 4.5-77, are non-listed special-status reptile species with potential to occur in the Upper North Fork Feather River Bundle - northwestern pond turtle and California horned lizard. Habitat loss, degradation, point source pollution, and introduction of feral animals would be the primary factors contributing to this impact for amphibians and turtles (see Table 4.5-81). Impacts to montane hardwood conifer habitat in lower elevation projects (Rock Creek-Cresta) could result in *significant impacts* to the special-status amphibian and reptile species. These species could suffer direct mortality as a result of increased vehicle traffic or could experience the indirect effects of habitat degradation from low-density development.

A number of non-listed special-status bird species, as noted Table 4.5-77, have been identified as having potential to occur in the Upper North Fork Feather River Bundle. Included in this group are shore birds, water birds (e.g., egrets), forest habitat species, riparian species, and shrub and grassland species.

Review of county general plan information, breeding bird survey results, and county bird lists revealed that many of these species such as common yellowthroat, Cooper's hawk, and horned lark are known to occur in the vicinity of the project and probably occur on Pacific Gas and Electric Company lands. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the non-listed special-status bird species. Increased use and development of new and expanded facilities in areas adjacent to Lake Almanor and the Poe powerhouse could disrupt both nesting and/or foraging activities of bird species that are known to occur in the project vicinity. Both loss and degradation of habitat, increased noise levels, and introduction of feral animals/pets that could prey on nesting birds are the primary adverse effects that could occur. These adverse effects could result in a *significant impact* to non-listed special-status bird species.

A number of non-listed special-status mammal species, as noted Table 4.5-77, have been identified as having potential to occur in the Upper North Fork Feather River Bundle. Of these species, the following have been observed within the vicinity of the Upper North Fork Feather River Bundle: Sierra Nevada snowshoe hare and Pacific fisher.

Increased use and development of new and expanded facilities in areas adjacent to Lake Almanor could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations). This would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, and introduction of feral animals/pets that could disrupt the nocturnal foraging patterns of species such as ringtail, Pacific fisher, and pine marten, as well as other non-listed special-status mammal species with potential to occur in the Upper North Fork Feather River Bundle (Table 4.5-77). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Butte County morning-glory, dissected-leaftoothwort, shore sedge, Sheldon's sedge, fox sedge, northern coralroot, English sundew, four-angled spikerush, Bailey's ivesia, Nuttall's pondweed, American scheuchzeria, water bulrush, marsh skullcap, western campion, smooth goldenrod, and Siskiyou Mountains huckleberry are non-listed special-status plant species that have the potential to be located in the Upper North Fork Feather River Bundle land area. Any future development would have a *significant impact* on these special-status plants.

##### ***Mineral Extraction***

An increase in mineral extraction and mining activities as a result of the proposed divestiture are not anticipated in the Upper North Fork Feather River Bundle therefore *no impacts* to non-listed special-status species are expected.

##### ***Timber Harvest***

Light to moderate timber harvest is anticipated within the Upper North Fork Feather River Bundle lands. Approximately 600 acres (300 acres even-aged and 300 acres of uneven-aged management) of new THPs are predicted within the Upper North Fork Feather River projects and approximately 250 acres (80 acres even-aged and 170 acres of uneven-aged management) are predicted for the Poe project. In addition, 300 acres are projected for harvest in the Humbug Valley area, which is associated with the Rock Creek-Cresta Project.

The Sacramento valley tiger beetle is the only sensitive invertebrate species predicted to occur in the Upper North Fork Feather River Bundle project. This terrestrial invertebrate may occur in riparian and riverine habitat in the lower elevation (Rock Creek-Cresta) projects within this bundle. Occurrence of this species was documented in the Rock Creek-Rio Oso transmission line corridor associated with the Rock Creek-Cresta project.

Although only light timber harvest activities are predicted in this project, any impact to riverine or montane riparian habitat could adversely affect this species. Timber management activities including establishing new roads, transporting logs, erosion from loss of vegetative cover, and increased vehicle traffic could result in degradation of riparian vegetation upon which this species depends. This would be considered a *significant impact*.

As noted in Table 4.5-77, non-listed special-status amphibian species with potential to occur in the Upper North Fork Feather River Bundle project include the northern leopard frog, western spadefoot, tailed frog, mountain yellow-legged frog, foothill yellow-legged frog and Cascades frog.

Despite light anticipated timber harvest levels, there is potential for adverse affects to the six amphibian species predicted to occur in the vicinity of the Upper North Fork Feather River Bundle. A variety of adverse effects associated with timber harvesting (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on these species, particularly point source pollution, increased habitat degradation from human activity and erosion, and direct habitat loss. These

species may experience indirect impacts from reduced water quality as a result of construction of new roads or stream crossings, from log skidding or ground disturbance associated with transporting logs and down timber across the landscape. Although THPs typically require measures to minimize these affects, impacts remain from salvage harvest activities and incomplete or ineffective implementation of mitigation measures. Adverse affects from any of these sources on lacustrine, wet meadow, riverine, freshwater emergent wetland, montane riparian, or sierra mixed conifer habitats would be considered a *significant impact*.

As noted in Table 4.5-77, non-listed special-status reptile species with potential to occur in the Upper North Fork Feather River Bundle project are northwestern pond turtle and California horned lizard.

Similar to the amphibian discussion above, increased timber harvest could result in a *significant impact* to the northwestern pond turtle. Unlike amphibians, reptiles could be directly impacted by harvest activities as a result of ground disturbance from vehicular traffic or tree removal. Habitat loss, degradation, and point source pollution would be the primary factors contributing to this impact.

Impacts to montane hardwood conifer habitat could result in *significant impacts* to the California horned lizard. This species could suffer direct mortality as a result of increased vehicle traffic or could experience the indirect effects of habitat degradation from low-density recreational development.

As previously noted, a number of non-listed special-status bird species have been identified as having potential to occur in the Upper North Fork Feather River Bundle project. Included in this group are shore birds, water birds (e.g., egrets), forest habitat species, riparian species, and shrub and grassland species.

Review of county general plan information, breeding bird survey results, and county bird lists revealed that many of these species such as common yellowthroat, Cooper's hawk, and horned lark are known to occur in the vicinity of the project and probably occur on Pacific Gas and Electric Company lands. A variety of adverse effects associated with timber harvesting (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the non-listed special-status bird species. Increased timber harvest activities within the project would result in reduced water quality, reduced cover and refuge opportunities, loss of nesting opportunities or a reduction in nesting habitat suitability from changes in forest structure, loss of productivity from increased human disturbance, increased access from new road construction resulting in higher human activity levels, and habitat changes favoring local colonization by nest predators and other resource competitors. These adverse effects could result in a *significant impact* to non-listed special-status bird species.

As previously stated, a number of non-listed special-status mammal species have been identified as having potential to occur in the Upper North Fork Feather River Bundle. Of these species, the following have been observed within the vicinity of the Upper North Fork Feather River Bundle: Sierra Nevada snowshoe hare and Pacific fisher.

Increased timber harvest activities could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) which would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, increased human activity as a result of new access roads, direct loss of breeding and cover (snags) elements, a reduction in prey abundance from direct and indirect affects, and reduced habitat suitability from changes in forest canopy cover and structure could adversely affect species such as ringtail, Pacific fisher, and pine marten, as well as other non-listed special-status mammal species with potential to occur in the Upper North Fork Feather River Bundle (Table 4.5-77). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Butte County morning-glory, dissected-leaftoothwort, shore sedge, Sheldon's sedge, fox sedge, northern coralroot, English sundew, four-angled spikerush, Bailey's ivesia, Nuttall's pondweed, American scheuchzeria, water bulrush, marsh skullcap, western campion, smooth goldenrod, and Siskiyou Mountains huckleberry are non-listed special-status plant species that have the potential to be located in the Upper North Fork Feather River Bundle land area. Any future timber harvesting would have a *significant impact* on these special-status plants.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company is currently party to the following informal agreements related to protection or conservation of non-listed special status species:

- Pacific Gas and Electric Company is involved in the Coordinated Resource Management Plan (CRMP) work being done in the Feather River Basin. Pacific Gas and Electric Company has been a voluntary contributor to erosion control and stream restoration project.
- Pacific Gas and Electric Company agrees bald eagle nest location information is include in biological survey work. New owner to be provided information on location of sensitive biological resources.

The agreements listed above either directly or indirectly benefit biological resources, including non-listed species with potential to occur in the Upper North Fork Feather River Bundle (Table 4.5-77). Since current informal agreements have not yet been formalized, a new owner is not legally obligated to comply with them, unless they become conditions in the new FERC licenses. Discontinuance of current participation and implementation of CRMPs could result in direct and adverse affects to listed terrestrial species. Impacts could range from direct habitat loss, in the case of reduced minimum stream flows affecting riparian habitat, to indirect affects including intrusion

into sensitive wildlife areas, nest disturbance, and reductions in habitat suitability from increased human disturbance. These affects would be considered a *significant impact*.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hamilton Ranch Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed special-status wildlife and plant species, the proposed auction of the Upper North Fork Feather River Bundle could result in a significant impact.

#### **Bundle 7: Bucks Creek (FERC 0619)**

There are several habitats and sensitive species in the vicinity of Bundle 7. Please see Figures 4.5-17 for mapped information.

#### ***Land Development***

Land development changes anticipated for the Bucks Creek Bundle project are described under Impact 5-1.

As noted in Table 4.5-77, no non-listed invertebrate species have potential to occur in the Bucks Creek Bundle project and therefore no impacts to non-listed invertebrates are expected.

As noted in Table 4.5-77, non-listed special-status amphibian species with potential to occur in the Bucks Creek Bundle project include the northern leopard frog, tailed frog, mountain yellow-legged frog, foothill yellow-legged frog and Cascades frog. There is potential for increased development around Bucks Creek and Bucks Lake. A variety of adverse effects associated with land development (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on these species, particularly point source pollution, increase in feral animals, increased habitat degradation from human activity and erosion, and direct habitat loss. Adverse affects from any of these sources on lacustrine, wet meadow, riverine, freshwater emergent wetland, montane riparian, or sierra mixed conifer habitats would be considered a *significant impact*.

As noted in Table 4.5-77, non-listed special-status reptile species with potential to occur in the Bucks Creek Bundle project are northwestern pond turtle and California horned lizard. Similar to the amphibian discussion above, future increased development and use could result in a *significant impact* to the northwestern pond turtle. Habitat loss, degradation, point source pollution, and

increased human activity would be the primary factors contributing to this impact. Impacts to montane hardwood conifer habitat could result in significant impacts to the California horned lizard. This species could suffer direct mortality as a result of increased vehicle traffic or could experience the indirect effects of habitat degradation from development.

A number of non-listed special-status bird species, as noted Table 4.5-77, have been identified as having potential to occur in the Bucks Creek Bundle. Included in this group are shorebirds, water birds (e.g., egrets), forest habitat species, riparian species, and shrub and grassland species.

Review of county general plan information, breeding bird survey results, and county bird lists revealed that many of these species such as common yellowthroat, Cooper's hawk, and horned lark are known to occur in the vicinity of the project and probably occur on Pacific Gas and Electric Company lands. A variety of adverse effects associated with land development (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the non-listed special-status bird species. Increased development of new and expanded facilities in areas adjacent to Bucks Creek and Bucks Lake could disrupt both nesting and/or foraging activities of bird species that are known to occur in the project vicinity. Both loss and degradation of habitat, increased noise levels, and introduction of feral animals/pets that could prey on nesting birds are the primary adverse effects that could occur. These adverse effects could result in a *significant impact* to non-listed special-status bird species.

A number of non-listed special-status mammal species, as noted Table 4.5-77, have been identified as having potential to occur in the Bucks Creek Bundle. None of the mammal species predicted to occur in the Bucks Creek Bundle have been documented.

Increased development of new and expanded facilities in areas adjacent to Bucks Creek or Bucks Lake could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations). This would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, and introduction of feral animals/pets could disrupt the nocturnal foraging patterns of species such as ringtail, Pacific fisher, and pine marten, as well as other non-listed special-status mammal species with potential to occur in the Bucks Creek Bundle (Table 4.5-77). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Hillside arnica, shore sedge, northern coralroot, English sundew, yellow willowherb, marsh skullcap, western campion, smooth goldenrod, and Siskiyou Mountains huckleberry are non-listed special-status plant species that could potentially be located in the Bucks Creek Bundle land area. Any future development could result in a *significant impact* to these plant species

***Mineral Extraction***

An increase in mineral extraction and mining activities as a result of the proposed divestiture are not anticipated in the Bucks Creek Bundle. Therefore *no impacts* to non-listed, special-status species are expected.

***Timber Harvest***

Moderate timber harvest is anticipated within the Bucks Creek Bundle lands. Approximately 500 acres (250 acres even-aged and 250 acres of uneven-aged management) of new THPs are predicted within the Bucks Creek project.

As noted in Table 4.5-77, no non-listed special-status invertebrate species have potential to occur in the Bucks Creek Bundle and therefore *no impacts* to non-listed invertebrates are expected.

As noted in Table 4.5-77, non-listed special-status amphibian species with potential to occur the Bucks Creek Bundle include the northern leopard frog, tailed frog, mountain yellow-legged frog, foothill yellow-legged frog and Cascades frog.

Despite light anticipated timber harvest levels, there is potential for adverse affects to the amphibian species predicted to occur in the vicinity of the Bucks Creek Bundle. A variety of adverse effects associated with timber harvesting (see Table 4.5-81, Impacts of Land Use Alterations) would also have an effect on these species, particularly point source pollution, increased habitat degradation from human activity and erosion, and direct habitat loss. These species may experience indirect impacts from reduced water quality as a result of construction of new roads or stream crossings, from log skidding or ground disturbance associated with transporting logs and down timber across the landscape. Although THPs typically require measures to minimize these effects, impacts remain from salvage harvest activities and incomplete or ineffective implementation of mitigation measures. Adverse effects from any of these sources on lacustrine, wet meadow, riverine, freshwater emergent wetland, montane riparian, or sierra mixed conifer habitats would be considered a *significant impact*.

As noted in Table 4.5-77 and above, non-listed special-status reptile species with potential to occur in the Bucks Creek Bundle are northwestern pond turtle and California horned lizard.

Similar to the amphibian discussion above, increased timber harvest could result in a *significant impact* to the northwestern pond turtle. Unlike amphibians, reptiles could be directly impacted by harvest activities as a result of ground disturbance from vehicular traffic or tree removal. Habitat loss, degradation, and point source pollution would be the primary factors contributing to this impact.

Impacts to montane hardwood conifer habitat could result in *significant impacts* to the California horned lizard. This species could suffer direct mortality as a result of increased vehicle traffic or

could experience the indirect effects of habitat degradation from low-density recreational development.

As previously noted, a number of non-listed special-status bird species have been identified as having potential to occur in the Bucks Creek Bundle. Included in this group are shore birds, water birds (e.g., egrets), forest habitat species, riparian species, and shrub and grassland species.

Review of county general plan information, breeding bird survey results, and county bird lists revealed that many of these species such as common yellowthroat, Cooper's hawk, and horned lark are known to occur in the vicinity of the project and probably occur on Pacific Gas and Electric Company lands. A variety of adverse effects associated with timber harvesting (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the non-listed special-status bird species. Increased timber harvest activities within the project would result in reduced water quality, reduced cover and refuge opportunities, loss of nesting opportunities or a reduction in nesting habitat suitability from changes in forest structure, loss of productivity from increased human disturbance, increased access from new road construction resulting in higher human activity levels, and habitat changes favoring local colonization by nest predators and other resource competitors. These adverse effects could result in a *significant impact* to non-listed special-status bird species.

As previously stated, a number of non-listed special-status mammal species have been identified as having potential to occur in the Bucks Creek Bundle. None of the mammal species predicted to occur in the Bucks Creek Bundle have been documented on FERC, contiguous, or watershed lands.

Increased timber harvest activities could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) which would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, increased human activity as a result of new access roads, direct loss of breeding and cover (snags) elements, a reduction in prey abundance from direct and indirect affects, and reduced habitat suitability from changes in forest canopy cover and structure could adversely affect species such as ringtail, Pacific fisher, and pine marten, as well as other non-listed special-status mammal species with potential to occur in the Bucks Creek Bundle (Table 4.5-77). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Hillside arnica, shore sedge, northern coralroot, English sundew, yellow willowherb, marsh skullcap, western campion, smooth goldenrod, and Siskiyou Mountains huckleberry are non-listed special-status plant species that could potentially be located in the Bucks Creek Bundle land area. Any future timber harvest could result in a *significant impact* to these plant species.



### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company is currently party to no known informal agreements related to protection or conservation of non-listed special-status species in the Bucks Creek project.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hamilton Ranch Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive wildlife and plant species, the proposed auction of the Bucks Creek Bundle could result in a *significant impact*.

### **Bundle 8: Butte Creek - DeSabra-Centerville (FERC 0803), Lime Saddle (non-FERC), Coal Canyon (non-FERC)**

There are several habitats and sensitive species in the vicinity of Bundle 8. Please see Figures 4.5-19 and 4.5-23 for mapped information.

### ***Land Development***

Land development changes anticipated for the Butte Creek Bundle project are described under Impact 5-1.

The Sacramento valley tiger beetle is the only sensitive invertebrate species predicted to occur in the Butte Creek Bundle project. This terrestrial invertebrate may occur in riparian and riverine habitat in the vicinity of the Centerville, Coal Canyon, and Lime Saddle powerhouses. Although occurrence of this species is not documented in the project, the species is known to occur in the Rock Creek-Rio Oso transmission line corridor associated with the Rock Creek-Cresta project which is in close proximity to this land area.

Development is predicted in this project which could result in direct and indirect impacts to riverine or montane riparian habitat which could adversely affect this species. Increased human use of riparian areas could result in degradation of riparian vegetation upon which this species depends. This would be considered a *significant impact*.

As noted in Table 4.5-77, non-listed special-status amphibian species with potential to occur in the Butte Creek Bundle project include the western spadefoot, mountain yellow-legged frog, foothill yellow-legged frog and Cascades frog.

There is potential for increased development within the DeSabra-Centerville and Coal Canyon/Thermalito Diversion Pool areas. A variety of adverse effects associated with land development (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on these species, particularly point source pollution, increase in feral animals, increased habitat degradation from human activity and erosion, and direct habitat loss. Adverse affects from any of these sources on lacustrine, wet meadow, riverine, freshwater emergent wetland, montane riparian, or sierra mixed conifer habitats would be considered a *significant impact*.

As noted in Table 4.5-77, a non-listed special-status reptile species with potential to occur in the Butte Creek Bundle is the northwestern pond turtle. This species has been documented within the Butte Creek Bundle. The northwestern pond turtle has been observed, incidental to surveys for other species, on Pacific Gas and Electric Company property by Pacific Gas and Electric Company personnel. The California horned lizard is likely to occur within the project bundle, as habitat suitability in the project is high.

Increased, high intensity development could result in a substantial adverse effects to the northwestern pond turtle habitat loss, degradation, point source pollution, and increased human activity would be the primary factors contributing to this impact. The indirect effects of reduced water quality could result in substantial impacts to this species. For the reasons outlined above, increased development would result in *significant impacts* to the northwestern pond turtle.

A number of non-listed special-status bird species, as noted Table 4.5-77, have been identified as having potential to occur in the Butte Creek Bundle. Included in this group are shore birds, water birds (e.g., egrets), forest habitat species, riparian species, and shrub and grassland species. The golden eagle and, possibly, great gray owl are the only species documented as occurring in the Butte Creek Bundle land area.

Review of county general plan information, breeding bird survey results, and county bird lists revealed that many of these species such as common yellowthroat, Cooper's hawk, and horned lark are known to occur in the vicinity of the project and probably occur on Pacific Gas and Electric Company lands. A variety of adverse effects associated with land development (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the non-listed special-status bird species. Increased development in areas adjacent to DeSabra-Centerville and Coal Canyon/Thermalito Diversion Pool areas could disrupt both nesting and/or foraging activities of bird species that are known to occur in the project vicinity. Both loss and degradation of habitat, increased noise levels, and introduction of feral animals/pets that could prey on nesting birds are the primary adverse effects that could occur. These adverse effects could result in a *significant impact* to non-listed special-status bird species.

A number of non-listed special-status mammal species, as noted Table 4.5-77, have been identified as having potential to occur in the Butte Creek Bundle. Increased residential development in the DeSabra-Centerville and Coal Canyon/Thermalito Diversion Pool area could result in a variety of

adverse effects associated with land development (see Table 4.5-81, Impacts of Land Use Alterations) which would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, and introduction of feral animals/pets could disrupt the nocturnal foraging patterns of species such as ringtail, Pacific fisher, and pine marten, as well as other non-listed special-status mammal species with potential to occur in the Butte Creek Bundle (see Table 4.5-77). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

Mingan moonwort, western goblin, Butte County morning-glory, shore sedge, fox sedge, yellow willowherb, western campion, long-leaved starwort, and Siskiyou Mountains huckleberry are non-listed special-status plant species that could potentially be located in the Butte Creek Bundle land area. Future land development would result in a *significant impact* on these plant species.

### ***Mineral Extraction***

An increase in mineral extraction and mining activities as a result of the proposed divestiture are not anticipated in the Butte Creek Bundle therefore no impacts to non-listed special-status species are expected.

### ***Timber Harvest***

Light timber harvest is anticipated within the Butte Creek Bundle lands. Approximately 50 acres of even-aged management and 150 acres of uneven-aged management THPs are predicted within the Butte Creek Bundle.

The Sacramento valley tiger beetle is the only sensitive invertebrate species predicted to occur in the Butte Creek Bundle project. This terrestrial invertebrate may occur in riparian and riverine habitat in the vicinity of the Centerville, Coal Canyon, and Lime Saddle powerhouses. Although occurrence of this species is not documented in the project, the species is known to occur in the Rock Creek-Rio Oso transmission line corridor associated with the Rock Creek-Cresta project.

Although only light timber harvest activities are predicted in this project, any impact to riverine or montane riparian habitat could adversely affect this species. Timber management activities including establishing new roads, transporting logs, erosion from loss of vegetative cover, and increased vehicle traffic could result in degradation of riparian vegetation upon which this species depends. This would be considered a *significant impact*.

As noted in Table 4.5-77, non-listed special-status amphibian species with potential to occur in the Butte Creek Bundle include the western spadefoot, mountain yellow-legged frog, foothill yellow-legged frog and Cascades frog.

Despite light anticipated timber harvest levels, there is potential for adverse affects to the four sensitive amphibian species predicted to occur in the vicinity of the Butte Creek Bundle. A variety of adverse effects associated with timber harvesting (see Table 4.5-81, Impacts of Land Use Alterations) would also have an effect on these species, particularly point source pollution, increased habitat degradation from human activity and erosion, and direct habitat loss. These species may experience indirect impacts from reduced water quality as a result of construction of new roads or stream crossings, from log skidding or ground disturbance associated with transporting logs and down timber across the landscape. Although THPs typically require measures to minimize these affects, impacts remain from salvage harvest activities and incomplete or ineffective implementation of mitigation measures. Adverse affects from any of these sources on lacustrine, wet meadow, riverine, freshwater emergent wetland, montane riparian, or sierra mixed conifer habitats would be considered a *significant impact*.

As noted in Table 4.5-77, a non-listed special-status reptile species with potential to occur in the Butte Creek Bundle is the northwestern pond turtle. This species has been documented within the Butte Creek Bundle. The northwestern pond turtle has been observed, incidental to surveys for other species, on Pacific Gas and Electric Company property by Pacific Gas and Electric Company personnel. The California horned lizard is likely to occur within the project bundle, as habitat suitability in the project is high.

Increased timber harvest could result in impacts to the northwestern pond turtle. This species could be directly impacted by harvest activities as a result of ground disturbance from vehicular traffic or tree removal. Indirect effects associated with reduced water quality from creating new stream crossings, new roads, and transporting (skidding) logs could have an adverse effect on this species. Habitat loss, degradation, and point source pollution would be the primary factors contributing to this impact. For the reasons outlined above, timber harvest activities would have a *significant impact* on this species.

As previously noted a number of non-listed special-status bird species have been identified as having potential to occur in the Butte Creek Bundle. Included in this group are shore birds, water birds (e.g., egrets), forest habitat species, riparian species, and shrub and grassland species.

Review of county general plan information, breeding bird survey results, and county bird lists revealed that many of these species are known to occur in the vicinity of the project and probably occur on Pacific Gas and Electric Company lands. A variety of adverse effects associated with timber harvesting (see Table 4.5-81, Impacts of Land Use Alterations) would have an effect on one or more of the non-listed special-status bird species. Increased timber harvest activities within the project would result in reduced water quality, reduced cover and refuge opportunities, loss of nesting opportunities or a reduction in nesting habitat suitability from changes in forest structure, loss of productivity from increased human disturbance, increased access from new road construction resulting in higher human activity levels, and habitat changes favoring local

colonization by nest predators and other resource competitors. These adverse effects could result in a *significant impact* to non-listed special-status bird species.

As previously stated, a number of non-listed special-status mammal species have been identified as having potential to occur in the Butte Creek Bundle. None of the mammal species predicted to occur in the Butte Creek Bundle have been documented on lands within the project.

Increased timber harvest activities could result in a variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) which would subsequently affect the mammal species which utilize these habitats. Both loss and degradation of habitat, increased noise and light levels, increased human activity as a result of new access roads, direct loss of breeding and cover (snags) elements, a reduction in prey abundance from direct and indirect affects, and reduced habitat suitability from changes in forest canopy cover and structure could adversely affect species such as ringtail, Pacific fisher, and Pine marten, as well as other non-listed special-status mammal species with potential to occur in the Butte Creek Bundle (Table 4.5-77). Dogs and cats, both feral and domestic, could potentially prey on smaller mammal species. These adverse effects could result in a *significant impact* to non-listed special-status mammal species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company is currently party to the following informal agreements related to protection or conservation of non-listed, special-status species:

- Small instream releases to West Branch Feather River at Miocene Diversion. No regulatory requirement to do so.
- Pacific Gas and Electric Company's FERC license requirements for instream flow releases at Lower Centerville Diversion Dam is normally 40 cfs, but allows for a reduction to ten cfs in dry years. Downstream reaches of the stream provide salmon habitat, and in the past years Pacific Gas and Electric Company informally agreed with CDFG not to exercise this reduction.

The agreements listed above either directly or indirectly benefit biological resources, including listed species with potential to occur in the Butte Creek Bundle (Table 4.5-77). Since current informal agreements have not yet been formalized, a new owner is not legally obligated to comply with them, unless they become conditions in the new FERC licenses. Discontinuance of current participation and implementation of CRMPs could result in direct and adverse effects to listed terrestrial species. Impacts could range from direct habitat loss, in the case of reduced minimum stream flows affecting riparian habitat, to indirect effects including intrusion into sensitive wildlife areas, nest disturbance, and reductions in habitat suitability from increased human disturbance. These effects would be considered a *significant impact*.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated

previously for the Hamilton Ranch Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Butte Creek Bundle could result in a *significant impact*.

#### **Summary of Impact to Entire DeSabra Regional Bundle**

Land development or management changes and non-implementation of informal agreements and BMPs could result in *significant* adverse effects to non-listed special-status species for the DeSabra Regional Bundle.

#### **4.5.9.3 Drum Regional Bundle**

Pacific Gas and Electric Company lands within the Drum Bundle contain many habitats that support non-listed special-status species. Table 4.5-78 identifies the habitats within the Drum Bundle and the associated special-status species that may occur in those habitats.

#### **Bundle 9: North Yuba River - Narrows (FERC 1403)**

There are several habitats and sensitive species in the vicinity of Bundle 9. Please see Figures 4.5-34 for mapped information.

#### ***Land Development***

Land use development in Chapter 3 identifies the Narrows-Lake Englebright land area within the North Yuba River Bundle. Wildlife habitat found in this land area is primarily blue oak-foothill pine, montane hardwood, and lacustrine. These habitats are suitable for a number of special-status wildlife species. The western pond turtle, California spotted owl, Cooper's hawk, golden eagle, northern goshawk, Townsend's big-eared bat, and the western red bat are a few examples of the non-listed special-status species with the potential to occur within the land area. Although the above special-status species have not been observed in the North Yuba River Bundle, suitable habitat for the species may exist. In addition, special-status species occurring on adjacent lands may be affected by the project. Table 4.5-78 provides information on non-listed special-status species that may occur in the bundle based on the habitat.

Land development changes anticipated for the North Yuba River Bundle are described under Impact 5-1.

**Table 4.5-78 Non-listed Special-status Wildlife Species Found in Each Vegetation Community For the Drum Region**

Species	Known	AGS	SCN	BOW	BOP	DFR	JPN	LAC	MHC	PPN	RFR	SMC	MHW	SGB	BAR	MCP	URB	WTM	WFR	VOW
<b>Invertebrates</b>																				
Button's sierra sideband (snail)								9,11												
Pomo bronze shoulder-band				10																
Spiny rhyacophilancaddisfly								9,10, 11												
<b>Amphibians</b>																				
Foothill yellow-legged frog	11									10, 11,12		11	10					11		
Mountain yellow-legged frog								11										11		
Southern Olympic salamander								10												
<b>Reptiles</b>																				
Northwestern pond turtle								10												
Western pond turtle	11							9,11, 12												
<b>Birds</b>																				
Black swift	11					11	11				11				11	11			11	
Burrowing owl				9	9					9						9				
California spotted owl	10,11								9,11, 12			11	10							
Cooper's hawk	11			10, 11,12	9,11, 12								10				10,11			10
Double-crested cormorant								9,10, 12												
Ferruginous hawk				11	11															
Golden eagle	11	11	11	10, 11,12	9,11, 12	11	11		9,11, 12	10, 11,12	11		10	11	11	11		11	11	10

**Table 4.5-78 Non-listed Special-status Wildlife Species Found in Each Vegetation Community For the Drum Region**

Species	Known	AGS	SCN	BOW	BOP	DFR	JPN	LAC	MHC	PPN	RFR	SMC	MHW	SGB	BAR	MCP	URB	WTM	WFR	VOW
Great blue heron								9,10, 11,12										11		
Great egret		11		11	9,11			9,11, 12									11			
Horned lark				12	9,12															
Loggerhead shrike				10,12	9,12															10
Long-eared owl					9,12															
Merlin				10,12	9,12			9,10, 12	9,12				10				11			
Northern goshawk	11		11	10,11					9,11, 12	12		11	10							
Northern harrier				10				10					10							
Osprey	11							9,10, 11,12												
Pileated woodpecker	11								11							11				
Prairie falcon				10,12	9,12				9,12	10,12			10							10
Purple martin		11		10, 11,12	9,11, 12			9,10, 11,12									10,11	11		10
Sharp-shinned hawk	11			10, 11,12	9,11, 12	11			9,11, 12	10, 11,12			10			11	10,11		11	10
White-tailed kite		11		10	9,11, 12												11	11		10
Yellow warbler	11			10, 11,12	9,11, 12					10, 11,12							11		11	10
<b>Mammals</b>																				
Lodgepole chipmunk												11				11				
Pacific fisher	10								11	11		11	10			11				
Pallid bat		11		10, 11,12	12										11		10			10



**Table 4.5-78 Non-listed Special-status Wildlife Species Found in Each Vegetation Community For the Drum Region**

Species	Known	AGS	SCN	BOW	BOP	DFR	JPN	LAC	MHC	PPN	RFR	SMC	MHW	SGB	BAR	MCP	URB	WTM	WFR	VOW
Pine marten							11		11	11			10					11		
Sierra Nevada mountain beaver						11			12	12										
Townsend's western big-eared bat		11		10, 11,12	9,11, 12				9,11, 12	10, 11,12			10					11		
Western red bat		11		10,11	9,11				9,11	10,11			10					11		
Yuma myotis				10, 11,12																10

NOTES: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

Habitats:

AGS = Annual Grassland

BOP = Blue Oak-Foothill Pine

BOW = Blue Oak Woodland

CRC = Chamise-Redshank Chaparral

DFR = Douglas-Fir

FEW = Fresh Emergent Wetland

JPN = Jeffrey Pine

LAC = Lacustrine

LPN = Lodgepole Pine

LSG = Low Sagebrush

MCP = Montane Chaparral

MCH = Mixed Chaparral

MHC = Montane Hardwood-Conifer

MHW = Montane Hardwood

MRI = Montane Riparian

PPN = Ponderosa Pine

RFR = Red Fir

RIV = Riverine

SCN = Subalpine Conifer

SGB = Sagebrush

SMC = Sierra Mixed Conifer

VOW = Valley Oak Woodland

VRI = Valley Foothill Riparian

WFR = White Fir

WTM = Wet Meadow

The Button's sierra sideband snail and spiny rhyacophilan caddisfly are non-listed special-status species that have the potential to occur within the North Yuba River Bundle project. A variety of adverse effects could occur to these sensitive species due to development including habitat degradation from increased motorized activity, human activity, increased erosion, soil compaction/trampling of nest sites, and direct loss of habitat (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to potential habitat for this species, could result in a *significant impact*.

Based on habitat and species range constraints, there are no non-listed special-status amphibians known to occur nor have the potential to occur within the North Yuba River Bundle. Therefore there would be *no impact* to non-listed special-status amphibian species.

The western pond turtle has the potential to occur within the North Yuba River Bundle. This aquatic reptile occurs in riverine and lacustrine habitats. Development in this land area could result in a variety of adverse effects such as habitat degradation from increased motorized activity, human activity, increased erosion, soil compaction/trampling of nest sites, point source pollution, and direct loss of habitat (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to potential habitat for these species, could result in a *significant impact*.

Due to the variety of habitat types in this land area there are many non-listed bird species that could occur in the North Yuba River Bundle. The California spotted owl and the northern goshawk are two special-status species of particular concern for the United States Forest Service (USFS). The USFS owns the lands surrounding this area. Other special-status species associated with the habitat found in this land area include; sharp-shinned hawk, prairie falcon, merlin, golden eagle, Cooper's hawk, long-eared owl, and the yellow warbler. Development in this land area could result in adverse effects to these special-status species. Effects of particular concern are direct habitat loss due to tree removal, increased poaching, and an overall increased habitat degradation from human activity (see Table 4.5-81). For purposes of this analysis, any potential loss or abandonment of a known raptor nest is considered a significant impact, and if development does occur here, it is highly likely that any or all raptors located nearby would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The Townsend's big-eared bat and western red bat are two non-listed special-status mammal species that have the potential to occur within the North Yuba River Bundle, based on suitable habitat and species range information. Bats are known to make use of buildings and human made structures as well as the habitat features associated with this land area such as steep cliffs and rocky out-crops. Development could result in adverse effects to bats and their habitats including habitat degradation from human activity as well as direct habitat loss/alteration (see Table 4.5-81). Effects of particular concern include fugitive noise and human encroachment. Effects such as these could disturb natural nesting and foraging sites for these bat species. A *significant impact* is anticipated to non-listed special-status mammal species within the North Yuba River Bundle.

Dubious pea, bog club moss, and marsh skullcap are non-listed special-status plant species that have the potential to occur in the North Yuba River Bundle. Based on the level of future development that is expected and the presence of suitable habitats, there is potential for future development to result in a *significant impact* to these non-listed special-status plant species.

#### ***Timber Harvest***

According to the forestry assumptions in Chapter 3, there will be no timber harvest plans for the North Yuba River Bundle. As a result, *no impact* to non-listed special-status species is anticipated.

#### ***Mineral Extraction***

According to the mineral assumptions in Chapter 3, there will be no mineral extraction activity for the North Yuba River Bundle. As a result, *no impact* to non-listed special-status species is anticipated.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to non-listed special-status species in the North Yuba River–Narrows Bundle.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the North Yuba River Bundle could result in a *significant impact*.

#### **Bundle 10: Potter Valley (FERC 0077)**

There are several habitats and sensitive species in the vicinity of Bundle 10. Please see Figures 4.5-33 for mapped information.

Wildlife habitat found in these land areas is primarily ponderosa pine, valley oak woodland, blue oak woodland, montane hardwood conifer, and lacustrine. These habitats are suitable for a number of wildlife species. The northwestern pond turtle, California spotted owl, Pacific fisher, and the

foothill yellow-legged frog are a few examples of the non-listed special-status species that have the potential to occur within these land areas. Although not all of above special-status species are known to occur in the Potter Valley Bundle project, suitable habitat for the species may exist. In addition, special-status species occurring on adjacent lands may be affected by the project. Table 4.5-78 provides information on non-listed special-status species that may occur in the bundle based on the suitable habitat type.

#### ***Land Development***

Land development changes anticipated for the Potter Valley Bundle project are described under Impact 5-1.

***Van Arsdale Reservoir/Potter Valley Powerhouse.*** The Pomo bronze shoulder-band snail and spiny rhyacophilan caddisfly are non-listed special-status invertebrate species that have the potential to occur within the Potter Valley Bundle. A variety of adverse effects could occur to these sensitive species due to development including habitat degradation from increased motorized activity, human activity, increased erosion, soil compaction/trampling of nest sites, and direct loss of habitat (see Table 4.5-81). These potential adverse effects could result in a *significant impact* to the Pomo bronze shoulder-band snail and spiny rhyacophilan caddisfly.

The foothill yellow-legged frog and southern olympic salamander are two special-status amphibian species that have the potential to occur within the Potter Valley Bundle. Development in or adjacent to waterways that support these species could result in impacts to the local populations and their habitats (see Table 4.5-81). Development and surface disturbances increases erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading habitat for these species. These effects, if they were to occur, would be considered a *significant impact*.

The northwestern pond turtle is a non-listed special-status reptile species that has the potential to occur within the Potter Valley Bundle. This aquatic reptile relies heavily on riparian, riverine, and lacustrine habitats. Development in or adjacent to waterways that support these species could result in impacts to the local populations and their habitats (see Table 4.5-81). Development and surface disturbances increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading habitat for the northwestern pond turtle. These effects, if they were to occur, would be considered a *significant impact*.

The California spotted owl is known to nest in the Potter Valley Bundle. More specifically, nest sites have been documented within one-quarter mile of the Potter Valley Powerhouse land area. Other non-listed special-status species with the potential to occur within the land areas include, sharp-shinned hawk, prairie falcon, golden eagle, loggerhead shrike, Cooper's hawk, and the yellow warbler. Development in this land area could result in adverse effects to these special-status bird species. Effects of specific concern to listed bird species are noise, increased habitat

degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nest trees and foraging areas (see Table 4.5-81). For purposes of this analysis, any loss or abandonment of a raptor nest is considered a *significant impact*, and if significant land development occurs here, it is highly likely that any raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The pacific fisher is known to occur within the Potter Valley Bundle. More specifically, this species is associated with the montane hardwood conifer and ponderosa pine habitat within this land area. Other special-status mammals that have the potential to occur within the land area include pallid bat, pine marten, Townsend's big-eared bat, western red bat, and Yuma myotis. Development could result in adverse effects to these mammal species and their habitats including habitat degradation from human activity as well as direct habitat loss/alteration (see Table 4.5-81). Effects of particular concern include fugitive noise and human encroachment. Effects such as these could disturb natural nesting and foraging sites for these species. A *significant impact* is anticipated to non-listed special-status mammal species within the Potter Valley Bundle.

Dissected-leaf toothwort, streamside daisy, Tiburon buckwheat, American manna grass, Hayfield tarplant, Nuttall's pondweed, eel-grass pondweed and great burnet are non-listed special-status plant species that have the potential to occur in the Potter Valley Bundle. Future development that occurred in occupied habitat of these plants would result in a *significant impact*.

**Lake Pillsbury.** The Pomo bronze shoulder-band snail and spiny rhyacophilan caddisfly are non-listed special-status invertebrate species that have the potential to occur within the Potter Valley Bundle. A variety of adverse effects could occur to these sensitive species due to development including habitat degradation from increased motorized activity, human activity, increased erosion, soil compaction/trampling of nest sites, and direct loss of habitat (see Table 4.5-81). These potential adverse effects could result in a *significant impact* to the Pomo bronze shoulder-band snail and spiny rhyacophilan caddisfly.

The foothill yellow-legged frog and southern olympic salamander are two special-status amphibian species that have the potential to occur within the Potter Valley Bundle. Development in this land area could result in adverse effects to these special-status species (see Table 4.5-81). Construction of dwelling units and associated surface grading within or adjacent to waterways and water bodies could result in soil erosion. Eroded soils, sediments and other materials entering watercourses could be carried some distance downstream of the pollutant source. Aquatic wildlife occurring within the plume of sedimentation could be adversely affected. These effects, if they were to occur within or directly adjacent to occupied habitat for these species, could result in a *significant impact*.

The northwestern pond turtle has the potential to occur within the Potter Valley Bundle. Potential effects from development would be similar as described for amphibians. This aquatic reptile relies heavily on riparian, riverine, and lacustrine habitats. Development in or adjacent to waterways that support these species could result in impacts to the local populations and their habitats (see Table

4.5-81). Development and surface disturbances increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading habitat for the northwestern pond turtle. These effects, if they were to occur, would be considered a *significant impact*.

The California spotted owl is known to nest in the Potter Valley Bundle. More specifically nest sites have been documented within one-quarter mile of the Lake Pillsbury Land area. Other non-listed special-status species with the potential to occur within the land areas include, sharp-shinned hawk, prairie falcon, golden eagle, loggerhead shrike, Cooper's hawk, and the yellow warbler. Development in this land area could result in adverse effects to these special-status species. Effects of particular concern are direct habitat loss due to tree removal, nest abandonment due to increased noise and lighting from human activity and population loss through predation by introduced feral and domestic animals (see Table 4.5-81). For purposes of this analysis, any loss or abandonment of a raptor nest is considered a *significant impact*, and if significant land development occurs here, it is highly likely that any raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The pacific fisher is known to occur within the Potter Valley Bundle. More specifically, one has been sited near the south end of the Lake Pillsbury Land area. Other special-status mammals that have the potential to occur within the land area include pallid bat, pine marten, Townsend's big-eared bat, western red bat, and Yuma myotis. Effects from development of particular concern are increased habitat degradation from human activity, fugitive noise from construction, increased road kills due to new road construction, interruption of migratory corridors, population loss through predation by introduced feral and domestic animals, habitat fragmentation as well as loss of reproduction and foraging habitat (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to potential habitat for the Pacific fisher would result in a *significant impact*.

Marsh horsetail, streamside daisy, and great burnet are non-listed special-status plant species that have the potential to occur in the Potter Valley Bundle. Future development that occurred in occupied habitat of these plants would result in a *significant impact*.

#### ***Mineral Extraction***

According to the mineral assumptions in Chapter 3, there will be no mineral extraction activity for the Potter Valley Bundle. As a result, *no impact* to listed species is anticipated.

#### ***Timber Harvest***

According to the forestry assumptions in Chapter 3, aggressive timber harvest is a potential development type for the two land areas mentioned above. The aggressive harvest scenario presents timber harvest activities that could potentially occur under a new owner. According to the aggressive harvest scenario 2,900 acres (20,000 MBF) of the 3,400 acres of available commercial forestland could be harvested over the next five years. Under this assumption, the even-age method

would be used on 275 acres (6,875 MBF) and the uneven-age method would be used on 2,625 acres (13,125 MBF), which is 85 percent of the total acres treated. Potential effects associated with timber harvest include direct habitat loss, particularly with even-aged harvesting, as well as habitat degradation due to erosion. In areas subjected to even-age harvest there is a potential for habitat fragmentation, depending upon the size and location of the harvest. For example, if even-age harvest is spread out over several parcels within the Potter Valley Bundle, the potential is remote. Should even-age harvest occur in a concentrated area in a transition zone between two habitat types (i.e., ponderosa pine and montane hardwood), the potential would be much greater. If direct loss of habitat should occur due to timber harvesting, this could result in a *significant impact* to special-status species within these land areas.

The Pomo bronze shoulder-band snail and spiny rhyacophilan caddisfly are non-listed special-status invertebrate species that have the potential to occur within the Potter Valley Bundle. A variety of adverse effects could occur to these sensitive species due to timber harvesting activities. Effects of particular concern could be point source pollution, increased erosion, soil compaction/trampling of nest sites, and direct loss of habitat (see Table 4.5-81). These potential adverse effects could result in a *significant impact* to the Pomo bronze shoulder-band snail and spiny rhyacophilan caddisfly.

The foothill yellow-legged frog and southern olympic salamander are two special-status amphibian species that have the potential to occur within the Potter Valley Bundle. Timber harvesting activities in this land area could result in adverse effects to these special-status species (see Table 4.5-81). Adverse effects of particular concern include habitat degradation due to erosion and point source pollution, especially if timber harvest activities were occurring within preferred habitat for the species (i.e., riparian, riverine, and lacustrine). These adverse effects, if they were to occur, could result in a *significant impact* to a listed amphibian species associated with Potter Valley Bundle.

The northwestern pond turtle has the potential to occur within the Potter Valley Bundle. Potential effects from timber harvesting activities would be similar as described for amphibians. This aquatic reptile relies heavily on riparian, riverine, and lacustrine habitats. Timber harvest adjacent to waterways that support these species could result in impacts to the local populations and their habitats (see Table 4.5-81). Timber harvesting could increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading habitat for the northwestern pond turtle. These effects, if they were to occur, would be considered a *significant impact*.

The California spotted owl is known to nest in the Potter Valley Bundle. More specifically nest sites have been documented within one-quarter mile of both of the previously mentioned land areas. Other non-listed special-status species with the potential to occur within these land areas include, sharp-shinned hawk, prairie falcon, golden eagle, loggerhead shrike, Cooper's hawk, and the yellow warbler. Timber harvest in these land areas could result in adverse effects to these special-status bird species. Effects of particular concern are direct habitat loss due to tree removal, nest

abandonment due to increased noise and lighting from human activity and population loss through predation by introduced feral and domestic animals (see Table 4.5-81). For purposes of this analysis, any loss or abandonment of a raptor nest is considered a *significant impact*, and if significant land development occurs here, it is highly likely that any raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The pacific fisher is known to occur within both of the previously mentioned land areas in the Potter Valley Bundle. Other special-status mammals that have the potential to occur within the land area include pallid bat, pine marten, Townsend's big-eared bat, western red bat, and Yuma myotis. Effects from timber harvest of particular concern are increased habitat degradation from human activity, fugitive noise from construction, increased road kills due to new road construction, interruption of migratory corridors, habitat fragmentation as well as loss of reproduction and foraging habitat (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to potential habitat for the Pacific fisher would result in a *significant impact*.

Marsh horsetail, streamside daisy, and great burnet are non-listed special-status plant species that have the potential to occur in the Potter Valley Bundle. Future development that occurred in occupied habitat of these plants would result in a *significant impact*.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company honors several informal agreements associated with the Potter Valley project that provide support for special-status species and their habitats.

Pacific Gas and Electric Company donates \$500 annually to the Mendocino County 4-H Club to clean up the Eel River from Van Arsdale Dam to the Mendocino County Line. Pacific Gas and Electric Company provides lunch to the volunteers in addition to the donation. This practice is purely informal and is not required under Pacific Gas and Electric Company FERC license or other regulatory requirements.

Pacific Gas and Electric Company's Timber Harvest Plan, approved by the California Department of Forestry, for the Trout Creek area was withdrawn in 1989 due to concerns expressed by Friends of Trout Creek about potential impacts to old growth and virgin stands, and archeological sites existing in the Trout Creek area. A new owner might choose not to continue this informal agreement and therefore choose to harvest the Trout Creek area. Effects of timber harvest would be similar to the above discussion under land management changes.

- Pacific Gas and Electric Company agreements which include Benmore Canyon and Trout Creek are documented in a 1991 Pacific Gas and Electric Company video entitled "Preservation and harvesting: A Story of Cooperation."
- Granger-The permit documents a Pacific Gas and Electric Company agreement to operate USFS campgrounds around Lake Pillsbury.



- Pacific Gas and Electric Company participates in Bald Eagle monitoring at Lake Pillsbury.

Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Potter Valley Bundle could result in a *significant impact*.

#### **Bundle 11: South Yuba River - Drum-Spaulding (FERC 2310)**

There are several habitats and sensitive species in the vicinity of Bundle 11. Please see Figures 4.5-35 and 4.5-41 for mapped information.

#### ***Land Development***

Wildlife habitat found in these land areas are primarily ponderosa pine, blue oak-foothill pine, blue oak woodland, montane chaparral, montane hardwood conifer, sierran mixed conifer, riverine, and lacustrine. These habitats are suitable for a number of wildlife species. The foothill yellow-legged frog, western pond turtle, black swift, California spotted owl, and the northern goshawk are a few examples of the non-listed special-status bird species that have the potential to occur within these land areas. Although not all of the above special-status species are known to occur in the South Yuba River Bundle, suitable habitat for the species may exist. In addition, special-status species occurring on adjacent lands may be affected by the project. Table 4.5-78 provides information on non-listed special-status species that may occur in the bundle based on the habitat.

Land development changes anticipated for the South Yuba River Bundle project are described under Impact 5-1.

The Button's sierra sideband snail and spiny rhyacophilan caddisfly are non-listed special-status invertebrate species that have the potential to occur within the South Yuba River Bundle. A variety of adverse effects could occur to these sensitive species due to land development. Effects of particular concern could be point source pollution, increased erosion, soil compaction/trampling of nest sites, and direct loss of habitat (see Table 4.5-81). These potential adverse effects could result in a *significant impact* to the Button's sierra sideband snail and spiny rhyacophilan caddisfly.

The foothill yellow-legged frog and mountain yellow-legged frog are two special-status amphibian species that have the potential to occur within the South Yuba River Bundle. Development in this land area could result in adverse effects to these special-status amphibian species. Construction of dwelling units and associated surface grading within or adjacent to waterways and water bodies could result in soil erosion. Eroded soils, sediments and other materials entering watercourses could be carried some distance downstream of the pollutant source (see Table 4.5-81). Aquatic wildlife occurring within the plume of sedimentation could be adversely affected. These effects, if they were to occur within or directly adjacent to occupied habitat for these species, could result in a *significant impact*.

The western pond turtle is the only non-listed special-status reptile species with the potential to occur within the South Yuba River Bundle project. Potential effects from land development would be similar as described for amphibians. This aquatic reptile relies heavily on riparian, riverine, and lacustrine habitats. Development in or adjacent to waterways that support these species could result in impacts to the local populations and their habitats (see Table 4.5-81). Land development could increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading habitat for the western pond turtle. These effects, if they were to occur, would be considered a *significant impact*.

The California spotted owl is known to nest in the South Yuba River Bundle. More specifically, nest sites have been documented within one-quarter mile of the land areas associated with these land areas. Other non-listed special-status species with known occurrences within the land areas includes; northern goshawk, black swift, Cooper's hawk, golden eagle, osprey, pileated woodpecker, sharp-shinned hawk, and the yellow warbler. Many of these species are associated with the wet meadow habitat type that can be found within the South Yuba River Bundle. Others are associated with the mixed hardwood and conifer forests that are abundant throughout the bundle. Development in the project land areas could result in adverse effects to these special-status species (see Table 4.5-81). Effects of particular concern are direct habitat loss due to tree removal, nest abandonment due to increased noise and lighting from human activity and population loss through predation by introduced feral and domestic animals. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a *significant impact*, and if significant land development occurs here, it is highly likely that any raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The Pacific fisher, pine marten, Sierra Nevada mountain beaver, pallid bat, Townsend's big-eared bat, western red bat, and Yuma myotis have the potential to occur in the South Yuba River Bundle based on habitat type and species range information. The habitat types this species is associated with are typical of high-elevation Sierran coniferous communities such as, Sierran mixed conifer and montane chaparral. Sierran mixed conifer forests can be found along the entire western range of the South Yuba River Bundle project. Development of these parcels could have negative effects on furbearers, such as, fugitive noise disturbing nocturnally active mammals, direct habitat

loss/alteration, increased road kills due to new road construction, interruption of migratory corridors, and habitat fragmentation (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to potential habitat for these non-listed special-status mammals could result in a *significant impact*.

Mingan moonwort, dissected-leaf toothwort, Sheldon's sedge, American manna grass, red-anthered rush, dubious pea, bog club-moss, Nelson's pepperwort, Nuttall's pondweed, Robbin's pondweed and marsh skullcap are non-listed special-status plant species that have the potential to occur in the South Yuba River Bundle. Future development that occurred in occupied habitat of these plants would result in a *significant impact*.

### ***Mineral Extraction***

According to the mineral assumptions in Chapter 3, there will be no mineral extraction activity for the South Yuba River Bundle. As a result, *no impact* to listed species is anticipated.

### ***Timber Harvest***

According to forestry assumptions in Chapter 3, aggressive timber harvest is a potential development type for the South Yuba River Bundle. The aggressive harvest scenario presents timber harvest activities that could potentially occur under a new owner. According to the aggressive harvest scenario 5,378 acres (20,155 MBF) of commercial forestland could be harvested over the next five years, which would result in an 85 percent of the total acres treated. Under this assumption, the even-age method would be used on 553 acres (7,080 MBF) and the uneven-age method would be used on 1,687 acres (7,675 MBF).

Potential effects associated with timber harvest include direct habitat loss, particularly with even-aged harvesting, as well as habitat degradation due to erosion. In areas subjected to even-age harvest there is a potential for habitat fragmentation, depending upon the size and location of the harvest. For example, if even-age harvest is spread out over several parcels within the South Yuba River Bundle project, the potential for habitat fragmentation is remote. Should even-age harvest occur in a concentrated area in a transition zone between two habitat types (i.e., ponderosa pine and montane hardwood), the potential for habitat fragmentation would be much greater. If direct loss of habitat should occur due to timber harvesting, this could result in a *significant impact* to non-listed special-status species within these land areas.

The Button's sierra sideband snail and spiny rhyacophilan caddisfly are non-listed special-status invertebrate species that have the potential to occur within the South Yuba River Bundle. A variety of adverse effects could occur to these sensitive species due to timber harvesting activities. Effects of particular concern could be increased erosion, soil compaction/trampling of nest sites, and direct loss of habitat (see Table 4.5-81). These potential adverse effects could result in a *significant impact* to the Button's sierra sideband snail and spiny rhyacophilan caddisfly.

The foothill yellow-legged frog and mountain yellow-legged frog are two special-status amphibian species that have the potential to occur within the South Yuba River Bundle. Timber harvesting in these land areas could result in adverse effects to non-listed special-status amphibian species. Timber harvest adjacent to waterways and water bodies could result in soil erosion. Eroded soils, sediments and other materials entering watercourses could be carried some distance downstream of the pollutant source (see Table 4.5-81). Aquatic wildlife occurring within the plume of sedimentation could be adversely affected. These effects, if they were to occur within or directly adjacent to occupied habitat for these species, could result in a *significant impact*.

The western pond turtle is the only non-listed special-status reptile species with the potential to occur within the South Yuba River Bundle project. Potential effects from timber harvesting activities would be similar as described for amphibians. This aquatic reptile relies heavily on riparian, riverine, and lacustrine habitats. Timber harvest adjacent to waterways that support these species could result in impacts to the local populations and their habitats (see Table 4.5-81). Of particular concern, timber harvest could increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading habitat for the western pond turtle. These effects, if they were to occur, would be considered a *significant impact*.

The California spotted owl is known to nest in the South Yuba River Bundle. More specifically, nest sites have been documented within one-quarter mile of the land areas associated with these land areas. Other non-listed special-status species with known occurrences within the land areas includes; northern goshawk, black swift, Cooper's hawk, golden eagle, osprey, pileated woodpecker, sharp-shinned hawk, and the yellow warbler. Many of these species are associated with the wet meadow habitat type that can be found within the South Yuba River Bundle. Others are associated with the mixed hardwood and conifer forests that are abundant throughout the bundle. Timber harvest of the project lands could result in adverse effects to these special-status species (see Table 4.5-81). Effects of particular concern are direct habitat loss due to tree removal, nest abandonment due to increased noise and lighting from human activity and population loss through predation by introduced feral and domestic animals. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a *significant impact*, and if significant land development occurs here, it is highly likely that any raptors would abandon their nests in search of quieter habitat. This would be considered a *significant impact*.

The pacific fisher, pine marten, Sierra Nevada mountain beaver, pallid bat, Townsend's big-eared bat, western red bat, and Yuma myotis have the potential to occur in the South Yuba River Bundle based on habitat type and species range information. The habitat types this species is associated with are typical of high-elevation Sierran coniferous communities such as, Sierran mixed conifer and montane chaparral. Sierran mixed conifer forests can be found along the entire western range of the South Yuba River Bundle project. Timber harvest of these parcels could have negative effects on furbearers, such as, fugitive noise disturbing nocturnally active mammals, direct habitat

loss/alteration, increased road kills due to new road construction, interruption of migratory corridors, and habitat fragmentation (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to potential habitat for these non-listed special-status mammals could result in a *significant impact*.

Mingan moonwort, dissected-leaf toothwort, Sheldon's sedge, American manna grass, red-anthered rush, dubious pea, bog club-moss, Nelson's pepperwort, Nuttall's pondweed, Robbin's pondweed and marsh skullcap are non-listed special-status plant species that have the potential to occur in the South Yuba River Bundle. Future development that occurred in occupied habitat of these plants would result in a *significant impact*.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to non-listed special-status species in the South Yuba River Bundle.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the South Yuba River Bundle could result in a significant impact.

#### **Bundle 12: Chili Bar (FERC 2155)**

There are several habitats and sensitive species in the vicinity of Bundle 12. Please see Figures 4.5-42 for mapped information.

#### ***Land Development***

Wildlife habitat found in these land areas is primarily blue oak woodland, chamise-redshank chaparral, mixed chaparral, ponderosa pine, riverine, and lacustrine. These habitats are suitable for a number of wildlife species. Foothill yellow-legged frog, western pond turtle, California spotted owl, golden eagle, northern goshawk, and pallid bat are a few examples of the non-listed special-status species that have the potential to occur within these land areas. Although not all of

above special-status species are known to occur in the Chili Bar Bundle, suitable habitat for the species may exist. In addition, special-status species occurring on adjacent lands may be affected by the project. Table 4.5-78 provides information on non-listed special-status species that may occur in the bundle based on the habitat.

Land development changes anticipated for the Chili Bar Bundle are described under Impact 5-1.

There is no known occurrence of a non-listed special-status invertebrate species within the Chili Bar Bundle. Therefore there would be *no impact* to special-status invertebrate species due to development.

The foothill yellow-legged frog is the only non-listed special-status amphibian species that has the potential to occur within the Chili Bar Bundle. Development in this land area could result in adverse effects to this special-status species (see Table 4.5-81). Construction of units and associated surface grading within or adjacent to waterways and water bodies could result in soil erosion. Eroded soils, sediments and other materials entering watercourses could be carried some distance downstream of the pollutant source. Aquatic wildlife occurring within the plume of sedimentation could be adversely affected. These effects, if they were to occur within or directly adjacent to occupied habitat for these species, could result in a *significant*.

The western pond turtle is the only non-listed special-status reptile species with the potential to occur within the South Yuba River Bundle project. Potential effects from land development would be similar as described for amphibians. This aquatic reptile relies heavily on riparian, riverine, and lacustrine habitats. Development in or adjacent to waterways that support these species could result in impacts to the local populations and their habitats (see Table 4.5-81). Land development could increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading habitat for the western pond turtle. These effects, if they were to occur, would be considered a *significant impact*.

Non-listed special-status bird species with the potential to occur within the land areas include; northern goshawk, black swift, Cooper's hawk, golden eagle, California spotted owl, sharp-shinned hawk, double crested cormorant, horned lark, loggerhead shrike, long-eared owl and the yellow warbler. Many of these species are associated with the mixed chaparral and lacustrine habitat types which can be found within the Chili Bar Bundle. Others are associated with the mixed hardwood and conifer forests that are abundant throughout the project. Development in the project land areas could result in adverse effects to these special-status species (see Table 4.5-81). Effects of particular concern are direct habitat loss due to tree removal, nest abandonment due to increased noise and lighting from human activity and population loss through predation by introduced feral and domestic animals. This would be considered a *significant impact*.

The Sierra Nevada mountain beaver, pallid bat, Townsend's big-eared bat, and Yuma myotis have the potential to occur in the Chili Bar Bundle based on habitat type and species range information.

The habitat types these species are associated with are typical blue oak woodland, blue oak-foothill pine, ponderosa pine, riverine, and lacustrine habitat type. All are found in the land area. Effects from development of particular concern are increased habitat degradation from human activity, fugitive noise from construction, increased road kills due to new road construction, interruption of migratory corridors, population loss through predation by introduced feral and domestic animals, habitat fragmentation as well as loss of reproduction and foraging habitat (see Table 4.5-81). These effects, if they were to occur within or directly adjacent to potential habitat for the pacific fisher would result in a *significant impact*.

Marsh skullcap is a non-listed special-status plant species that had the potential to occur in the Chili Bar Bundle. Future development that occurred in occupied habitat of these plants would result in a *significant impact*.

#### ***Timber Harvest***

According to the forestry assumptions in Chapter 3, there will be no timber harvest plans for the Chili Bar land area. As a result, *no impact* to listed species is anticipated.

#### ***Mineral Extraction***

According to the mineral assumptions in Chapter 3, there will be no mineral extraction activity for the Chili Bar land area. As a result, *no impact* to listed species is anticipated.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to non-listed special-status species in the Chili Bar Bundle.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Chili Bar Bundle could result in a significant impact.

### **Summary of Impact to Entire Drum Regional Bundle**

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Chili Bar Bundle could result in a *significant impact*.

#### **4.5.9.4 Motherlode Regional Bundle**

Pacific Gas and Electric Company lands within the Motherlode Region contain many habitats that support sensitive species. Table 4.5-79 identifies the habitats within the Motherlode Region and the associated sensitive species that may occur in those habitats.

#### ***Bundle 13: Mokelumne River (FERC 00137)***

There are several habitats and non-listed special-status species in the vicinity of the Mokelumne River Bundle. Please see Figures 4.5-24 and 4.5-27 for mapped information.

#### ***Land Development***

The Mokelumne River Bundle contains annual grassland, barren, blue oak foothill pine, chamise redshank chaparral, mixed chaparral, montane riparian, montane hardwood, montane hardwood conifer, ponderosa pine, Jeffery pine, sierra mixed conifer, Douglas fir, red fir, subalpine, conifer, riverine and lacustrine habitat. Table 4.5-79 presents the non-listed special-status species that are associated with the habitats in the Mokelumne River Bundle.

Land development changes anticipated for the Mokelumne River Bundle are described under Impact 5-1.

There are no sensitive invertebrates with potential to occur in the Mokelumne River Bundle. Therefore, there will be *no impacts* to invertebrates as a result of development.

As noted in Table 5-79, the only sensitive amphibian species with potential to occur in the Mokelumne River Bundle are foothill yellow-legged frog, Mount Lyell salamander, mountain yellow-legged frog, Yosemite toad, and western spadefoot. Development in this land area could result in adverse effects to these special-status species. Construction of units and associated surface grading within or adjacent to waterways and water bodies could result in soil erosion. Eroded soils, sediments and other materials entering watercourses could be carried some distance downstream of the pollutant source.



**Table 4.5-79 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Motherlode Region**

Species	Known	MRI	Cropland	MCP	RIV	VRI	CRC	AGS	SCN	BAR	BOP	DFR	JPN	LAC	MHW	PPN	RFR	SMC	MHC
<b>Invertebrates</b>																			
Bohart's blue butterfly	No				15	15								15					
Button's Sierra sideband	No				15	15													
Grady's cave amphipod	Yes				14														
Hara's cave amphipod	Yes				14														
Hirsute Sierra sideband	Yes									15									
Keeled sideband	No					15								15					
Merced canyon shoulder-band	No				15									15					
Molestan blister beetle	No							15											
Tight coin (= Yates snail)	No					15								15					
Wengerors' cave amphipod	No																		
Yosemite mariposa sideband	No				15									15					
<b>Amphibians</b>																			
California tiger salamander	No					15		15			15								
Foothill yellow-legged frog	Yes				13,14	13,14	14									13,14		13,14	
Mt. Lyell salamander	No				13	13		13									13		
Mountain yellow-legged frog	Yes	13,14			13,14				13,14					15					
Relictual slender salamander	No																		14
Yosemite toad	No								13,14										
Western spadefoot	No				13,15			13,15			13,15			13,15					
<b>Reptiles</b>																			
California horned lizard	No																		13,14, 15
Western pond turtle	Yes	13,14, 15			13,14, 15	13,14, 15								13,14, 15					

**Table 4.5-79 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Motherlode Region**

Species	Known	MRI	Cropland	MCP	RIV	VRI	CRC	AGS	SCN	BAR	BOP	DFR	JPN	LAC	MHW	PPN	RFR	SMC	MHC
<b>Birds</b>																			
Baird's sandpiper	No				14									14					
Burrowing owl	No			15							15					15			
California spotted owl	Yes														13,14			13,14	13,14
California thrasher	No					13													
Cooper's hawk	No	13,14, 15				13,14, 15					13,14, 15				13,14, 15				13,14, 15
Double-crested cormorant	No				15									15					
Ferruginous hawk	No							13,15			15								
Golden eagle	Yes			13,14, 15							13,14, 15	13			13,14, 15	13,14, 15			13,14, 15
Great blue heron	No	13,15	15,13					15						13,15					
Great egret	No				15						15			15					
Horned lark	No							13,15			13,15			15					
Long-billed curlew	No		15					15						14					
Long-eared owl	No	13,14, 15				13,14, 15		15			13,14, 15				13,14, 15				13,14, 15
Merlin	No							13,14, 15			13,14, 15			13,14, 15	13,14, 15	13,14, 15			13,14, 15
Northern goshawk	Yes								13,14									13,14	
Northern harrier	No		15			15		15			15				15				
Osprey	Yes													13,14, 15		13,14		13,14	
Prairie falcon	Yes		15	14		13		13,15			13,14		13		13,14	13,14		13,14	13
Purple martin	No					13,15					13,14, 15			14,15	13,15	13,15			13,15
Sharp-shinned hawk	Yes	13,14, 15				13,14, 15					13,14, 15		13,14, 15			13,14, 15			

**Table 4.5-79 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Motherlode Region**

Species	Known	MRI	Cropland	MCP	RIV	VRI	CRC	AGS	SCN	BAR	BOP	DFR	JPN	LAC	MHW	PPN	RFR	SMC	MHC
Short-eared owl	No		15					15											
Tricolored blackbird	Yes		15,14		14	14		14,15											
White-tailed kite	No		15,13					13,15			14								
Yellow-breasted chat	No	13				13													
Yellow warbler	Yes	13,14,15		13,14,15		13,14,15					14					13,14,15		13,14,15	
<b>Mammals</b>																			
Greater western mastiff bat	Yes	13,14,15				13		13,14,15			13,14,15								
Little brown myotis	No	13,14			13,14						13,14		13,14	13,14		13,14		13,14	
Lodgepole chipmunk	No			13,14														13,14	
Northern flying squirrel	No	13				13					13		13					13	
Ornate shrew	No	13,15				13,15		13,15											
Pacific fisher	Yes	13,14							13,14				13,14					13,14	
Pallid bat	Yes							13,14,15							13,14,15			13,14,15	13,14,15
Pine marten	Yes								13,14				13,14				13,14	13,14	
Ringtail	No	14,15				14,15					14,15								
San Joaquin pocket mouse	No		15					15											
Sierra Nevada mountain beaver	No														13,14	13,14			13,14
Sierra Nevada snowshoe hare	No	13,14			13,14								13,14					13,14	
Spotted bat	Yes							13,14		13,14								13,14	
Townsend's western big-eared bat	Yes							13,14,15			13,14,15							13,14,15	13,14,15
Western red bat	No	13,14				13,14		13,14			13,14		13,14					13,14	
Yuma myotis	No	13,14,15				13,14,15		13,14,15			13,14,15					13,14,15		13,14,15	

Notes: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

Habitats:

AGS	=	Annual Grassland		
BOP	=	Blue Oak-Foothill Pine		
BOW	=	Blue Oak Woodland		
CRC	=	Chamise-Redshank Chaparral		
DFR	=	Douglas-Fir		
FEW	=	Fresh Emergent Wetland		
JPN	=	Jeffrey Pine		
LAC	=	Lacustrine		
LPN	=	Lodgepole Pine		
LSG	=	Low Sagebrush		
MCP	=	Montane Chaparral		
MCH	=	Mixed Chaparral	SCN	= Subalpine Conifer
MHC	=	Montane Hardwood-Conifer	SGB	= Sagebrush
MHW	=	Montane Hardwood	SMC	= Sierra Mixed Conifer
MRI	=	Montane Riparian	VOW	= Valley Oak Woodland
PPN	=	Ponderosa Pine	VRI	= Valley Foothill Riparian
RFR	=	Red Fir	WFR	= White Fir
RIV	=	Riverine	WTM	= Wet Meadow

Aquatic wildlife occurring within the plume of sedimentation could be adversely affected. These effects would be considered a *significant impact*.

As noted in Table 4.5-79, the only sensitive reptile species with potential to occur in Mokelumne River Bundle are western pond turtle and California horned lizard. Potential impacts from construction to the aquatic western pond turtle, would be the same impacts as those amphibian species listed above. Impacts to the terrestrial horned lizard would be limited to direct loss of individuals and habitat from dwelling construction. The overall impacts to non-listed special-status reptiles are *significant*

California spotted owl, California thrasher, Cooper's hawk, golden eagle, horned lark, long-eared owl, merlin, northern goshawk, osprey, prairie falcon, purple martin, sharp-shinned hawk, and yellow warbler are some of the sensitive bird species that would be expected to occur in this land area. Development in this land area could result in adverse effects to these special-status species. Effects of particular concern are direct habitat loss due to tree removal and potential destruction of active nest sites. This is considered a *significant impact*. Sensitive mammal species for Mokelumne River Bundle include pine marten, greater western mastiff bat, little brown myotis, lodgepole chipmunk, northern flying squirrel, Pacific fisher, pallid bat, Sierra Nevada snowshoe hare, spotted bat, Townsend's big-eared bat, western red bat, Sierra Nevada mountain beaver and Yuma myotis. Effects from development of particular concern are increased habitat degradation from human activity, fugitive noise from construction, increased road kills due to new road construction, interruption of migratory corridors, population loss through predation by introduced feral and domestic animals, habitat fragmentation as well as loss of reproduction and foraging habitat. These effects, if they were to occur within or directly adjacent to potential habitat for the non-listed special-status mammal species would result in a *significant impact*.

Prairie wedge grass is the only non-listed plant species that could be present in the Electra Tunnel/West Point Powerhouse and Lake Tabeaud/Electra Powerhouse land areas. Future development that occurs in occupied habitat of these plants would result in a *significant impact*.

Prairie wedge grass potentially occurs in the Lower and Upper Bear River Reservoir/Salt Springs Reservoir land area. Future development that occurred in occupied habitat of this plant would result in a *significant impact*.

Liddon's sedge, holly fern, and Robbin's pondweed are the three non-listed plant species with the potential to occur in the Upper and Lower Blue Lakes/Meadow Lake/Twin Lake land area. Future development in this land area could have a negative impact on these species and their habitats. Future development that occurred in occupied habitat of these plants would result in a *significant impact*.

##### ***Mineral Extraction***

No additional mineral extractions are expected to occur on lands associated with Mokelumne River Bundle. As a result, *no impacts* to sensitive species or their habitats are anticipated.

##### ***Timber Harvest***

A significant acreage associated with the Mokelumne River Bundle project (i.e., over 850 acres of a total 2,100, or 40 percent of the total commercial forest lands) has potential for future aggressive timber harvesting activities, both even-aged and uneven-aged harvest. A more complete description of future aggressive timber management is located in Impact 5-1. The majority of future timber harvest activities would occur on lands associated with the Tiger Creek Reservoir and Facilities land area, the Electra Tunnel/West Point Powerhouse land area, and the Upper and Lower Blue Lakes/Meadow Lake/Twin Lake land area. There are no sensitive invertebrates with potential to occur in Mokelumne River Bundle. Therefore, there will be *no impacts* to invertebrates as a result of future timber development.

As noted in Table 4.5-79, the only sensitive amphibian species with potential to occur in Mokelumne River Bundle project are foothill yellow-legged frog, Mount Lyell salamander, mountain yellow-legged frog, Yosemite toad, and western spadefoot. Point source pollution, erosion, soil compaction, and direct habitat loss could result from aggressive timber harvest management. These effects could result in a *significant impact* to sensitive amphibian species.

As noted in Table 4.5-79, the only sensitive reptile species with potential to occur in Mokelumne River Bundle are California horned lizard and western pond turtle. Development in or adjacent to waterways that support these species could result in impacts to the local populations and their habitats. Development and surface disturbances increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading wetland communities. Therefore, there would be a *significant impact* to sensitive reptiles as a result of aggressive timber methods.

California spotted owl, California thrasher, Cooper's hawk, golden eagle, horned lark, long-eared owl, merlin, prairie falcon, northern goshawk, purple martin, sharp-shinned hawk, white-tailed kite, yellow-breasted chat, and yellow warbler are the sensitive bird species that would be expected to occur in this land area. Adverse effects to sensitive bird species are stated in Impact 5-1. For purposes of this analysis, any loss or abandonment of a raptor nest is considered a significant impact, and if significant timber harvest occurs here, it is highly likely that any or all of these bird species would abandon or lose their nests. This is considered a *significant impact* for sensitive bird species.

Sensitive mammal species for Mokelumne River Bundle include marten, greater western mastiff bat, little brown myotis, lodgepole chipmunk, northern flying squirrel, fisher, Sierra Nevada mountain beaver, pallid bat, spotted bat, Townsend's western big-eared bat, western red bat, and

Yuma myotis. Aggressive timber harvest could result in direct habitat loss for listed mammals, and fragmentation of those habitats. Effects from development of particular concern are increased habitat degradation from human activity, fugitive noise from construction, increased road kills due to new road construction, interruption of migratory corridors, population loss through predation by introduced feral and domestic animals, habitat fragmentation as well as loss of reproduction and foraging habitat. Fragmentation could adversely affect the breeding and foraging patterns of marten and fisher. As a result, this is considered a *significant impact* for sensitive mammal species.

There are five sensitive non-listed plant species with potential to occur in Mokelumne River Bundle: Liddon's sedge, Bisbee Peak rush-rose, holly fern, Robbin's pondweed, and prairie wedge grass. Future aggressive timber harvest in Mokelumne River Bundle could have a negative impact on these species and their habitats. Therefore, there is a *significant impact* to sensitive non-listed plant species as a result of anticipated timber production.

#### ***Informal Agreements/Best Management Practices***

As Stated in Impact 5-1, Pacific Gas and Electric Company honors several informal agreements associated with the Mokelumne River project.

- Tiger Creek Afterbay is voluntarily kept at two feet above normal minimum operating elevation in order to provide water for the Amador County Water Agency (AWCA).
- Pacific Gas and Electric Company holds Upper and Lower Blue Lakes, Twin Lake, Meadow Lakes and Tabeaud Lake at near full through the summer.
- Pacific Gas and Electric Company imposes voluntary ramping rates below Salt Springs Dam, Tiger Creek Afterbay, and Electra Diversion for public safety.
- Pacific Gas and Electric Company has revised its operating procedures for Tiger Creek and West Point powerhouse to prevent sudden surges and fluctuations.

All of the agreements listed above either directly or indirectly benefit sensitive species in Mokelumne River Bundle project. Since these current agreements have not yet been formalized, a new owner is not legally obligated to comply with them, unless they become conditions in the new FERC licenses. Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) that it has developed: General Guidelines for Protection of Sensitive Species and Habitat Areas; Protection of Sensitive Aquatic Resources During Canal Outages; Protection of Sensitive Aquatic Resources from Sudden Stream Flow changes; Protection of Sensitive Species and Habitats During Integrated Pest and Vegetation Management; and Protection of Threatened and Endangered Species. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and,

as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Mokelumne River Bundle could result in a *significant impact*.

#### **Bundle 14: Stanislaus River - Spring Gap-Stanislaus (FERC 2130), Phoenix (FERC 1061)**

There are several habitats and sensitive species in the vicinity of Bundle 14. Please see Figures 4.5-28 and 4.5-31 for mapped information.

#### ***Land Development***

The Stanislaus River Bundle contains blue oak foothill pine, montane hardwood, ponderosa pine, Jeffery pine, montane chaparral, sierra mixed conifer, riverine and lacustrine habitat. Table 4.5-79 presents the sensitive species that is associated with the habitats in the Stanislaus River Bundle.

The Stanislaus River Bundle has potential for development, according to the land use development assumed in Chapter 3. Land development changes anticipated for the Stanislaus River Bundle project are described under Impact 5-1.

There are two invertebrates that have been known to occur within the Stanislaus River Bundle, Grady's cave amphipod and Hara's cave amphipod. There are many species of amphipods, and tend to be very regionally located, or specific to a local site which is not in the vicinity of the area of potential development. Therefore, there will be *no impacts* to sensitive invertebrate species.

Four species of sensitive amphibians have the potential to occur in the Stanislaus River Bundle; foothill yellow-legged frog, mountain yellow-legged frog, relictual slender salamander, and Yosemite toad. Development in this land area could result in adverse effects to these special-status species. Construction of units and associated surface grading within or adjacent to waterways and water bodies could result in soil erosion. Eroded soils, sediments and other materials entering watercourses could be carried some distance downstream of the pollutant source. Aquatic wildlife occurring within the plume of sedimentation could be adversely affected. Loss or degradation of sensitive amphibian habitat due to commercial and recreational development is considered a *significant impact*.

California horned lizard and western pond turtle are the two sensitive reptilian species that are known to occur, or could occur in the Stanislaus River Bundle. Impacts to western pond turtle would be the same as for amphibians in Impact 5-1. California horned lizard would experience habitat degradation or loss if development occurred in the vicinity of this reptile. Negative impacts to sensitive reptiles or degradation of their habitat would be considered a *significant impact*.



Baird's sandpiper, Cooper's hawk, golden eagle, merlin, northern goshawk, osprey, prairie falcon, and sharp-shinned hawk, as well as other bird species (see Table 4.5-79) could be found in the Stanislaus River Bundle. Northern goshawk and California spotted owl in particular have been documented within one and one-half miles of Relief Reservoir and Lyons Reservoir. A variety of adverse effects associated with habitat loss and degradation (see Table 4.5-81, Impacts of Land Use Alterations) could also affect one or more of these listed bird species. For purposes of this analysis, any potential loss or abandonment of a raptor nest is considered a *significant impact*. If commercial development does occur here, it is highly likely that any or all raptors located nearby would abandon their nests in search of quieter habitat. Because known raptor nests are located in the bundle, future development would be considered a *significant impact*.

Those non-listed special status species that actually have potential habitat within the Stanislaus River Bundle are pine marten, greater western mastiff bat, little brown myotis, Pacific fisher, Sierra Nevada snowshoe hare, and Yuma myotis. A complete list of sensitive non-listed mammals found in the Stanislaus River Bundle is in Table 4.5-79. Pine marten has been documented within one and one-half miles of Relief Reservoir. There is potential for habitat fragmentation to occur in areas of extensive residential development in the Kennedy Meadows and Lyons Reservoir areas. Fragmentation could adversely affect the breeding and foraging patterns of Pine marten and Pacific fisher, which are known to occur within the bundle. In addition, increased human encroachment in general could degrade habitats for these sensitive species, and because Pine marten is known to occur in the vicinity of this parcel, increased commercial and recreational development is considered a *significant impact*.

There are four sensitive non-listed plant species that have the potential to occur in the Stanislaus River Bundle: shore sedge, Liddon's sedge, meadow sedge and Robbin's pondweed. Future development that occurs in occupied habitat of these plants would result in a *significant impact*.

### ***Timber Harvest***

A significant acreage associated with the Stanislaus River Bundle (i.e., over 580 acres out of a total of 800 acres, or 73 percent of the total commercial forest lands) has potential for future aggressive timber harvesting activities, both even-aged and uneven-aged harvest. A more complete description of harvest in the Stanislaus River Bundle is stated in Impact 5-1. The majority of future timber harvest activities would occur on lands associated with the Stanislaus River land area.

There are no sensitive invertebrate species that occur in these land areas. Therefore, there are *no impacts* to sensitive invertebrates as a result of additional timber harvests.

As noted in Table 4.5-79, sensitive amphibian species with potential to occur in the Stanislaus River Bundle are foothill yellow-legged frog, mountain yellow-legged frog, relictual slender salamander, and Yosemite toad. Point source pollution, erosion, soil compaction, and direct habitat loss could

result from aggressive timber management. These effects could result in a *significant impact* to sensitive amphibian species.

As noted in Table 4.5-79, the only sensitive reptile species with potential to occur in the Stanislaus River Bundle are California horned lizard and western pond turtle. Development in or adjacent to waterways that support these species could result in impacts to the local populations and their habitats. Development and surface disturbances increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading wetland communities. These effects would be considered a *significant impact*.

Based on the level of future timber harvests that are expected and the proximity to suitable habitats, there is potential for future timber management on watershed lands in land areas associated with the Stanislaus River Bundle to result in a *significant impact* to sensitive reptile species such as the California horned lizard and western pond turtle.

As noted in Table 4.5-79, a number of sensitive bird species have potential to occur in the Stanislaus River Bundle. Of these species, the following have been observed within or adjacent to the Stanislaus River Bundle in recent years: California spotted owl, Cooper's hawk, golden eagle, northern goshawk, osprey, prairie falcon, sharp-shinned hawk, and yellow warbler. Removal of trees associated with timber harvest could disrupt nesting bird species such as California spotted owl, northern goshawk, osprey, sharp-shinned hawk, and Cooper's hawk. These species are known to occur within the project, and therefore adverse effects could result in a *significant impact* to a listed bird species.

As noted in Table 4.5-79, a number of sensitive mammal species have potential to occur in the Stanislaus River Bundle. Of these, pine marten, greater western mastiff bat, pacific fisher, pallid bat, spotted bat, Sierra Nevada mountain beaver and Townsend's western big-eared bat are known to occur. Aggressive timber harvest could result in direct habitat loss for sensitive mammals. In addition, there is potential for habitat fragmentation to occur in areas of even-aged cutting. Fragmentation could adversely affect the breeding and foraging patterns of pine marten and pacific fisher, which are known to occur within the bundle. As a result, future aggressive timber harvest within the Stanislaus River Bundle project would result in a *significant impact* to sensitive mammal species.

There are four sensitive non-listed plant species that have the potential to occur in the Stanislaus River Bundle: shore sedge, Liddon's sedge, meadow sedge and Robbin's pondweed. Future aggressive timber harvest in this bundle could have a negative impact on these species and their habitats. Therefore, there is a *significant impact* to sensitive non-listed plant species as a result of anticipated timber harvest.

***Mineral Extraction***

Land use development in Chapter 3 has identified one location in the Stanislaus River land area, located near the Stanislaus forebay and powerhouse, that has potential for additional quartz mining.

No sensitive invertebrate species are known, or potentially could occur in the vicinity of the Stanislaus forebay and powerhouse. Therefore, there will be *no impact* to sensitive invertebrate species as a result of increased mining activities.

New mineral extraction activities in the vicinity of Stanislaus forebay and powerhouse could result in negative impacts to the sensitive amphibians in the Stanislaus River Bundle. New mineral extraction activities within or adjacent to the Middle Fork Stanislaus River could result in a variety of adverse effects to foothill yellow-legged frog, mountain yellow-legged frog, and relictual slender salamander (see Table 4.5-81, Impacts of Land Use Alterations). Specific adverse effects that could occur as a result of mineral extraction include point source pollution, fugitive dust, and habitat degradation due to erosion, soil compaction, and direct habitat loss. These effects would be exacerbated since they would occur near habitats preferred by the species. While they are not known to occur near the Stanislaus forebay and powerhouse, these effects may result in *significant impacts* to sensitive amphibian species.

California horned lizard and western pond turtle are the only sensitive non-listed reptiles to occur in the Stanislaus River Bundle. Impacts to these reptile species are similar to those for the amphibian species listed above. While they are not known to occur near the Stanislaus forebay and powerhouse, these effects may still result in *significant impacts* to sensitive reptilian species.

Similar to the amphibian and reptile discussions above, future increased mineral extraction activities could result in negative effects to sensitive bird species. Species such as those listed under the development discussion for this bundle, could be subjected to the following adverse effects: point source pollution, fugitive noise and dust, habitat degradation due to erosion, direct habitat loss (including loss of nesting trees), and habitat fragmentation. These adverse effects would result in a *significant impact* to these sensitive bird species.

Future increased mineral extraction activities within the Stanislaus River Bundle project could result in a negative impacts to sensitive mammal species. Species such as those listed under the development discussion for this bundle, could be subject to the following adverse effects: point source pollution, fugitive noise and dust, habitat degradation due to erosion, direct habitat loss, edge effect, and habitat fragmentation. These adverse effects would result in a *significant impact* to these sensitive mammal species.

There are four sensitive non-listed plant species that have the potential to occur in the Stanislaus River Bundle: shore sedge, Liddon's sedge, meadow sedge, and Robbin's pondweed. Future mineral extraction in this bundle could have a negative impact on these species and their habitats.

Therefore, there is a *significant impact* to sensitive non-listed plant species as a result of anticipated mining activities.

#### ***Informal Agreements/ Best Management Practices***

Currently there are no informal agreements associated with the Stanislaus River Bundle that would adversely affect non-listed special-status species if they were not transferred. Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Mokelumne River Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Stanislaus River Bundle could result in a *significant impact*.

#### **Bundle 15: Merced River - Merced Falls (FERC 2467)**

There are several habitats and sensitive species in the vicinity of Bundle 15. Please see Figure 4.5-32 for mapped information.

The Merced River Bundle contains annual grassland, cropland, riverine and lacustrine habitat. Table 4.5-79 presents the sensitive species that is associated with the habitats in the Merced River Bundle.

#### ***Land Development***

Land development changes anticipated for the Merced River Bundle project are described under Impact 5-1. No additional land development changes are expected for the Merced River bundle.

#### ***Timber Harvest***

No additional timber harvest is expected to occur on lands associated with the Merced River Bundle.

#### ***Mineral Extraction***

No additional mineral extraction is expected to occur on lands associated with the Merced River Bundle.

### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to non-listed special-status species in the Stanislaus River-Spring Gap Bundle.

Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Mokelumne River Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Merced River Bundle could result in a *significant impact*.

### **Summary of Impacts to Entire Motherlode Regional Bundle**

Land development or management changes and implementation of informal agreements and BMPs could result in *significant* adverse effects to sensitive non-listed special-status species for the Motherlode Regional Bundle.

#### **4.5.9.5 Kings Crane-Helms Regional Bundle**

##### **Bundle 16: Crane Valley (FERC 1354)**

There are several habitats and sensitive species in the vicinity of Bundle 16. Please see Figures 4.5-43 and 4.5-45 for mapped information. Potential adverse effects to biological resources associated with timber harvesting are noted in Table 4.5-81, Impacts of Land Use Alterations.

### ***Land Development***

The opportunities and constraints land use modeling analysis identifies four land areas within the Crane Valley Bundle that may undergo land development changes: (1) Bass Lake, (2) Manzanita Lake--San Joaquin powerhouse #3, (3) San Joaquin powerhouse #2, and (4) AG Wishon powerhouse.

Land use development presented in Chapter 3 identifies the Bass Lake land area as having a development potential of four dwelling units per 114 acres. In this analysis, .05 units per acre is designated Open Space. However, the fragmentation of the parcels and the limited number of acres overall it would require a major investment in infrastructure for development to occur. Construction of these dwelling units could result in direct loss of non-listed special-status species or

their habitat. As a result, potentially significant impacts to non-listed special-status species and their habitats can be anticipated due to residential development.

The land use development presented in Chapter 3 identifies the Manzanita lake land area as having a development potential of one unit per acre or 126 residential units per 359 acres. However, public services and utilities such as sewerage facilities are not currently available. The construction of these dwelling units and public services could result in direct loss of non-listed special-status species and their habitat. As a result, *significant impacts* to non-listed special-status species and their habitat can be anticipated due to development.

The land use development presented in Chapter 3 identifies the San Joaquin Powerhouse 2 land area as having a development potential of nine dwelling units on the 137 acres, with a minimum ten-acre lot size for Agricultural Residential. The construction of these dwelling units and public services could result in direct loss of non-listed special-status species or their habitat. As a result, *significant impacts* to non-listed special-status species and their habitat can be anticipated due to residential development.

The land use development presented in Chapter 3 identifies the A.G. Wishon Powerhouse land area as having a development potential of one dwelling unit per 28 acres. The construction of this dwelling units and public services could result in direct loss of non-listed special-status species or their habitat. As a result, *significant impacts* to non-listed special-status species and their habitat can be anticipated due to residential development.

There are no invertebrate species of concern in this bundle; therefore there will be *no impact*.

Any residential development on any of the parcels within the Crane Valley Bundle would not affect sensitive non-listed amphibian or reptile species.

Any development of the parcels within the Crane Valley Bundle could effect sensitive non-listed bird species. This would be considered a *significant* impact.

Any additional development within the bundle would not significantly impact the special-status mammal species.

Five sensitive non-listed plant species with the potential to occur in the Crane Valley Bundle are Small's southern clarkia, flaming trumpet, Madera linanthus, orange lupine and Kings River monkeyflower. Future development that may occur in the occupied habitat of these plants would result in a *significant impact*.

#### ***Timber Harvest***

Timber harvest is anticipated with the Crane Valley bundle. Approximately 100 acres of selection harvest are predicted within the Crane Valley Project.

Non-listed special-status invertebrate species do not have the potential to occur within the Crane Valley Bundle. Therefore, there would be *no impact* to non-listed special-status invertebrate species within the Crane Valley Project land.

Various non-listed special-status amphibian species have the potential to occur within the Crane Valley Bundle. Please see Table 4.5-80 for a complete list. During timber harvesting activities, there is potential for habitat degradation due to erosion and point sources pollution, which could have adverse effects special-status amphibian species. Of particular concern are areas located near or adjacent to riparian habitat. There is potential that timber harvesting could result in a *significant impact* to non-listed special-status amphibian species that could occur within the vicinity of the Crane Valley Bundle.

As noted in Table 4.5-80, the non-listed special-status reptile species with potential to occur in the Crane Valley Bundle are western pond turtle and two-striped garter snake. Similar to the amphibian discussion above, increased timber harvest could result in a *significant impact* to these species. Unlike amphibians, reptiles could be directly impacted by harvest activities as a result of ground disturbance from vehicular traffic or tree removal. However, habitat loss, degradation, and point source pollution would be the primary factors contributing to this impact.

There are several non-listed special-status bird species that have the potential to occur with the Crane Valley Bundle. Please see Table 4.5-80 for a complete list. Effects of specific concern to bird species are noise, increased habitat degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nesting trees. The listed bird species associated with this project could be adversely affected by timber harvesting due to direct loss of habitat and disruption of foraging and nesting activities. These adverse effects could contribute to a *significant impact* to listed bird species within the vicinity of the project.

Several non-listed special-status mammal species have the potential to occur within the Crane Valley Bundle. Please see Table 4.5-80 for a complete list. Specific adverse effects associated with timber harvesting which could impact these mammal species include fugitive noise, increased habitat degradation due to human activity, directs habitat loss, habitat fragmentation and edge effect. Based on these potential effects timber harvesting is considered to have a *significant impact* on non-listed special-status mammal species that may occur within the vicinity of the project.

#### ***Mineral Extraction***

No mining is expected, therefore *no impacts* will occur to special-status species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to non-listed special-status species in the Crane Valley Bundle.

**Table 4.5-80 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Kings Crane-Helms Region**

Species	Known	MRI	RIV	WTM	URB	BOW	VOW	LPN	VIR	AGS	BAR	BOP	JPN	LAC	MCH	MHC	PPN	WFR	RFR	SMC
<b>Reptiles</b>																				
California horned lizard	No					17/18/ 19/20			17/18/ 19/20	17/18/ 19/20		17/18/ 19/20					17/18/ 19/20			
California legless lizard	No					18/19/ 20			18/19/ 20			18/19/ 20								
Two striped garter snake	No	17,18, 19,20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20			16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	17,18, 19,20	16,17, 18,19, 20			
Western pond turtle	Yes	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20			16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	17,18, 19,20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20
<b>Amphibians</b>																				
California tiger salamander	No		19,20			19,20	19,20		19,20	19,20		19,20								
Foothill yellow legged frog	No	17,18, 19,20	17,18, 19,20	17,18, 19,20		17,18, 19,20			17,18, 19,20	17,18, 19,20		17,18, 19,20			17,18, 19,20	17,18, 19,20	17,18, 19,20			
Mountain yellow-legged frog	No	16,18	16,18	16,18				16,18					16,18	16,18			16,18	16,18	16,18	16,18
Mt. Lyell salamander	No			16,18				16,18		16,18	16,18						16	16,18	16,18	16,18
Relictual slender salamander	No	16,17, 18,19	16,17, 18,19			16,17, 18,19			16,17, 18,19			16,17, 18,19			16,17, 18,19	18,19	16,17, 18,19	16,17, 18,19		16,17, 18,19
Tehachapi slender salamander	No	20				20			20			20								
Western spadefoot	No		17,19, 20			17,19, 20				17,19, 20		17,19, 20		17,19, 20						
Yosemite toad	No		16,18	16,18				16,18						16,18			16		16,18	16,18
<b>Birds</b>																				
American white pelican	No		16,17, 18								17,18			16,17, 18						



**Table 4.5-80 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Kings Crane-Helms Region**

Species	Known	MRI	RIV	WTM	URB	BOW	VOW	LPN	VIR	AGS	BAR	BOP	JPN	LAC	MCH	MHC	PPN	WFR	RFR	SMC
Black swift	No	16,17, 18,19, 20	16,17, 18,19, 20			16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20
Black-capped chickadee	No	16,18																	16,18	
Burrowing owl	No			16,17, 18,19		16,17, 18,19			16,17, 18,19	16,17, 18,19		16,17, 18,19			16,17, 18,19		16,17, 18,19			
California spotted owl	No	16,17, 18,19						16,17, 18,19	16,17, 18,19			16,17, 18,19	16,17, 18,19				16,17, 18,19	16,17, 18,19	16,17, 18,19	16,17, 18,19
Common loon	No		16,17, 18,19											16,17, 18,19						
Cooper's hawk	No	16,17, 18,19, 20				16,17, 18,19, 20			16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20
Double-crested cormorant	No		16,18								18			16,18						
Ferruginous hawk	No			17,18, 19		17,18, 19			17,18, 19	17,18, 19		17,18, 19								
Fulvous whistling duck	No		16,17, 18,19								17			16,17, 18,19						
Golden eagle	No	16,17, 18,19, 20				16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20
Horned lark	No			16,17, 18,19, 20		16,17, 18,19, 20			16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20								
Loggerhead shrike	No	16,17, 18,19, 20				16,17, 18,19, 20				16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20							

**Table 4.5-80 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Kings Crane-Helms Region**

Species	Known	MRI	RIV	WTM	URB	BOW	VOW	LPN	VIR	AGS	BAR	BOP	JPN	LAC	MCH	MHC	PPN	WFR	RFR	SMC
Long-eared owl	No	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20			16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20			16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		
Merlin	No	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20			16,17, 18,19, 20			16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20
Northern goshawk	No	16,17, 18,19				16,17, 18,19			16,17, 18,19			16,17, 18,19	16,17, 18,19		16,17, 18,19		16,17, 18,19	16,17, 18,19	16,17, 18,19	16,17, 18,19
Northern harrier	No		17,18, 19	17,18, 19		17,18, 19			17,18, 19	17,18, 19		17,18, 19	17,18, 19	17,18, 19	17,18, 19					17,18, 19
Osprey	No	16,17, 18	16,17, 18			16,17, 18		16,17, 18	16,17, 18	16,17, 18		16,17, 18	16,17, 18	16,17, 18			16,17, 18	16,17, 18	16,17, 18	16,17, 18
Prairie falcon	No	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20
Purple martin	No	16,18, 19,20	16,18, 19,20	16,18, 19,20		16,18, 19,20			16,18, 19,20	16,18, 19,20		16,18, 19,20		16,18, 19,20			16,18, 19,20	16,18, 19,20		16,18, 19,20
Rufous crowned sparrow	No								17,18, 19	17,18, 19		17,18, 19			17,18, 19					
Sharp-shinned hawk	No	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20
Short-eared owl	No	16,17, 18,19		16,17, 18,19		16,17, 18,19			16,17, 18,19	16,17, 18,19		16,17, 18,19	16,17, 18,19				16,17, 18,19	16,17, 18,19		16,17, 18,19
Tricolored blackbird	No			16,17, 18,19, 20					16,17, 18,19, 20	16,17, 18,19, 20										
Vaux's swift	No	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20					16,17, 18,19, 20			16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20			16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20

**Table 4.5-80 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Kings Crane-Helms Region**

Species	Known	MRI	RIV	WTM	URB	BOW	VOW	LPN	VIR	AGS	BAR	BOP	JPN	LAC	MCH	MHC	PPN	WFR	RFR	SMC
White-faced ibis	No		17,18, 19	17,18, 19						17,18, 19				17,18, 19						
White-tailed kite	No			17,18			17,18		17,18	17,18		17,18								
Wood stork	No		17,18, 19											17,18, 19						
Yellow breasted chat	No								16,17, 18,19, 20											
<b>Mammals</b>																				
Greater western mastiff bat	No	18,20		18,20		18,20	18,20		18,20	18,20		18,20			18,20		18,20			
Little brown myotis	No	16,17	16,17	16,17		16,17		16,17	16,17	16,17		16,17	16,17	16,17	16,17		16,17	16,17	16,17	16,17
Lodgepole chipmunk	No							16					16				16	16	16	16
Northern flying squirrel	No	17				17	17	17	17			17	17				17	17	17	17
Northern river otter	No	16,17	16,17	16,17										16,17						
Pacific fisher	No	16,18						16,18					16,18				16,18	16,18	16,18	16,18
Pallid bat	No	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20
Pine marten	No	16		16				16					16				16	16	16	16
Ringtail	No	16,17, 19,20		16,17, 19,20		16,17, 19,20			16,17, 19,20	16,17, 19,20		16,17, 19,20	16,17, 19,20		16,17, 19,20		16,17, 19,20	16,17, 19,20		16,17, 19,20
Sierra Nevada snowshoe hare	No	16,17	16,17					16,17					16,17				16,17	16,17		16,17
Spotted bat	No	16,17	16,17	16,17		16,17	16,17		16,17	16,17		16,17	16,17				16,17	16,17		16,17
Townsend's western big-eared bat	No	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19	16,17, 18,19		16,17, 18,19

**Table 4.5-80 Non-Listed Special-Status Wildlife Species Found in Each Vegetation Community For the Kings Crane-Helms Region**

Species	Known	MRI	RIV	WTM	URB	BOW	VOW	LPN	VIR	AGS	BAR	BOP	JPN	LAC	MCH	MHC	PPN	WFR	RFR	SMC
Western mastiff bat	No	16,17, 19		16,17, 19		16,17, 19	16,17, 19		16,17, 19	16,17, 19		16,17, 19			16,17, 19		16,17, 19			
Western red bat	No	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20			16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20	16,17, 18,19, 20		16,17, 18,19, 20
Yuma myotis	No	16,17	16,17			16,17	16,17	16,17		16,17		16,17	16,17		16,17		16,17	16,17	16,17	16,17

Notes: The above table represents species that occur per bundle by habitat type. Numbers refer to bundle region.

Habitats:

AGS = Annual Grassland  
 BOP = Blue Oak-Foothill Pine  
 BOW = Blue Oak Woodland  
 CRC = Chamise-Redshank Chaparral  
 DFR = Douglas-Fir  
 FEW = Fresh Emergent Wetland  
 JPN = Jeffrey Pine  
 LAC = Lacustrine  
 LPN = Lodgepole Pine  
 LSG = Low Sagebrush  
 MCP = Montane Chaparral  
 MCH = Mixed Chaparral  
 MHC = Montane Hardwood-Conifer  
 MHW = Montane Hardwood  
 MRI = Montane Riparian  
 PPN = Ponderosa Pine  
 RFR = Red Fir  
 RIV = Riverine  
 SCN = Subalpine Conifer  
 SGB = Sagebrush  
 SMC = Sierra Mixed Conifer  
 VOW = Valley Oak Woodland  
 VIR = Valley Foothill Riparian  
 WFR = White Fir  
 WTM = Wet Meadow

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Crane Valley Bundle could result in a *significant impact*.

#### **Bundle 17: Kerckhoff (FERC 0096)**

There are several habitats and sensitive species in the vicinity of the Kerckhoff Bundle. Please see Figure 4.5-45 for mapped information.

#### ***Land Development***

The land use development presented in Chapter 3 identifies the Kerckhoff Reservoir land area as having a development potential of two dwelling units on the 122 acres of land. Development of this land would require bringing in public services and utilities and it is unlikely that more than two units would be developed. The construction of these dwelling units and public services could result in direct loss of non-listed special-status species or their habitat. As a result, *significant impacts* to non-listed special-status species and their habitat can be anticipated due to development.

The Auberry Service Center services hydroelectric generation facilities in Madera, Fresno, Tulare, and Merced. According to Land Use, it is unlikely a buyer would want to abandon an established service facility that can continue its present service.

The already extensive urban area within Auberry limits the potential of sensitive species to the area. Residential development will likely have *no significant impact* on any sensitive non-listed invertebrates.

Low density residential develop may occur near Kerckhoff Reservoir. This could result in *significant impacts* to amphibian species of special concern, particularly Hammond's spadefoot and California tiger salamander. This development could also have a potentially significant impact on local sensitive reptilian species and bird species of special concern. Residential development near Kerckhoff Reservoir is not likely to significantly impact mammal species of special concern.

Twenty non-listed plant species have the potential to occur in the Kerckhoff Bundle. These species are heartscale, brittlescale, lesser saltscale, Lost Hills crownscale, Hoover's calycadenia, recurved larkspur, Kings River buckwheat, spiny-sealed button-celery, Hall's tarplant, vernal barley, pale-

yellow layia, Munz's tidy-tips, Panoche pepper-grass, Madera linanthus, showy madia, Indian Valley bushmallow, Kings River monkeyflower, shining navarretia, rayless ragwort, and prairie wedge grass. Future development that may occur in occupied habitat of these plants would result in a *significant impact*.

##### ***Timber Harvest***

No change in Timber harvesting is expected, therefore *no impacts* will occur to non-listed special-status species.

##### ***Mineral Extraction***

No mining is expected, therefore *no impacts* will occur to non-listed special-status species.

##### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to non-listed special-status species in the Kerckhoff Bundle.

Pacific Gas and Electric Company, as standard operating practices statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to non-listed special-status wildlife and plant, the proposed auction of the Kerckhoff Bundle could result in a *significant impact*.

##### **Bundle 18: Kings River - Helms Pumped Storage (FERC 2735), Haas-Kings River (FERC 1988), Balch (FERC 0175)**

There are several habitats and sensitive species in the vicinity of Bundle 18. Please see Figures 4.5-46 and 4.5-48 for mapped information.

##### ***Land Development***

The land use development presented in Chapter 3 identifies that the Wishon Reservoir land area has a development potential of seven dwelling units on the 401 acres of land with 40-acre minimum lot size. Road construction is poor and public service and utilities are not available for this area. However, construction of these dwelling units and public services could result in direct loss of non-

listed special-status species or their habitat. As a result, potentially significant impacts to non-listed special-status species and their habitat can be anticipated due to residential development.

No invertebrate species of special concern are known to occur in this area. No impact is expected.

Any development in the bundle could affect non-listed special-status amphibians. There may be an impact to non-listed special-status reptiles from development in this bundle. There may be an impact to un-listed special-status birds from change in development within this bundle.

Increases in development near Wishon Reservoir will increase habitat loss, human encroachment and habitat fragmentation to special-status mammals.

Thirty-one non-listed plant species have the potential to occur in the Kings River Bundle. These species are brittlescale, grey-leaved violet, Hall's daisy, Halls tarplant, Hockett Meadows lupine, Indian Valley bushmallow, Kaweah monkeyflower, Keil's daisy, Kings River buckwheat, Kings River monkeyflower, Lost Hills crowscale, Madera linanthus, Mingan moonwort, Mono Hot Springs evening-primrose, Munz's tidy-tips, orange lupine, pale-yellow layias, prairie wedge grass, rayless layia, rayless ragwort, recurved larkspur, San Benito spine flower, Sanford's arrowhead, shining navarretia, shore sedge, showy madia, subalpine fireweed, Tehipite valley jewel-flower, vernal barley, Yosemite ivesia and Yosemite lewisia. Further development that may occur in occupied habitat of these plants would result in *significant impact*.

### ***Timber Harvest***

Timber harvest is anticipated within the Kings River bundle. Approximately 100 acres of selection harvest are predicted within the Kings River Project. Potential adverse effects to biological resources associated with timber harvesting are noted in Table 4.5-81, Impacts of Land Use Alterations.

Non-listed special-status invertebrate species do not have the potential to occur within the Kings River Bundle. Therefore, there would be *no impact* to non-listed special-status invertebrate species within the Kings River Project land.

**Table 4.5-81 Impacts of Potential Land Alterations**

	Effects to Onsite Resources			Effects to Offsite Resources		
	Land Development changes	Land Management Changes		Land Development changes	Land Management Changes	
	Residential/Commercial/Recreation	Timber	Mining	Residential/Commercial/Recreation	Timber	Mining
1. Point source pollution <i>Run-off of accumulated chemicals from paved surface areas such as automobile oil and gas residue on roads could impact riparian, wet meadow, and other wetland habitats. Impacts would include degradation of habitat quality and wildlife exposure to toxic substances.</i>	X	X	X	X	X	X

**Table 4.5-81 Impacts of Potential Land Alterations**

	Effects to Onsite Resources			Effects to Offsite Resources		
	Land Development changes	Land Management Changes		Land Development changes	Land Management Changes	
	Residential/Commercial/Recreation	Timber	Mining	Residential/Commercial/Recreation	Timber	Mining
2. Fugitive noise, dust and lighting <i>Noise, dust and lighting from construction activities could impact special-status wildlife species. Impacts would include a reduction in habitat suitability from chronic noise and light.</i>	X	X	X	X	X	X
3. Edge effect <i>Land use changes and timber harvest activities would alter the mosaic of vegetation communities and habitat matrix across a watershed landscape resulting in changes in the composition of the wildlife community.</i>	X	X	X	X	X	X
4. Increased poaching <i>Increased human activities and access associated with development in rural areas may result in impacts to harvest species due to increased poaching.</i>	X	X		X		X
5. Increased road kills <i>Increased human activity and addition of new roads would increase wildlife mortality from vehicle collisions.</i>	X	X	X	X	X	X
6. Increase in feral animals, domestic pets and exotic species <i>Increased human recreational and residential uses would result in an increase in domestic animals which would impact native wildlife by reducing habitat suitability and by increasing direct wildlife mortality.</i>	X			X		
7. Introduction of non-native plants <i>Surface disturbance associated with land development would increase the risk of aggressive non-native plant species establishment. Exotic plants may out-compete native species resulting in reduced health and vigor of plant communities and wildlife habitats.</i>	X	X	X	X	X	X
8. Interruption of migratory corridors <i>The direct and indirect affects of increased human activity may result in reduced use or abandonment of traditional migratory corridors exposing wildlife to additional predation and exposure risks.</i>	X	X	X	X	X	X
9. Increased habitat degradation from human activity <i>Increased human activity such as off-highway vehicle traffic, littering, increased incidence of wildfires, etc. would impact special-status wildlife by degrading habitat quality and decreasing habitat suitability.</i>	X	X	X	X	X	X
10. Habitat degradation due to erosion <i>Development and surface disturbances increase erosion potential which could directly impact riparian, wet meadow and wetland habitats reducing habitat suitability and directly degrading wetland communities..</i>	X	X	X	X	X	X



**Table 4.5-81 Impacts of Potential Land Alterations**

	Effects to Onsite Resources			Effects to Offsite Resources		
	Land Development changes	Land Management Changes		Land Development changes	Land Management Changes	
	Residential/Commercial/Recreation	Timber	Mining	Residential/Commercial/Recreation	Timber	Mining
11. Habitat Fragmentation <i>Direct habitat loss and reductions in habitat suitability could result in habitat fragmentation. Impacts could include a reduction in local special-status species populations due to a lack of large, contiguous habitat patches or from edge effects.</i>	X	X	X			
12. Soil Compaction/trampling <i>Increased human use could result in localized soil compaction which would increase erosion potential, effect plant recruitment, and directly impact plant communities.</i>	X	X	X			
13. Direct habitat loss/ alteration <i>Land use changes and timber harvest would result in direct loss of habitat which would result in local loss of the wildlife community supported by that habitat.</i>	X	X	X			

Various non-listed special-status amphibian species have the potential to occur within the Kings River Bundle. Please see Table 4.5-80 for a complete list. During timber harvesting activities, there is potential for habitat degradation due to erosion and point sources pollution, which could have adverse effects special-status amphibian species. Of particular concern are areas located near or adjacent to riparian habitat. There is potential that timber harvesting could result in a *significant impact* to non-listed special-status amphibian species that could occur within the vicinity of the Kings River Bundle.

As noted in Table 4.5-80, the non-listed special-status reptile species with potential to occur in the Crane Valley Bundle are western pond turtle and two-striped garter snake. Similar to the amphibian discussion above, increased timber harvest could result in a *significant impact* to these species. Unlike amphibians, reptiles could be directly impacted by harvest activities as a result of ground disturbance from vehicular traffic or tree removal. However, habitat loss, degradation, and point source pollution would be the primary factors contributing to this impact.

There are several non-listed special-status bird species that have the potential to occur with the Kings River Bundle. Please see Table 4.5-80 for a complete list. Effects of specific concern to bird species are noise, increased habitat degradation due to human activity, habitat fragmentation, and direct loss of habitat, including loss of nesting trees. The listed bird species associated with this project could be adversely affected by timber harvesting due to direct loss of habitat and disruption of foraging and nesting activities. These adverse effects could contribute to a *significant impact* to listed bird species within the vicinity of the project.

Several non-listed special-status mammal species have the potential to occur within the Kings River Bundle. Specific adverse effects associated with timber harvesting which could impact these mammal species include fugitive noise, increased habitat degradation due to human activity, direct habitat loss, habitat fragmentation and edge effect. Based on these potential effects timber harvesting is considered to have a *significant impact* on non-listed special-status mammal species that may occur within the vicinity of the project.

##### ***Mineral Extraction***

No mining is expected, therefore no impacts will occur to special-status species.

##### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to non-listed special-status species in the Kings River-Helms, Haas-Kings River, and Balch Bundle.

Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Hat Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Kings River Bundle could result in a *significant impact*.

##### **Bundle 19: Tule River (FERC 1333)**

There are several habitats and sensitive species in the vicinity of Bundle 19. Please see Figure 4.5-49 for mapped information.

##### ***Land Development***

The land use development presented in Chapter 3 identifies the Tule River land area as having a development potential of 90 dwelling units on the 64 acres of land. Although Doyle Springs Homeowners Association has offered to buy the property and maintain it as open space, there is potential for development of a new residential area. The construction of these dwelling units and public services could result in direct loss of non-listed special-status species or their habitat. As a result, there could be *significant impacts* to non-listed special-status species and their habitat can be anticipated due to development.

No special-status invertebrates are present on these lands. Potentially significant impact may occur to amphibian species of special concern if these lands are developed. Potentially significant impact may occur to reptilian species of special concern if these lands are developed. Potentially significant impact may occur to bird species of special concern if these lands are developed. Potentially significant impact may occur to mammal species of special concern if these lands are developed.

Eight non-listed plant species have the potential to occur in the Tule River Bundle. These species are alkali mariposa lily, Piute cypress, mouse buckwheat, Madera linanthus, Kings River monkeyflower, Kaweah monkeyflower, calico monkeyflower, Piute Mountains navarretia, and prairie wedge grass. Further development that may occur in occupied habitats of these plants would result in a *significant impact*.

#### ***Timber Harvest***

No change in timber harvesting is expected, therefore *no impacts* will occur to special-status species.

#### ***Mineral Extraction***

No mining is expected, therefore *no impacts* will occur to special-status species.

#### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company have no informal agreements in place that pertain to non-listed special-status species in the Tule River Bundle.

Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Tule River Bundle could result in a *significant impact*.

#### **Bundle 20: Kern Canyon (FERC 0178)**

There are several habitats and sensitive species in the vicinity of Bundle 20. Please see Figure 4.5-50 for mapped information.

##### ***Land Development***

Kern Valley land is designated open space; therefore *no impacts* will occur to special-status wildlife species.

Four non-listed plant species have the potential to occur in the Kern Canyon Bundle. These species are dwarf calycadenia, recurved larkspur, Shevock's hairy golden-aster and pale-yellow layia. Further development that may occur in occupied habitat of these plants would result in a *significant impact*.

##### ***Timber Harvest***

No change in timber harvesting is expected, therefore *no impacts* will occur to special-status species.

##### ***Mineral Extraction***

No mining is expected, therefore *no impacts* will occur to special-status species.

##### ***Informal Agreements/Best Management Practices***

Pacific Gas and Electric Company, as standard operating practices Statewide, implements the various protective measures contained in the Best Management Practices (BMPs) enumerated previously for the Crane Valley Bundle. These BMPs guide Pacific Gas and Electric Company's operation and maintenance activities in order to protect terrestrial and aquatic biological resources. A new owner may not implement these or equally protective BMPs. This would be considered a *significant impact* because changes in BMPs may not be conducted in coordination with natural resource agencies and, as a consequence, may not provide the same level of protection currently afforded biological resources.

In light of the above-discussed adverse effects to sensitive non-listed wildlife and plant species, the proposed auction of the Kern Canyon Bundle could result in a *significant impact*.

##### **Summary of Impact to Entire Kings Crane-Helms Regional Bundle**

Land development or management changes and non-implementation of informal agreements and BMPs could result in *potentially significant adverse effects* to non-listed special-status species for the Kings Crane-Helm Regional Bundle.

##### **4.5.9.6 Evaluation of Impact to Entire System**

Land development or management changes and non-implementation of informal agreements and BMPs could result in *significant* adverse effects to non-listed special-status species for the entire System

#### 4.5.9.7 Impact 5-2: Mitigation Measures

##### Mitigation Measures Proposed as Part of the Project

There are no proposed mitigations presented in the PEA for terrestrial biology.

##### Mitigation Measures Identified in This Report

***Mitigation Measure 5-2a:*** Prior to or concurrent with the transfer of title for the pertinent bundles, the informal agreements/non-binding operating practices listed below shall by written instrument be made binding upon the new owner.

- Pacific Gas and Electric Company voluntarily makes a minimum flow release of 200 cfs from the Pit 1 Powerhouse tailrace into the Pit River at all times of the year, per the request of CDFG, USFWS, and SWRCB. It is expected that the new FERC license will have defined flow release requirements.
- Pacific Gas and Electric Company has committed to CDFG to release flushing flows from Pit 1 Dam two to three times a year to flush vegetation out of the Fall River Pond. This action is also likely to be a requirement in the new FERC license.
- Pacific Gas and Electric Company constructed and maintains a fence line to keep cattle off project levees on the south side of Big Lake, per an agreement with CDFG, CDF, and USFWS. Maintenance of this fence needs to continue but may not be included as a new FERC license condition.
- At Iron Canyon Reservoir, Pacific Gas and Electric Company informally maintains the reservoir at a level sufficient to make the Big Bend community boat ramp operational. This agreement also benefits biological resources since reservoir levels would be more stabilized allowing for shoreline emergent wetland vegetation to establish.
- Pacific Gas and Electric Company is an active participant in the Lower McCloud Coordinated Resource Management Project (CRMP). New owner would be expected to take over the responsibilities currently held by Pacific Gas and Electric Company as a member of the CRMP.
- Pacific Gas and Electric Company has an informal agreement with the CDFG that ensures that the reservoir level at Macumber Reservoir does not drop below 12 feet.
- Pacific Gas and Electric Company is involved in the CRMP work being done in the Feather River Basin. Pacific Gas and Electric Company has been a voluntary contributor to erosion control and stream restoration project.
- Pacific Gas and Electric Company agrees bald eagle nest location information is to be included in biological survey work. New owner to be provided information on location of sensitive biological resources.
- Small instream releases to West Branch Feather River at Miocene Diversion. No regulatory requirement to do so.
- Pacific Gas and Electric Company's FERC license requirements for instream flow releases at Lower Centerville Diversion Dam is normally 40 cfs, but allows for a reduction to ten cfs in dry years. Downstream reaches of the stream provide salmon habitat, and in the past years Pacific Gas and Electric Company informally agreed with CDFG not to exercise this reduction.

- Pacific Gas and Electric Company agreements which include Benmore Canyon and Trout Creek are documented in a 1991 Pacific Gas and Electric Company video entitled “Preservation and harvesting: A Story of Cooperation”.
- Granger-The permit documents a Pacific Gas and Electric Company agreement to operate USFS campgrounds around Lake Pillsbury.
- Pacific Gas and Electric Company participates in Bald Eagle monitoring at Lake Pillsbury.
- Tiger Creek Afterbay is voluntarily kept at two feet above normal minimum operating elevation in order to provide water for the Amador County Water Agency (AWCA).
- Pacific Gas and Electric Company holds Upper and Lower Blue Lakes, Twin Lake, Meadow Lakes and Tabeaud Lake at near full through the summer.
- Pacific Gas and Electric Company imposes voluntary ramping rates below Salt Springs Dam, Tiger Creek Afterbay, and Electra Diversion for public safety.
- Pacific Gas and Electric Company has revised its operating procedures for Tiger Creek and West Point powerhouse to prevent sudden surges and fluctuations.

***Mitigation Measure 5-2b:*** Prior to the transfer of title for any bundle, Pacific Gas and Electric Company shall demonstrate that the new owner has received and reviewed the existing Best Management Practices (BMPs) of Pacific Gas and Electric Company for that particular bundle as noted in the preceding section, and the new owner shall either (1) commit in writing to adhere to those pertinent existing BMPs or (2) submit to the CPUC for its review and approval, and obtain approval of, substitute Best Management Practices that are protective of the environment to an equal or greater degree than Pacific Gas and Electric Company’s existing BMPs.

***Mitigation Measure 5-2c:*** Prior to approval of any land use development change, timber harvest plan or additional mineral extraction activities on the Project Lands, the new owner shall undertake the following process:

- Coordinate with the United States Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG) and, when applicable, the United States Forest Service (USFS) and/or Bureau of Land Management (BLM) to determine the status of special-status species in the area of the proposed development, harvest or mineral extraction. As part of consultation, necessary surveys to be conducted shall be determined. The purpose of such surveys shall be to determine special-status species presence or absence in the area of the proposed development, harvest or mineral extraction, and within one mile of the proposed activity. At minimum, the special-status species listed in Table 4.5-76 shall be considered. Surveys shall conform to then-current USFWS and USFS protocols. A letter report that documents agency consultation, survey methodology, and a proposed means to document survey results shall be prepared by the new owner and submitted to the involved agencies.
- Surveys shall be undertaken in accordance with the agreed methodology, and shall be conducted over a period of two seasons. Upon completion, they shall be provided to the relevant agencies. The surveys and resulting reports shall also address the following:
  - The potential for interruption of migratory corridors or sensitive breeding areas;
  - The potential for and effects of habitat fragmentation as a result of the proposed activity;

- The effects on special-status species of erosion, slope instability, point source pollution and the introduction of exotic animal and plant species resulting from the proposed activity.
- If, as a result of the surveys, no special-status species are detected within the area of the proposed activity, or within one mile of the area of proposed activity, no further mitigation for special-status species shall be required under this measure.
- If special-status species are detected, prior to receiving approvals for the proposed activity, the new owner shall prepare a Biological Resource Protection Plan outlining the measures that are necessary to reduce impacts to special-status species to a less than significant level and, as part of implementation of the proposed activity, shall carry out such measures. The Biological Resource Protection Plan shall mandate avoidance of special-status species and special-status species habitat to the fullest extent possible. Avoidance measures may include buffer zones and set backs from sensitive species habitat, restricted construction time periods, and seasonal construction restrictions. Where avoidance is not feasible, the Biological Resource Protection Plan shall require that the new owner shall minimize impacts using a combination of on-site and off-site habitat preservation measures, including establishing habitat conservation easements on nearby comparable land, purchase and protection of comparable habitat and habitat enhancement.

**Alternate Mitigation Measure 5-2c:** As an alternative to Mitigation Measure 5-2c, above, prior to or concurrent with the transfer of title for any bundle, there shall be recorded against the lands within the bundle conservation easements running with the land and (in a form and substance approved by the CPUC) precluding any further land use development, or expansion of timber harvest or mineral extraction activities.

#### **4.5.9.8 Impact 5-2: Level of Significance After Mitigation**

Implementation of Mitigation Measures 5-2a, 5-2b and 5-2c would reduce the impact to a *less than significant* level. Alternatively, implementation of Mitigation Measures 5-2a, 5-2b and Alternate Mitigation Measure 5-2c would eliminate the impact altogether.

#### **4.5.10 IMPACT 5-3: IMPACT, ANALYSIS AND MITIGATION MEASURES**

**Impact 5-3 The project could result in habitat degradation as measured by potential habitat fragmentation and disruption to migration corridors. (Significant)**

The previous analyses (Impacts 5-1 and 5-2) present effects of direct and indirect loss of habitat on TES and non-listed special-status species, which are elements of broader wildlife communities. The following impact analysis (Impact 5-3) presents the project effects on the integrity of these broader wildlife communities through habitat loss and degradation within the project and in a regional landscape. Table 4.5-81 describes some effects that may occur with various land alterations. This is a broad, complex issue and not easily analyzed. Many of the effects cannot be measured or predicted. For purposes of illustrating effects, this analysis has been narrowed to two major subject matters: the potential for the project to result in habitat fragmentation, and the potential for the project to disrupt deer migratory corridors. See Sections 4.5.5 and 4.5.6 for more detail.

### 4.5.10.1 Shasta Regional Bundle

#### **Bundle 1: Hat Creek - Hat Creek 1 and 2 (FERC 2661)**

##### ***Land Development***

A description of potential future land use development changes assumed for the Hat Creek bundle is presented in Impact 5-1.

***On-Site Impacts.*** The Hat Creek Bundle is primarily open space and has few constraints that would restrict development. Hat Creek is an established, high-quality fishery that draws significant numbers of anglers annually. Lands associated with the Hat Creek Bundle area have been identified as having development potential, with new development expected to be in the form of second home and resort-type development. Development in close proximity to Hat Creek, Crystal Lake, and Baum Lake could result in a variety of effects to biological resources, as noted in Table 4.5-81, Impacts of Land Use Alterations. Habitat types likely to be developed include grassland, Sierran mixed conifer, lower sage, and croplands.

The Hat Creek drainage provides a natural migratory corridor for the Lake Britton deer herd, as well as other local wildlife species. In addition, CDFG has identified portions of the Hat Creek Bundle areas as being wintering habitat for the Lake Britton herd. New development could include the installation of fencing around property boundaries that would be a barrier to migrating wildlife, particularly deer. Since most of the future development assumed for the Hat Creek Bundle area is situated at the lower elevations on relatively level topography, there is potential that this new development would act as a barrier to wildlife species migrating from higher elevations to lower elevations in the winter. Other adverse effects associated with development include point source pollution, fugitive noise and light, increased road kills, and increased feral/domestic pet population. These adverse effects would result in a *significant impact* associated with disruption of a designated migratory corridor.

***Off-Site Impacts.*** Similar to on-site impacts as described above, land development changes associated with the Hat Creek Bundle could adversely affect the migratory patterns of the Lake Britton deer herd population, on both Pacific Gas and Electric Company-owned land and adjacent watershed lands. Potential adverse effects to off-site habitats can be found in Table 4.5-81, Impacts of Land Use Alterations. Lassen National Forest Lands and the Cinder Flats Wildlife Area (BLM land) are located to the east of the Hat Creek Bundle, and lands owned by the Shasta National Forest, which are managed by Lassen National Forest, are located along the northeastern boundary of the Hat Creek Bundle, to the west. Of particular concern would be disruption of nesting and foraging behaviors and migratory patterns of deer herds and furbearers, primarily due to increased fugitive noise and light, and an increase in the local feral/domestic pet population. The adverse effects noted above could result in habitat degradation of these adjacent, public-owned lands. This would be considered a *significant impact*.



### ***Timber Harvest***

As discussed under Impact 5-1, no timber harvesting activities are assumed for the Hat Creek project area.

### ***Mineral Extraction***

Mineral extraction activities for diatomaceous earth are assumed for lands associated with the Hat Creek 2 Powerhouse.

Extraction of mineral resources is a fairly intensive activity that could result in several potential effects, as noted in Table 4.5-81, Impacts of Land Use Alterations. These effects could result in impacts to both floral and fauna species associated with the Hat Creek Bundle. Noise associated with mineral extraction activities could disrupt nesting bird species, migratory deer herds (Lake Britton herd), and forest carnivore species. Point source pollution and erosion/sedimentation could adversely affect water quality within project area waterways and, subsequently, plant and animal species that utilize these waterways.

Significant clearing would result in the direct loss of habitat, fragmentation of habitat, and alteration of habitat structure (i.e., edge effect), all of which would be considered *significant impacts*. Although edge effect impacts would likely impact most wildlife species, game animals such as mule deer, black bear, and ruffed grouse, which prefer edge habitats, may actually benefit from habitat disturbance once extraction activities have ceased and new vegetation is allowed to grow.

The Hat Creek Bundle is located adjacent to a substantial amount of publicly-owned lands. Since increased timber harvesting activities are not likely to occur in the Hat Creek Bundle, these potential land management changes would not likely affect adjacent watershed lands. There is potential, however, for significant mineral extraction activities to occur on the Hat Creek Bundle lands. Potential adverse effects that could result in degradation of off-site habitat are listed in Table 4.5-81, Impacts of Land Use Alterations. These effects would disrupt the migratory patterns of the Lake Britton deer herd and would tend to discourage use of adjacent habitats by wildlife species, particular along the boundaries of Pacific Gas and Electric Company owned and watershed lands. Additionally, increased fugitive noise, dust, and lighting could disrupt the nesting and foraging patterns of special-status species located on adjacent off-site lands. All of these adverse effects would contribute to a *significant impact*.

### **Bundle 2: Pit River - Pit 1 (FERC 2687), Pit 3, 4, and 5 (FERC 0233), McCloud-Pit (FERC 2106)**

### ***Land Development***

A description of potential future land use development changes assumed for the Pit River Bundle is presented in Impact 5-1.

Pacific Gas and Electric Company lands associated with McArthur Swamp are before FERC and the CPUC for approval to be transferred to the California Waterfowl Association, and no future development on this land is assumed. This land will remain as open space/recreation, with continued opportunities for wildlife enhancement and grazing. The proposed land transfer is undergoing a separate environmental review process and will not be discussed in this Draft EIR.

Table 4.5-81, Impacts of Land Use Alterations, lists the potential adverse effects contributing to habitat loss/degradation that could occur as a result of land use development. The McCloud/Iron Canyon, Pit 4, 5, 6, 7, and James B. Black Powerhouse land area are not likely to experience extensive development, except for scattered residences. This type of development is not expected to result in a significant impact to habitat loss/degradation. The most significant impacts likely to occur are associated with the Pit River 1, Pit 3, and Lake Britton land areas. Since the majority of parcels associated with these land areas are currently open space or sparse rural residential, more intensive land development would contribute to located habitat degradation. The Pit River drainage is a large watershed that naturally serves as a migration corridor for a variety of wildlife species occurring in the region. Future development in all three of these land areas has the potential to disrupt the Pit River (Pit 3, 4, and 5 project), West Lassen (Pit 1 project), and Lake Britton (Pit 3, 4, and 5 and Pit 1 projects) deer herds. Direct loss of wintering habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disrupted migration patterns. Any disruption to the migratory patterns of these deer herds would be considered a *significant impact*.

The expected development of habitats (primarily pasture/cropland, montane hardwood-conifer, and blue oak-foothill pine) would result in a significant level of habitat fragmentation. The majority of the Pit River Bundle is located adjacent to public lands. USFS and BLM own and manage most of the surrounding lands in this bundle. Development next to USFS and/or BLM would result in distinct habitat fragmentation and edge effect. This is considered a *significant impact*.

The majority of the Pit River Bundle project area is located adjacent to publicly-owned lands, as listed below:

- Pit 1: north of Big Lake/Horr Pond is the Ahjumawi Lava Springs State Park and Shasta National Forest Lands which are actually managed by Lassen National Forest; Cinder Flats Wildlife Area (BLM land) is located south of the Pit No. 1 Powerhouse; BLM land is also located north of the Pit No. 1 Powerhouse and west of Fall River Mills.
- Pit 3, 4, and 5: from Lake Britton west to the Pit No. 4 Reservoir, Shasta National Forest Lands (managed by Lassen National Forest) are located on both sides of the project area; Pit No. 4 Reservoir west to the Pit No. 4 Powerhouse has Shasta National Forest Lands located on both sides of the Pit River.
- McCloud-Pit: Shasta National Forest Land is adjacent to a large portion of the project area, primarily to the west of the Pit River.

More intensive land development is anticipated to occur in the Pit River Bundle area, specifically within the Lake Britton area. Development in the Pit 1 and Pit 3 land areas could potentially result in significant impacts to habitat and associated plant and wildlife species, as discussed under Impacts 5-1 and 5-2. Fugitive noise resulting in the disruption of nesting territories of sensitive bird species is the most likely indirect effect that could occur to wildlife species. Fugitive noise and light, increased feral/domestic animal populations, and habitat degradation due to human activity could disrupt both the forage and breeding patterns of special-status mammal species. There is also potential for increased development to disrupt the migratory patterns of the Lake Britton, Pit River, and West Lassen deer herds. All of these adverse effects would contribute to a *significant impact* associated with off-site biological resources.

### ***Timber Harvest***

As noted under Impact 5-1, approximately 5,712 acres of land within the Pit River Bundle area could be subjected to future timber harvest activities, primarily within the Pit 3, 4, and McCloud-Pit projects to the west.

Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. A significant amount of timber harvesting could occur on watershed lands associated with the Pit River Bundle should a new owner opt to maximize timber harvesting activities. In areas subjected to clear-cutting there is a potential for habitat fragmentation, depending upon the size and location of the clear-cut. For example, if clear-cutting is spread out over several parcels within the Pit River Bundle area, the potential for habitat fragmentation is remote. Should clear-cutting occur in a concentrated area in a transition zone between two habitat types (i.e., Sierran mixed conifer and montane riparian), the potential for habitat fragmentation would be much greater. Habitat fragmentation could adversely affect species that prefer contiguous stands older-growth forest, such as northern spotted owl, a Federally listed species known to occur in the Pit River Bundle.

Timber harvesting activities also have the potential to disrupt the migratory patterns of the Pit River and Lake Britton deer herds, primarily due to habitat fragmentation and excessive noise in timber harvest zones. Disruption of either of these herds would also be considered a *significant impact*. However, it is noted that in areas that have been subjected to clear-cutting and are undergoing successional vegetation growth. The resulting edge effect could actually have a beneficial impact to game species such as deer and elk, due to increased availability of browse habitat (i.e. montane chaparral).

### ***Mineral Extraction***

As discussed under Impact 5-1, watershed lands associated with the Pit 3, 4, and 5 project (adjacent to Lake Britton and the Pit River) and land west of Big Lake (Pit 1 project) have potential for future mineral extraction activities.

Extraction of mineral resources is a fairly invasive activity that could result in several adverse effects, as noted in Table 4.5-81, Impacts of Land Use Alterations. These effects could result in significant impacts to both floral and fauna species associated with the Pit River Bundle area, and are discussed in detail in the Hat Creek Bundle. Increased mineral extraction activities could also disrupt the migration patterns of the Pit River and Lake Britton deer herds. Although edge effect impacts would likely impact most wildlife species, game animals such as mule deer, black bear, and ruffed grouse which prefer edge habitats may actually benefit from habitat disturbance once extraction activities have ceased and new vegetation is allowed to grow. All of these adverse effects would result in a *significant impact* for the Pit River Bundle.

Increased timber harvesting and mineral extraction have the potential to result in off-site impacts to biological resources. See Table 4.5-81, Impacts of Land Use Alterations. As noted above, an extensive amount of Shasta National Forest Land is located directly adjacent to the Pit River Bundle area. Fugitive noise could result in disruption of nesting and foraging activities associated with raptor species. Gravel mining activities on the land located west of Big Lake could result in point source pollution and habitat degradation due to erosion (i.e., sedimentation) within the Fall River that could result in adverse effects to species that reside there. Timber harvesting and mineral extraction activities could also disrupt the migratory patterns of the Lake Britton, West Lassen, and Pit River deer herds. All of these adverse effects would contribute to a *significant impact* associated with off-site biological resources.

#### **Bundle 3: Kilarc-Cow Creek (FERC 0606)**

##### ***Land Development***

A description of potential future land use development changes assumed for Kilarc-Cow Creek Bundle is presented in Impact 5-1.

It is anticipated that lands within the Kilarc-Cow Creek Bundle area will remain in large lot development. As a result, significant habitat loss resulting in habitat fragmentation is not anticipated. In addition, no designated migratory deer herds are known to occur in the project area. Impacts associated with future development on the Kilarc-Cow Creek Bundle lands are anticipated to have a *less than significant impact* associated with habitat fragmentation and disruption of migratory corridors.

All the properties adjacent to the watershed lands associated with the Kilarc-Cow Creek Bundle (Bundle 3) are under private ownership. Subsequently, off-site impacts to watershed lands in Bundle 3 would be *less than significant*.

##### ***Timber Harvest***

As mentioned in Impact 5-1, up to 500 acres of timber lands within the Kilarc-Cow Creek Bundle project area may be subjected to harvesting. Potential effects associated with timber harvest are

identified in Table 4.5-81, Impacts of Land Use Alterations. Due to the relatively small acreages of timber harvesting anticipated and prevalence of similar vegetation on the surrounding lands, significant habitat fragmentation is not likely to occur. Although resident deer herds are abundant throughout the Kilarc-Cow Creek Bundle area, there are no designated migratory corridors through the area. As a result, impacts associated with habitat fragmentation and disrupted migratory corridors would be *less than significant*.

### ***Mineral Extraction***

As discussed under Impact 5-1, future mineral extraction activities are not assumed for lands associated with the Kilarc-Cow Creek Bundle Project Lands.

### **Bundle 4: Battle Creek (FERC 1121)**

#### ***Land Development***

A description of potential future land use development changes assumed for the Battle Creek Bundle is presented in Impact 5-1.

Increased land development within the Battle Creek Bundle could result in a variety of potential adverse effects to biological resources (see Table 4.5-81, Impacts of Land Use Alterations). Development of lands currently in open space would result in the direct loss of habitat, including blue oak-foothill pine woodland and montane hardwood-conifer. Since development in the Inskip land area would occur in relatively low densities, the potential for significant habitat fragmentation is low. Although the density of development within the Shingletown land area would be much higher, this development would be occurring adjacent to existing development and would not result in habitat fragmentation.

The Eastern Tehama deer herd is known to occur in the Battle Creek Bundle area. New development could include the installation of fencing around property boundaries that could act as a barrier to migrating wildlife, particularly deer. This would result in a *significant impact* associated with disruption of a known migratory corridor.

The majority of the properties associated with the Battle Creek Bundle are located adjacent to the watershed lands and under private ownership. The lands surrounding the North Battle Creek Reservoir are the exception, and are owned and managed by the Lassen National Forest. Potential for future recreational development would be focused on the areas surrounding Lake Macumber, Lake Nora, and Lake Grace, while future residential development could occur in the Shingletown and Inskip land areas. Although none of these areas are adjacent to public-owned lands, they are adjacent to private land holdings that may support habitat for special-status wildlife and plant species that may experience the off-site effects listed in Table 4.5-81. Of particular concern, there is also potential for the Eastern Tehama deer herd migration corridor to be disrupted. All of these

adverse effects could contribute to a *significant impact* to off-site habitats and associated wildlife and plant species found adjacent to the Battle Creek Bundle area.

##### ***Timber Harvest***

As discussed under Impact 5-1, up to 1,200 acres of timber may be harvested. Of these 1,200 acres, 200 acres would be subject to even-aged harvest (i.e., clear-cutting) and the other 1,000 acres would be an uneven-aged harvest (i.e., select cutting).

Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. Although a relatively large amount of timber harvesting could occur, the watershed lands associated with the Battle Creek Bundle are broken up into several dispersed parcels and significant habitat fragmentation is not likely to occur. Timber harvesting activities have the potential to disrupt the migratory patterns of the Eastern Tehama Deer Herd, which CDFG has identified as the largest migratory deer herd in California. Disruption of this herd would be considered a *significant impact*.

Increased timber harvesting would have potential to result in off-site impacts to habitats, as noted in Table 4.5-81, Impacts of Land Use Alterations. This activity could disrupt the migratory patterns of the Eastern Tehama deer herd on adjacent watershed lands. These adverse effects in Table 4.5-81 could contribute to a *significant impact* to off-site habitats and associated wildlife and plant species found adjacent to the Battle Creek Bundle.

##### **Summary of Impact to Entire Shasta Regional Bundle**

Land development and management changes may result in habitat degradation as measured by potential habitat fragmentation and disruption to migration corridors. This is a *significant impact* to the resources within the entire Shasta Regional Bundle.

##### **4.5.10.2 DeSabra Regional Bundle**

##### **Bundle 5: Hamilton Branch (no-FERC license)**

##### ***Land Development***

A description of potential future land use development changes assumed for the Hamilton Branch Bundle is presented in Impact 5-1.

The Hamilton Branch powerhouse and associated facilities are within the summer range of the Eastern Tehama Deer Herd. Besides residing in the vicinity of the powerhouse, the herd migrates through the area that requires crossing of the Hamilton Branch canal. The canal crossing is an existing source of mortality for the deer herd, but a 1981-82 study determined that mortality from these crossings was not a population-level factor.

New roads and access to canals and other water conveyance structures for recreation could result in direct impacts to both resident and migratory deer. Migratory habitat could be reduced by increased human activity, loss of vegetative cover, and loss or reduction of forage. For these reasons, effects impeding migration of the Eastern Tehama Deer Herd is considered a *significant impact*.

As described in Impact 5-1, predicted land development in the Hamilton Branch Bundle is considered light. Recreational development in particular would be focused around Mountain Meadows reservoir near existing recreational facilities.

Land ownership in the vicinity of the Hamilton Beach Bundle consists of a mix of federal, state and private lands. Based on acres of ownership, the USFS is the primary land owner in the bundle vicinity. Despite relatively homogenous ownership patterns, the bundle and vicinity support a variety of vegetative communities ranging from lacustrine, montane riparian and riverine aquatic communities to several conifer upland communities.

Project impacts would not result in increased habitat fragmentation either by creating a fragmented ownership pattern or by substantially reducing wildlife habitat patch size. Therefore, impacts as a result of fragmentation are considered to be *less than significant*.

#### ***Timber Harvest***

As mentioned in Impact 5-1, approximately 80 acres of timber lands within the Hamilton Beach Bundle area may be subjected to harvesting. Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. Due to the relatively small acreages of timber harvesting anticipated and prevalence of similar vegetation on the surrounding lands, significant habitat fragmentation is not likely to occur. For the same reasons, no impacts associated with migratory corridor disruption or habitat fragmentation are expected to the Eastern Tehama Deer Herd. Depending upon the specific location of harvest activities, predicted selective cuts in the bundle could improve summer browse conditions as early successional, high quality forage becomes available. As a result, impacts as a result of future timber harvest would be *less than significant*.

#### ***Mineral Extraction***

As discussed under Impact 5-1, future mineral extraction activities are not assumed for lands associated with the Hamilton Beach Bundle area. Therefore, there would be *no impact* due to mineral extraction in the Hamilton Branch Bundle.

### **Bundle 6: Upper North Fork Feather River (FERC 2105), Rock-Creek-Cresta (FERC 1962), Poe (FERC 2107)**

#### ***Land Development***

A description of potential future land use development changes assumed for the Upper North Fork Feather River Bundle is presented in Impact 5-1.

The eastern Upper North Fork Feather River projects are within the relatively flat basin that supports Mountain Meadows Reservoir and Lake Almanor. As stated in the impact analysis for the Hamilton Branch project, seasonal use of the lake and reservoir, as well as canals, by the Eastern Tehama Deer Herd is likely. This herd may rely on Lake Almanor as a perennial water source. Annual and perennial grassland vegetation around the lake may be used as seasonal forage by the herd. In addition, the basin may provide forage and cover resources for fawns. New roads and access to canals and other water conveyance structures for recreation could result in direct impacts to both resident and migratory deer. Table 4.5-81 outlines effects as a result of additional development. For these reasons, effects to the quality or quantity of seasonal habitat or impeding migration of the Eastern Tehama Deer Herd are considered to be a *significant impact*.

As described above, predicted residential and recreational development in the Upper North Fork Feather River projects is considered moderate. Recreational development in particular would be focused around Lake Almanor and the Butt Valley reservoir areas.

Land ownership in the vicinity of Upper North Fork Feather River Bundle area consists of a mix of federal, state and private lands. Based on acres of ownership, the USFS is the primary land owner in the project vicinity. Despite relatively homogenous ownership patterns, the bundle and vicinity support a variety of vegetative communities ranging from lacustrine, montane riparian and riverine aquatic communities to several conifer upland communities. Because the constituent projects span a broad elevational gradient, the Upper North Fork Feather River Bundle lands support a wide variety of terrestrial vegetative communities from conifers and oak woodlands to chaparral.

Project impacts would not result in increased habitat fragmentation by creating a fragmented ownership pattern. However, the project may substantially fragment annual and perennial grassland communities or result in fragmentation of oak woodlands or coniferous forests. Therefore, off-site effects are considered to be a *significant impact*.

#### ***Timber Harvest***

As mentioned in Impact 5-1, approximately 850 acres of timber lands within the Upper North Fork Feather River and Poe projects of Bundle 6 may be subjected to harvesting. Approximately 380 acres would be subject to even-aged, or clear cut, harvesting methods. Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. Although a relatively large amount of timber harvesting could occur, watershed lands associated with the Upper



North Fork Feather River Bundle are dispersed and exhibit relatively low connectivity. Most harvesting would occur around Lake Almanor adjacent to recreational and residential uses reducing the effects of edge. However, the short-term loss of cover in even-aged management areas could result in fragmentation effects requiring the Eastern Tehama Deer Herd to alter migratory routes exposing them to increased risk of predation and other detrimental effects. Disruption of this herd's migratory routes would be considered a *significant impact*.

Projected timber harvesting could result in a variety of adverse effects to biological resources located off-site (Table 4.5-81, Impacts of Land Use Alterations), including increased resource utilization in adjacent areas and increased use of adjacent areas as transitional forage and migratory habitats. Resident and migratory wildlife could be impacted by the indirect effects of increased utilization and by increased exposure to human activities associated with timber harvest activities. While these impacts could locally be significant, the effects on regional fragmentation would be relatively minor and are anticipated to be *less than significant*.

### ***Mineral Extraction***

As discussed under Impact 5-1, future mineral extraction activities are not assumed for lands associated with the Upper North Fork Feather River Bundle area. Therefore, there would be *no impact* due to mineral extraction in Bundle 6.

### **Bundle 7: Bucks Creek (FERC 0619)**

#### ***Land Development***

A description of potential future land use development changes assumed for the Bucks Creek bundle is presented in Impact 5-1.

The Bucks Creek Bundle lands and project features are located within an area characterized by gently rolling hills at lower elevations and steep canyons along river and creek channels. Bucks Creek is situated completely within, and Bucks Lake is adjacent to, the Bucks Lake Wilderness Area. The Wilderness Area consists of rugged topography and steep terrain and, consequently, is remote and receives very low density recreational use.

While the Bucks Lake region is within the summer range of the Bucks Mountain Deer Herd, it probably receives low use as a result of rugged topography and a lack of significant annual or perennial grassland habitat. However, the mountainous areas in the vicinity of Bucks Lake, including Bucks Mountain, represent the core summer range for this herd.

The recent Storrie fire which, as of late August 2000, had consumed over 20,000 acres, may change the migratory characteristics of the herd and as a result of lost vegetation, provide limited foraging habitat for the herd as the area recovers. In time, the area will recover and succeed through early vegetative communities that would include annual grassland and chaparral. The

effects of the fire, for the purpose of this document, would overshadow the effects of light to moderate development around Bucks Lake and Bucks Creek.

Even without the effects of the fire, the development predicted around the lake and Bucks Creek would not likely affect herd migratory patterns, or substantially effect the habitat suitability of migratory habitat in the region. For the reasons outlined above, impacts affecting the migratory corridors and quality or quantity of seasonal habitat for the Bucks Mountain or Eastern Tehama Deer Herd are considered *less than significant*.

Land ownership in the Bucks Creek Bundle consists primarily of State and Federal lands with small enclaves of private ownership. The majority of lands predicted for development in the Bucks Creek Bundle are Federally owned lands. The most significant ownerships in the vicinity are the Bucks Lake Wilderness Area and Plumas National Forest, owned by the Department of Agriculture. In addition, the project is adjacent to Lassen National Forest.

These ownerships are interspersed with small private holdings that, relative to the size of the National Forests and the Wilderness Area, would not result in fragmentation as defined by the effects described at the beginning of this section.

Vegetative community diversity within the Bucks Creek Bundle is low compared to the other bundles in the DeSabra Region. Besides the montane riparian habitat associated with Bucks Creek, the area is characterized by ponderosa pine, red fir and Sierran mixed conifer forests. Development around Bucks Lake and Bucks Creek would not contribute to fragmentation of these vegetative communities within the contextual spatial scale of the project contemplated in this analysis. The relatively large, contiguous patches of coniferous forest in the region would continue to support the existing wildlife community composition and would not reduce species diversity.

For the reasons outlined above, impacts as a result of fragmentation are considered to be *less than significant*.

#### ***Timber Harvest***

Timber harvest is anticipated within the Kings River bundle. Approximately 100 acres of selection harvest are predicted within the Kings River Project.

Projected timber harvesting could result in a variety of adverse effects to biological resources located off-site (Table 4.5-81, Impacts of Land Use Alterations), including increased resource utilization in adjacent areas and increased use of adjacent areas as transitional forage and migratory habitats. Resident and migratory wildlife could be impacted by the indirect effects of increased utilization and by increased exposure to human activities associated with timber harvest activities. While these impacts could locally be significant, the effects on regional fragmentation would be relatively minor and are anticipated to be *less than significant*.

### ***Mineral Extraction***

As discussed under Impact 5-1, future mineral extraction activities are not assumed for lands associated with the Bucks Creek Bundle area. Therefore, there will be *no impact* due to mineral extractions in Bundle 7.

### **Bundle 8: Butte Creek - DeSabra-Centerville (FERC 0803), Lime Saddle (non-FERC), Coal Canyon (non-FERC)**

### ***Land Development***

A description of potential future land use development changes assumed for the Butte Creek bundle is presented in Impact 5-1.

The DeSabra-Centerville project supports resident black-tailed deer, the Bucks Mountain deer herd, as well as migratory deer, the Bucks Lake deer herd. Higher elevation project features and lands to the east provide summer and transitional migratory habitat while the lower elevation, western facilities, including the Lime Saddle and Coal Canyon powerhouses, represent winter habitat for the Bucks Lake deer herd. The Canyon/Thermalito Diversion Pool area supports wintering deer from the Bucks Mountain herd as well as a small resident population. Although development is predicted adjacent to existing residential uses, expansion of urban centers would result in impacts to these deer herds. New roads and access to canals and other water conveyance structures for recreation and residential uses could also result in direct impacts to both deer herds. Direct mortality as a result of canal crossings has been documented in the project area but is not likely a population-level deer herd effect.

For the reasons outlined in Table 4.5-81, impacts affecting the quality or quantity of seasonal habitat or migration of the Bucks Mountain Deer Herd and the Bucks Lake deer herd are considered to be *significant*.

The Butte Creek bundle spans a broad elevational gradient that includes State, Federal, and private ownership, and a diverse assemblage of vegetative communities. The bundle is partially within Lassen National Forest (DeSabra-Centerville), adjacent to state and BLM lands (Lime Saddle), and to greater extent than other DeSabra Regional Bundle features, adjacent to and on substantial private ownership (Coal Canyon). Predicted development would be centered on existing urban uses in the Coal Canyon area. While expansion of these uses in urban centers would likely result in direct impacts to some species, the fragmentation effects described in the beginning of this section are not expected as a result of predicted project actions.

As previously stated, the Butte Creek Bundle supports a wide variety of vegetation communities as a consequence of spanning a broad elevational cline. Vegetative communities include minor fir and coniferous forest components in the eastern bundle reaches to blue oak and gray pine-oak woodlands at lower elevations. The Coal Canyon project supports agricultural vegetative types

including cropland and orchard/vineyard. Since predicted development would be limited to the Coal Canyon area and focused around existing urban centers, the fragmentation effects discussed at the beginning of this section are not expected. Natural vegetative communities would probably not be affected by predicted urban growth. For these reasons, impacts as a result of fragmentation are considered to be *less than significant*.

##### ***Timber Harvest***

As mentioned in Impact 5-1, no new timber harvest is projected for the Butte Creek Bundle, but re-entry into existing harvest plans with more aggressive, even-aged cutting is anticipated in the DeSabra-Centerville project. Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. A more aggressive cutting scenario would contribute to fragmentation in the immediate vicinity of the DeSabra-Centerville project which supports a small residential, and relatively large wintering, Bucks Lake deer herd. The short-term loss of cover in even-aged management areas could result in fragmentation effects requiring the herd to alter migratory routes exposing them to increased risk of predation and other detrimental effects. Disruption of this herd's migratory routes would be considered a *significant impact*.

Projected timber harvesting could result in a variety of adverse effects to biological resources located off-site (Table 4.5-81, Impacts of Land Use Alterations), including increased resource utilization in adjacent areas and increased use of adjacent areas as transitional forage and migratory habitats. Resident and migratory wildlife could be impacted by the indirect effects of increased utilization and by increased exposure to human activities associated with timber harvest activities. While these impacts could locally significant, their effects on regional fragmentation would be relatively minor and are anticipated to be *less than significant*.

##### ***Mineral Extraction***

As discussed under Impact 5-1, future mineral extraction activities are not assumed for lands associated with the Butte Creek Bundle. Therefore, there will be *no impacts* due to mineral extraction in Bundle 8.

##### **Summary of Impact to Entire DeSabra Regional Bundle**

Land development and management changes may result in habitat degradation as measured by potential habitat fragmentation and disruption to migration corridors. This is a *significant impact* to the resources within the entire DeSabra Regional Bundle.

#### 4.5.10.3 Drum Regional Bundle

##### **Bundle 9: North Yuba River -- Narrows (FERC 1403)**

###### ***Land Development***

A description of potential future land use development changes assumed for the North Yuba River bundle is presented in Impact 5-1.

This bundle includes two parcels of land located directly south of Lake Engelbright at the boundaries of Nevada and Yuba Counties. Facilities on these lands include the Narrows powerhouse. The North Yuba River Bundle land area consists of fairly steep topography that constrains access and restricts development. However, there is potential for recreational development to occur on the land area. New development could include the installation of fencing around property boundaries that would be a barrier to migrating wildlife, particularly deer.

The North Yuba River Bundle provides a natural migratory corridor for the Motherlode deer herd, as well as other local wildlife species. In addition, CDFG has identified portions of the North Yuba River Bundle areas as being critical wintering habitat for the Motherlode deer herd. Adverse effects would result in a *significant impact* associated with disruption of a designated migratory corridor.

Similar to direct impacts as described above, land development changes associated with North Yuba River Bundle could adversely affect the migratory patterns of the Motherlode deer herd population, on adjacent watershed lands. The surrounding properties are predominantly designated as public lands owned by the State Land Commission. Development of lands in the North Yuba River Bundle could disrupt sensitive species that utilize these adjacent lands and could also result in habitat fragmentation. Resultant effects could include disruption of nesting raptors and foraging behaviors and migratory patterns of carnivores and other species. The adverse effects noted above could result in habitat degradation of these adjacent, public-owned lands. This would be considered a *significant impact*.

###### ***Timber Harvest/Mineral Extractions***

As discussed under Impact 5-1, no timber harvesting activities or mineral extractions are assumed for the North Yuba River Bundle. Therefore, there will be *no impacts* due to mineral extraction.

##### **Bundle 10: Potter Valley (FERC 0077)**

###### ***Land Development***

A description of potential future land use development changes assumed for the Potter Valley bundle is presented in Impact 5-1. Land development assumptions in Chapter 3 identifies two land

areas with potential for development: Van Arsdale Reservoir/Potter Valley Powerhouse and Lake Pillsbury.

***Van Arsdale Reservoir/Potter Valley Powerhouse.*** This land area extends from the eastern boundary of the Mendocino County line westward along the Eel River, and includes the Van Arsdale Reservoir and the Potter Valley powerhouse. As mentioned in Impact 5-1, this land area is expected to have increase future development. The land area would not likely to experience extensive development, except for scattered ranchettes or single-family homes on large parcels and outdoor recreation. This type of development is not expected to result in a significant habitat loss or degradation. However, this land area does serve as a migration corridor for a variety of wildlife species occurring in the region including the wintering Clear Lake and Mendocino deer herds. Direct loss of wintering habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disrupted migration patterns. Any disruption to the migratory patterns of these deer herds would be considered a *significant impact*.

Surrounding properties of this land area consist of forest land, rangeland, agricultural land, and some urban areas. As discussed above for direct impacts, future development is anticipated to occur in the Potter Valley Bundle area. Though the regional habitat is fragmented, the project could disrupt both the forage and breeding patterns of special-status mammal species occurring on adjacent lands. There is also potential for increased development to disrupt the migratory patterns of the Clear Lake and Mendocino deer herds. All of these potential adverse effects would contribute to a *significant impact* associated with off-site biological resources.

***Lake Pillsbury.*** This land area extends from the western border of Lake County eastward along the Eel River and includes Lake Pillsbury. As mentioned in Impact 5-1, this land area is expected to have increased future development. Table 4.5-81, Impacts of Land Use Alterations, lists the potential adverse effects contributing to habitat loss/degradation that could occur as a result of land use development. The land area is likely to experience extensive development along the shores of Lake Pillsbury and the headwaters to the Eel River, consisting of single-family and secondary homes. This land area serves as a migration corridor for the wintering Clear Lake and Mendocino deer herds. Of particular concern is the Tule Elk population that utilizes the northwestern region of the Lake Pillsbury land area. Any disruption to the migratory patterns of these deer herds would be considered a *significant impact*.

Surrounding properties of this land area consist of forestland, rangeland, agricultural land, and some urban areas. As discussed above for the Van Arsdale Reservoir land area, significant future development is anticipated to occur. Off-site impacts are listed in Table 4.5-81, and are similar to those in the previous land area. Specific off-site effects to wildlife species are discussed in the Hat Creek Bundle. All of these potential adverse effects would contribute to a *significant impact* associated with off-site biological resources.

### ***Timber Harvest***

As noted under Impact 5-1, approximately 3,400 acres of land within the Potter Valley Bundle project area could be subjected to future timber harvest activities.

Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. A significant amount of timber harvesting could occur on watershed lands associated with the Potter Valley Bundle should a new owner opt to maximize timber-harvesting activities.

Timber harvesting activities also have the potential to disrupt the migratory patterns of the Mendocino and Clear Lake deer herds, primarily due to excessive noise. In areas that have been subjected to clear-cutting and are undergoing successional vegetation growth, resulting edge effect could actually have a beneficial impact to game species such as deer and elk, due to increased availability of browse habitat. Disruption of migratory corridors for these herds would also be considered a *significant impact*.

Increased timber harvesting would have potential to result in indirect impacts to off-site habitats, as noted in Table 4.5-81, Impacts of Land Use Alterations. This activity could disrupt the migratory patterns of the Mendocino and Clear Lake deer herds, as well as the Tule Elk population, on adjacent watershed lands. Adverse effects would contribute to a *significant impact* to off-site habitats and associated wildlife and plant species found adjacent to the Potter Valley Bundle project.

### ***Mineral Extraction***

As discussed under Impact 5-1, no mineral extraction activities are assumed for Potter Valley project area. Therefore, there will be *no impacts* due to mineral extraction.

## **Bundle 11: South Yuba River - Drum-Spaulding (FERC 2310)**

### ***Land Development***

A description of potential future land use development changes assumed for the South Yuba River Bundle is presented in Impact 5-1. Land Use development in Chapter 3 has identified the following land areas for potential development: Kidd Lake/Cascade Lakes, Meadow Lake/Fordyce Lake/Lake Sterling/White Rock Lake, Rock Lake/Lindsey Lakes, Lake Valley Reservoir, Lake Spaulding/Drum Penstock Forebay, Dutch Flat-Bear River North of Rollins Reservoir, Rollins Reservoir/Bear River, Halsey Forebay/Lake Arthur, Rock Creek Lake/Auburn, and Folsom Lake. Each land area is discussed separately for on-site and off-site impacts. Table 4.5-81, Impacts of Land Use Alterations lists the potential adverse effects contributing to habitat loss/degradation that could occur as a result of land use development.

***Kidd Lake/Cascade Lakes.*** This land area, as discussed under Impact 5-1, is located east of Lake Valley reservoir, just south of South Yuba River. It is anticipated that the land area will remain in large lot ranchettes, single family and secondary homes, or outdoor recreational operations. This

type of development typically occurs at very low densities. As a result, significant habitat loss resulting in habitat fragmentation is not anticipated. In addition, no designated migratory deer herds are known to occur in the project area. Impacts associated with future development within this land area are anticipated to have a *less than significant impact* associated with habitat fragmentation and disruption of migratory corridors.

All the properties adjacent to the watershed lands are associated with Tahoe National Forest. This region of the South Yuba River Bundle project is a checkerboard pattern between forest-owned and private-owned lands. This proposes the threat of habitat fragmentation of the area. Development of this land area could create fragmentation between adjacent forest-owned lands that would result in adverse effects to the sensitive species utilizing the land area. Table 4.5-81 outlines the effects of development on adjacent lands. Of particular concern are the parcels of land located between Kidd Lake and Upper Peak Lake. Development in this area could cause barriers for sensitive species that use these lakes for breeding, foraging, and as a water source. Indirect impacts to adjacent lands would be *significant*.

***Meadow Lake/Fordyce Lake/Lake Sterling/White Rock Lake.*** This land area covers lands that include the northern portion of Meadow Lake, all of Fordyce Lake and Lake Sterling. As mentioned under Impact 5-1, it is anticipated that the land area will have outdoor recreational development. This type of development typically occurs at very low densities. As a result, significant habitat loss resulting in habitat fragmentation is not anticipated. However, the parcel associated with the southern most edge of Lake Sterling is a fawning area for the Nevada City deer herd. Direct loss of fawning habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disrupted migration patterns. The fawning area is 17 acres total and occurs in the southern most edge of the parcel. Any development that may occur in this fawning area could seriously impact the deer herd. Therefore, this is considered a *significant impact*.

All the properties adjacent to the Pacific Gas and Electric Company-owned lands are associated with Tahoe National Forest. This region of the South Yuba River Bundle is a checkerboard pattern between forest-owned and private-owned lands. This alone proposes a threat of habitat fragmentation within the area. Development of this land area could create fragmentation between adjacent forestlands that would result in adverse effects to the sensitive species utilizing the land area. The parcels of land proposed for development are surrounding White Rock Lake, Fordyce Lake, Meadow Lake, and Lake Sterling. Development in this area could cause barriers for sensitive species that use these lakes for breeding, foraging, and as a water source. Specific off-site impacts to wildlife are described in the Hat Creek Bundle. Indirect impacts to adjacent lands would be *significant*.

***Rock Lake/Lindsey Lakes.*** This land area extends from Upper Rock Lake in the north southward toward Carr Lake. As mentioned under Impact 5-1, it is anticipated that the land area will have outdoor recreational development. This type of development typically occurs at very low densities.



As a result, significant habitat loss resulting in habitat fragmentation is not anticipated. In addition, there are no migration corridors or fawning areas associated with this land area. Therefore, there will be a *less than significant impact* associated with on-site habitat fragmentation or disruption of migratory corridors due to development.

All the properties adjacent to the watershed lands are associated with Tahoe National Forest. This region of the South Yuba River Bundle is a checkerboard pattern between forest-owned and private-owned lands. This proposes a great threat of habitat fragmentation to the area. Fragmentation could result in adverse effects to the sensitive species utilizing the land area. Development in this area could cause barriers for sensitive species that use the associated lakes for breeding, foraging, and as a water source. See Table 4.5-81 for a list of impacts associated with these types of development. Specific off-site impacts to wildlife are described in the Hat Creek Bundle. Indirect impacts to adjacent lands would be *significant*.

**Lake Valley Reservoir.** This land area is located south east of Lake Spaulding and includes Lake Valley Reservoir and Kelly Lake. There is one parcel located just east of Lake Valley Reservoir at the eastern terminus of Project Road. As mentioned under Impact 5-1, it is anticipated that this land area will have outdoor recreational development. Significant habitat loss resulting in habitat fragmentation is not anticipated. In addition, there are no migration corridors or fawning areas associated with this land area. Therefore, there is a less than significant impact associated with on-site habitat fragmentation or disruption of migratory corridors due to outdoor recreational development of this land area anticipated.

Tahoe National Forest lands also surrounds this region of the South Yuba River Bundle. Development of this land area could create fragmentation between adjacent forest-owned lands, and could result in adverse effects to the sensitive species utilizing the land area. Development in this land area could cause barriers for sensitive species that use the associated lakes for breeding, foraging, and as a water source. Negative impacts to off-site resources are discussed in Table 4.5-81. Specific off-site impacts to wildlife are described in the Hat Creek Bundle. Indirect impacts to adjacent lands would be *significant*.

**Lake Spaulding/Drum Penstock Forebay.** This land area includes lands located north and northwest of Rucker Lake and extending southwest to lands surrounding the Drum Penstock Forebay, including Lake Spaulding. As mentioned in Impact 5-1, it is anticipated that this land area will have increased future development. The land area is likely to experience extensive development, consisting of single-family and secondary homes on small acreages. Most of the development potential exists along the shores of Lake Spaulding and within habitat types such as montane chaparral, ponderosa pine, montane hardwood, wet meadow, and riverine. This type of development is expected to result in a significant habitat loss/degradation. In addition, this land area serves as a migration corridor for the wintering Nevada City and Blue Canyon deer herds. The Nevada City deer herd utilizes the north side of the Bear River and the Blue Canyon herd utilizes the south side of the Bear River near Drum Forebay Penstock facilities. Direct loss of wintering

habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disrupted migration patterns. Any disruption to the migratory corridors of these deer herds would be considered a *significant impact*.

Tahoe National Forest lands surrounds this region of the South Yuba River Bundle. Development of this land area could create fragmentation of adjacent forest owned lands that would result in adverse effects to the sensitive species utilizing the land area. Several parcels are located along these rivers surrounding both sides and are associated with sensitive habitat types such as wet meadows. Development in this area could cause barriers for sensitive species that use Lake Spaulding, South Yuba River, and Bear River for breeding, foraging, and as a water source. Negative effects to off-site resources are listed in Table 4.5-81. More specific off-site impacts to wildlife are found in the Hat Creek Bundle. Significant impacts associated with habitat fragmentation and disruption of migratory corridors as result of land development changes are anticipated. Therefore, indirect impacts to adjacent lands would be *significant*.

***Dutch Flat-Bear River North of Rollins Reservoir.*** This land area is located between Dutch Flat and Chicago Park along the Bear River just north of Rollins Reservoir. As mentioned under Impact 5-1, it is anticipated that this land area will experience extensive development, consisting of single-family and secondary homes on small acreages. Multiple parcels of this land area are along the Bear River extending south down to the Chicago Park area. This level of development is expected to result in a significant habitat loss/degradation. In addition, this land area serves as a migration corridor for the wintering Nevada City and Blue Canyon deer herds. The Nevada City herd utilizes the north side of the Bear River and is associated with the Dutch Flat facility area, while the Blue Canyon herd utilizes the south side of the Bear River associated with the Alta powerhouse. Direct loss of wintering habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disrupted migration patterns. Any disruption to the migratory patterns of these deer herds would be considered a *significant impact*.

Tahoe National Forest and the BLM own the lands surrounding this region of the South Yuba River Bundle. Development could create fragmentation between adjacent agency owned lands that would result in adverse effects to the sensitive species utilizing the land area. Development in this area could cause barriers for sensitive species that use the Bear River for breeding, foraging, and as a water source. Development of the parcels could result in adverse effects to sensitive species utilizing the forestlands. Table 4.5-81 outlines negative effects to off-site resources. More specific off-site impacts to wildlife can be found in the Hat Creek Bundle. Impacts associated with habitat fragmentation and disruption of migratory corridors as result of land development changes are anticipated. Therefore, indirect impacts to adjacent lands would be *significant*.

***Rollins Reservoir/Bear River, Halsey Forebay/Lake Arthur, Rock Creek Lake/Auburn, and Folsom Lake.*** As mentioned under Impact 5-1, it is anticipated that this land area will experience extensive development, consisting of single-family and secondary homes on small acreages.

Parcels of these land areas are located near the Rollins Reservoir and further south along the Bear River reaching down to Lake Folsom. The habitat types found in the parcels are montane hardwood, ponderosa pine, blue oak woodland, and riverine. However, due to the small parcel size and surrounding land uses, this type of development is not expected to result in a significant habitat loss/degradation. In addition, these land areas do not serve as a migration corridor for any known deer herds. Impacts associated with future development within this land area are anticipated to have a *less than significant impact* associated with habitat fragmentation and disruption of migratory corridors.

Adjacent land properties of these land areas are predominantly privately owned. Although agency owned lands are abundant within the South Yuba River Bundle, they do not occur adjacent to these particular land areas. Because the adjacent lands are privately owned and there is no disruption of migratory corridors, development within this land area is anticipated to have a *less than significant impact*.

### ***Timber Harvest***

As mentioned in Impact 5-1, up to 9,400 acres of timberlands within the South Yuba River Bundle may be subjected to harvesting. Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. Primary effects include direct habitat loss, particularly with even-aged harvesting, as well as habitat degradation due to erosion. A significant amount of timber harvesting could occur on watershed lands associated with the South Yuba River Bundle should a new owner opt to maximize timber-harvesting activities. In areas of clear-cutting, there is potential for habitat fragmentation, depending upon the size and location of the clear-cut. For example, if clear-cutting is spread out over several parcels within the South Yuba River Bundle, the potential for habitat fragmentation is remote. Should clear-cutting occur in a concentrated area in a transition zone between two habitat types, the potential for habitat fragmentation would be much greater. Habitat fragmentation could adversely affect species which prefer contiguous stands in older-growth forest.

Timber harvesting activities also have the potential to disrupt the migratory patterns of the Nevada City and Blue Canyon deer herds, primarily due to excessive noise in timber harvest zones during the late-fall and early-spring migration periods. However, in areas that have been subjected to clear-cutting and are undergoing successional vegetation growth, resulting edge effect could actually result in a beneficial impact to game species such as deer and elk, due to increased availability of browse habitat (i.e. montane chaparral). Disruption of either of these herds would also be considered a *significant impact*.

Increased timber harvesting would have potential to result in indirect impacts to off-site habitats, as noted in Table 4.5-81, Impacts of Land Use Alterations. This activity could disrupt the migratory patterns of the Nevada City and Blue Canyon deer herds on adjacent lands. Specific impacts to off-site wildlife are discussed in the Hat Creek Bundle. Adverse effects could contribute to a

*significant impact* to off-site habitats and associated wildlife and plant species presently found adjacent to the South Yuba River Bundle.

#### ***Mineral Extraction***

As discussed under Impact 5-1, future mineral extraction activities are not assumed for lands associated with the South Yuba River Bundle project. Therefore, there will be no impact to the South Yuba River Bundle as a result of additional mining activities.

#### **Bundle 12: Chili Bar (FERC 2155)**

#### ***Land Development***

A description of potential future land use development changes assumed for the Chili Bar Bundle is presented in Impact 5-1.

The Chili Bar Bundle includes narrow parcels of land north of the American River, starting at just the north of Slab Creek Reservoir, eastward to just south of Fannon Reservoir. The majority of lands within this area are located immediately adjacent to White Rock Creek. As mentioned under Impact 5-1, it is anticipated that this land area will have additional future development. In this particular land area, due to surrounding land use and low project land acreage, development is expected to occur at a very low density. As a result, significant habitat loss resulting in habitat fragmentation is not anticipated. However, there is winter range for the Motherlode deer herd located in the northwestern region of this land area. Given that the wintering area only occurs in the northwestern region of the land area, this type of development would result in a *less than significant impact* associated with habitat fragmentation and disruption of migratory corridors.

Properties adjacent to this land area are predominantly privately owned, with the exception of BLM land directly north of the project. In addition, there is a known wintering deer herd that utilizes these lands. However, because the adjacent lands are privately owned and there is very little public lands associated with the land area, development within this land area is anticipated to have a *less than significant impact* to surrounding habitats.

#### ***Timber Harvest***

As discussed under Impact 5-1, no timber harvesting activities or mineral extractions are assumed for the Chili Bar Bundle area therefore *no impact* is anticipated to the land area, on-site or off-site.

#### **Summary of Impact to Entire Drum Regional Bundle**

Land development and management changes may result in habitat degradation as measured by potential habitat fragmentation and disruption to migration corridors. This is a *significant impact* to the resources within the entire Drum Regional Bundle.

#### 4.5.10.4 Motherlode Regional Bundle

##### Bundle 13: Mokelumne River (FERC 0137)

###### ***Land Development***

A description of potential future land use development changes assumed for the Mokelumne River Bundle is presented in Impact 5-1.

The Mokelumne River Bundle area is surrounded primarily by forestland and rangeland. These lands have been designated for timber productions, recreation, open-space, and open-forest. Lands associated with the Mokelumne River Bundle project area have been identified as having some limited development potential, with new development expected to be in the form of second homes and ranchettes. Development in close proximity to the North Fork Mokelumne River, Upper Lakes area, Tiger Creek area, West Point powerhouse, and Upper/Lower Bear River Reservoirs could result in a variety of effects to biological resources, as noted in Table 4.5-81, Impacts of Land Use Alterations. Habitat types likely to be affected include Sierra mixed conifer, sub-alpine conifer, Jeffrey pine, ponderosa pine, montane hardwood, and blue oak-foothill pine.

The North Fork Mokelumne River drainage provides a natural migratory corridor for furbearers, and the Salt Springs and Railroad Flat deer herds, as well as other local wildlife species. In addition, CDFG has identified the Upper Lakes area to be within fawning areas for the Salt Springs deer herd, the Lower Bear River Reservoir area to be within a holding area, and critical winter range throughout the rest of the project area to the West Point powerhouse. New development could include the installation of fencing around property boundaries that would be a barrier to migrating wildlife, particularly deer. Development assumed for the Mokelumne River Bundle is situated throughout the project area. Adverse effects to migrating deer or protective areas would result in a *significant impact*.

Similar to on-site impacts as described above, land development changes associated with the Mokelumne River Bundle project could adversely affect the migratory patterns of the Salt Springs and Railroad Flat deer herd populations, on both Pacific Gas and Electric Company-owned land and adjacent, watershed lands. Potential adverse effects of particular concern to off-site habitats can be found in Table 4.5-81, Impacts of Land Use Alterations. Eldorado and Stanislaus National Forest lands surround the majority of the Mokelumne River Bundle on both sides of the North Fork Mokelumne River. Bureau of Land Management (BLM) lands are located from the Tiger Creek powerhouse downstream all the way to Lake Tabeaud. Listed and non-listed species with potential to occur on adjacent off-site lands are listed in Impacts 5-1 and 5-2, and could also be subjected to indirect effects. Of particular concern would be disruption of nesting and foraging behaviors and migratory patterns, primarily due to increased fugitive noise and light and an increase in the local feral/domestic pet population. Downstream amphibians would also be sensitive to development on adjacent lands, and/or degradation of habitat upstream. This would be considered a *significant impact* to off-site resources.

##### ***Timber Harvest***

A description of potential future land management changes assumed for the Mokelumne River Bundle is discussed under Impact 5-1.

Future timber harvesting activities can be anticipated for the Mokelumne River Bundle. This bundle is surrounded by forestland and rangeland, and some areas are already zoned for timber production. Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. A significant amount of additional timber harvest could occur on watershed lands associated with the Mokelumne River Bundle should a new owner opt to maximize timber production. In areas subjected to clear-cutting, there is potential for habitat fragmentation, depending upon the size and location of the clear-cut. Habitat fragmentation could adversely affect species which prefer contiguous stands older-growth forest, such as California spotted owl and northern goshawk, two species of special concern known to occur in the Mokelumne River Bundle.

Timber harvesting activities also have the potential to disrupt the migratory patterns of the Salt Springs and Railroad Flat deer herds, primarily due to excessive noise. However, in areas that have already been harvested and are experiencing successional re-growth, resulting edge effect and increased availability of browse habitat could actually result in a beneficial impact to game species such as mule deer and black bear. An assessment of biological resources within watershed lands has not been conducted, therefore there is potential that timber-harvesting activities could result in a *significant impact* associated with habitat fragmentation and disruption of migratory corridors.

As discussed above for on-site impacts, land management changes that may occur in the Mokelumne River Bundle with potential to result in off-site impacts to biological resources are increased timber harvesting. Table 4.5-81, Impacts of Land Use Alterations, lists the potential adverse effects that could occur to off-site areas as a result of increased timber harvest. Impacts 5-1 and 5-2 describe the types of direct impacts that could occur to both listed and non-listed special-status species. The Hat Creek Bundle describes impacts to off-site wildlife. As noted above, an extensive amount of Eldorado and Stanislaus National Forest Land is located directly adjacent to the Mokelumne River Bundle project. All of these adverse effects would contribute to a *significant impact* associated with off-site biological resources

##### ***Mineral Extraction***

As discussed under Impact 5-1, additional mineral extraction in the Mokelumne River Bundle is not likely to occur.

**Bundle 14: Stanislaus River - Spring Gap-Stanislaus (FERC 2130), Phoenix (FERC 1061)*****Land Development***

A description of potential future land use development changes assumed for the Stanislaus River Bundle is presented in Impact 5-1.

Table 4.5-81, Impacts of Land Use Alterations, lists the potential adverse effects contributing to habitat loss/degradation that could occur as a result of land use development. The Stanislaus and Lyons Reservoir/Phoenix Reservoir land areas are likely to experience extensive commercial and recreational development in certain locations (see Impact 5-1). The development expected in these areas may result in significant habitat loss/degradation. The most significant impacts likely to occur are located in the Kennedy Meadows area and the Lyons Reservoir area. The majority of parcels associated with these land areas are currently zoned for general recreation, commercial recreation, public, and open space, but are presently surrounded by Stanislaus National Forest Land. Although the expected direct loss of habitat would not necessarily be considered significant, intensive development would contribute to habitat fragmentation in these areas and would result in a *significant impact*.

The Middle and South Fork Stanislaus River drainages comprise a large watershed that naturally serves as a migration corridor for a variety of wildlife species occurring in the region, especially the Stanislaus deer herd. The Stanislaus River Bundle is directly within critical winter range for the Stanislaus deer herd, and the specific areas projected to have future development are designated as fawning areas, according to CDFG. Direct loss of wintering or fawning habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disrupted migration patterns. Any disruption to the migratory patterns of these deer herds would be considered a *significant impact*.

As discussed above for on-site impacts, significant future development is anticipated to occur in the Stanislaus River Bundle area, specifically within the Kennedy Meadows and Lyons Reservoir area. Special-status species occurring on adjacent non-Pacific Gas and Electric Company lands (i.e., Stanislaus National Forest lands) which could be indirectly affected by development activities on Pacific Gas and Electric Company lands are listed in Impacts 5-1 and 5-2. Table 4.5-81 outlines impacts as a result of development. Off-site resources that could be negatively affected are discussed in the Hat Creek Bundle. There is also potential for increased development to disrupt the migratory patterns of the Stanislaus deer herds. All of these potential adverse effects would contribute to a *significant impact* associated with off-site biological resources.

***Timber Harvest***

As discussed under Impact 5-1, future timber harvesting activities can be anticipated for the Stanislaus River Bundle. This project area is, in most areas, surrounded by forestland and rangeland, with some parcels zoned for timber production. Potential effects associated with timber

harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. A significant amount of additional timber harvest could occur on watershed lands associated with the Stanislaus River Bundle should a new owner opt to maximize timber production. On-site impacts as a result of increased timber production are discussed in Hat Creek Bundle. Because Stanislaus National Forest surrounds most of the Stanislaus River Bundle, increased habitat fragmentation, as a result of future timber harvest, would be a *significant impact*.

Timber harvesting activities also have the potential to disrupt the migratory patterns of the Stanislaus deer herd, primarily due to excessive noise in timber harvest zones during the late-fall and early-spring migration periods. However, there may be a beneficial impact to game species such as mule deer and black bear as a result of additional timber production. Therefore, there is potential that timber harvesting activities could result in a *significant impact* associated with habitat fragmentation and disruption of migratory corridors.

#### ***Mineral Extraction***

The potential for additional mining activities may also occur in the Stanislaus River Bundle. Table 4.5-81, Impacts of Land Use Alterations, lists the potential adverse effects that could occur to off-site areas as a result of increased mineral extraction. Impacts 5-1 and 5-2 describe the types of direct impacts that could occur to both listed and non-listed special-status species. As noted above, an extensive amount of Stanislaus National Forest land is located directly adjacent to the Stanislaus powerhouse. Fugitive noise could result in disruption of migratory corridors for the Stanislaus deer herd, as well as nesting and foraging activities associated with raptors and other sensitive species that have potential to occur here. In addition, point source pollution and habitat degradation due to erosion (i.e., sedimentation) within adjacent waters including the Middle Fork Stanislaus River would have a significant impact to amphibians or reptiles that reside there. All of these adverse effects would contribute to a *significant impact* associated with off-site biological resources.

As for direct impacts, land management changes that may occur in the Stanislaus River Bundle, with potential to result in off-site impacts to biological resources, are increased timber harvesting and mineral extraction (see Table 4.5-81, Impacts of Land Use Alterations). Impacts 5-1 and 5-2 describe the types of direct impacts that could occur to both listed and non-listed special-status species. As noted above, an extensive amount of Stanislaus National Forest land is located directly adjacent to the Stanislaus River Bundle lands. All of these adverse effects would contribute to a *significant impact* associated with off-site biological resources

#### **Bundle 15: Merced River -- Merced Falls (FERC 2467)**

#### ***Land Development***

A description of potential future land use development changes assumed for the Merced River Bundle is presented in Impact 5-1.



As stated in Impact 5-1, the Merced River Bundle does not have development potential due to current zoning restrictions. Therefore, the transfer of ownership of this bundle should have *no impact* to existing on-site or off-site resources.

#### ***Timber Harvest***

As stated in Impact 5-1, the Merced River Bundle does not have potential for additional timber or mining due to current zoning restrictions. Therefore, the transfer of ownership of this bundle should have *no impact* to existing on-site or off-site resources.

#### ***Mineral Extraction***

As stated in Impact 5-1, the Merced River Bundle does not have potential for additional mining activities due to current zoning restrictions. Therefore, the transfer of ownership of this bundle should have *no impact* to existing onsite or off-site resources.

#### **Summary of Impact to Entire Motherlode Regional Bundle**

Land development and management changes may result in habitat degradation as measured by potential habitat fragmentation and disruption to migration corridors. This is a significant impact to the resources within the entire Motherlode Regional Bundle.

#### **4.5.10.5 Kings Crane-Helms Regional Bundle**

##### **Bundle 16: Crane Valley (FERC 1354)**

#### ***Land Development***

A description of potential future land use development changes assumed for the Crane Valley Bundle is presented in Impact 5-1.

The Crane Valley Bundle project area is primarily recreation, private/public land or hydro-power/water conveyance facilities. There are a few constraints to development, primarily because Bass Lake has reached its carrying capacity for recreation. Development in close proximity to Bass Lake or Manzanita Lake could result in a variety of effects to biological resources, as noted in Table 4.5-81, Impacts of Land Use Alterations. Of particular concern, the Oakhurst deer herd is known to occur in the vicinity of the Crane Valley Bundle. Development of this land area could result in a significant habitat loss and degradation (see Table 4.5-81). Direct loss of habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) could be the primary contributors to disruption of migration patterns of the Oakhurst deer herd. The parcels on the west side of Bass Lake are more conducive to development than parcels on the east side. Development of recreational facilities on the available parcels would directly impact habitat through increased human intrusion. It is anticipated that development would have a significant impact on

wildlife migratory corridors or habitat fragmentation within the Bass Lake area. Therefore, on-site impacts to this land area would be *significant*.

The majority of the Crane Valley Bundle project area is located adjacent to Sierra National Forest. Development of this land area could create fragmentation of adjacent forest owned lands that would result in adverse effects to the sensitive species utilizing the land area. Development in this area could cause barriers for sensitive species that use Bass Lake for breeding, foraging, and as a water source. Of particular concern, the Oakhurst deer herd is known to occur in the vicinity of the Crane Valley Bundle. Direct loss of habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disruption of migration patterns of the Oakhurst deer herd. Significant impacts associated with habitat fragmentation and disruption of migratory corridors as result of land development changes are anticipated. Therefore, off-site impacts to adjacent lands would be *significant*.

The parcels located between San Joaquin Powerhouse No. 3 and Manzanita Lake surround the current day use recreation at Manzanita Lake, and therefore are situated in a manner conducive to increase recreation potential. Manzanita Lake currently receives considerable usage during the recreation season. An expansion of the current facilities and an increase in use would increase the level of human intrusion in the area, which could result in a significant biological impact (see Table 4.5-81). There is a small Pacific Gas and Electric Company supported day use area at Smaley Cove near the north end of the lake. An increase of recreational use of this area would increase impacts to lakeside and shoreline riparian habitat as well as increase human encroachment. If development were expanded to include the large parcel at the northern end of the reservoir, there may be impacts to sensitive riparian habitat and species that utilize this land area, such as the Oakhurst deer herd. Therefore, on-site impacts to this land area would be *significant*.

Similar to on-site impacts described above, land development changes associated with the San Joaquin Powerhouse No. 3 and Manzanita Lake could adversely affect off-site wildlife. Of particular concern would be disruption of nesting and foraging behaviors of raptors and migratory patterns of mammals and the Oakhurst deer herd. Direct loss of habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disruption of migration patterns of the Oakhurst deer herd. In addition, this land area is surrounded by the Sierra National Forest. Development in this land area would result in fragmentation of natural corridors that may be utilized by wildlife species as access to Manzanita Lake. Significant impacts associated with habitat fragmentation and disruption of migratory corridors as result of land development changes are anticipated. Therefore, off-site impacts to adjacent lands would be *significant*.

#### ***Timber Harvest***

One hundred acres are projected to have a select cut timber harvest in the Crane Valley Bundle. Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use

Alterations. A significant amount of timber harvesting could occur on watershed lands associated with the Crane Valley Bundle should a new owner opt to maximize timber harvest activities. In areas subjected to selective harvest there is a potential for habitat fragmentation, depending upon the size and location of the harvest. Habitat fragmentation could adversely affect species that prefer contiguous stands older-growth forest, such as California spotted owl, a non-listed special-status species that has the potential to occur in the Crane Valley Bundle. Timber harvesting activities also have the potential to disrupt the migratory patterns of the Oakhurst deer herd, primarily due to habitat fragmentation and excessive noise in timber harvest zones. This is considered a *significant impact*.

### ***Mineral Extraction***

Since an increase in mineral extraction is not likely to occur on the Crane Valley Bundle, this potential land management change would not affect adjacent lands. Therefore, there would be a *less than significant impact*.

### **Bundle 17: Kerckhoff (FERC 0096)**

#### ***Land Development***

A description of potential future land use development changes assumed for the Kerckhoff Bundle is presented in Impact 5-1.

The Kerckhoff Bundle project is primarily developed for recreation and open space. Lands associated with this bundle could potentially be developed into residential or commercial recreation use. Development in close proximity to Kerckhoff Reservoir or the Auberry area could result in a variety of effects to biological resources as noted in Table 4.5-81, Impacts of Land Use Alterations. If development was expanded at Kerckhoff Reservoir, there may be impacts to sensitive riparian habitat and special-status species within the land area. Of particular concern is the Oakhurst deer herd that may utilizes this land area. Development could result in habitat degradation or fragmentation that could disrupt the migration of this deer herd. It is anticipated that development would have a significant impact on wildlife migratory corridors or habitat fragmentation within this land area. Therefore, on-site impacts to this land area would be *significant*.

Similar to on-site impacts described above, land development changes associated with this land area could adversely affect off-site wildlife. Of particular concern would be disruption of nesting and foraging behaviors of raptors and migratory patterns of mammals. More specifically, the Oakhurst, Huntington, and South Sierra Foothill deer herds can be found in the vicinity of these land areas. Direct loss of habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disruption of migration patterns of these deer herds. In addition, this land area is surrounded by the Sierra National Forest and the Bureau of Land Management. Development in this land area would result in fragmentation of natural corridors that may be utilized by wildlife species as access to the existing waterways. Significant impacts

associated with habitat fragmentation and disruption of migratory corridors as result of land development changes are anticipated. Therefore, off-site impacts to adjacent lands would be *significant*.

##### ***Timber Harvest***

There is no anticipated future timber harvest planned for the Kerckhoff Bundle. Since an increase in timber harvesting is not likely to occur in the Kerckhoff Bundle, there would be *no impact*.

##### ***Mineral Extraction***

There are no existing active mining claims within this bundle and the geology is not likely to support future mineral extraction. Therefore, *no impact* will occur to on-site resources as a result of land management changes.

#### **Bundle 18: Kings River - Helms Pumped Storage (FERC 2735), Haas-Kings River (FERC 1988), Balch (FERC 0175)**

##### ***Land Development***

A description of potential future land use development changes assumed for the Kings River Bundle is presented in Impact 5-1.

The Kings River Bundle contains hydropower and water conveyance facilities, a wildlife habitat management area and several recreation facilities. The Keller Ranch parcel is the staging area for Kings River commercial whitewater boating. Table 4.5-81 outlines the impacts associated with development.

Pacific Gas and Electric Company has employee housing, an employee bunkhouse for employees on temporary assignment, and other support facilities adjacent to Wishon Reservoir. Some of the residences are currently not occupied. It is possible that all houses could be assigned to new employees, used as vacation rentals, or sold to others for use as a residences or second homes. Unless there is an expansion of housing units in the area, use of all current facilities should not result in a significant impact to outside resources over what currently exists. There are several day use recreational facilities that could be expanded along the western shore of Wishon Reservoir. Of particular concern are the Hume and Northkings deer herds. These deer herds utilize this land area for migratory and foraging purposes. If expansion were to take place, it could have a *significant* impact to deer migratory corridors and deer habitat fragmentation.

Pacific Gas and Electric Company has a relatively large parcel of land on the south side of Pine Flat Reservoir known as the Keller Ranch. Pacific Gas and Electric Company permits the Zypher recreational boating enterprise to use this land for its part of its operations. There is potential for an increase in commercial recreation at Keller Ranch. If, an increase in recreation occurs here, there would be a *significant impact* to wildlife migratory corridors.

Similar to the on-site impacts described above, land development changes associated with the Kings River Bundle area could adversely affect the Hume and Northkings deer herd migratory corridors. Table 4.5-81 outlines off-site impacts as a result of development. In addition to migratory corridors for deer there is the potential for habitat fragmentation effecting other sensitive species utilizing adjacent lands. This land area is surrounded by Sierra National Forest which is suitable habitat for a number of wildlife species. Special-status species with potential to occur on the adjacent lands could also be subjected to indirect effects such as human intrusion and edge effect. These adverse effects could result in habitat degradation of these adjacent, public owned lands. This would be considered a *significant impact*.

### ***Timber Harvest***

One hundred acres are projected to have a select cut timber harvest in the Kings River Bundle. This logging will cause a local, temporarily *significant impact* in the area, but will in the long term, result in positive impact by allowing improved natural succession to a more productive habitat.

One hundred acres are projected to have a select cut timber harvest in the Kings River Bundle. Potential effects associated with timber harvest are identified in Table 4.5-81, Impacts of Land Use Alterations. A significant amount of timber harvesting could occur on watershed lands associated with the Kings River Bundle should a new owner opt to maximize timber harvest activities. In areas subjected to selective harvest there is a potential for habitat fragmentation, depending upon the size and location of the harvest. Habitat fragmentation could adversely affect species that prefer contiguous stands older-growth forest, such as California spotted owl, a non-listed special-status species that has the potential to occur in the Kings River Bundle. Timber harvesting activities also have the potential to disrupt the migratory patterns of the Hume and Northkings deer herds, primarily due to habitat fragmentation and excessive noise in timber harvest zones. This is considered a *significant impact*.

### ***Mineral Extraction***

There are no current mining activities in the Kings River Bundle. The geological formations in the bundle area are not conducive for future mineral extractions. Therefore, there will be *no impact* caused by mineral extraction.

## **Bundle 19: Tule River (FERC 1333)**

### ***Land Development***

A description of potential future land use development changes assumed for the Tule River Bundle is presented in Impact 5-1.

The Tule River Bundle is used for Pacific Gas and Electric Company housing, cabins, and open space. The current landowners within the available parcel would like to acquire the remaining land

so that it could be maintained as open space. However, if another party were to acquire it, it is reasonable to expect that residences or increased recreation would be developed. Table 4.5-81 illustrates the on-site effects as a result of development. Of particular concern is the Tule River deer herd. The Tule River deer herd utilizes this land area for migratory and foraging purposes. If expansion were to take place, it could have a *significant impact* to deer migratory corridors and deer habitat fragmentation.

Similar to the direct impacts described above, land development changes associated with the Tule River Bundle project could cause wildlife habitat loss and fragmentation and an increase in human intrusion would be inevitable. Direct loss of habitat, as well as the construction of new barriers to migrating wildlife (i.e., housing, fencing) would be the primary contributors to disruption of migration patterns of the Tule River deer herd. In addition, this land area is surrounded by the Sierra National Forest and Sequoia National Forest. Development in this land area would result in fragmentation of natural corridors that may be utilized by wildlife species as access waterways and nesting or foraging areas. Significant impacts associated with habitat fragmentation and disruption of migratory corridors as result of land development changes are anticipated. Therefore, off-site impacts to adjacent lands would be *significant*.

##### ***Timber Harvest***

There are no future timber harvests planned for the Tule River Bundle. Since an increase in timber harvesting is not likely to occur on the Tule River Bundle lands there will be *no impact*.

##### ***Mineral Extraction***

There are no existing active mining claims within this bundle and the geology is not likely to support future mineral extraction. Therefore, *no impact* will occur on the Tule River Bundle watershed lands as a result of mining.

#### **Bundle 20: Kern River - Kern Canyon (FERC 0178)**

##### ***Land Development***

A description of potential future land use development changes assumed for the Kern River bundle is presented in Impact 5-1. The Kern River Bundle project area consists of mostly Pacific Gas and Electric Company hydroelectric facilities and open space. There are no land development changes predicted for this bundle and therefore, *no impacts* to wildlife or habitat will occur.

##### ***Timber Harvest***

There are no future timber harvests planned for the Kern River Bundle. Since an increase in timber harvesting is not likely to occur on the Kern River Bundle lands, there will be *no impact*.

### ***Mineral Extraction***

There are no existing active mining claims within this bundle and the geology is not likely to support future mineral extraction. Therefore, *no impact* will occur on the Kern River Bundle watershed lands as a result of mining.

### **Summary of Impact to Entire Kings Crane-Helms Regional Bundle**

In light of the above-discussed adverse effects of land development, the proposed auction of the Kings Crane-Helms Regional Bundle could result in a *significant impact*.

#### **4.5.10.6 Evaluation of Impact To Entire System**

Land development and management changes may result in habitat degradation as measured by potential habitat fragmentation and disruption to migration corridors. This is a *significant impact* to the resources within the entire system.

#### **4.5.10.7 Impact 5-3: Mitigation Measures**

##### **Mitigation Measures Proposed as Part of the Project**

No proposed mitigation presented in the PEA for terrestrial biological resources.

##### **Mitigation Measures Identified in this Report**

***Mitigation Measure 5-3a:*** Prior to or concurrent with the transfer of title for the pertinent bundles, the informal agreements/non-binding operating practices listed below shall by written instrument be made binding upon the new owner.

- Pacific Gas and Electric Company voluntarily makes a minimum flow release of 200 cfs from the Pit 1 Powerhouse tailrace into the Pit River at all times of the year, per the request of CDFG, USFWS, and SWRCB.
- Pacific Gas and Electric Company has committed to CDFG to release flushing flows from Pit 1 Dam two to three times a year to flush vegetation out of the Fall River Pond.
- Pacific Gas and Electric Company constructed and maintains a fence to keep cattle off project levees on the south side of Big Lake, per an agreement with CDFG, CDF, and USFWS.
- At Iron Canyon Reservoir, Pacific Gas and Electric Company informally maintains the reservoir at a level sufficient to make the Big Bend community boat ramp operational. This agreement also benefits biological resources since reservoir levels would be more stabilized allowing for shoreline emergent wetland vegetation to establish.
- Pacific Gas and Electric Company currently has an informal agreement with CDFG which allows CDFG to conduct surveys for Shasta crayfish in the upper Tule River and Pit River associated with the Pit 1 project. This survey work is considered to be crucial in the recovery efforts for the species.

- Pacific Gas and Electric Company is an active participant in the Lower McCloud Coordinated Resource Management Project (CRMP). A new owner would be expected to take over the responsibilities currently held by Pacific Gas and Electric Company as a member of the CRMP.
- Pacific Gas and Electric Company is a participant in the Pit River Interagency Bald Eagle Management Plan and is currently implementing the mitigation measures prescribed in this plan.

***Mitigation Measure 5-3b:*** Prior to the transfer of title for any bundle, Pacific Gas and Electric Company shall demonstrate that the new owner has received and reviewed the existing Best Management Practices (BMPs) of Pacific Gas and Electric Company for that particular bundle as noted in the preceding section, and the new owner shall either (1) commit in writing to adhere to those pertinent existing BMPs or (2) submit to the CPUC for its review and approval, and obtain approval of, substitute Best Management Practices that are protective of the environment to an equal or greater degree than Pacific Gas and Electric Company's existing BMPs.

***Mitigation Measure 5-3c:*** Prior to approval of any land use development change, timber harvest plan or additional mineral extraction activities on the Project Lands, the new owner shall undertake the following process:

- Coordinate with the United States Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG) and, when applicable, the United States Forest Service (USFS) and/or Bureau of Land Management (BLM) to determine the status of relevant species and habitats in the area of the proposed development, harvest or mineral extraction. As part of consultation, necessary surveys to be conducted shall be determined. The purpose of such surveys shall be to determine habitat value and migration corridors in the area of the proposed development, harvest or mineral extraction, and within one mile of the proposed activity. At minimum, the special-status species listed in Tables 4.5-71 through 4.5-80 shall be considered. Surveys shall conform to then-current USFWS and USFS protocols. A letter report that documents agency consultation, survey methodology, and a proposed means to document survey results shall be prepared by the new owner and submitted to the involved agencies.
- Surveys shall be undertaken in accordance with the agreed methodology, and shall be conducted over a period of two seasons. Upon completion, they shall be provided to the relevant agencies. The surveys and resulting reports shall also address the following:
  - The potential for interruption of migratory corridors or sensitive breeding areas including the habitats and vegetation types within current CDFG deer herd designations for holding areas, fawning areas, and migratory corridors;
  - The potential for and effects of habitat fragmentation as a result of the proposed activity;
  - The effects of erosion, slope instability, point source pollution and the introduction of exotic animal and plant species resulting from the proposed activity on habitat value.
- If, as a result of the surveys, no relevant resources are detected within the area of the proposed activity, or within one mile of the area of proposed activity (i.e. deer use, migration corridors), no further mitigation shall be required under this measure.
- If relevant resources are detected, prior to receiving approvals for the proposed activity, the new owner shall prepare a Biological Resource Protection Plan outlining the measures that are necessary to reduce fragmentation and migration corridor impacts to a less than significant level and, as part of implementation of the proposed activity, shall carry out such measures. The Biological Resource



Protection Plan shall mandate avoidance of migration corridors to the fullest extent possible. Avoidance measures may include buffer zones and set backs from corridors, restricted construction time periods, and seasonal construction restrictions. Where avoidance is not feasible, the Biological Resource Protection Plan shall require that the new owner shall minimize impacts using a combination of on-site and off-site habitat preservation measures, including establishing habitat conservation easements on nearby comparable land, purchase and protection of comparable habitat and habitat enhancement.

**Alternate Mitigation Measure 5-3c:** As an alternative to Mitigation Measure 5-3c, above, prior to or concurrent with the transfer of title for any bundle, there shall be recorded against the lands within the bundle conservation easements running with the land and (in a form and substance approved by the CPUC) precluding any further land use development, or expansion of timber harvest or mineral extraction activities.

#### **4.5.10.8 Impact 5-3: Level of Significance After Mitigation**

Implementation of Mitigation Measures 5-3a, 5-3b and 5-3c would reduce the impact to a *less than significant* level. Alternatively, implementation of Mitigation Measures 5-3a, 5-3b and Alternate Mitigation Measure 5-3c would eliminate the impact altogether.

#### **4.5.11 IMPACT 5-4: IMPACT, ANALYSIS, AND MITIGATION MEASURES**

**Impact 5-4 The project may result in adverse effects to sensitive native plant communities, including wetlands and riparian corridors. (Significant)**

##### **Riparian Vegetation**

These resources are protected by a variety of regulatory programs. See Section 4.5.3 for more detail. The word riparian refers to anything connected with or immediately adjacent to the banks of a stream or other body of water. Streamside plant communities or riparian plant communities, encompass the flood plain and a portion of the adjacent upslope area. The flora and fauna of these communities are complex ecosystems, connecting an aquatic habitat and to an upland habitat. The ability of these areas to function naturally is crucial to the protection of the stream water resources.

These riparian communities also act as a buffer for the aquatic habitat. As a buffer these riparian communities serve several important functions: it preserves the stream's natural characteristics, protects water quality, and improves habitat for plants and animals on land and in the water. The riparian buffer traps and filters sediments, nutrients, and chemicals from surface runoff and shallow groundwater. Shade from the vegetation keeps the water cooler and moderates temperature fluctuation, increasing the water's ability to hold oxygen and support aquatic life. The stream flow slows around fallen trees and branches in the stream or riverbed, creating fish habitat. Plant stems slow water velocity and root systems keep the soil porous, so excess water is absorbed into the ground and flooding potential is reduced; the roots also stabilize the stream bank. The buffer's capacity to hold large amounts of water allows percolation to deeper water aquifers, replenishing groundwater supplies. A riparian forest buffer improves the biological diversity of surrounding

areas. Birds, mammals, and other animals find the food, cover, water, and nesting sites they need as well as corridors and pathways for movement between areas.

Riparian communities occur throughout the project area, scattered from the Cascades through the southern Sierra Nevada. Land development and management changes could result in a loss of riparian habitats. Due to the scarcity of the resource (current estimates are that an estimated 95 percent of the riparian woodlands have been lost from California [Grenfell 1988] due to human activities) any loss of vegetated riparian communities is considered significant and unavoidable.

#### **Wetlands**

Wetlands are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is often covered by shallow water during some parts of the year. Wetlands can be categorized according to specific habitat and type of vegetation. Wetlands include, but are not limited to, marshes, floodplains, seasonal wetlands, lakes, ponds, and vernal pools. Wetlands can have the following values and functions:

- Wetlands provide important habitat for diverse and complex communities of plants and animals, including over 50 percent of the Federally listed threatened or endangered species.
- Wetlands provide the principal habitat for migratory waterfowl. California provides critical wintering habitat for millions of waterfowl migrating along the Pacific Flyway.
- Wetlands provide direct spawning and rearing habitats and food supply that supports fisheries.
- Wetlands detain flood flows, reducing the size of floods.
- Wetlands absorb and filter pollutants that could otherwise degrade ground water or the water quality of other aquatic habitats.
- Wetlands recharge groundwater supplies like aquifers.
- Wetlands support many recreational activities including fishing, and hunting.

As a result human activities, many of California's wetlands were converted to agricultural and urban uses, and water that had naturally flooded the wetlands has been diverted for other needs. Estimates of wetlands that historically existed in California range from three to five million acres. The current estimate of wetland acreage in California is approximately 450,000 acres; this represents an 85 to 90 percent reduction-the greatest percentage loss in the nation.

Wetlands that occur throughout the project lands include: creeks, stream bogs, marshes, vernal pools, and lakes. Land development and management changes could result in a loss of wetland habitat. Due to the important functions of the resource and its the scarcity, any loss of a wetland is considered *significant and unavoidable*.

### **Other Sensitive Communities**

Other sensitive communities are identified and monitored carefully by the California Department of Fish and Game. These areas are either limited in distribution by nature or through destruction, and/or they provide habitat for sensitive species. Any loss of these communities would be considered *significant and unavoidable*.

#### **4.5.11.1 Shasta Regional Bundle**

##### **Bundle 1: Hat Creek**

A description of potential future land use development changes assumed for the Hat Creek Bundle is presented in Impact 5-1. These impacts could result in a loss of sensitive communities. This could result in *significant* impacts to sensitive native plant communities including wetlands and riparian habitats.

##### **Bundle 2: Pit River - Pit 1 (FERC 2687), Pit 3, 4, and 5 (FERC 0233), McCloud-Pit (FERC 2106)**

A description of potential future land use development changes assumed for the Pit River Bundle is presented in Impact 5-1. Northern basalt flow vernal pools and northern interior cypress forest have been documented within two miles of the Pit 1 facility. The northern basalt flow vernal pools are a sensitive plant community and a sensitive wetland. These may occur in the project lands. Watercourses, wetlands and other sensitive plant communities may also occur within the land areas identified. Any land development and/or land management that would adversely affect these areas is considered a *significant* impact.

##### **Bundle 3: Kilarc-Cow Creek (FERC 0606)**

A description of potential future land use development changes assumed for the Kilarc-Cow Creek Bundle is presented in Impact 5-1. These impacts could result in a loss of sensitive communities. This could result in *significant* impacts to sensitive native plant communities including wetlands and riparian habitats.

##### **Bundle 4: Battle Creek (FERC 1121)**

A description of potential future land use development changes assumed for the Kilarc-Cow Creek Bundle is presented in Impact 5-1. Darlingtonia seeps and fens are known to occur within two miles of Battle Creek. These may occur in the project lands. Watercourses, wetlands and other sensitive plant communities may also occur within the land areas identified. Any land development and/or land management that would adversely affect these areas is considered a *significant* impact.

### **Summary of Impact to Entire Shasta Regional Bundle**

Land use alterations could result in *significant adverse impacts* to sensitive native plant communities, including wetlands and riparian corridors in the Shasta Regional Bundle.

#### **4.5.11.2 DeSabra Regional Bundle**

##### **Bundle 5: Hamilton Branch (non-FERC)**

##### **Bundle 6: Upper North Fork Feather River (FERC 2105), Rock-Creek-Cresta (FERC 1962), Poe (FERC 2107)**

##### **Bundle 7: Bucks Creek (FERC 0619)**

A description of potential future land use development changes assumed for the Hamilton Branch Bundle, the Upper North Fork Feather River Bundle, and the Bucks Creek Bundle are presented in Impact 5-1. These impacts could result in a loss of sensitive communities. This could result in *significant* impacts to sensitive native plant communities including wetlands and riparian habitats.

##### **Bundle 8: Butte Creek - DeSabra-Centerville (FERC 0803), Lime Saddle (non-FERC), Coal Canyon (non-FERC)**

A description of potential future land use development changes assumed for Butte Creek Bundle is presented in Impact 5-1. Northern mudflow volcanic vernal pools, great valley cottonwood forest, and great valley willow scrub have been documented within two miles of the Battle Creek facility. These may occur in the project lands. Watercourses, wetlands and other sensitive plant communities may also occur within the land areas identified. Any land development and/or land management that would adversely affect these areas is considered a *significant* impact.

### **Summary of Impact to Entire DeSabra Regional Bundle**

Land use alterations could result in *significant adverse impacts* to sensitive native terrestrial plant communities, including wetlands and riparian corridors in the DeSabra Regional Bundle.

#### **4.5.11.3 Drum Regional Bundle**

##### **Bundle 9: North Yuba River - Narrows (FERC 1403)**

##### **Bundle 10: Potter Valley (FERC 0077)**

A description of potential future land use development changes assumed for the North Yuba River Bundle and Potter Valley Bundle are presented in Impact 5-1. These impacts could result in a loss of sensitive communities. This could result in *significant* impacts to sensitive native plant communities including wetlands and riparian habitats.

**Bundle 11: South Yuba-Bear River - Drum-Spaulding (FERC 2310)**

A description of potential future land use development changes assumed for South Yuba-Bear River is presented in Impact 5-1. *Darlingtonia* seeps are known to occur within two miles of the Drum-Spaulding complex. These may occur in the project lands. Watercourses, wetlands and other sensitive plant communities may also occur within the land areas identified. Any land development and/or land management that would adversely affect these areas is considered a *significant* impact.

**Bundle 12: Chili Bar (FERC 2155)**

A description of potential future land use development changes assumed for the Chili Bar Bundle is presented in Impact 5-1. These impacts could result in a loss of sensitive communities. This could result in *significant* impacts to sensitive native plant communities including wetlands and riparian habitats.

**Summary of Impact to Entire Drum Regional Bundle**

Land use alterations could result in *significant adverse impacts* to sensitive native terrestrial plant communities, including wetlands and riparian corridors in the Drum Regional Bundle.

**4.5.11.4 Motherlode Regional Bundle****Bundle 13: Mokelumne River (FERC 0137)****Bundle 14: Stanislaus River - Spring Gap-Stanislaus (FERC 2130), Phoenix (FERC 1061)****Bundle 15: Merced River - Merced Falls (FERC 2467)**

A description of potential future land use development changes assumed for the Mokelumne River Bundle, the Stanislaus River Bundle and the Merced River Bundle are presented in Impact 5-1. These impacts could result in a loss of sensitive communities. This could result in *significant and unavoidable* impacts to sensitive native plant communities including wetlands and riparian habitats.

**Summary of Impact to Entire Motherlode Regional Bundle**

Land use alterations could result in *significant adverse impacts* to sensitive native terrestrial plant communities, including wetlands and riparian corridors in the Motherlode Regional Bundle.

##### 4.5.11.5 Kings Crane-Helms Regional Bundle

**Bundle 16: Crane Valley (FERC 1354)**

**Bundle 17: Kerckhoff (FERC 0096)**

**Bundle 18: Kings River - Helms Pumped Storage (FERC 2735), Haas-Kings River (FERC 1988), Balch (FERC 0175)**

**Bundle 19: Tule River (FERC 1333)**

**Bundle 20: Kern Valley - Kern Canyon (FERC 0178)**

A description of potential future land use development changes assumed for the Crane Valley Bundle, the Kerckhoff Bundle, the Kings River Bundle, Tule River Bundle and Kern Canyon Bundle are presented in Impact 5-1. These impacts could result in a loss of sensitive communities. This could result in *significant* impacts to sensitive native plant communities including wetlands and riparian habitats.

##### **Summary of Impact to Entire Kings Crane-Helms Regional Bundle**

Land use alterations could result in *significant adverse impacts* to sensitive native terrestrial plant communities, including wetlands and riparian corridors in the Kings Crane-Helms Regional Bundle.

##### 4.5.11.6 Evaluation of Impact to Entire System

Land use alterations could result in *significant adverse impacts* to sensitive native terrestrial plant communities, including wetlands and riparian corridors in the entire system.

##### 4.5.11.7 Impact 5-4: Mitigation Measures

##### **Mitigation Measures Proposed as Part of the Project**

No proposed mitigation was presented in the PEA for terrestrial biological resources.

##### **Mitigation Measures Identified in This Report**

***Mitigation Measure 5-4a:*** Prior to or concurrent with the transfer of title for any bundle, the informal agreements/non-binding operating practices listed for that bundle in the preceding section shall by written instrument be made binding upon the new owner.

***Mitigation Measure 5-4b:*** Prior to the transfer of title for any bundle, Pacific Gas and Electric Company shall demonstrate that the new owner has received and reviewed the existing Best Management Practices (BMPs) of Pacific Gas and Electric Company for that particular bundle as noted in the preceding section, and the new owner shall either (1) commit in writing to adhere to those pertinent existing BMPs or (2) submit to the CPUC for its review and approval, and obtain

approval of, substitute Best Management Practices that are protective of the environment to an equal or greater degree than Pacific Gas and Electric Company's existing BMPs.

***Mitigation Measure 5-4c:*** Prior to approval of any land use development change, timber harvest plan or additional mineral extraction activities on the Project Lands, the new owner shall undertake the following process:

- Coordinate with the United States Army Corps of Engineers (USCOE), the United States Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG) and, when applicable, the United States Forest Service (USFS) and/or Bureau of Land Management (BLM) to determine status of wetlands and sensitive plant communities in the area of the proposed development, harvest or mineral extraction. As part of consultation, the need for surveys to be conducted shall be determined. The purpose of such surveys shall be to determine the presence or absence of wetlands or sensitive plant communities in the area of the proposed development, harvest or mineral extraction, and within one mile of the proposed activity. Surveys shall conform to then-current USCOE, USFWS and USFS protocols. A letter report that documents agency consultation, survey methodology, and a proposed means to document survey results shall be prepared by the new owner and submitted to the involved agencies.
- If required based on preliminary findings, when wetlands and other vegetation is most discernible, surveys shall be undertaken in accordance with the agreed methodology, and shall be conducted between February 1 and June 30. Upon completion, they shall be provided to the relevant agencies.
- If, as a result of the surveys, no wetlands or sensitive plant communities are detected within the area of the proposed activity, or within one mile of the area of proposed activity, no further mitigation shall be required under this measure.
- If wetlands or sensitive plant communities are detected, prior to receiving approvals for the proposed activity, the new owner shall prepare a Resource Protection Plan outlining the measures that are necessary to reduce impacts to wetlands or sensitive plant communities to a less than significant level and, as part of implementation of the proposed activity, shall carry out such measures. The Resource Protection Plan shall mandate avoidance of wetlands or sensitive plant communities habitat to the fullest extent possible. Avoidance measures may include buffer zones and set backs from sensitive habitat, restricted construction time periods, and seasonal construction restrictions. Where avoidance is not feasible, the Resource Protection Plan shall require that the new owner shall minimize impacts using a combination of on-site and off-site preservation measures, including establishing conservation easements on nearby comparable land, purchase and protection of comparable habitat and habitat enhancement.

***Alternate Mitigation Measure 5-4c:*** As an alternative to Mitigation Measure 5-4c, above, prior to or concurrent with the transfer of title for any bundle, there shall be recorded against the Watershed lands within the bundle conservation easements running with the land and (in a form and substance approved by the CPUC) precluding any further land use development, or expansion of timber harvest or mineral extraction activities.

#### **4.5.11.8 Impact 5-4: Level of Significance After Mitigation**

Implementation of Mitigation Measures 5-4a, 5-4b and 5-4c would reduce the impact to a *less than significant* level. Alternatively, implementation of Mitigation Measures 5-4a, 5-4b and Alternate Mitigation Measure 5-4c would reduce the impact to a *less than significant* level.

### 4.5.12 IMPACT 5-5: IMPACT, ANALYSIS, AND MITIGATION MEASURES

#### **Impact 5-5: Changes in hydroelectric operations could result in adverse effects to non-fisheries biotic resources including riparian and lacustrine vegetation communities.**

The modeling results identified 12 bundles that have the potential to substantially change hydrologic operations (see Section 4.3). Bundles with operational flexibility are as follows:

- Bundle 1: Hat Creek
- Bundle 2: Pit River
- Bundle 5: Hamilton Branch
- Bundle 6: North Fork Feather River
- Bundle 7: Bucks Creek
- Bundle 10: Potter Valley
- Bundle 11: Drum-Spaulding
- Bundle 13: Mokelumne River
- Bundle 14: Stanislaus River
- Bundle 16: Crane Valley
- Bundle 17: Kerckhoff
- Bundle 18: Kings River

#### **Changes in Stream Flows**

A discussion and explanation of modeling assumptions, including a complete list of stream reaches in each bundle that may be affected by operational changes, is detailed in Section 4.3, Hydrology. There are three types of operational changes that may have an effect on downstream non-fisheries biotic resources:

- Seasonal decreased stream flows.
- Seasonal increased stream flows.
- Changes in the number and timing of flushing flows.

Riparian vegetation could be affected by seasonally decreased stream flows through creation of more xeric conditions along the stream bank. Removal or reduction of water supply to riparian communities could result in diminished health of the trees and forbs of the community. Ultimately, under a substantially changed water regime, the original vegetation could be displaced by vegetation more adapted to the new more xeric conditions (forbs, shrubs and grasses). The new vegetation type that is established could likely not have the same functions as the original habitat. Table 4.5-82 outlines the benefits of each vegetation type.

In addition to these shifts in functions, habitat modifications could affect riparian dependent and riparian-associated special-status species. Changes in riparian vegetation growing conditions may adversely affect recruitment and maintenance of special-status plant species, recruitment and maintenance of dominant riparian plant species that provide much of the available habitat structure, and availability of nesting and breeding sites for associated wildlife species such as turtles, birds,



**Table 4.5-82 Relative effectiveness of different vegetation types for specific benefits**

Benefit	Vegetation Type		
	Grass	Shrub	Tree
Stabilize bank erosion	Low/Medium	Medium/High	High
Filter sediment	High	Low/Medium	High
Filter nutrients, pesticides, microbes: sediment bound	High	Low/Medium	High
Filter nutrients, pesticides, microbes: soluble	Medium	Low	Medium
Aquatic habitat	Low	Medium	High
Wildlife habitat: grassland	High	Medium	Low
Wildlife habitat: forest wildlife	Low	Medium	High
Economic products	Medium	Low/Medium	High
Visual diversity	Low	Medium	High
Flood protection	Low	Medium	High

Source: Adapted from Agroforestry Notes. AF Note-4, Jan 1997. U.S.

and aquatic amphibians. These latter species spend all or part of their life cycle in riparian vegetation, and should the structure of vegetation near the land/water interface change dramatically, it could result in habitat degradation or habitat loss for the special-status species that live in this ecotone. Seasonal decreased stream flows could also result in alteration of vegetation community dynamics that may promote establishment of non-native or non-natural vegetation. Each of these effects has the potential to be significant, particularly if a local population is significantly affected, and/or if individuals of special-status species are affected. These changes constitute a *significant impact* to non-fisheries biotic resources.

Seasonal increased stream flows could affect riparian vegetation through similar dynamics. Seasonal increased stream flows could alter riparian vegetation by flooding areas for prolonged periods of time. This inundation of vegetation during periods of the year for which it is not adapted, could change growing conditions. For plant and wildlife resources, increased flows may adversely affect recruitment and maintenance of special-status plant species, recruitment and maintenance of dominant riparian plant species that provide much of the available habitat structure, and availability of nesting and breeding sites for associated wildlife species such as turtles, birds, and aquatic amphibians (due to flooding). Seasonal increased stream flows could also result in the flushing of amphibian eggs and/or larvae due to increased water volumes and/or velocities or alteration of vegetation community dynamics such that regeneration of vegetation is inhibited. Riparian vegetation often germinates or sprouts in areas scoured by spring runoff soon after the water levels drop. The vegetation then establishes during the growing season (i.e., summer and fall) when further scouring is unlikely. If peak flows are shifted to the critical growing season, riparian species may have a more difficult time since establishment might only occur during late fall

when seasonal affects such as diminishing photoperiod and cooler diurnal and nocturnal temperatures prevail. Lastly, increased flows could hinder the migratory movements of furbearers and/or deer herds if water levels rise to create a barrier to movement. Each of these changes may be significant to local populations or resources and/or individual special-status species and could result in effects that are a *significant impact*.

Flushing flows are the result of ramping by the operator in order to clean out the system. Many projects have FERC-imposed or self-imposed ramping rates which regulate how quickly water may be released from the reservoir. Ramping rates are applied generally to protect downstream resources and for public safety. As stated previously in this Chapter, there are many voluntary agreements to which Pacific Gas and Electric Company has adhered, many involving voluntarily imposed ramping rates. A new owner is not legally obligated to comply with informal ramping rates, and the potential for deviation from the current ramping rates could have an effect on special-status plant and wildlife species and their habitats.

Increased ramping rates could have a serious impact to downstream resources. Sudden flooding of a river system could effectively flush individuals or populations of species that breed, forage, and reside in or along rivers and streams such as turtles and the special-status amphibians listed in Impacts 5-1 and 5-2. Likewise, reptilian, bird, and mammalian species that spend all or part of their lives in the riparian ecotone along streams may experience direct loss of nests, foraging areas, breeding habitat, and/or direct mortality due to sudden flushing flows.

Flushing flows may also degrade downstream habitats through scouring and streambank erosion. High flows may rise above the banks of the stream and scour areas that are not accustomed to sudden, high flows. Not only does this scouring cause erosion of upper floodplain habitats, it can also result in siltation and sedimentation within the aquatic habitat of frogs and turtles. Lastly, prolonged exposure to flushing flows may seriously alter the streamside vegetation and adjacent habitats. Each of these effects is considered to be a *significant impact*.

#### **Fluctuations in Reservoir Levels**

A discussion and explanation of modeling efforts, including a complete list of reservoirs in each bundle that may be impacted by operational changes, is detailed in Section 4.3, Hydrology.

Alteration of existing lake or reservoir storage levels to accommodate a change in hydroelectric generation would result in lake level fluctuations that may be atypical for that reservoir. These changes may result in either seasonal inundation or desiccation of shoreline riparian habitats. Seasonal inundation of shoreline vegetation would result in the flooding of shoreline habitats during seasons for which the vegetation is not accustomed. Alternatively, reservoir drawdown could cause drying of shoreline habitats during periods that the vegetation may not be able to tolerate. Lake level fluctuations also can affect the erosion patterns of the reservoir thereby degrading the habitat for aquatic wildlife such as frogs and turtles. These types of changes may result in loss of

and/or degradation of shoreline habitat or sensitive species that occupy these habitats. These changes are considered to be a *significant impact*.

#### **4.5.12.1 Shasta Regional Bundle**

##### **Bundle 1: Hat Creek -- Hat Creek 1 and 2 (FERC 2661)**

As identified and discussed in Section 4.4.8.2, OASIS hydraulic modeling of the Hat Creek Project shows no difference in flow release patterns for all of the scenarios when compared to the Baseline. Therefore operation of the Hat 1 and 2 facilities by a new owner (s) would have *no effect* on non-fisheries biotic resources.

Cassel Pond and Baum Lake are the only two reservoirs associated with the Hat Creek Bundle. These reservoirs have limited operational flexibility and altered operations would result in *no impact* to lacustrine habitats or resources.

##### **Bundle 2: Pit River**

###### ***Pit 1 (FERC 2687)***

The Pit 1 Project has limited storage capacity and operational flexibility. In addition, a new owner(s) would be required to operate the project in compliance with current FERC license requirements. Therefore the operation of the Pit 1 Project by a new owner(s) would have *no impact* to non-fisheries riverine biotic resources.

The Pit 1 Diversion dam and the Pit 1 Forebay Dam have limited storage capacity and operational flexibility. In addition, a new owner (s) would be required to operate the project in compliance with current FERC license requirements. Therefore the operation of the Pit 1 Project by a new owner(s) would have *no impact* to lacustrine habitats or resources.

###### ***Pit 3, 4, and 5 (FERC 0233)***

As identified and discussed in Section 4.4.8.2, OASIS hydraulic modeling of the Pit 3, 4, and 5 Project indicated no change from baseline for the period of May through October. Reductions from the baseline occurred in April and November. During these periods of the year alterations of flow are not likely to impact aquatic resources and the predicted flow reductions did not violate FERC minimum flow releases established to ensure protection of aquatic resources. Therefore, changes in hydroelectric operations should result in *less-than-significant* adverse effects to non-fisheries riverine biotic resources including riparian communities.

OASIS modeling for Lake Britton indicates a non-substantive alteration in water storage volumes, therefore a *less-than-significant* impact on lacustrine habitats and resources.

##### **McCloud-Pit (FERC 2106)**

OASIS hydrologic modeling assumes the McCloud-Pit project would release the FERC required minimum flow to Iron Canyon Creek downstream of Iron Canyon Dam. This would result in *no impact* to non-fisheries riverine biotic resources.

Modeling of the Pit 7 system showed little alteration of streamflows for either modeled scenario. Operation of the system by a new owner(s) would result in *less-than-significant* impacts to non-fisheries riverine biotic resources.

Lake McCloud would experience minor reductions in water volume under the PowerMax Scenario that would result in *less-than-significant* impact. Iron Canyon Reservoir would experience substantial reductions in water volume under the PowerMax Scenario. This would result in a *significant* impact to lacustrine habitats and resources.

##### **Bundle 3: Kilarc-Cow Creek -- Kilarc-Cow Creek (FERC 0606)**

No substantive hydrologic operational changes are expected in the Kilarc-Cow Creek Bundle; therefore this impact is *less than significant*.

##### **Bundle 4: Battle Creek -- Battle Creek (FERC 1121)**

No substantive hydrologic operational changes are expected in the Butte Creek Bundle; therefore impacts to non-fisheries biotic resources including riverine and lacustrine habitats would be *less than significant*.

##### **Summary of Impact to Entire Shasta Regional Bundle**

Changes in hydroelectric operations would result in *less-than-significant* adverse effects to non-fisheries biotic resources in riparian systems and a *significant* impact to lacustrine habitats in the Shasta Regional Bundle.

##### **4.5.12.2 DeSabra Regional Bundle**

##### **Bundle 5: Hamilton Branch (non-FERC)**

The results of the OASIS hydraulic modeling indicate substantial reductions in streamflow between the Indian Ole Dam and the Hamilton Diversion Dam under the WaterMax and PowerMax Scenarios (see Section 4.4.8.2). Therefore, changes in hydroelectric operations could result in *significant adverse effects* to non-fisheries biotic resources including riparian communities for this stream section.

The hydraulic modeling results for the WaterMax and PowerMax Scenarios of the Hamilton Branch facility between the Hamilton Diversion Dam and the Hamilton Branch Powerhouse indicates that predicted flows will be essentially the same as the Baseline. Therefore, changes in hydroelectric

operations should result in *less-than-significant* adverse effects to non-fisheries biotic resources including riparian communities for this stream section.

The OASIS modeling of the Mountain Meadows Reservoir indicate that under either operating scenario, reservoir operations would not be substantially altered from the Baseline. Therefore this would result in a *less-than-significant impact* to lacustrine habitats and resources.

#### **Bundle 6: Upper North Fork Feather River**

##### ***Upper North Fork Feather River (FERC 2105)***

The results of the OASIS hydraulic modeling of the North Fork of the Feather River (NFFR) Project indicate that there will not be substantial reductions in streamflow between Canyon Dam and Beldon Reservoir under the WaterMax and PowerMax Scenarios (see Section 4.4.8.2). On the other hand there may be substantial reduction on flows in the section between Beldon Dam and the confluence of the NFFR with the East branch of the NFFR in the months of October through November in wet years. Therefore this may result in a *significant* effect to non-fisheries riverine biotic resources including riparian communities for this stream section.

Modeling of the two operating scenarios for Lake Almanor indicates a substantial change in operation from the Baseline. This would result in a *significant* impact to lacustrine habitat and resources.

Under the modeling analysis, a new owner's management of Butt Valley Reservoir and Belden Reservoir would not be substantially different from the Baseline operation. The project, therefore, would result in a *less-than-significant effect* to lacustrine habitats and resources for these two reservoirs.

##### ***Rock-Creek-Cresta (FERC 1962)***

Two stream stretches in the NFFR were assessed for the impact of reductions of stream flow for the Rock Creek-Cresta Project. The hydrologic modeling results for the NFFR section between the Rock Creek Dam and Bucks Powerhouse and the NFFR section between the Cresta Dam and Poe Powerhouse indicate the substantial flow reductions during above normal and wet years (see Section 4.4.8.2). These predicted reductions would occur during uncontrolled spring run-off months. These reductions could benefit aquatic resources when floodwaters could result in substantial destruction of habitat. Therefore the project would result in *no adverse effects* to non-fisheries riverine biotic resources including riparian communities for this stream section.

Rock Creek Reservoir and Cresta Reservoir are the only two reservoirs associated with the Rock Creek-Cresta Project. These reservoirs have limited operational flexibility and altered operations would result in *no impact* to lacustrine habitats or resources.

##### ***Poe (FERC 2107)***

Like the hydrologic modeling results for the Rock Creek-Cresta stream section, the hydrologic modeling results for the WaterMax and PowerMax Scenarios for the NFFR stream section between the Poe Dam and Poe powerhouse indicate that flows reductions are not substantial except during certain situation in above normal and wet years (see Section 4.4.8.2). Again, these predicted reductions would occur during uncontrolled spring run-off months (March through May). As previously stated these reductions could benefit aquatic resources when floodwaters could result in substantial destruction of habitat. Therefore the project would result in *no adverse effects* to non-fisheries biotic resources including riparian communities for this stream section.

Poe Reservoir is the only reservoir associated with the Poe Project. The Poe Reservoir has limited operational flexibility and altered operations would result in *no impact* to lacustrine habitats or resources.

##### **Bundle 7: Bucks Creek (FERC 0619)**

The hydrologic results for the WaterMax and PowerMax Scenarios in the Bucks Creek stream section between Bucks Lake and Lower Bucks Lake and the section of the NFFR between Bucks Powerhouse and Cresta Reservoir indicate that there are substantial reduction in flows under a myriad of circumstances for all water year types. As discussed in Section 4.4.8.2, these stream sections also experience variable flow under Baseline. Therefore, changes in hydroelectric operations should result in *less-than-significant* adverse effects to non-fisheries biotic resources including riparian communities for these stream sections.

The results of the OASIS hydrologic modeling of the PowerMax and WaterMax Scenarios for the Grizzly Creek stream section are exactly the same as the Baseline, therefore a new owner(s) operation would have *no impact* to non-fisheries riverine biotic resources.

Modeling indicates operation of Bucks Lake may be substantially different than Baseline. This would result in a *significant impact* to lacustrine habitats and resources.

Under the modeling analysis the operation of Lower Bucks Lake, Three lakes and Grizzley Forebay would not be different from Baseline. This would result in *less-than-significant* impacts to lacustrine habitats and resources.

##### **Bundle 8: Butte Creek - DeSabra-Centerville (FERC 0803), Lime Saddle (non-FERC), Coal Canyon (non-FERC)**

No substantive hydrologic operational changes are expected in the Butte Creek Bundle; therefore this impact is *less than significant* for non-fisheries biotic resources including riverine and lacustrine habitats.

### **Summary of Impact to Entire DeSabra Regional Bundle**

Changes in hydroelectric operations could result in *significant adverse* effects to non-fisheries biotic resources including riparian and lacustrine vegetation communities in the DeSabra Regional Bundle.

#### **4.5.12.3 Drum Regional Bundle**

##### **Bundle 9: North Yuba River - Narrows (FERC 1403)**

The OASIS hydrologic modeling for all modeled stream reaches of the Narrows Project could result in substantial flow reduction resulting in *significant* effects to non-fisheries riverine biotic resources including riparian communities for the North Yuba River Bundle (see Section 4.4.8.2).

The modeling results of Englebright Reservoir and New Bullards Bar Reservoir predict that operations under the PowerMax and WaterMax Scenarios are not substantially different from those of the Baseline. Therefore the project would result in *less-than-significant* impacts to lacustrine habitats and resources.

##### **Bundle 10: Potter Valley (FERC 0077)**

The OASIS hydrologic modeling for all modeled stream reaches of the Potter Valley Project could result in substantial flow reduction resulting in *significant* effects to non-fisheries riverine biotic resources including riparian communities for the Potter Valley Bundle (see Section 4.4.8.2).

Operations of Lake Pillsbury in the PowerMax Scenario are predicted to be substantially different than the Baseline conditions. This would result in a *significant* impact to lacustrine habitats and resources.

##### **Bundle 11: South Yuba River**

##### ***Drum-Spaulding (FERC 2310)***

The OASIS hydrologic modeling for all modeled stream reaches of the Drum-Spaulding Project could result in substantial flow reduction resulting in *significant* effects to non-fisheries riverine biotic resources including riparian communities for the South Yuba River Bundle (see Section 4.4.8.2).

The results of the OASIS hydrologic modeling for Fordyce Creek between Fordyce Reservoir and Lake Spaulding under the PowerMax and WaterMax Scenarios indicate substantial flow reductions during April to November. Therefore this may result in a *significant adverse effect* to non-fisheries biotic resources including riparian communities for this stream section.

The results of the OASIS hydrologic modeling for the South Yuba River between Lake Spaulding and Englebright Reservoir indicate a large amount of variation in streamflow during the summer

months under different scenarios. Substantial reduction in streamflow occurs in less than ten percent of the possible number of events and therefore the impact is considered *less-than-significant*.

Texas and Lindsey Creek modeling results indicate no variation in streamflow as a result of operations under different scenarios, therefore altered operations of these facilities by a new owner(s) would have *no effect* on non-fisheries riverine biotic resources.

The OASIS modeling for Canyon Creek from Bowman Lake downstream to Englebright Reservoir would result in different effect dependent on the scenario. The PowerMax Scenario does not result in substantial reduction of stream flow therefore the effect is less-than-significant. The WaterMax Scenario would result in an alteration of streamflow therefore there is *no effect* on non-fisheries riverine biotic resources.

Streamflow in the Middle Fork of the Yuba River from Jackson Meadows Reservoir to Milton Diversion Dam Reservoir as predicted in the PowerMax Scenario would be substantially reduced. Therefore this impact is *significant*. Both scenarios would result in *less-than-significant* impact to non-fisheries riverine biotic resources between Jackson Meadows and the Milton Diversion Dam. Similarly, both scenarios would result in *no effects* to non-fisheries biotic resources between Milton and Hour House Diversion Dams.

The OASIS hydrological modeling indicates that there will be no change in the streamflows in the Bear River from the Drum Afterbay downstream to the Rollins Reservoir. Therefore there is *no impact* to non-fisheries riverine biotic resources.

Streamflows from the Rollins Reservoir to the Bear River Canal intake would be subject to change under different operational scenarios. The WaterMax Scenario would result in substantial flow reductions in 12 events in the April through November period. This would result in *significant effects* to non-fisheries biotic resources in the stretch. The PowerMax Scenario would result in *less-than-significant* impact in this stream reach. Both scenarios could result in *significant effects* to non-biotic riverine resources from the Bear River Canal to Lake Combie.

Modeling results for Jackson Meadows indicate that operation under the WaterMax Scenario may be substantially different than Baseline operations. This would result in *significant* impacts to lacustrine habitats and resources. Modeling results of Texas- Fall Creek Lakes, Bowman Lake, White Rock Lake, Lake Sterling and Meadow Lake indicate future operations would not be significantly different from baseline operations. This would result in a *less-than-significant* impact to lacustrine habitats and resources.

Modeling of Fordyce Lake indicates substantial change in operations under both operating scenarios. This would result in a *significant* impact to lacustrine habitats and resources.



Modeling of Upper and Lower Peak and Kidd Lakes, Lake Spaulding, Lake Valley Reservoir and Kelly Lake indicates a new owner would not substantially alter operations from the baseline condition. This would result in *less-than-significant* impacts to lacustrine habitats and resources.

A new owner's management of the Rollins reservoir would be substantially different under the WaterMax Scenario during dry and critically dry years. This would result in a *significant* impact to lacustrine habitats and resources.

***Bundle 12: Chili Bar (FERC 2155)***

No substantive hydrologic operational changes are expected in the Chili Bar Bundle; therefore this impact is *less than significant*.

**Summary of Impact to Entire Drum Regional Bundle**

Changes in hydroelectric operations could result in *significant adverse effects* to non-fisheries biotic resources including and riparian and lacustrine vegetation communities in the Drum Regional Bundle.

**4.5.12.4 Motherlode Regional Bundle**

**Bundle 13: Mokelumne River (FERC 00137)**

The OASIS hydrologic modeling for all modeled stream reaches of the Mokelumne River Bundle could result in substantial flow reduction resulting in *significant* effects to non-fisheries riverine biotic resources including riparian communities (see Section 4.4.8.2).

The OASIS modeling indicate substantial stream flow reductions under both scenarios on the Bear River between the Upper Bear Reservoir and the North Fork of the Mokelumne River, resulting in *significant effects* to non-fisheries biotic resources in the reach. Changes in streamflow in the Bear River from the Lower Bear Reservoir to the North Fork of the Mokelumne River would be *less-than-significant*.

Modeling results for Cole Creek streamflows above Tiger Creek Conduit indicate *no effect* to stream flows from either scenario.

Cole Creek from the Tiger Creek Conduit to the confluence with the North Fork Mokelumne River could be subject to substantially altered streamflows through either modeling scenarios. These reductions could result in a *significant impact* to non-fisheries riverine biotic resources.

Modeled results indicate no change in streamflows for the modeled scenarios for the confluence of the East and West Panther creeks downstream to the confluence of the Panther Creek and the North Fork of the Mokelumne River predict no change in streamflows, therefore there is *no impact*.

Modeled results in the North Fork Mokelumne River from Twin and Meadows lakes to Pardee Reservoir indicates that both modeled scenarios could result in substantially altered streamflows. This would result in a *significant effect* to the non-fisheries biotic resources in the North Fork Mokelumne River from the Cole and Bear creeks, Panther Creek and the Tiger Creek Afterbay, and the Electra Diversion to the Electra Powerhouse Discharge. In the remainder of the modeled reaches, alteration of streamflows would have a *less-than-significant* effect on non-fisheries biotic riverine resources.

Modeling indicates that the operation of the Salt Springs Reservoir would be substantially different than the Baseline under the two project scenarios. Therefore the project would result in a *significant* impact to lacustrine habitats and resources.

Modeling results indicate that the PowerMax and WaterMax Scenario operations of Twin Lake, Meadow Lake, Blue Lakes, Upper Bear Reservoir, Lower Bear Reservoir, and Lake Tableaud would not be substantially different than Baseline operations. Therefore the project would result in a *less-than-significant* impact to lacustrine habitats and resources.

#### **Bundle 14: Stanislaus River**

##### ***Spring Gap-Stanislaus (FERC 2130)***

The OASIS hydrologic modeling for all modeled stream reaches of the Spring Gap-Stanislaus Project could result in substantial flow reduction resulting in *significant* effects to non-fisheries riverine biotic resources including riparian communities for the Stanislaus River Bundle (See Section 4.4.8.2).

Modeling results indicate a substantial alteration in streamflows in the Middle Fork of the Stanislaus River from Relief Reservoir to the confluence with the South Fork Stanislaus under both the PowerMax and WaterMax Scenarios. This would result in *significant impact* to non-fisheries biotic resources. The remainder of the modeled reaches, streamflow alterations would result in *less-than-significant* impacts to non-fisheries riverine biotic resources.

Modeling indicates that the operation of Strawberry Reservoir could be substantially different from the Baseline operation under the PowerMax and WaterMax Scenarios. Therefore the project would result in a *significant* impact to lacustrine habitats and resources.

Modeling indicates that the operations of Relief Reservoir, and Donnell's Reservoir would not be substantially different than Baseline operations. Therefore the project would result in *less-than-significant* impacts to lacustrine habitats and resources.

**Phoenix (FERC 1061)**

The OASIS hydrologic modeling for all modeled stream reaches of the Phoenix Project could result in substantial flow reduction resulting in *significant* effects to non-fisheries riverine biotic resources including riparian communities for the Stanislaus River Bundle (see Section 4.4.8.2).

Modeled results in the South Fork Stanislaus River from the Strawberry Reservoir to the confluence with the Middle Fork of the Stanislaus River indicate substantial streamflow alterations under either modeled scenario. The PowerMax and the WaterMax Scenarios would result in *significant effects* to non-fisheries biotic resources.

Modeling indicates that the operations of Lyons Reservoir would not be substantially different than Baseline operations. Therefore the project would result in *less-than-significant* impacts to lacustrine habitats and resources.

**Bundle 15: Merced River - Merced Falls (FERC 2467)**

No substantive hydrologic operational changes are expected in the Merced River Bundle; therefore this impact is *less than significant*.

**Summary of Impact to Entire Motherlode Regional Bundle**

Changes in hydroelectric operations could result in *significant adverse effects* to non-fisheries biotic resources including and riparian and lacustrine vegetation communities in the Motherlode Regional Bundle.

**4.5.12.5 Kings Crane-Helms Regional Bundle****Bundle 16: Crane Valley (FERC 1354)**

The OASIS hydrologic modeling for all modeled stream reaches of the Crane Valley Bundle could result in substantial flow reduction resulting in *significant* effects to non-fisheries riverine biotic resources including riparian communities (See Section 4.4.8.2).

OASIS modeling results indicate a substantial alteration in the streamflow of the North Fork Willow Creek below Bass Lake under both the PowerMax and WaterMax Scenarios. This would result in a *significant effect* to non-fisheries riverine biotic resources.

Modeling results of both scenarios also indicate a substantial alteration of steamflows in the South Fork Willow Creek below Browns Creek Diversion Dam. This would result in a *significant effect* to non-fisheries riverine biotic resources.

Modeling results of the Willow Creek mainstem show few differences in flow due to either scenario. This would result in a *less-than-significant* impact to non-fisheries riverine biotic resource.

Modeling operations indicate that the operations of Bass Lake could be substantially altered under both the PowerMax and WaterMax Scenarios. The project therefore could result in a *significant* impact to lacustrine habitats and resources.

##### **Bundle 17: Kerckhoff (FERC 0096)**

OASIS hydrologic modeling indicates no alteration of streamflows in the San Joaquin River below Kerckhoff Dam under either operation scenario. Therefore there is *no impact* to non-fisheries riverine biotic resources.

OASIS modeling indicated no alteration of reservoir operations from the PowerMax and WaterMax Scenarios from Baseline for the Kerckhoff Reservoir. The project therefore would result in *no impact* to lacustrine habitats and resources

##### **Bundle 18: Kings River**

###### ***Helms Pumped Storage (FERC 2735), Haas-Kings River (FERC 1988), Balch (FERC 0175)***

No substantive hydrologic operational changes are expected in the Kings River Bundle; therefore this impact is *less than significant*.

##### **Bundle 19: Tule River (FERC 1333)**

No substantive hydrologic operational changes are expected in the Tule River Bundle; therefore this impact is *less than significant*.

##### **Bundle 20: Kern Canyon (FERC 0178)**

No substantive hydrologic operational changes are expected in the Kern Canyon Bundle; therefore this impact is *less than significant*.

##### **Summary of Impact to Entire Kings Crane-Helms Regional Bundle**

Changes in hydroelectric operations could result in *significant adverse effects* to non-fisheries biotic resources including and riparian and lacustrine vegetation communities in the Kings Crane-Helms Regional Bundle.

##### **4.5.12.6 Evaluation of Impact to Entire System**

Changes in hydroelectric operations could result in *significant adverse effects* to non-fisheries biotic resources including riparian and lacustrine vegetation communities to the entire system.

#### 4.5.12.7 Impact 5-5: Mitigation Measures

##### Mitigation Measures Proposed as Part of the Project

Within the PEA (PG&E Co., 1999a), Pacific Gas and Electric Company does not provide specific mitigation measures for each FERC and non-FERC licensed project as part of the sale of hydroelectric assets to a new owner. Instead, Pacific Gas and Electric Company states that because a new owner will be required to operate according to existing agreements, and will be subject to environmental and resource regulations and directives in the same way that Pacific Gas and Electric Company is and has been, that aquatic resources will be protected. Pacific Gas and Electric Company offers to assist a new owner in understanding aquatic resources issues at each project, by providing the new owner with all non-privileged informational materials in its possession related to sensitive biological resources. Additionally, Pacific Gas and Electric Company proposes to transfer its BMPs to a new owner to provide guidance on procedures for complying with license conditions and applicable laws.

##### Mitigation Measures Identified in This Report

Mitigation measures are provided in Section 4.4, Fisheries.

#### 4.5.12.8 Impact 5-5 Level of Significance After Mitigation

Implementation of these mitigation measures should reduce the project's effects to *less than significant*.

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Special-Status Species

	Animal
	Plant
	Habitat
	FERC License Area
	Water
	Land
	Watershed Lands
	Contiguous Land
	Associated Land
	Lake / Reservoir
	County Boundary
	Township and Range Lines

Habitat Type

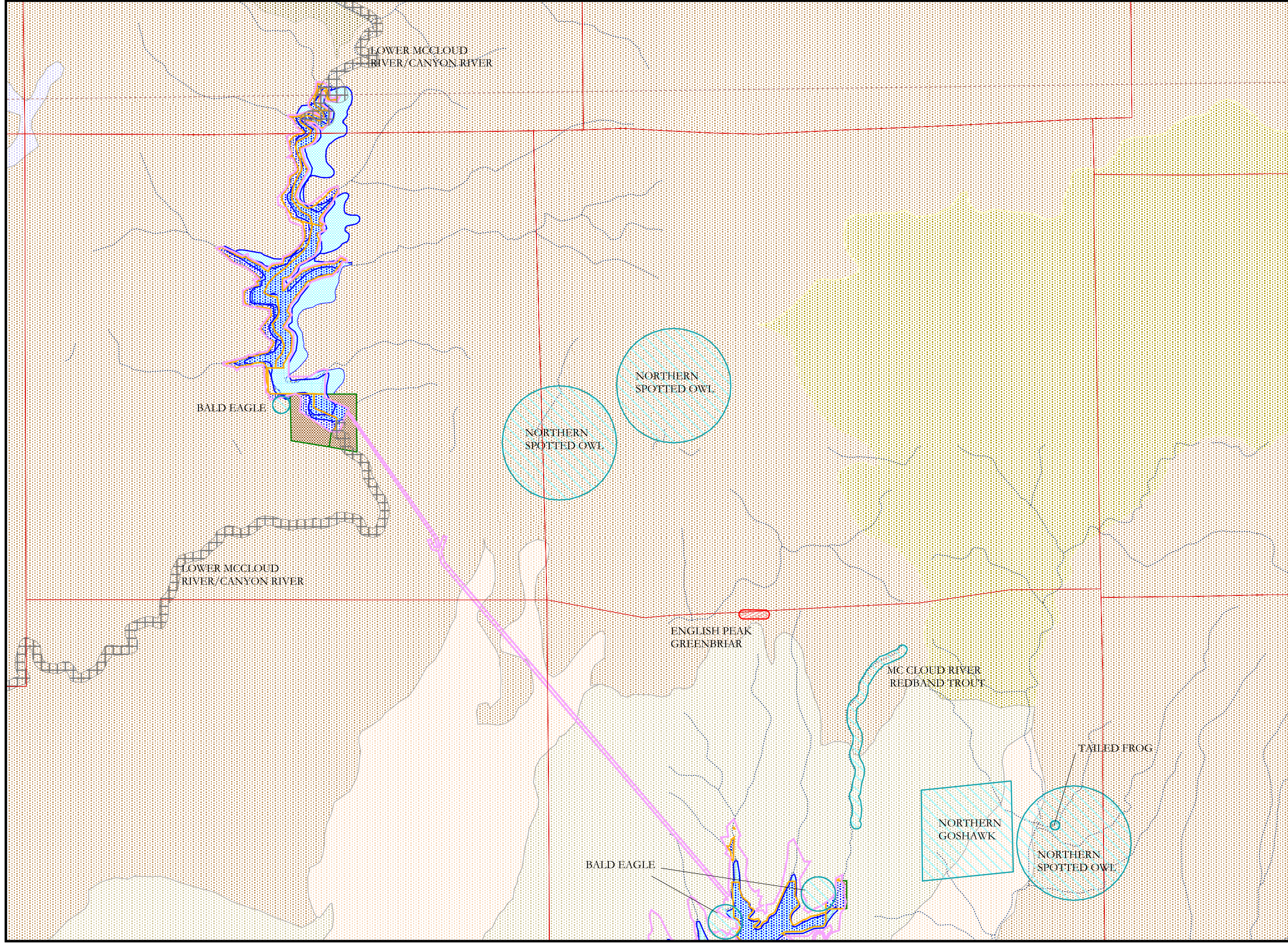
	Douglas-Fir
	Eastside Pine
	Montane Hardwood
	Pasture
	Ponderosa Pine
	Sierran Mixed Conifer

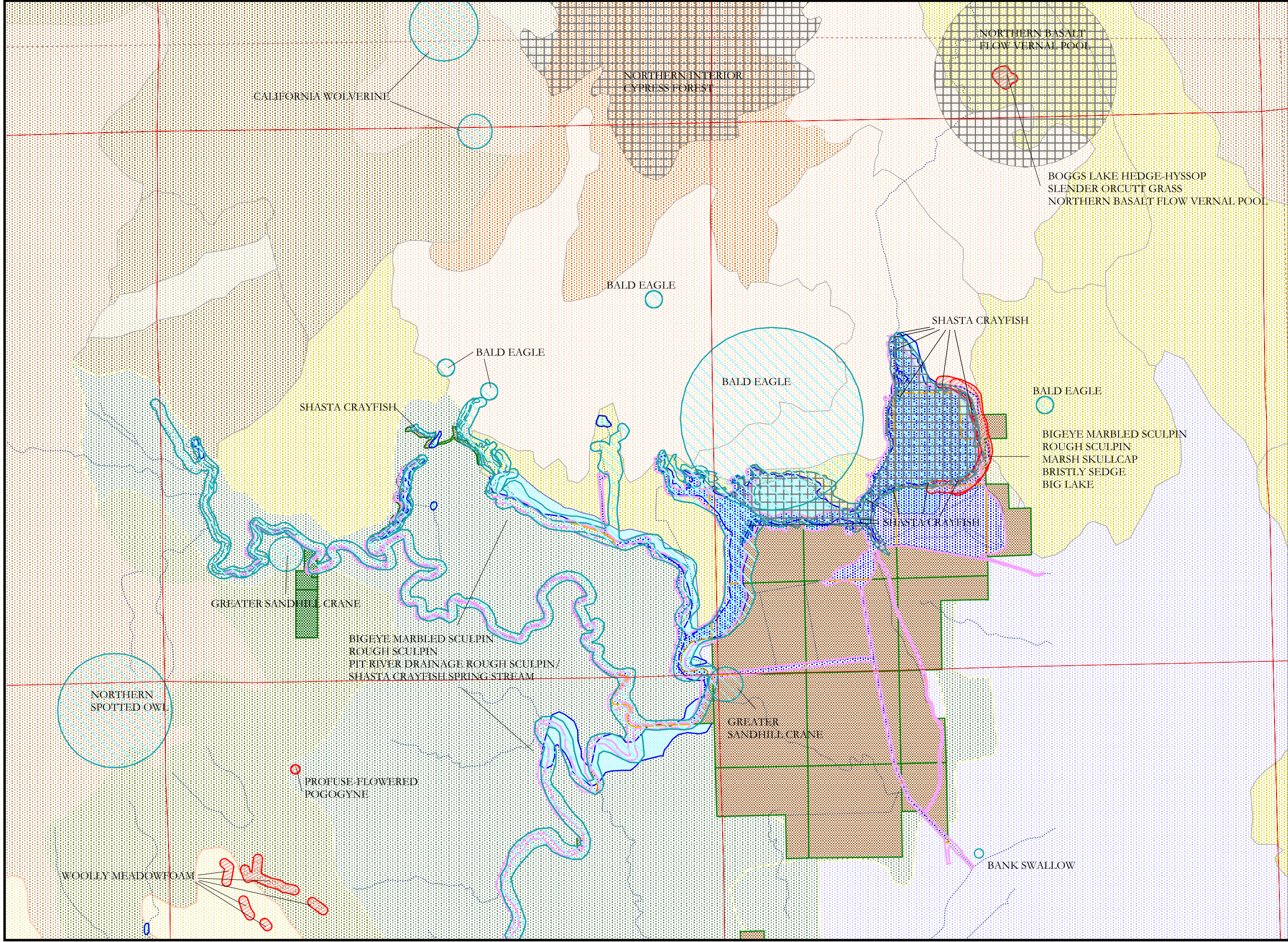
Map Location Reference

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Miles

**Hydroinvestiture EIR**

**Figure 4.5 - 1**  
**Species Occurrences**  
**Shasta Regional Bundle**  
**Aspen**  
*Environmental Group*





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**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land

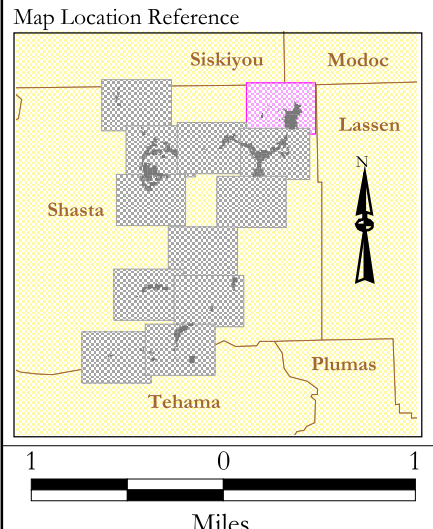
**Habitat Type**

- Bitterbrush
- Blue Oak-Foothill Pine
- Dryland Grain Crops
- Eastside Pine
- Juniper
- Mixed Chaparral
- Montane Hardwood
- Montane Hardwood-Conifer
- Pasture
- Perennial Grassland
- Sierran Mixed Conifer

**Lake / Reservoir**

**County Boundary**

**Township and Range Lines**



**Hydrodivestiture EIR**

**Figure 4.5 - 2**

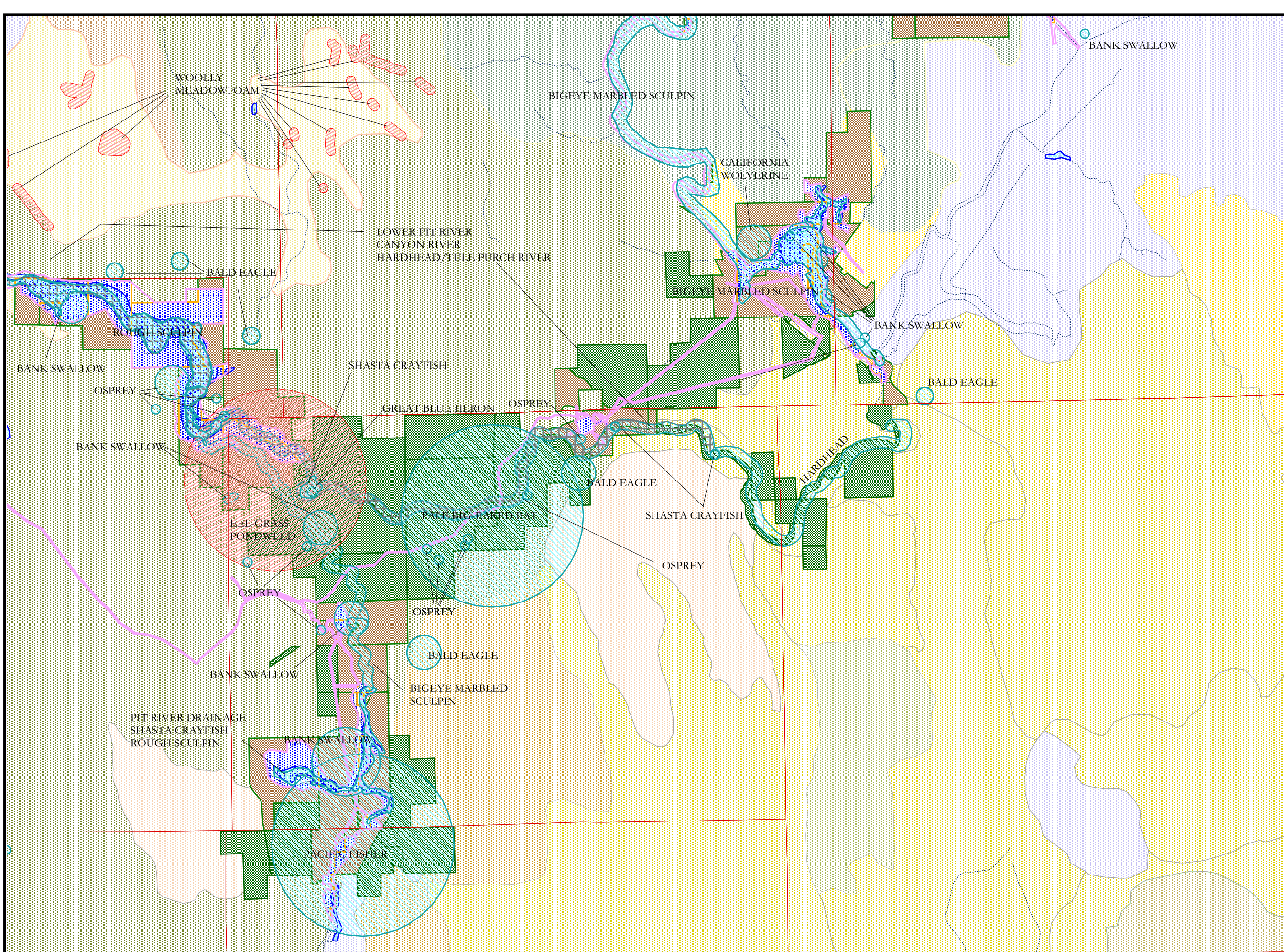
**Species Occurrences**

**Shasta Regional Bundle**

**Aspen**

Environmental Group





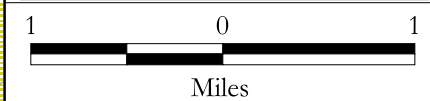
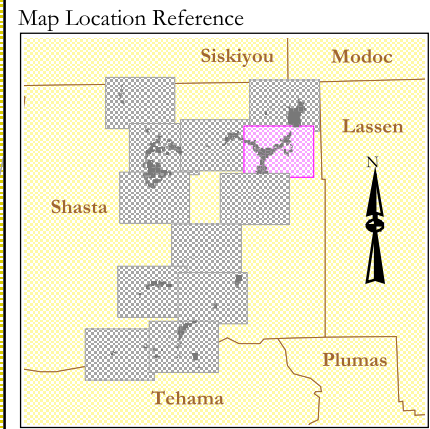
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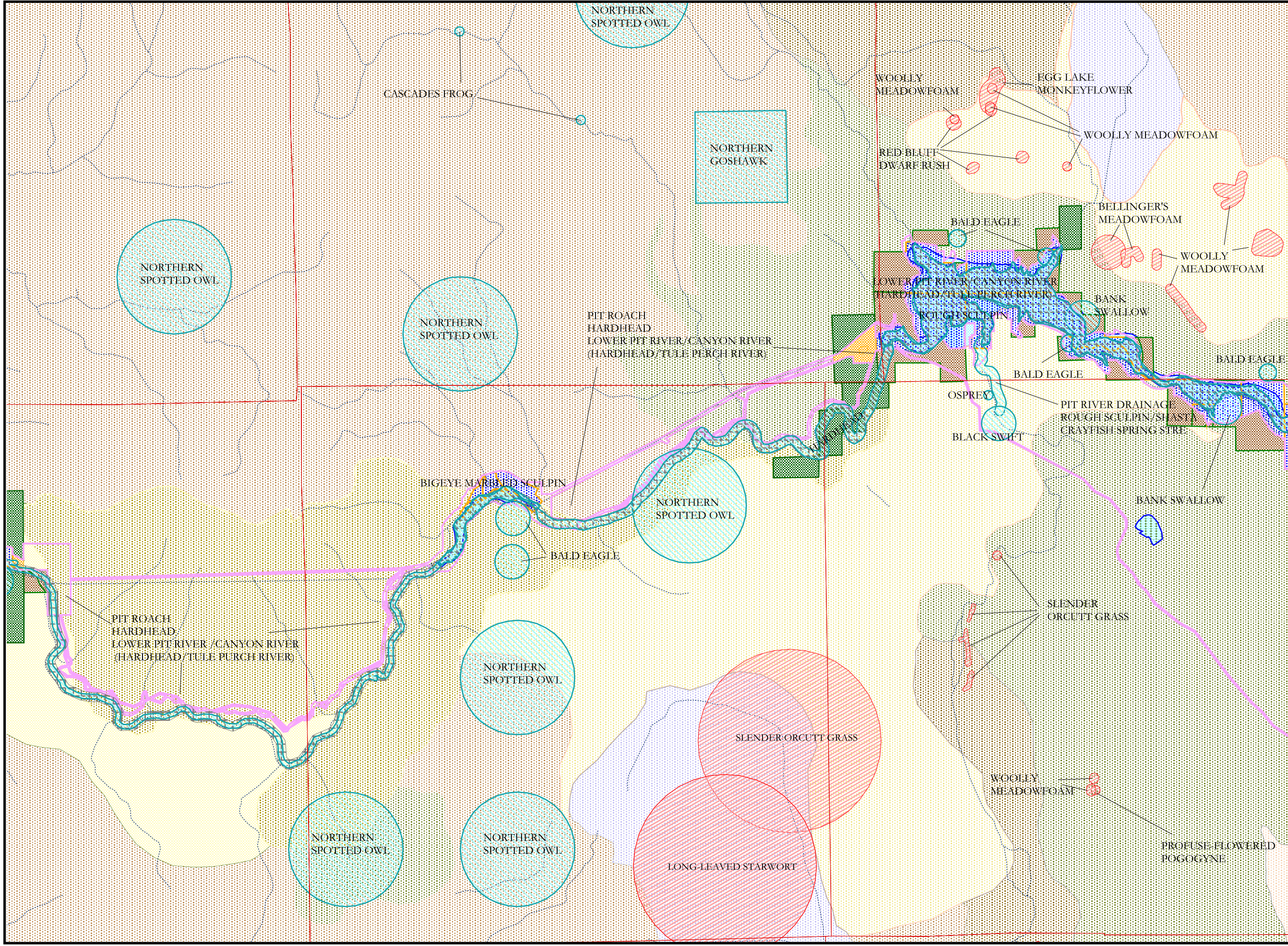
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- Special-Status Species**
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type**
- Annual Grassland
  - Blue Oak Woodland
  - Blue Oak-Foothill Pine
  - Dryland Grain Crops
  - Jeffrey Pine
  - Juniper
  - Low Sage
  - Montane Hardwood
  - Montane Hardwood-Conifer
  - Pasture
  - Perennial Grassland
  - Sierran Mixed Conifer







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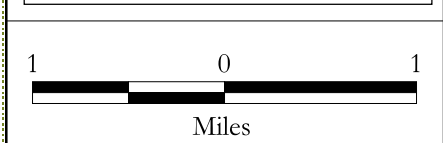
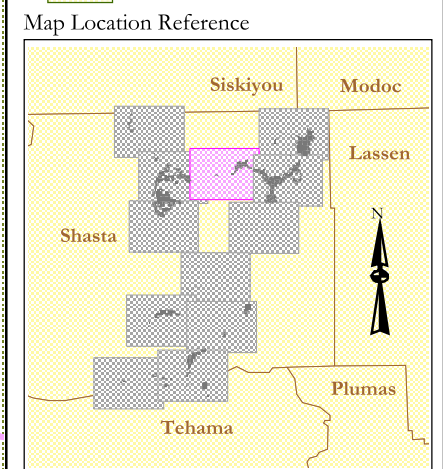
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**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land

**Habitat Type**

- Blue Oak-Foothill Pine
- Douglas-Fir
- Eastside Pine
- Montane Hardwood
- Montane Hardwood-Conifer
- Pasture
- Sierran Mixed Conifer
- White Fir



**Hydroinvestiture EIR**

**Figure 4.5 - 4**

**Species Occurrences**

**Shasta Regional Bundle**

**Aspen**  
Environmental Group



DISCLAIMER

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Special-Status Species

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

Habitat Type

- Douglas-Fir
- Montane Hardwood
- Montane Hardwood-Conifer
- Ponderosa Pine
- Sierran Mixed Conifer
- White Fir

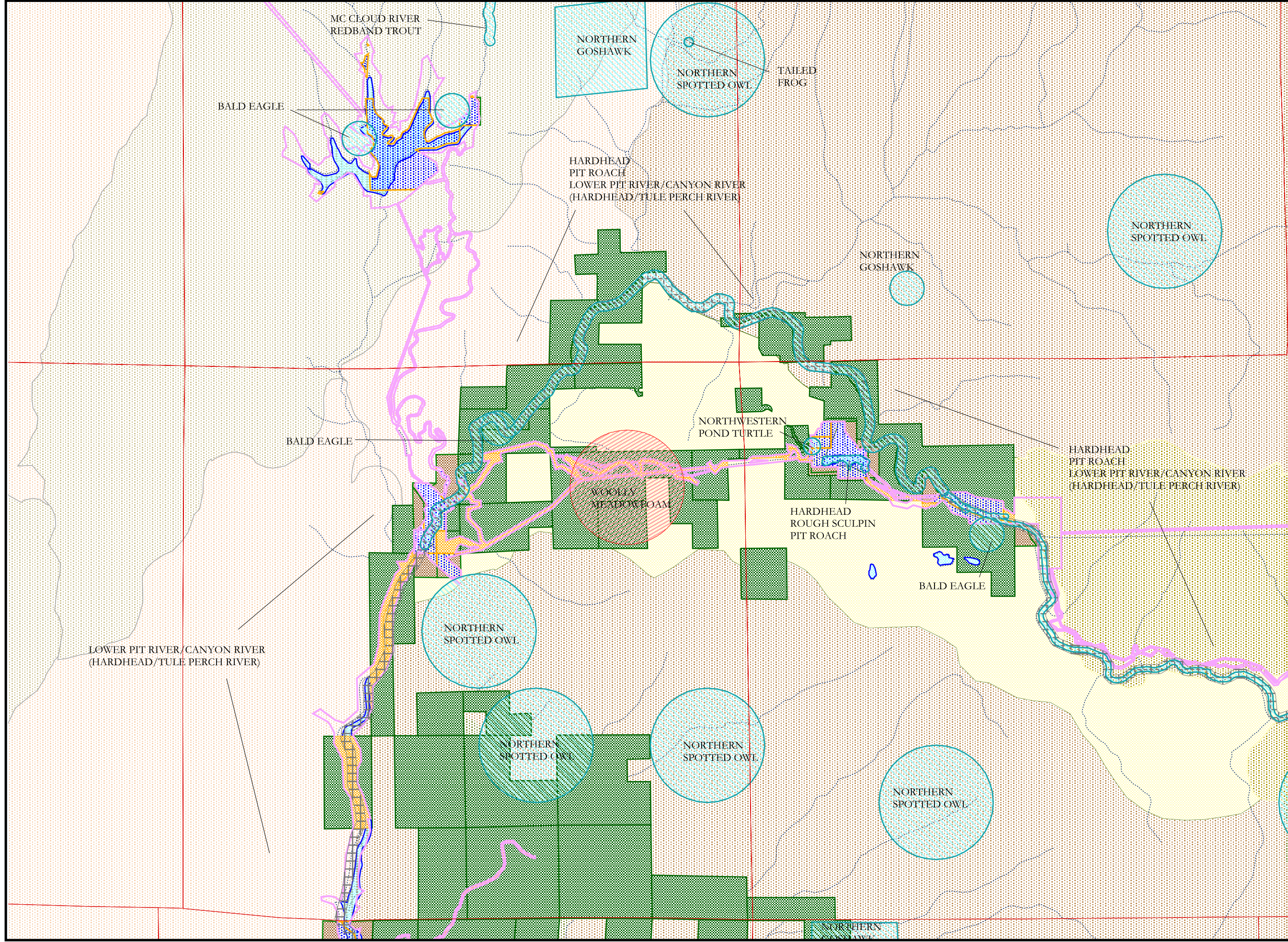
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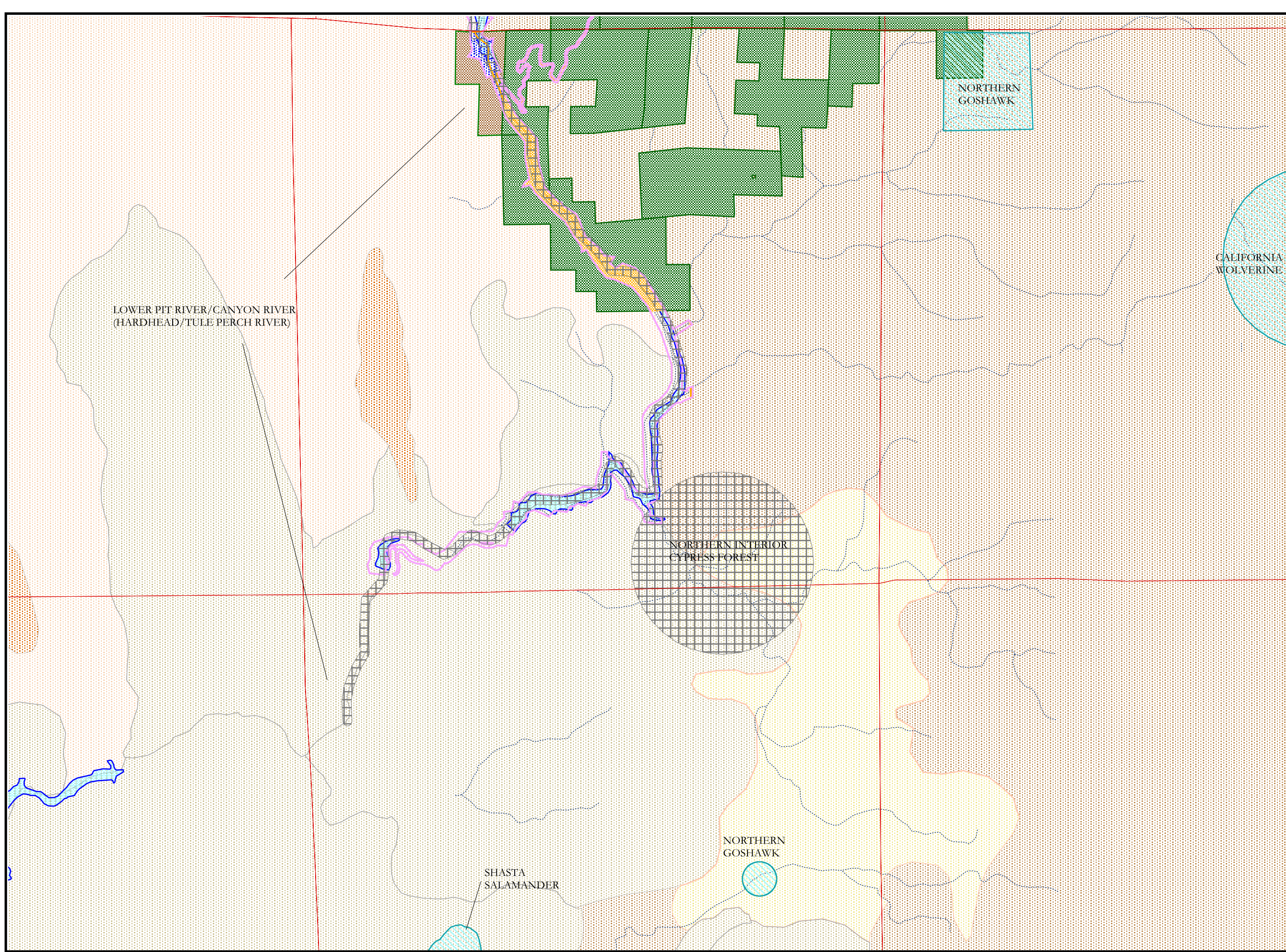
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Hydroinvestiture EIR

**Figure 4.5 - 5**  
**Species Occurrences**  
**Shasta Regional Bundle**

**Aspen**  
Environmental Group





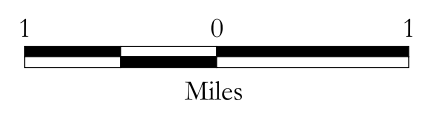
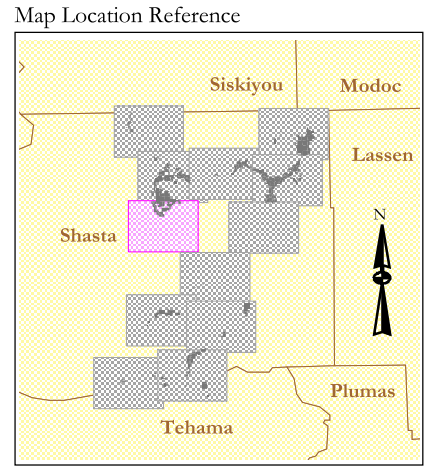
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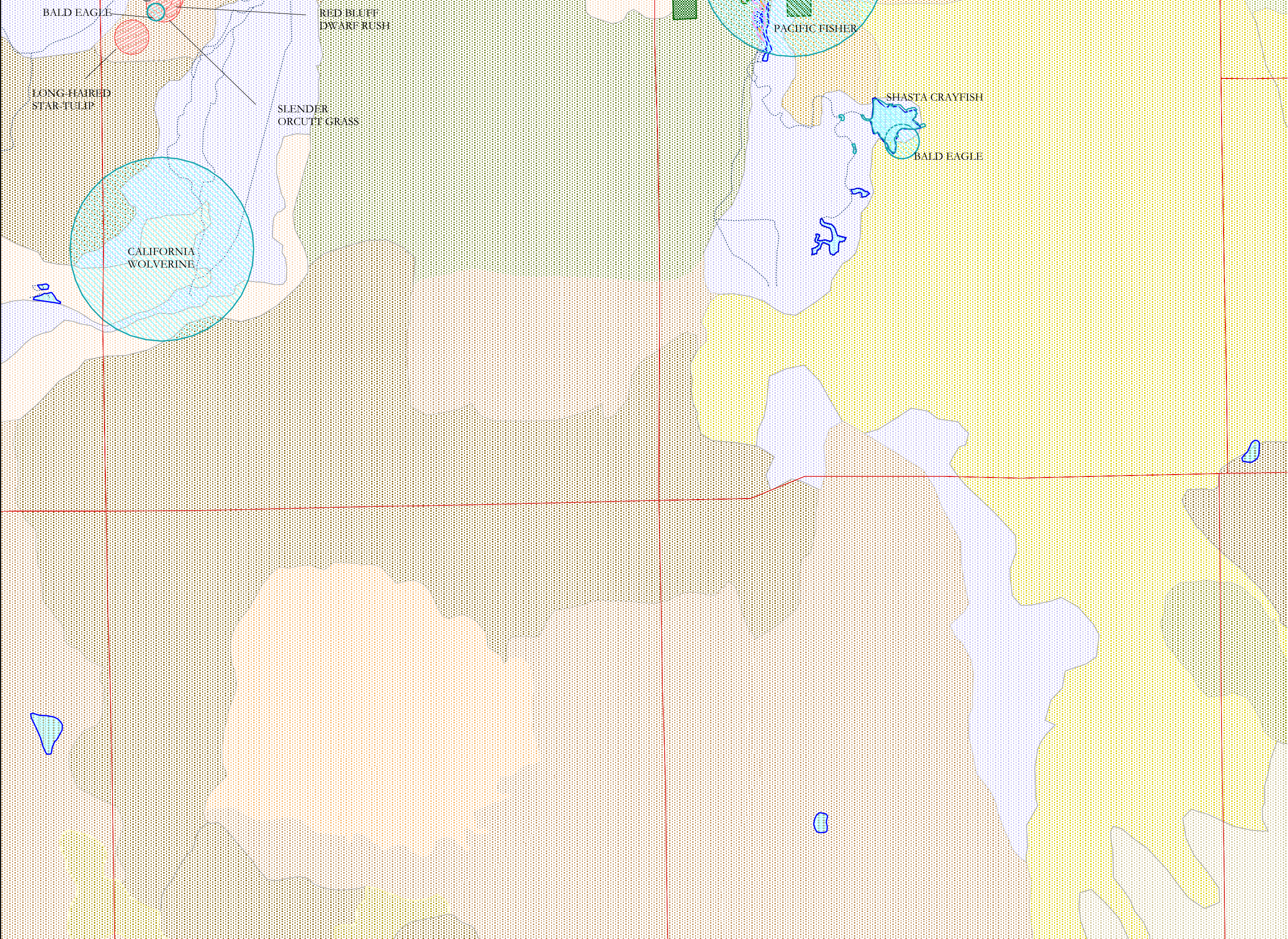
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- Special-Status Species
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type
- Blue Oak-Foothill Pine
  - Mixed Chaparral
  - Montane Hardwood
  - Montane Hardwood-Conifer
  - Ponderosa Pine
  - Sierran Mixed Conifer







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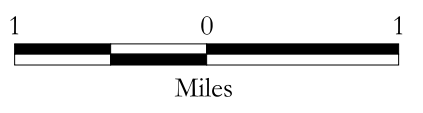
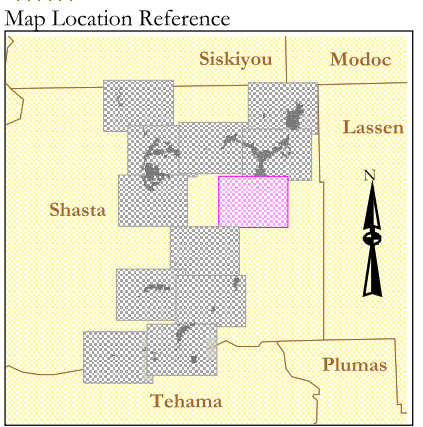
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**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

**Habitat Type**

- Barren
- Blue Oak Woodland
- Bitterbrush
- Douglas-Fir
- Eastside Pine
- Juniper
- Low Sage
- Montane Hardwood
- Montane Hardwood-Conifer
- Pasture
- Sierran Mixed Conifer
- Wet Meadow



**Hydrodivestiture EIR**

**Figure 4.5 - 7**

**Species Occurrences**

**Shasta Regional Bundle**

**Aspen**  
Environmental Group

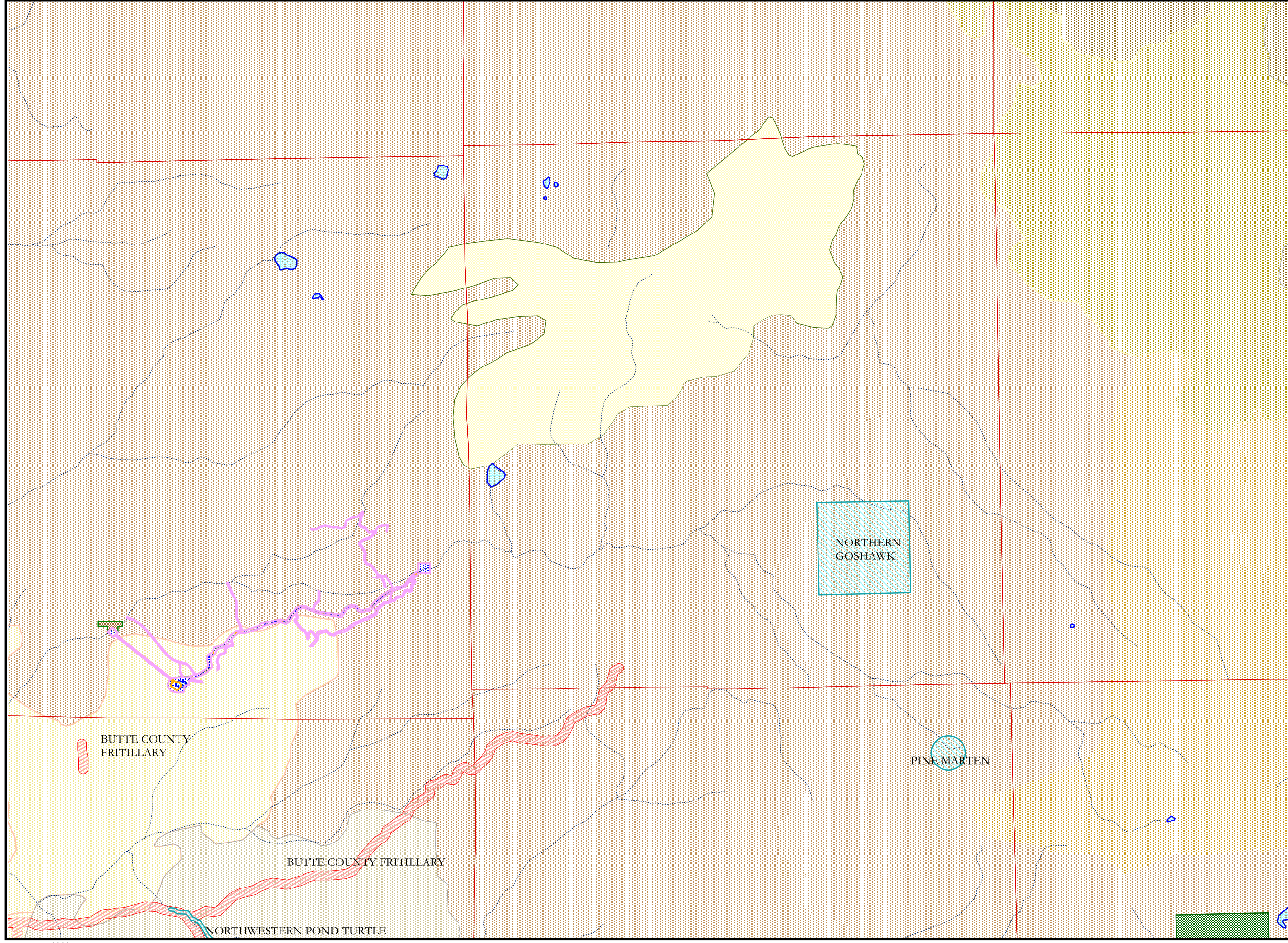


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**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

**Habitat Type**

- Blue Oak-Foothill Pine
- Douglas-Fir
- Eastside Pine
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer
- White Fir

**Map Location Reference**

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Miles

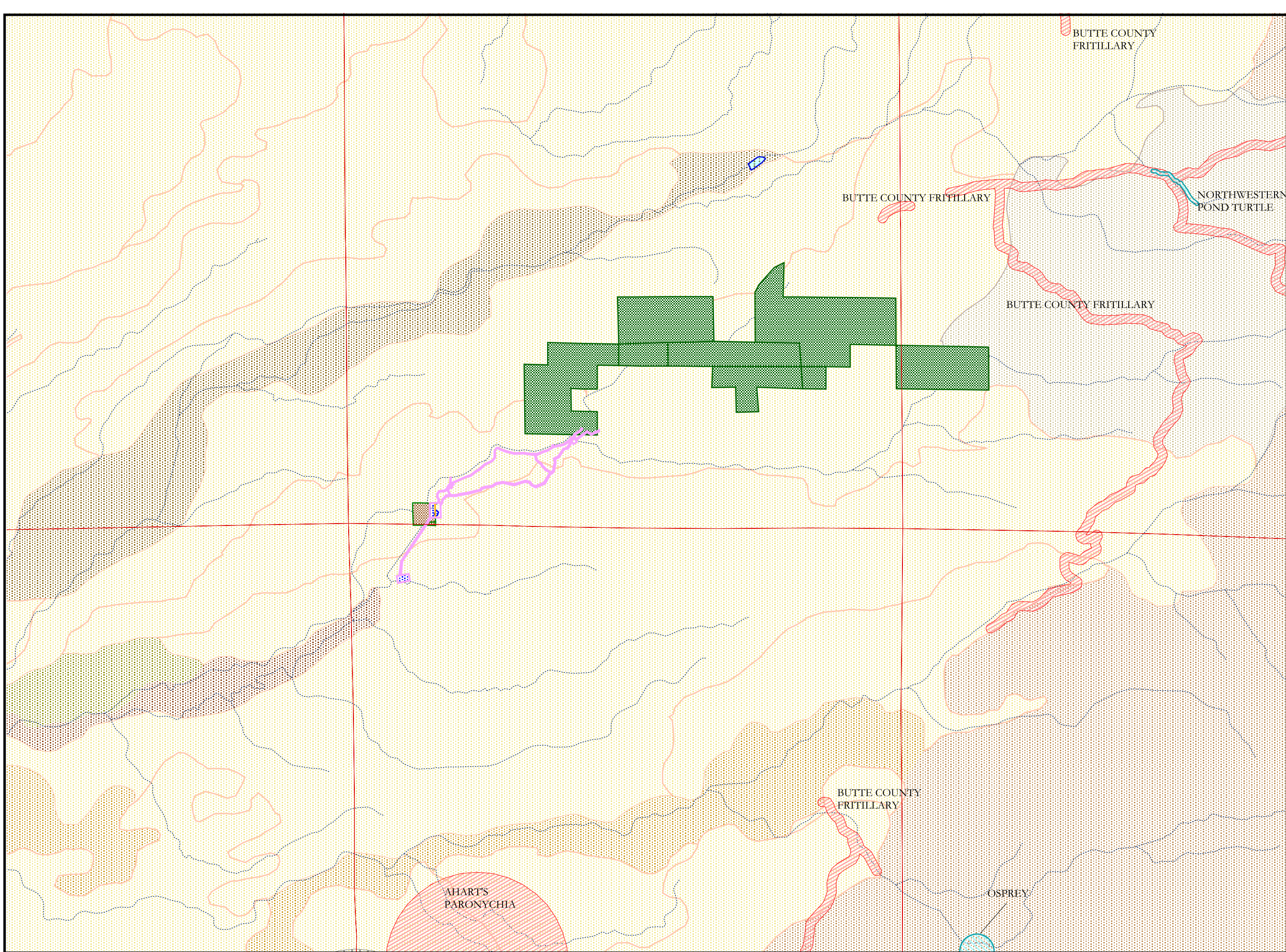
**Hydroinvestiture EIR**

**Figure 4.5 - 8**

**Species Occurrences**

**Shasta Regional Bundle**

**Aspen**  
Environmental Group



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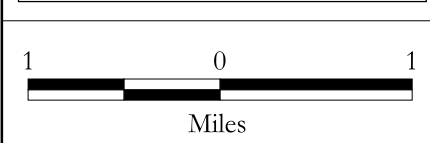
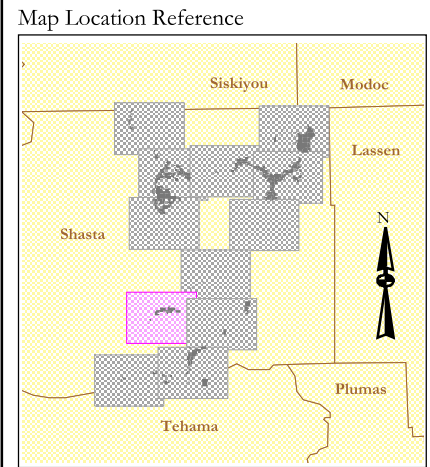
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**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

**Habitat Type**

- Blue Oak Woodland
- Blue Oak-Foothill Pine
- Cropland
- Ponderosa Pine
- Sierran Mixed Conifer
- Valley-Foothill Riparian
- Wet Meadow



**Hydroinvestiture EIR**

**Figure 4.5 - 9**

**Species Occurrences**

**Shasta Regional Bundle**

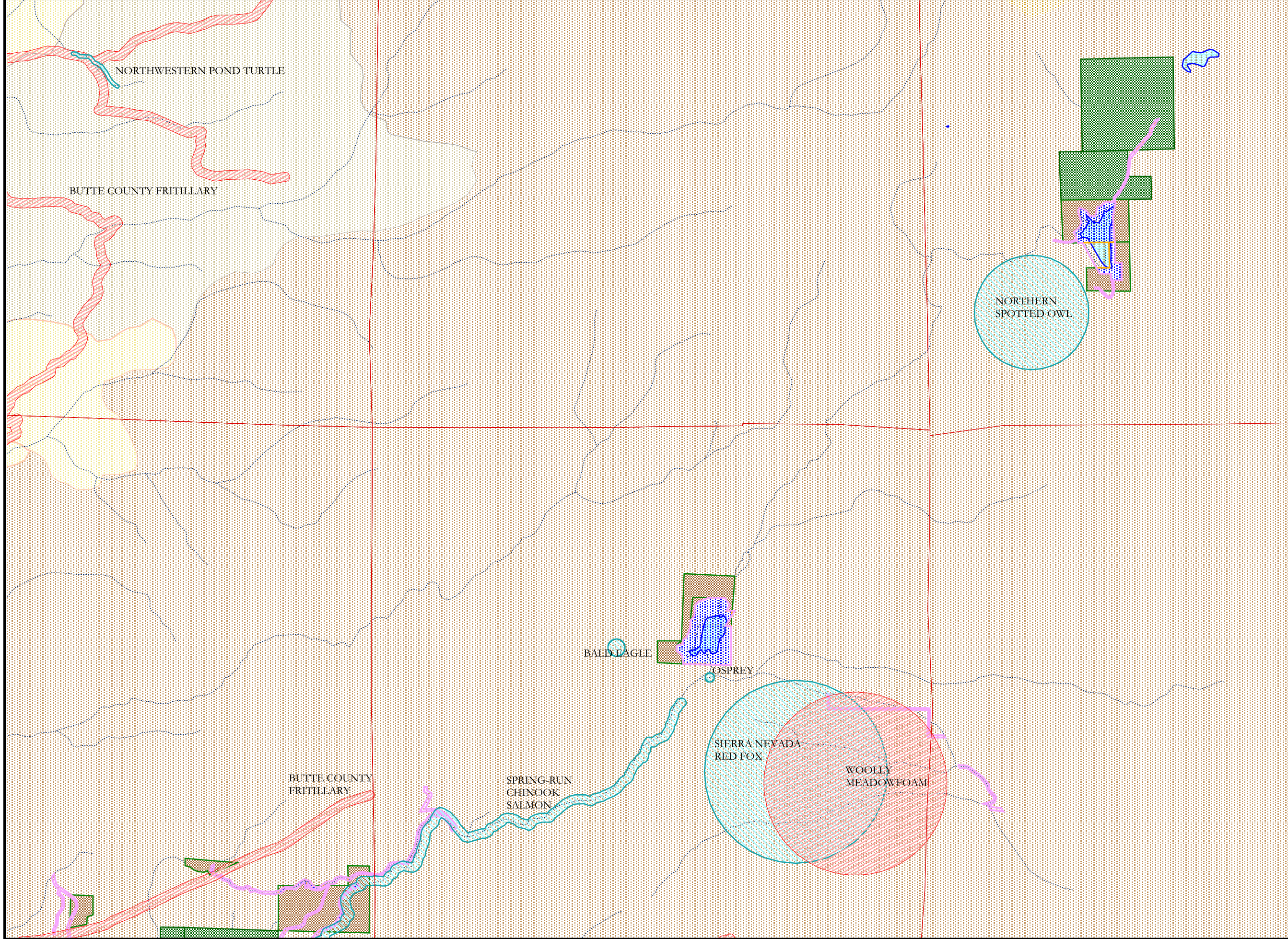
**Aspen**  
Environmental Group

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**Special-Status Species**

- Animal (teal hatched box)
- Plant (red hatched box)
- Habitat (gray grid box)
- FERC License Area (pink line)
- Water (blue dotted box)
- Land (yellow dotted box)
- Watershed Lands (green hatched box)
- Contiguous Land (brown hatched box)
- Associated Land (green hatched box)
- Lake / Reservoir (light blue box)
- County Boundary (dashed line)
- Township and Range Lines (red line)

**Habitat Type**

- Blue Oak-Foothill Pine (orange dotted box)
- Ponderosa Pine (gray dotted box)
- Red Fir (yellow dotted box)
- Sierran Mixed Conifer (brown dotted box)

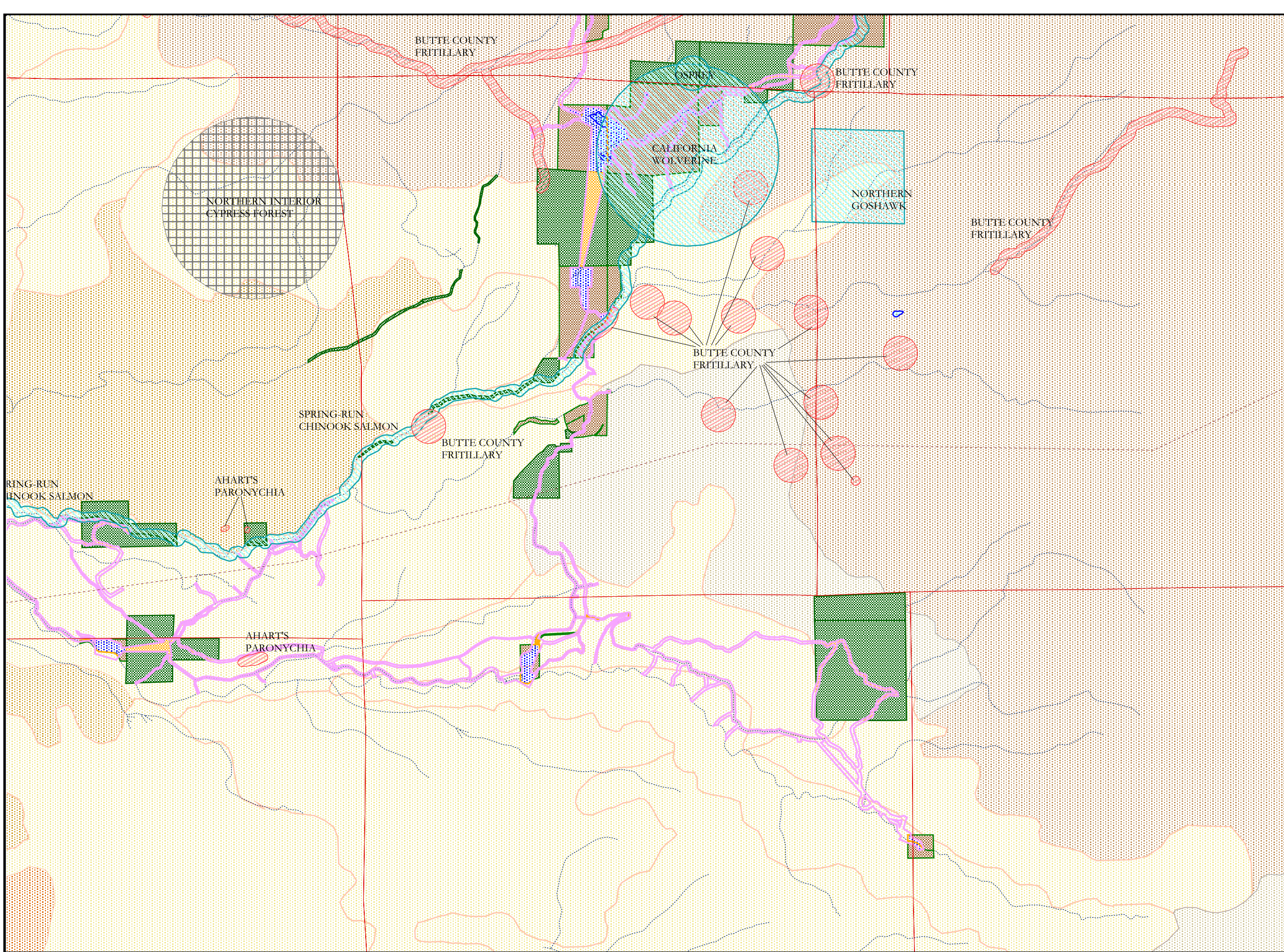
**Map Location Reference**

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Miles

**Hydrodivestiture EIR**

**Figure 4.5 - 10**  
**Species Occurrences**  
**Shasta Regional Bundle**  
**Aspen**  
Environmental Group





DISCLAIMER

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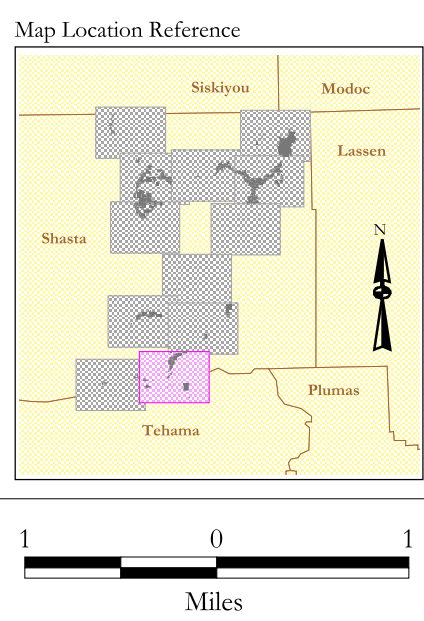
Source: Pacific Gas and Electric Company GIS Data Files; FERC Boundary, Hydrology, Parcels; California Department of Fish and Game GIS Data Files; CNDDB Special-Status Species, Gap Vegetation (WHRI), Lakes, August 2000; and EIP Associates GIS Program August 2000. GIS Data Projection: UTM Zone 10, NAD 83, Units Meters.

**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

**Habitat Type**

- Blue Oak Woodland
- Blue Oak-Foothill Pine
- Mixed Chaparral
- Ponderosa Pine
- Sierran Mixed Conifer



**Hydroinvestiture EIR**

**Figure 4.5 - 11**

**Species Occurrences**

**Shasta Regional Bundle**

**Aspen**

Environmental Group


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Special-Status Species


 Animal


 Plant


 Habitat


 FERC License Area


 Water


 Land


 Watershed Lands

 Contiguous Land


 Associated Land


 Lake / Reservoir


 County Boundary


 Township and Range Lines


Habitat Type


 Annual Grassland

 Blue Oak Woodland

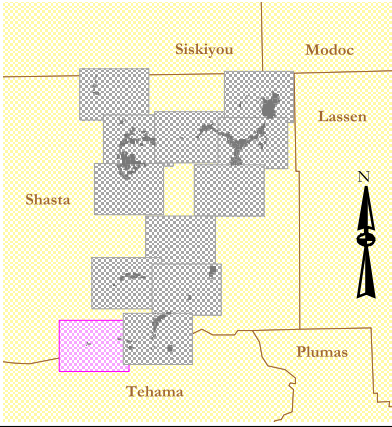
 Blue Oak-Foothill Pine

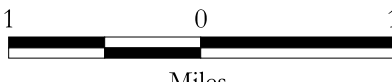
 Cropland

 Mixed Chaparral

 Valley-Foothill Riparian

Map Location Reference





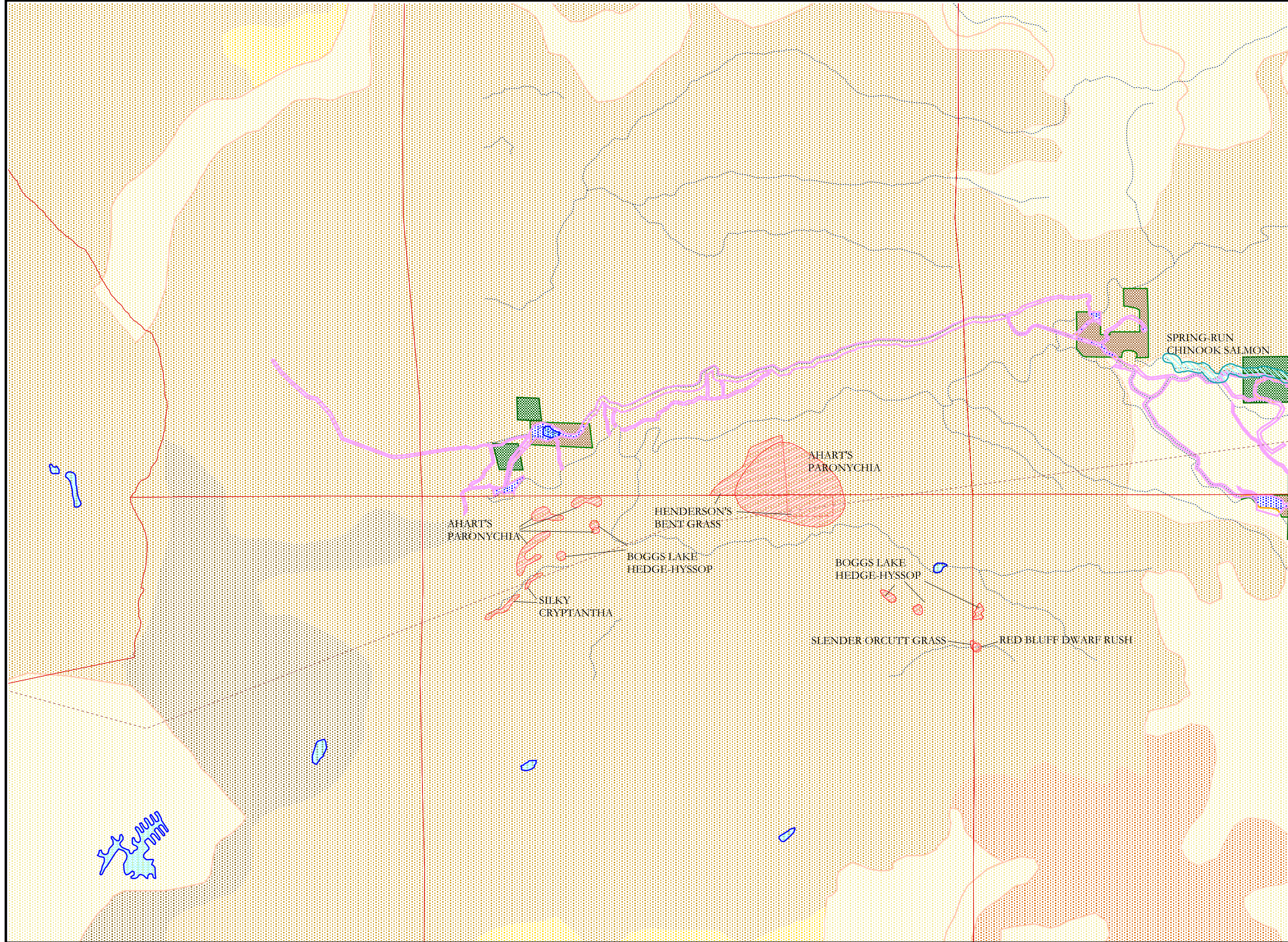
Hydroinvestiture EIR

Figure 4.5 - 12

Species Occurrences

Shasta Regional Bundle

Aspen Environmental Group





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Source: Pacific Gas and Electric Company GIS Data Files: FERC Boundary, Hydrology, Parcels; California Department of Fish and Game GIS Data Files: CNDDB Special-Status Species, Gap Vegetation (WHR1), Lakes, August 2000; and EIP Associates GIS Program August 2000. GIS Data Projection: UTM Zone 10, NAD 83, Units Meters.

Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

Habitat Type

Cropland

Douglas-Fir

Eastside Pine

Freshwater Emergent Wetland

Jeffrey Pine

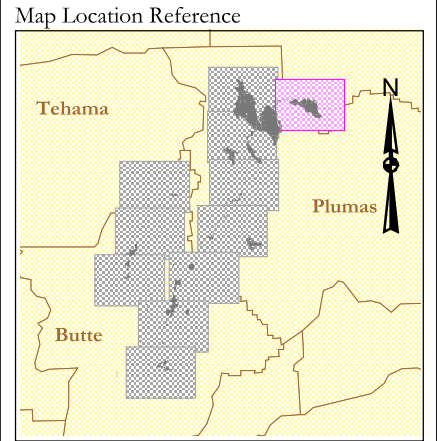
Montane Chaparral

Montane Riparian

Sierran Mixed Conifer

Urban

White Fir



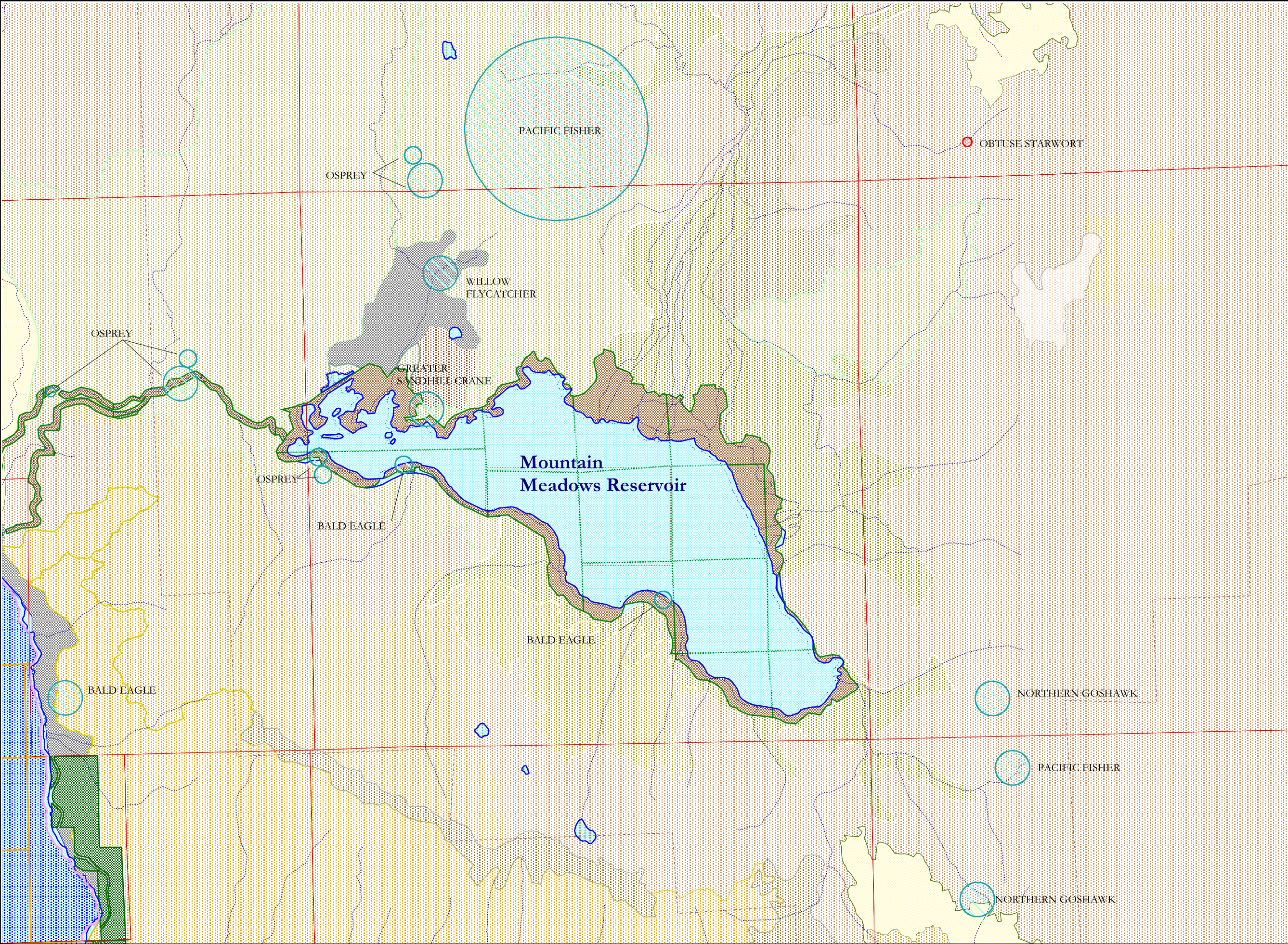
Hydrodivestiture EIR

Figure 4.5 - 13

Species Occurrences

DeSabra Regional Bundle

Aspen  
Environmental Group



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Source: Pacific Gas and Electric Company GIS Data Files: FERC Boundary, Hydrology, Parcels, California Department of Fish and Game GIS Data Files: CNDDB Special-Status Species, Gap Vegetation (WHRI), Lakes, August 2000; and EIP Associates GIS Program August 2000. GIS Data Projection: UTM Zone 10, NAD 83, Units Meters.

Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

Habitat Type

Eastside Pine

Jeffrey Pine

Montane Chaparral

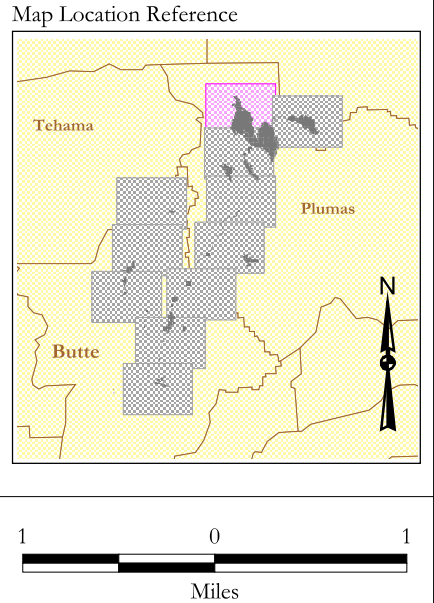
Montane Riparian

Red Fir

Sierran Mixed Conifer

Urban

White Fir



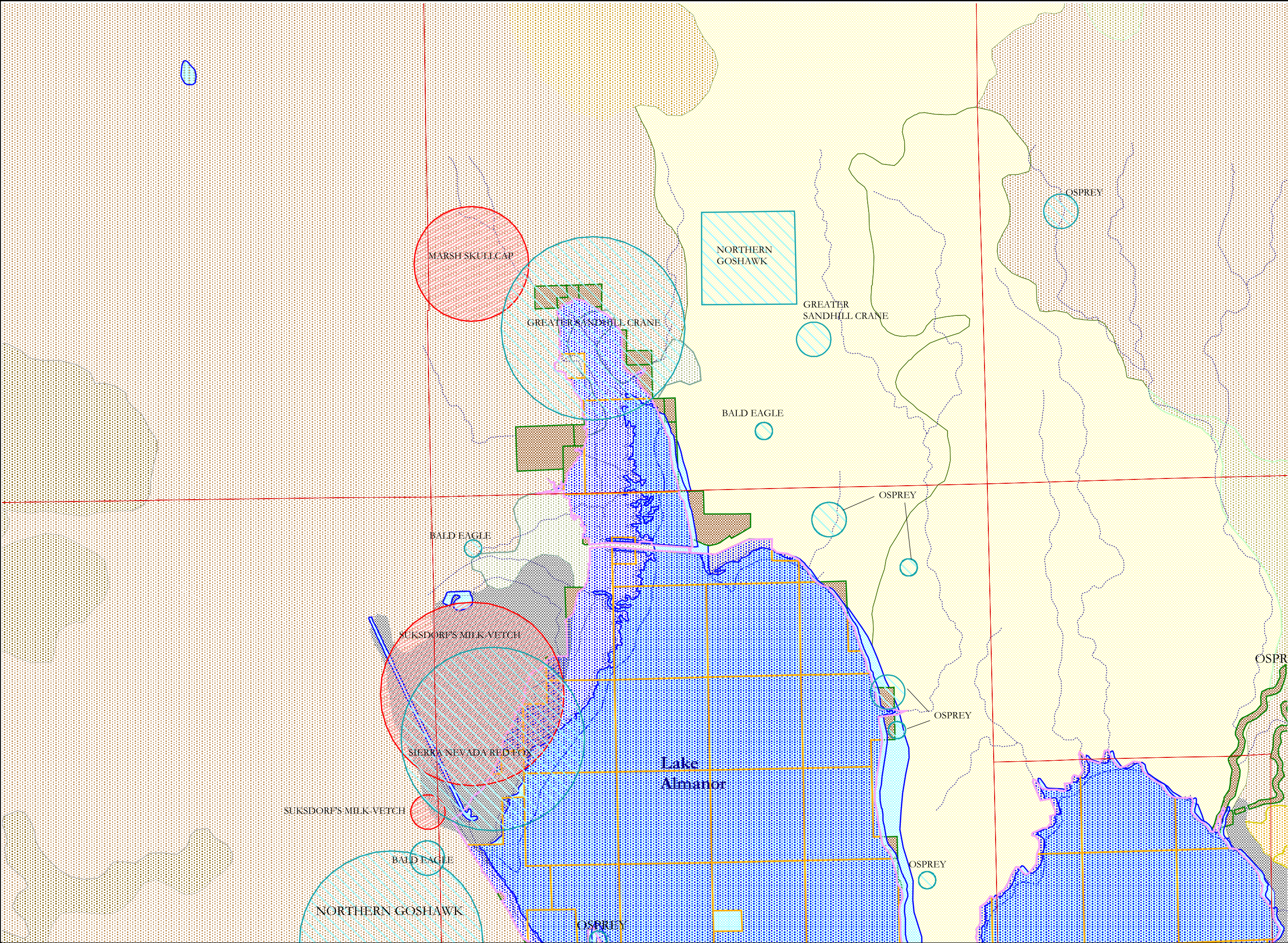
Hydroinvestiture EIR

Figure 4.5-14

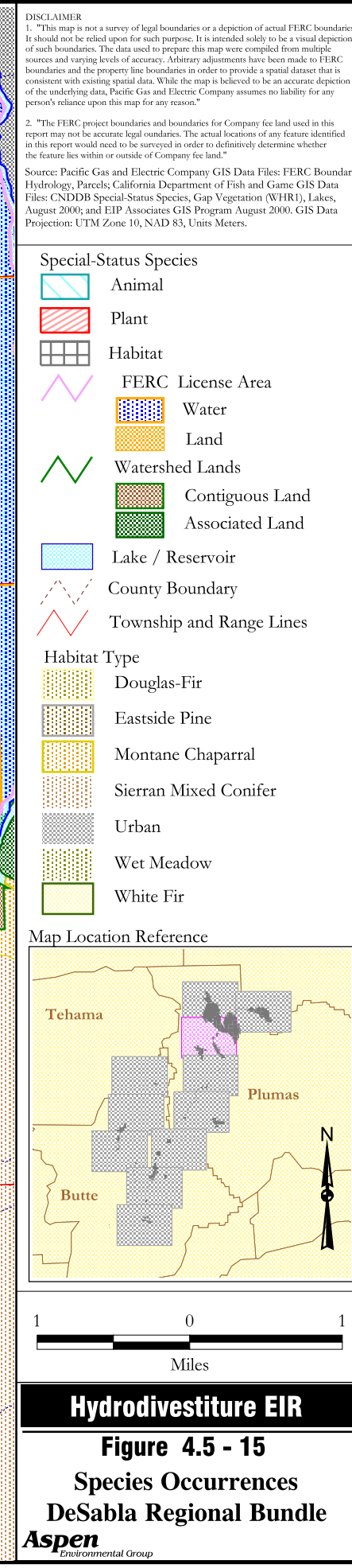
Species Occurrences

DeSabra Regional Bundle

Aspen  
Environmental Group












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Special-Status Species


 Animal


 Plant


 Habitat


 FERC License Area


 Water


 Land


 Watershed Lands

 Contiguous Land


 Associated Land


 Lake / Reservoir


 County Boundary


 Township and Range Lines


Habitat Type


 Douglas-Fir


 Eastside Pine


 Mixed Chaparral


 Montane Hardwood

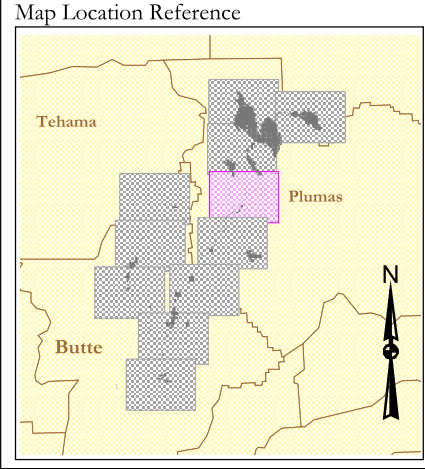
 Ponderosa Pine

 Red Fir

 Sierran Mixed Conifer

 Wet Meadow

 White Fir



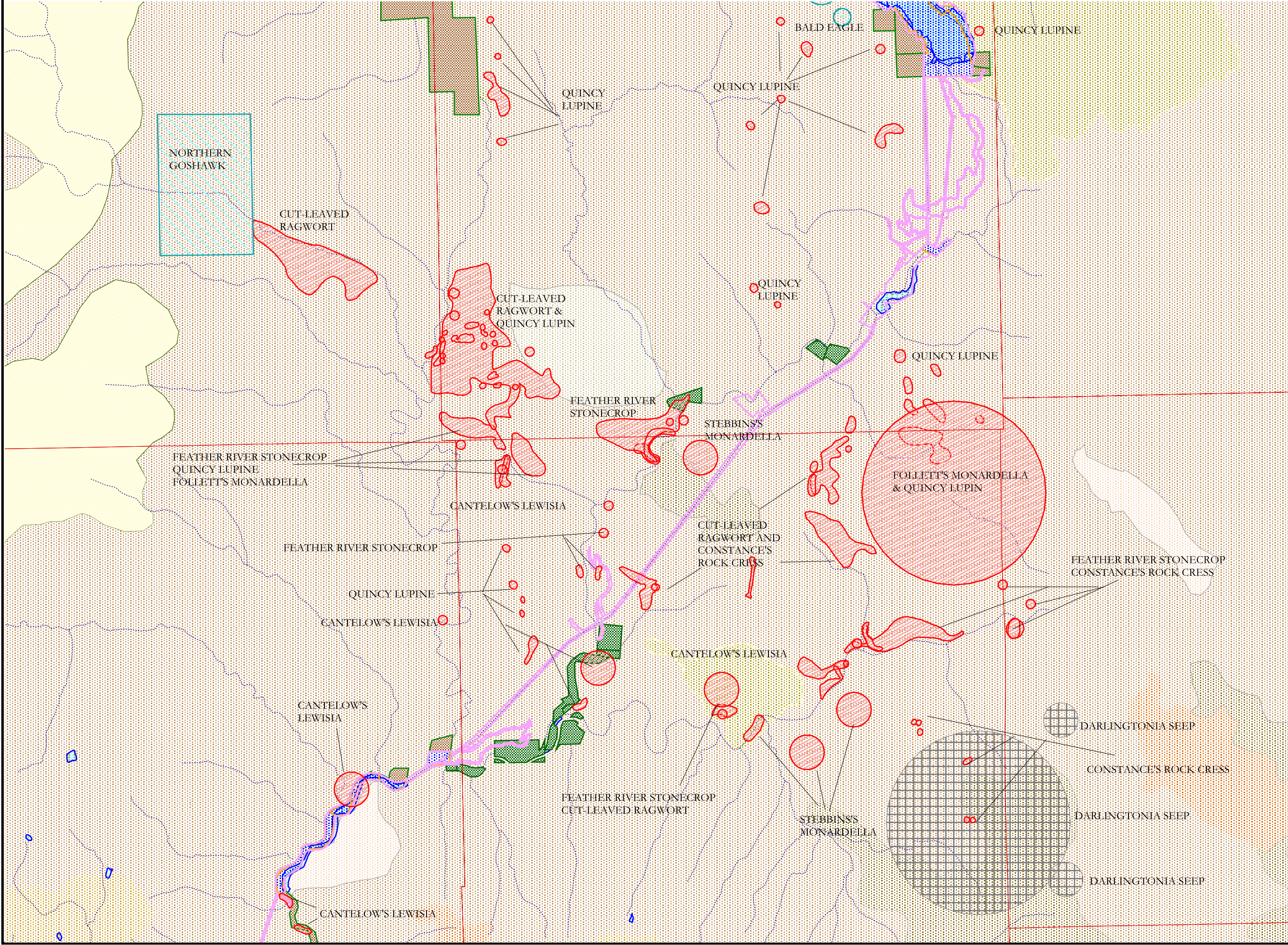
**Hydroinvestiture EIR**

**Figure 4.5 - 16**

**Species Occurrences**

**DeSabra Regional Bundle**

**Aspen**  
Environmental Group



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Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

Habitat Type

Eastside Pine

Mixed Chaparral

Montane Chaparral

Montane Hardwood

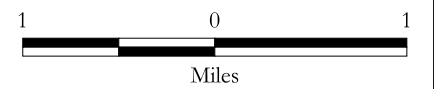
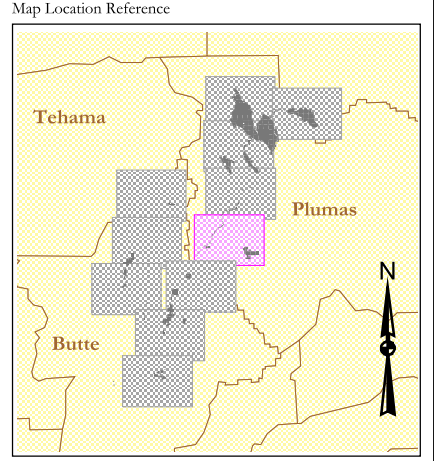
Montane Riparian

Ponderosa Pine

Red Fir

Sierran Mixed Conifer

White Fir



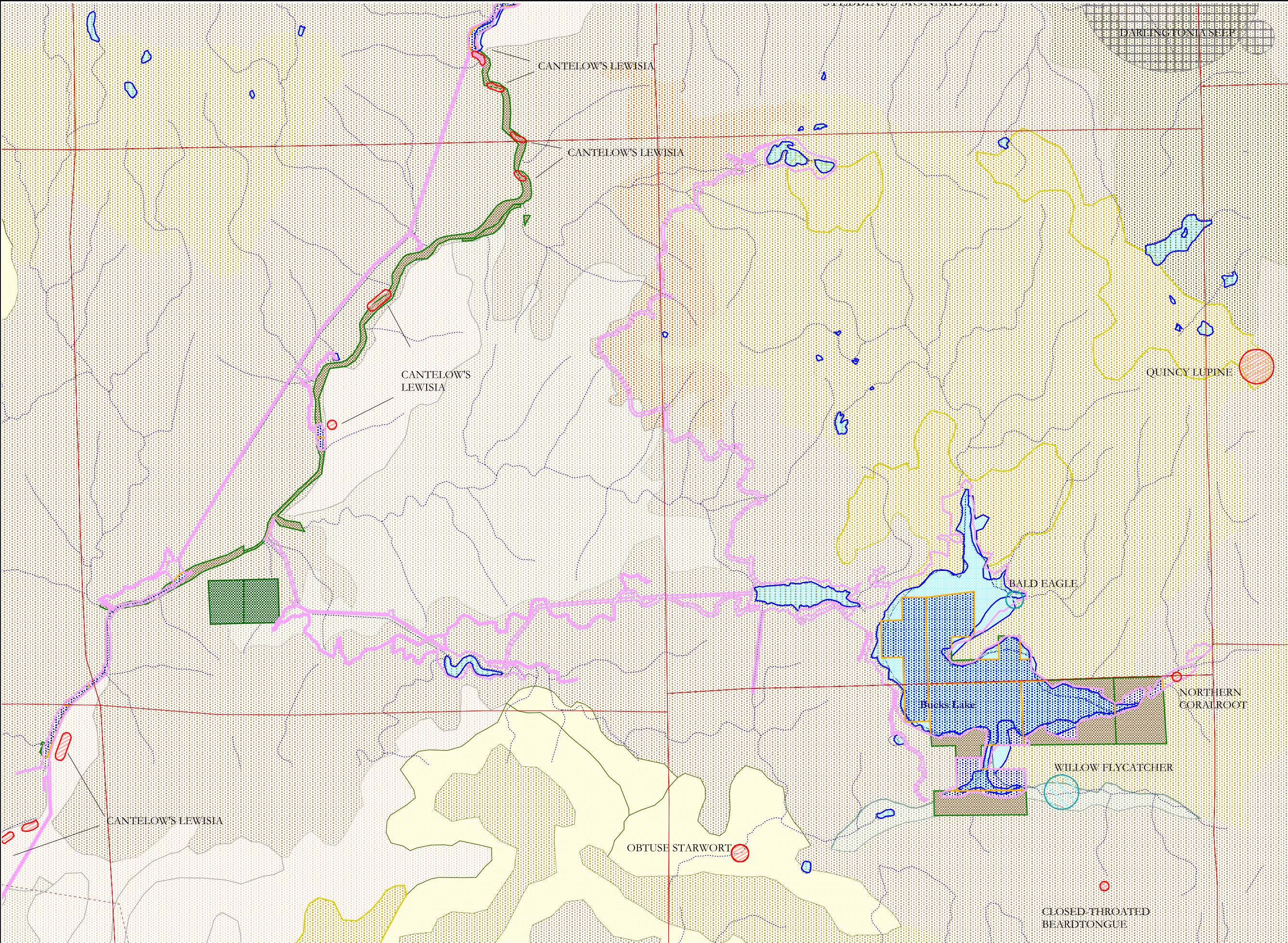
Hydrodivestiture EIR

Figure 4.5 - 17

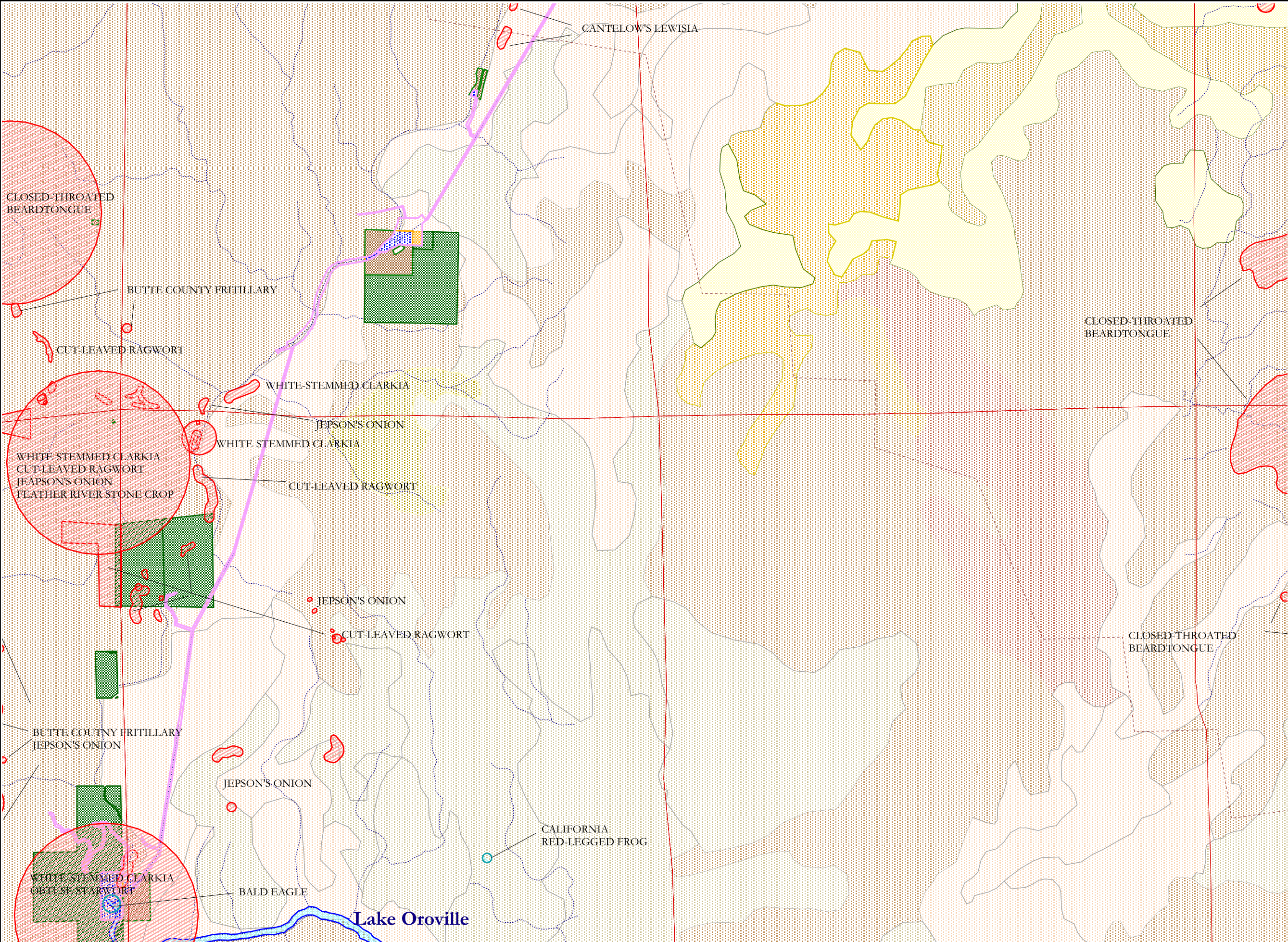
Species Occurrences

DeSabra Regional Bundle

Aspen Environmental Group







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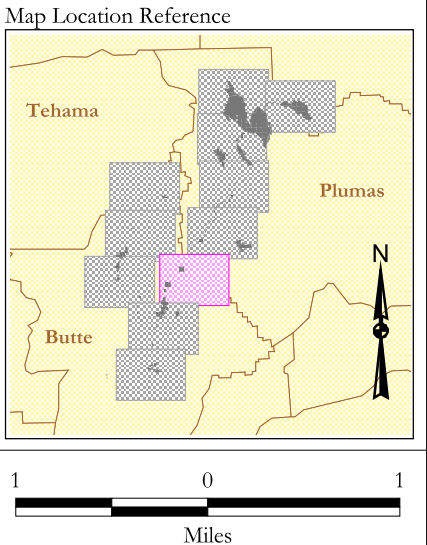
Source: Pacific Gas and Electric Company GIS Data Files: FERC Boundary, Hydrology, Parcels; California Department of Fish and Game GIS Data Files: CNDDB Special-Status Species, Gap Vegetation (WHR1), Lakes, August 2000; and EIP Associates GIS Program August 2000. GIS Data Projection: UTM Zone 10, NAD 83, Units Meters.

**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

**Habitat Types**

- Douglas-Fir
- Montane Chaparral
- Montane Hardwood
- Orchard and Vineyard
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer
- White Fir



**Hydroinvestiture EIR**

**Figure 4.5 - 18**

**Species Occurrences**

**DeSabra Regional Bundle**

**Aspen**  
Environmental Group



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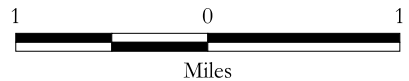
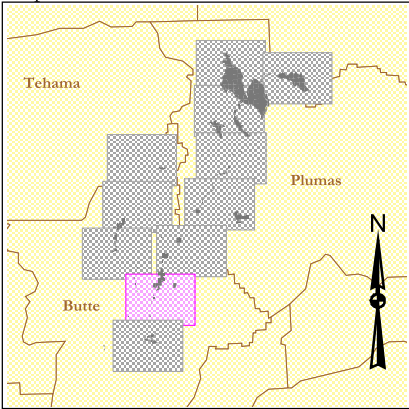
Special-Status Species

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

Habitat Type

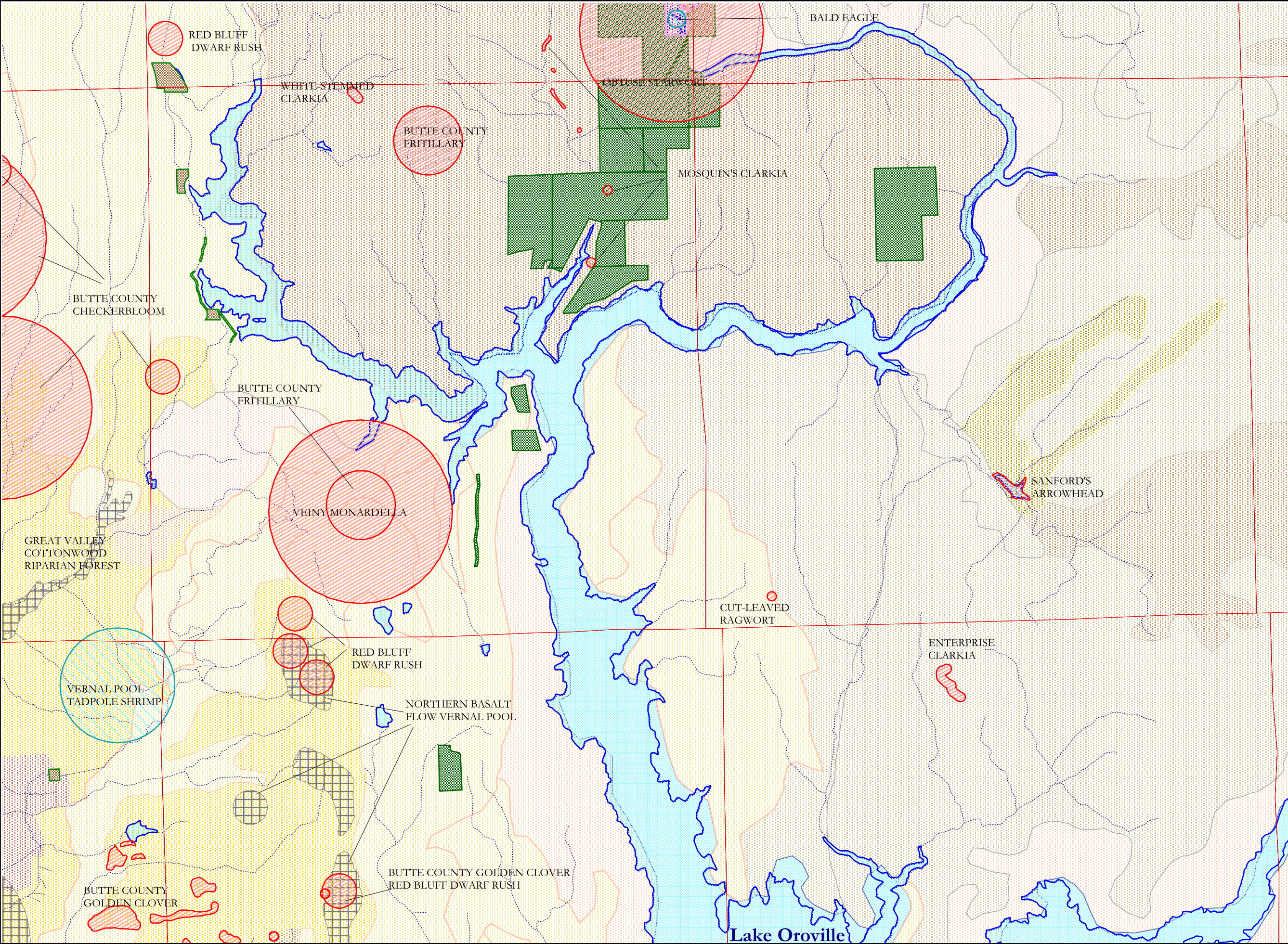
- Annual Grassland
- Barren
- Blue Oak Woodland
- Blue Oak-Foothill Pine
- Douglas-Fir
- Montane Hardwood
- Orchard and Vineyard
- Ponderosa Pine
- Sierran Mixed Conifer
- Valley-Foothill Riparian

Map Location Reference



Hydroinvestiture EIR

**Figure 4.5 - 19**  
**Species Occurrences**  
**DeSabra Regional Bundle**  
**Aspen**  
Environmental Group





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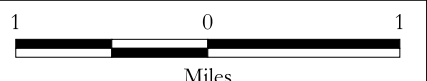
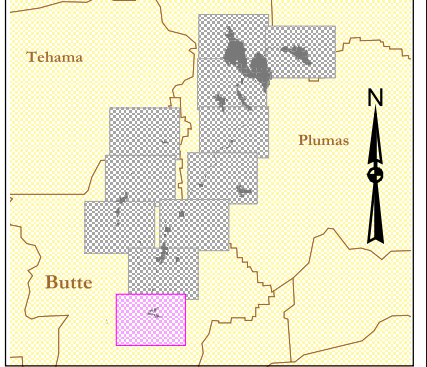
Special-Status Species

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

Habitat Type

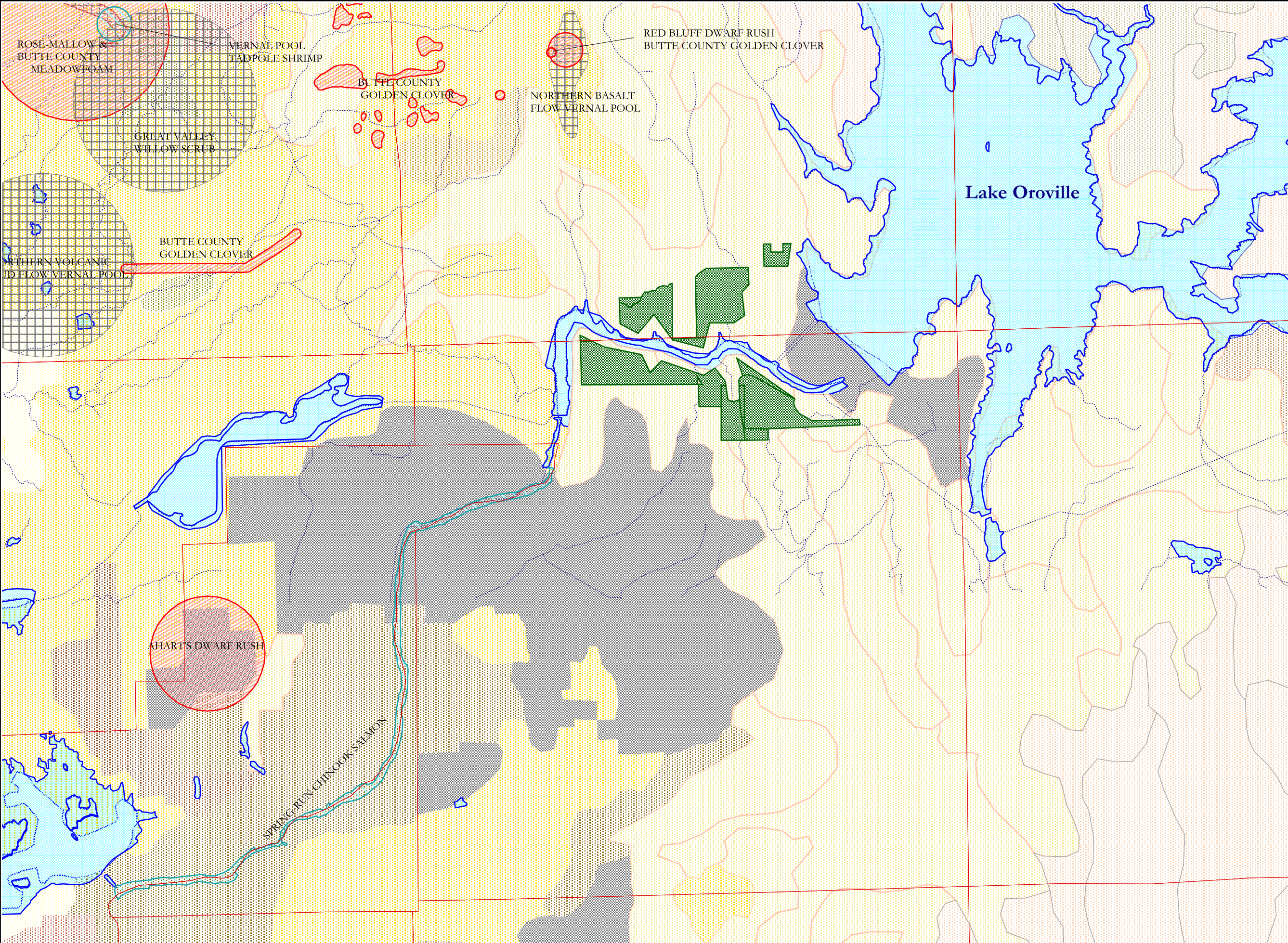
- Annual Grassland
- Blue Oak Woodland
- Blue Oak-Foothill Pine
- Cropland
- Freshwater Emergent Wetland
- Irrigated Row and Field Crops
- Montane Hardwood
- Orchard and Vineyard
- Ponderosa Pine
- Sierran Mixed Conifer
- Urban
- Valley-Foothill Riparian

Map Location Reference

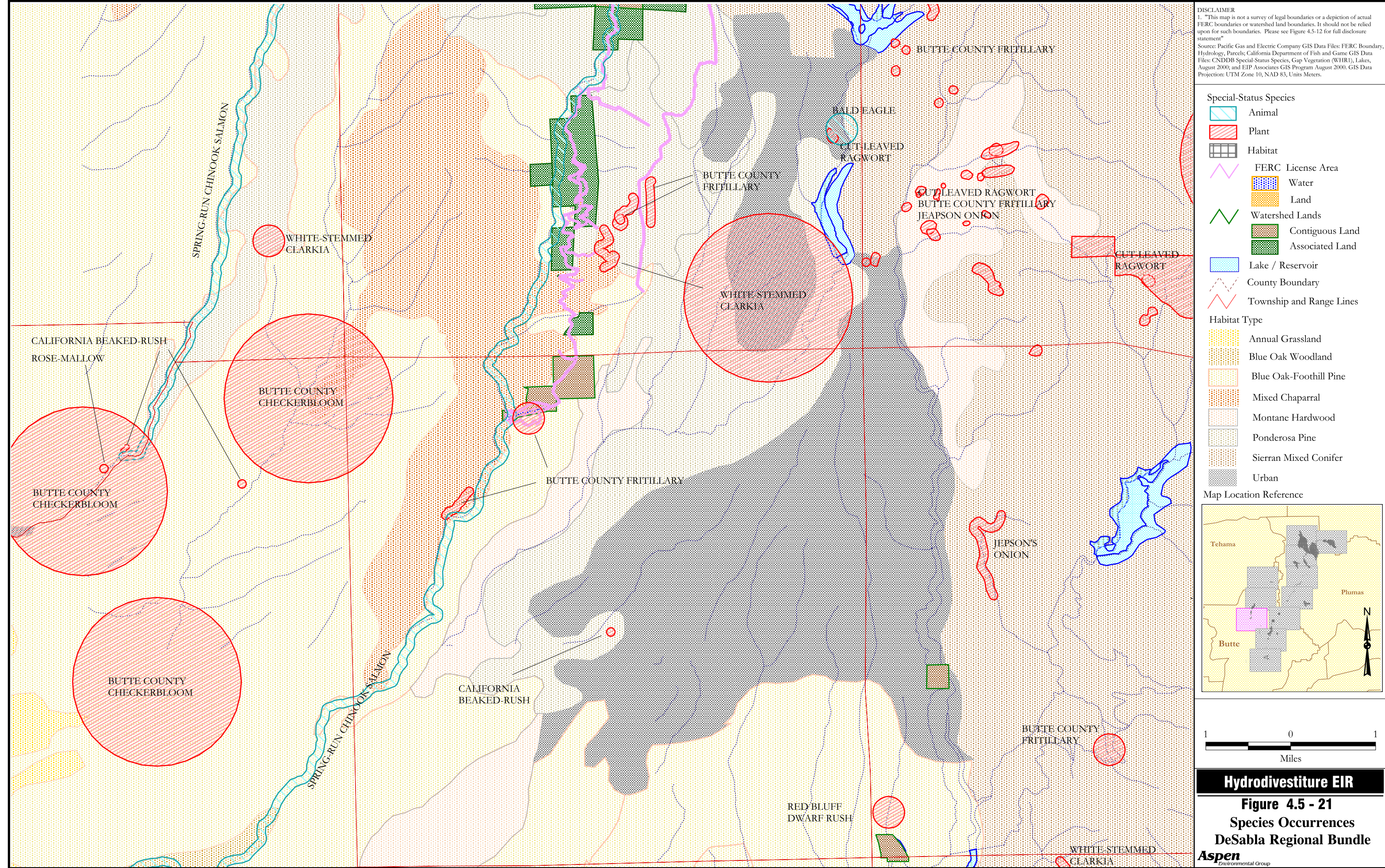


Hydroinvestiture EIR

Figure 4.5 - 20  
Species Occurrences  
DeSabra Regional Bundle







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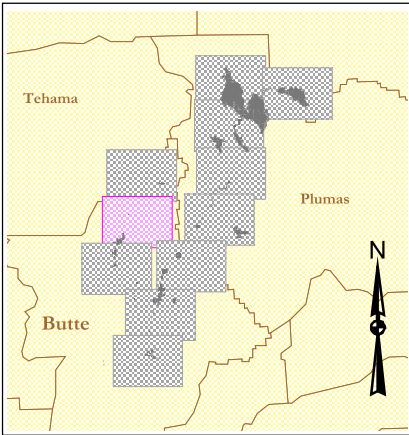
Special-Status Species

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

Habitat Types

- Blue Oak-Foothill Pine
- Lodgepole Pine
- Low Sage
- Mixed Chaparral
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer
- Urban
- White Fir

Map Location Reference



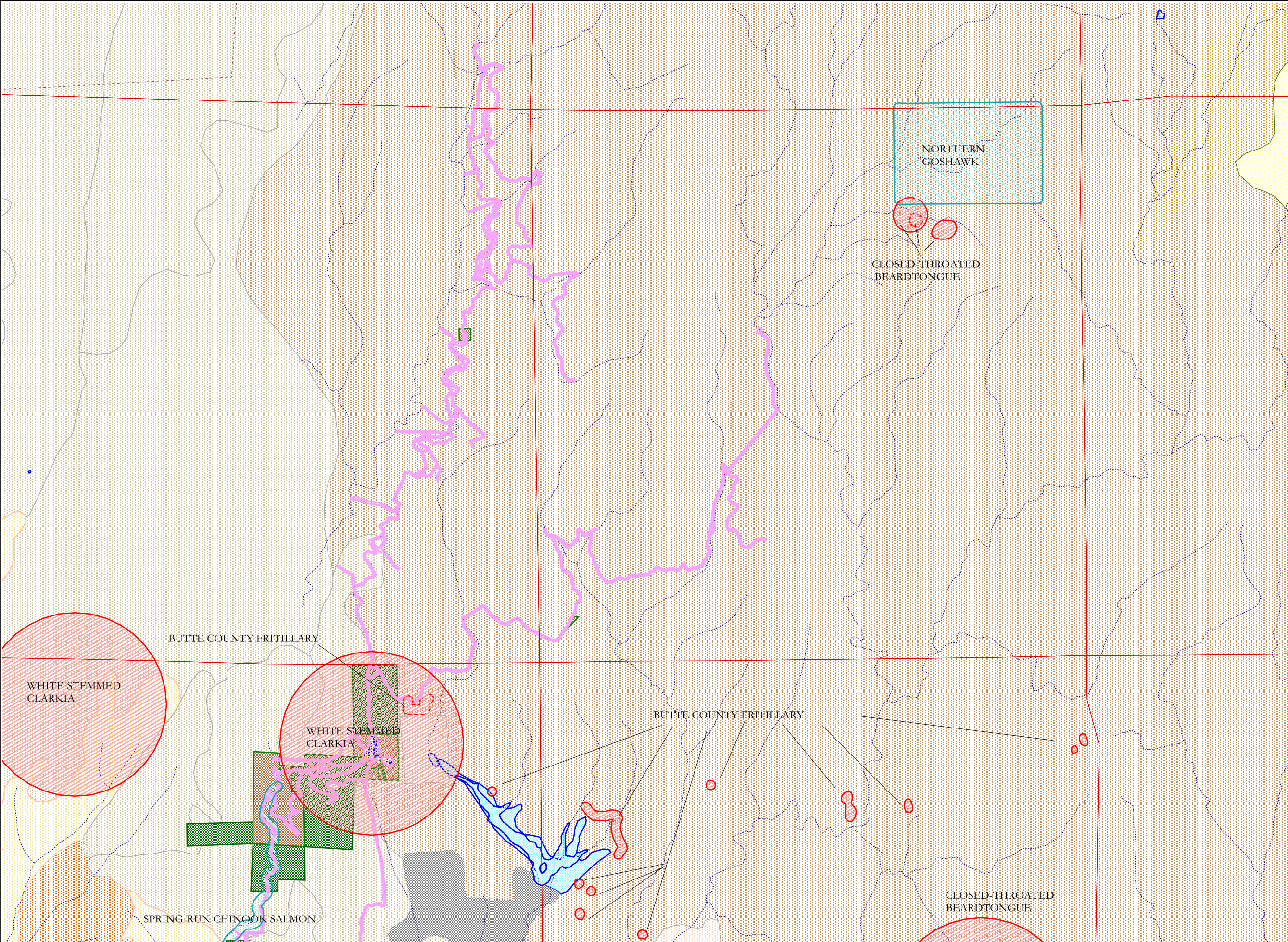
**Hydroinvestiture EIR**

**Figure 4.5 - 22**

**Species Occurrences**

**DeSabra Regional Bundle**

**Aspen**  
Environmental Group





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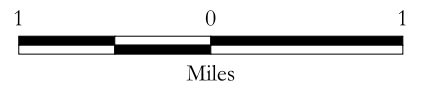
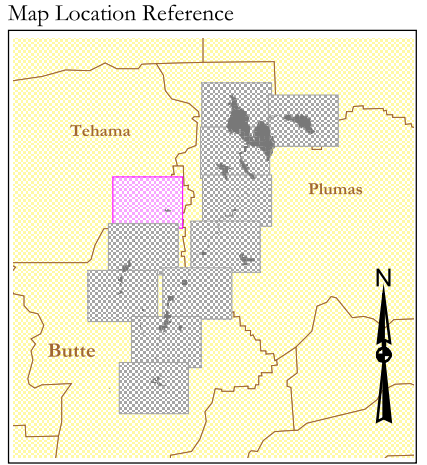
Source: Pacific Gas and Electric Company GIS Data Files: FERC Boundary, Hydrology, Parcels; California Department of Fish and Game GIS Data Files: CNDDDB Special-Status Species, Gap Vegetation (WHR1), Lakes, August 2000; and EIP Associates GIS Program August 2000. GIS Data Projection: UTM Zone 10, NAD 83, Units Meters.

Special-Status Species

Animal

Plant

Habitat Type



Hydroinvestiture EIR

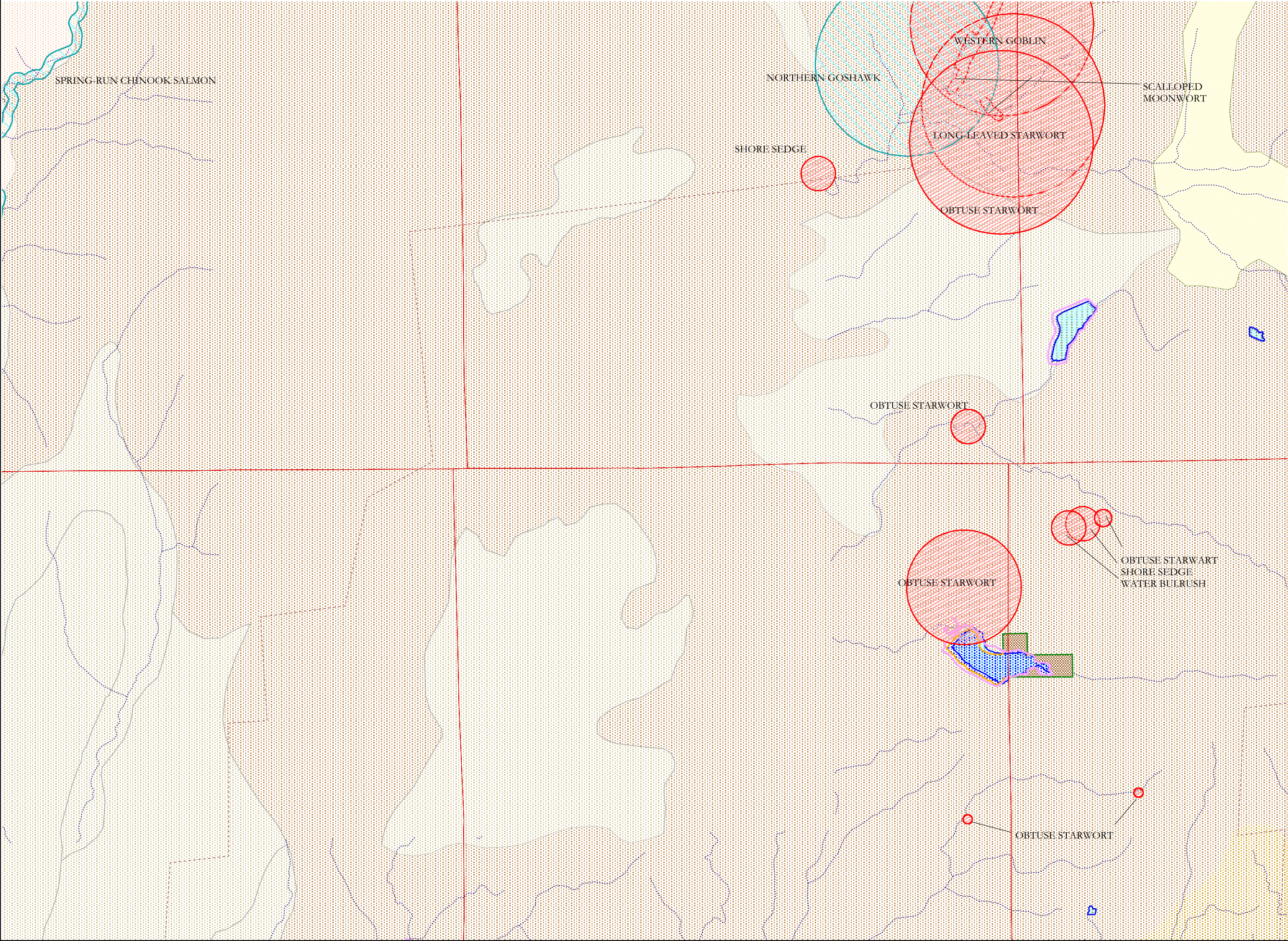
Figure 4.5 - 23

Species Occurrences

DeSabra Regional Bundle

Aspen

Environmental Group



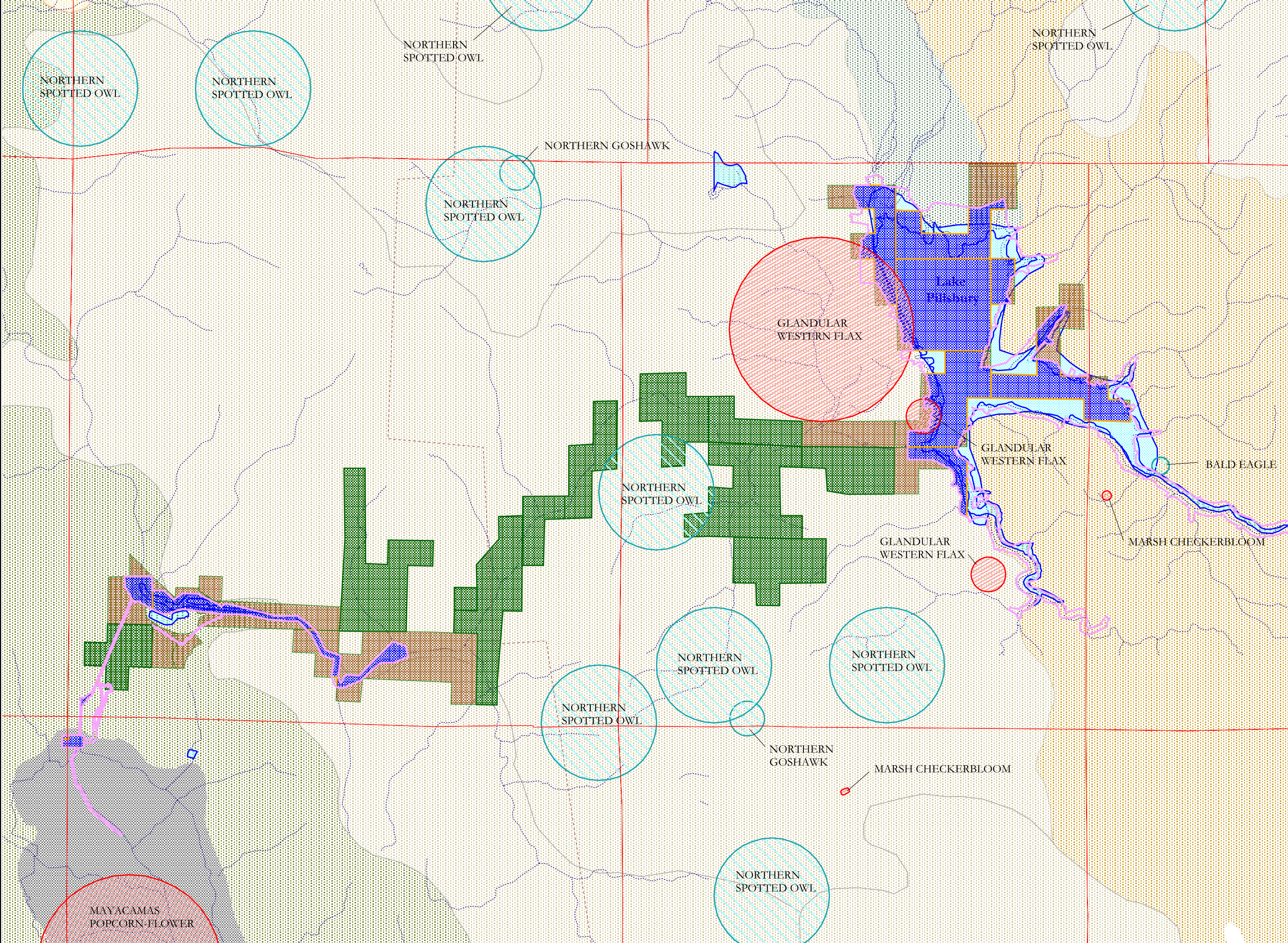


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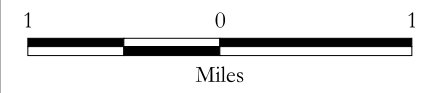
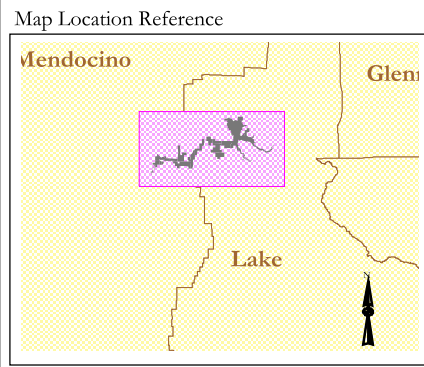
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- Special-Status Species**
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines

- Habitat Type**
- Blue Oak Woodland
  - Blue Oak-Foothill Pine
  - Dryland Grain Crops
  - Montane Hardwood-Conifer
  - Ponderosa Pine
  - Urban
  - Valley Oak Woodland



**Hydroinvestiture EIR**

**Figure 4.5 - 24**  
**Species Occurrences**  
**Drum Regional Bundle**  
**(Potter Valley)**

DISCLAIMER

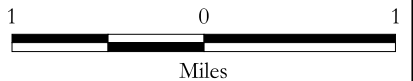
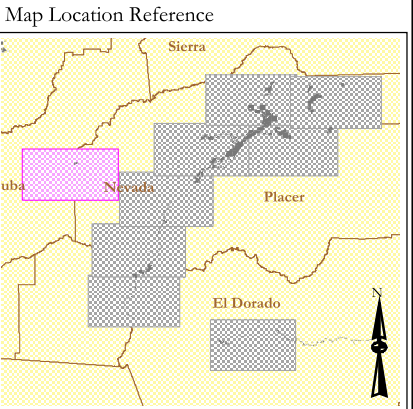
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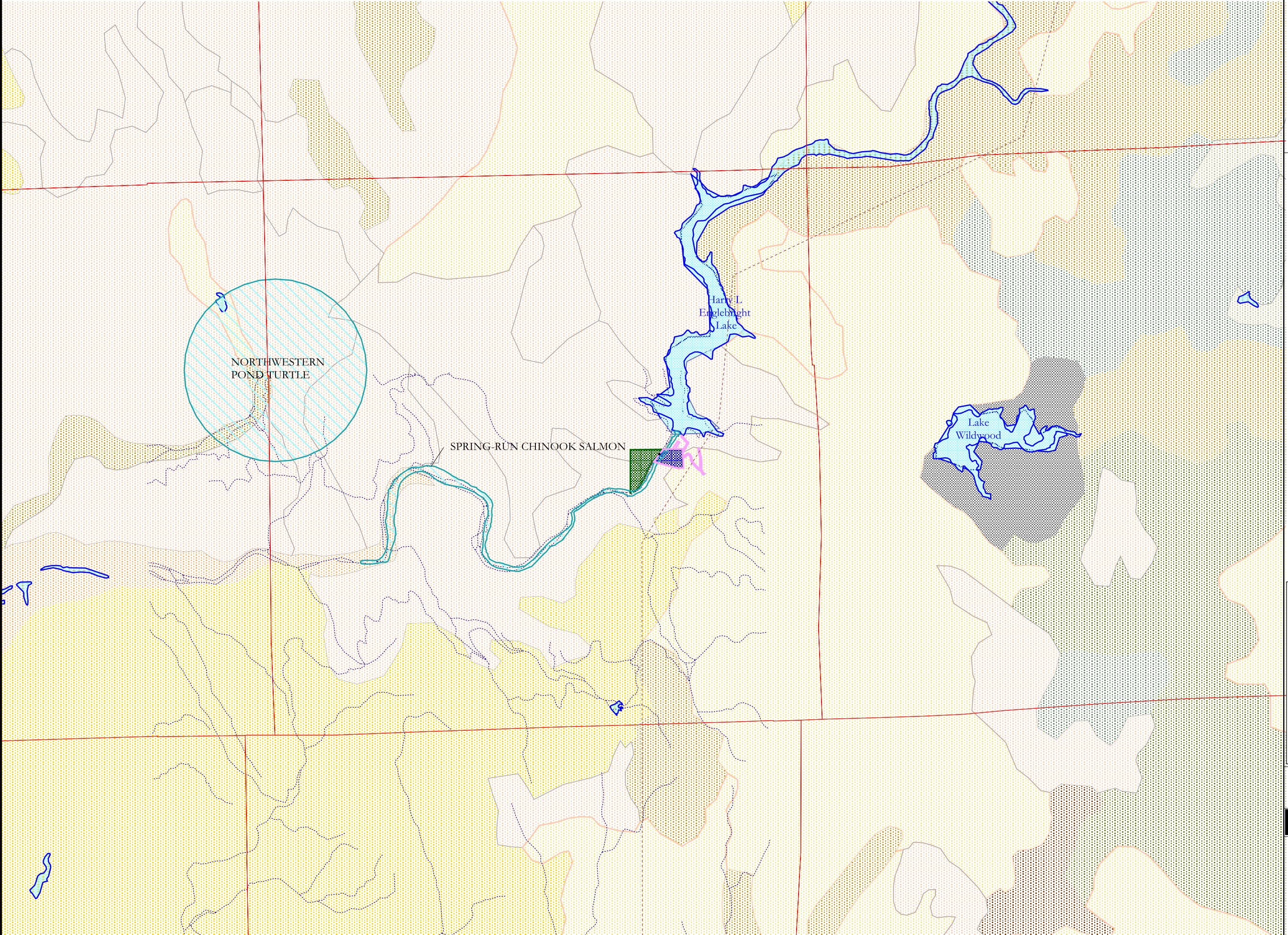
- Special-Status Species
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines

- Habitat Type
- Annual Grassland
  - Blue Oak Woodland
  - Blue Oak-Foothill Pine
  - Montane Hardwood



Hydrodivestiture EIR

Figure 4.5 - 25  
Species Occurrences  
Drum Regional Bundle  
(Spaulding)





DISCLAIMER

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Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

Habitat Type

Barren

Jeffrey Pine

Mixed Chaparral

Ponderosa Pine

Red Fir

Riverine

Sagebrush

Sierran Mixed Conifer

Subalpine Conifer

Wet Meadow

White Fir

Map Location Reference



1 0 1

Miles

Hydrodivestiture EIR

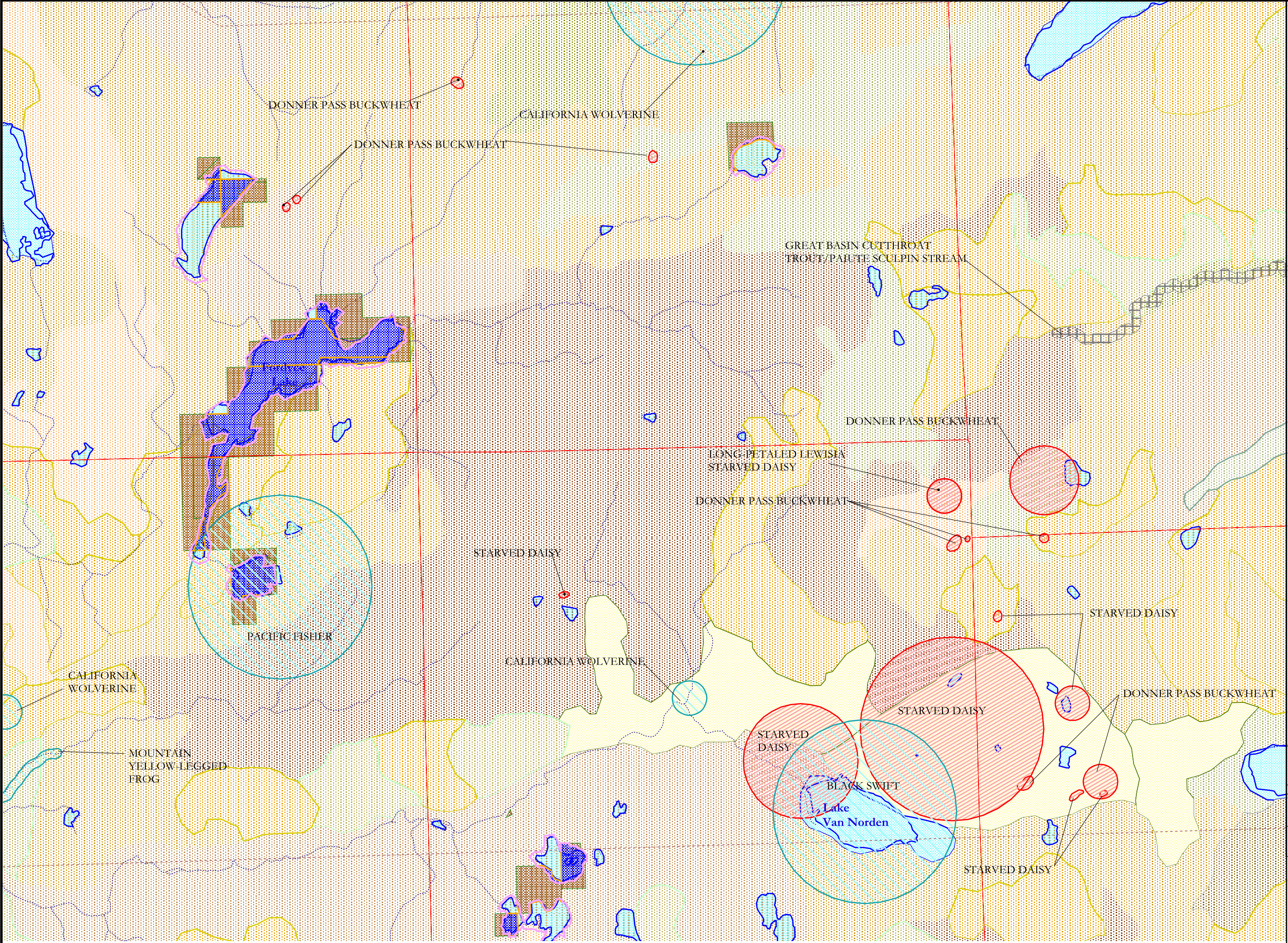
Figure 4.5 - 26

Species Occurrences

Drum Regional Bundle

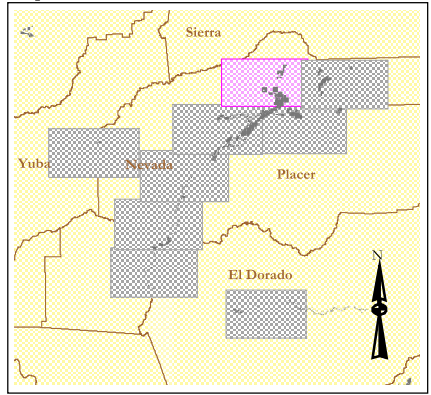
(Spaulding)

Aspen Environmental Group



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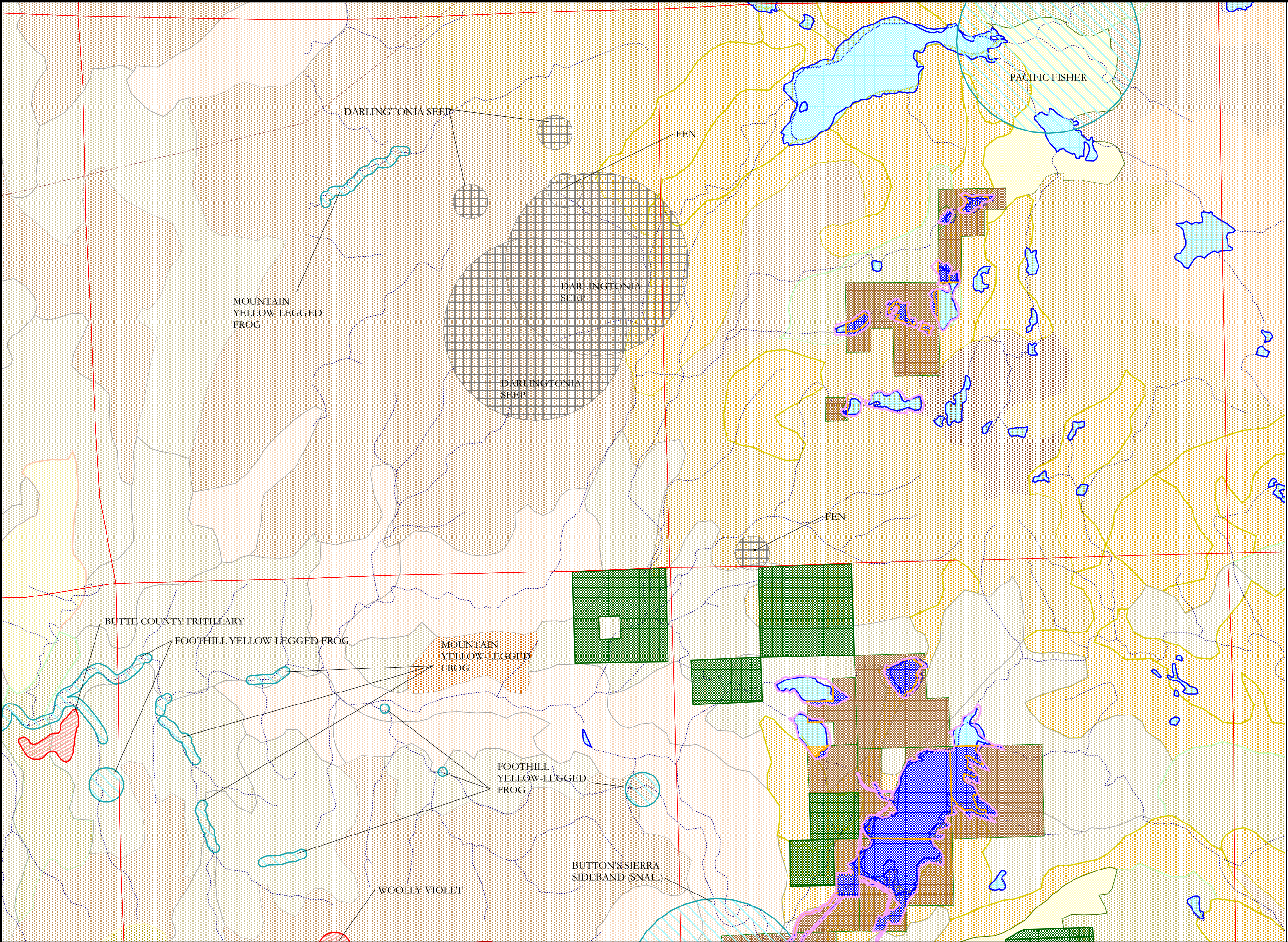
- Special-Status Species
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type
- Barren
  - Jeffrey Pine
  - Mixed Chaparral
  - Montane Chaparral
  - Ponderosa Pine
  - Red Fir
  - Riverine
  - Sagebrush
  - Sierran Mixed Conifer
  - Subalpine Conifer
  - Wet Meadow
  - White Fir
- Map Location Reference



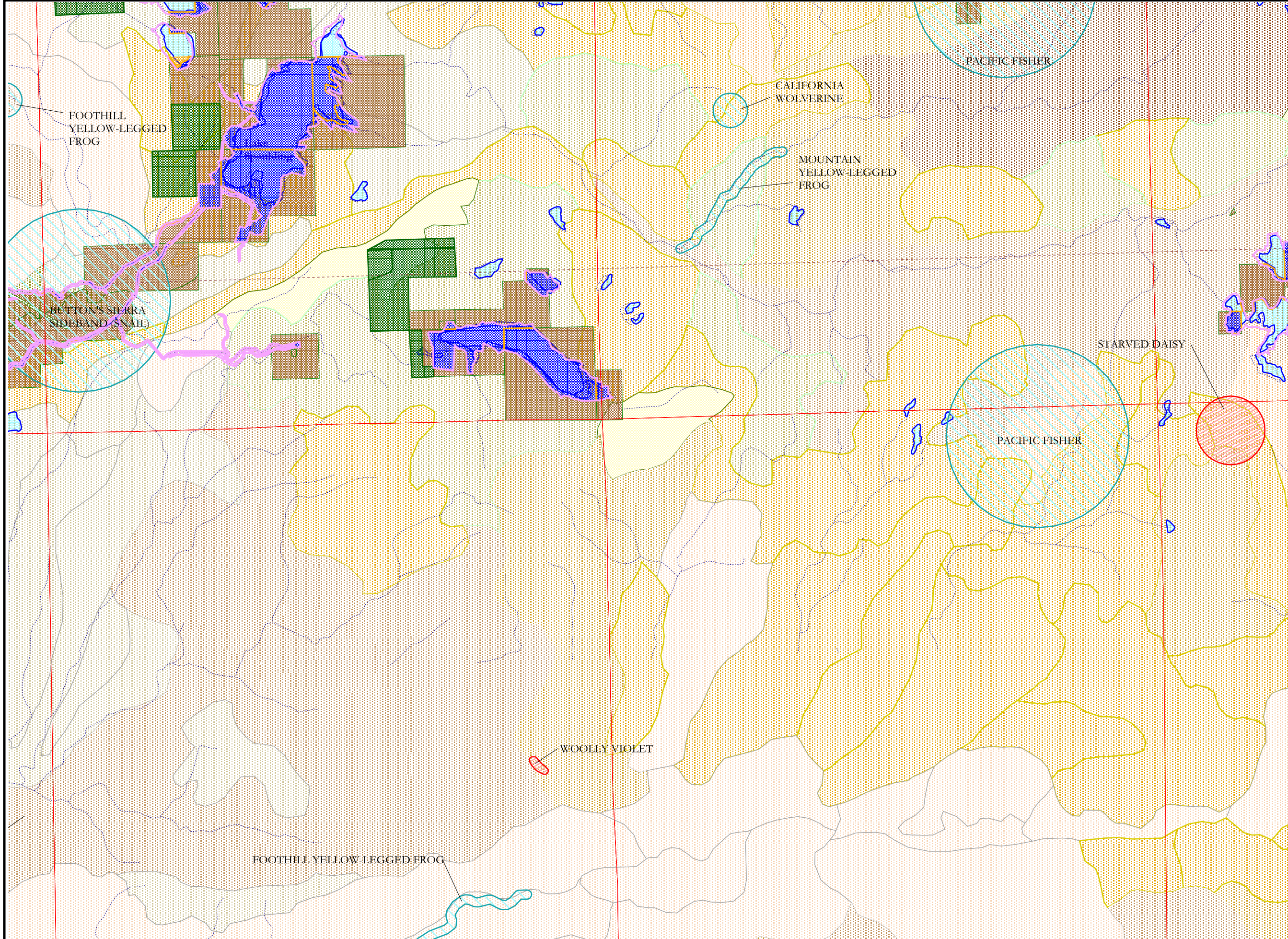
1 0 1  
Miles

Hydrodivestiture EIR

Figure 4.5 - 27  
Species Occurrences  
Drum Regional Bundle  
(Spaulding)  
Aspen Environmental Group







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**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

**Habitat Type**

- Barren
- Jeffrey Pine
- Montane Chaparral
- Montane Hardwood
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer
- Subalpine Conifer
- White Fir

**Map Location Reference**

1 0 1  
Miles

**Hydrodivestiture EIR**

**Figure 4.5 - 28**

**Species Occurrences**

**Drum Regional Bundle**

**(Spaulding)**

**Aspen**  
Environmental Group

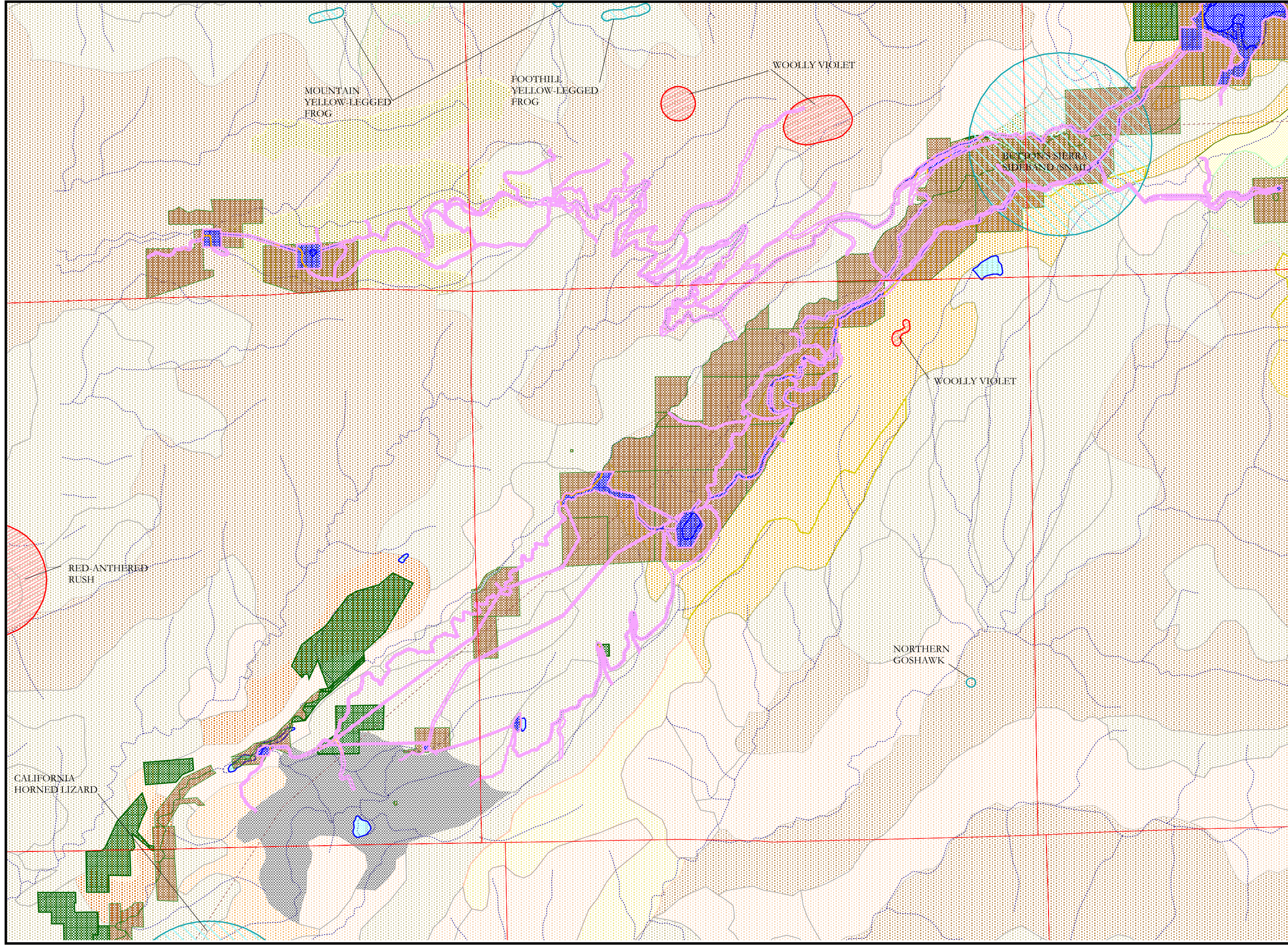
Hydrodivestiture Draft EIR

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**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

**Habitat Type**

- Blue Oak-Foothill Pine
- Douglas-Fir
- Jeffrey Pine
- Mixed Chaparral
- Montane Chaparral
- Montane Hardwood
- Ponderosa Pine
- Sierran Mixed Conifer
- Wet Meadow

**Map Location Reference**

1 0 1  
Miles

**Hydrodivestiture EIR**

**Figure 4.5 - 29**

**Species Occurrences**

**Drum Regional Bundle**

**(Spaulding)**

**Aspen**  
Environmental Group

Hydrodivestiture Draft EIR



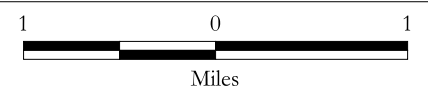
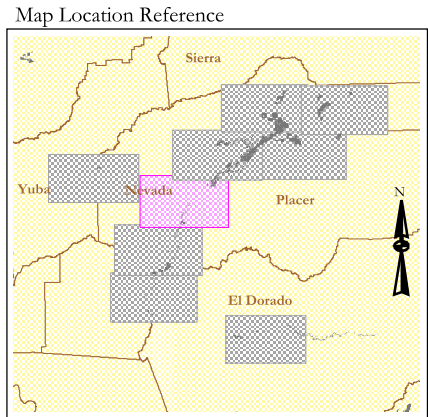
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- Special-Status Species
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type
- Barren
  - Blue Oak Woodland
  - Blue Oak-Foothill Pine
  - Cropland
  - Jeffrey Pine
  - Mixed Chaparral
  - Montane Chaparral
  - Montane Hardwood
  - Sierran Mixed Conifer
  - Urban

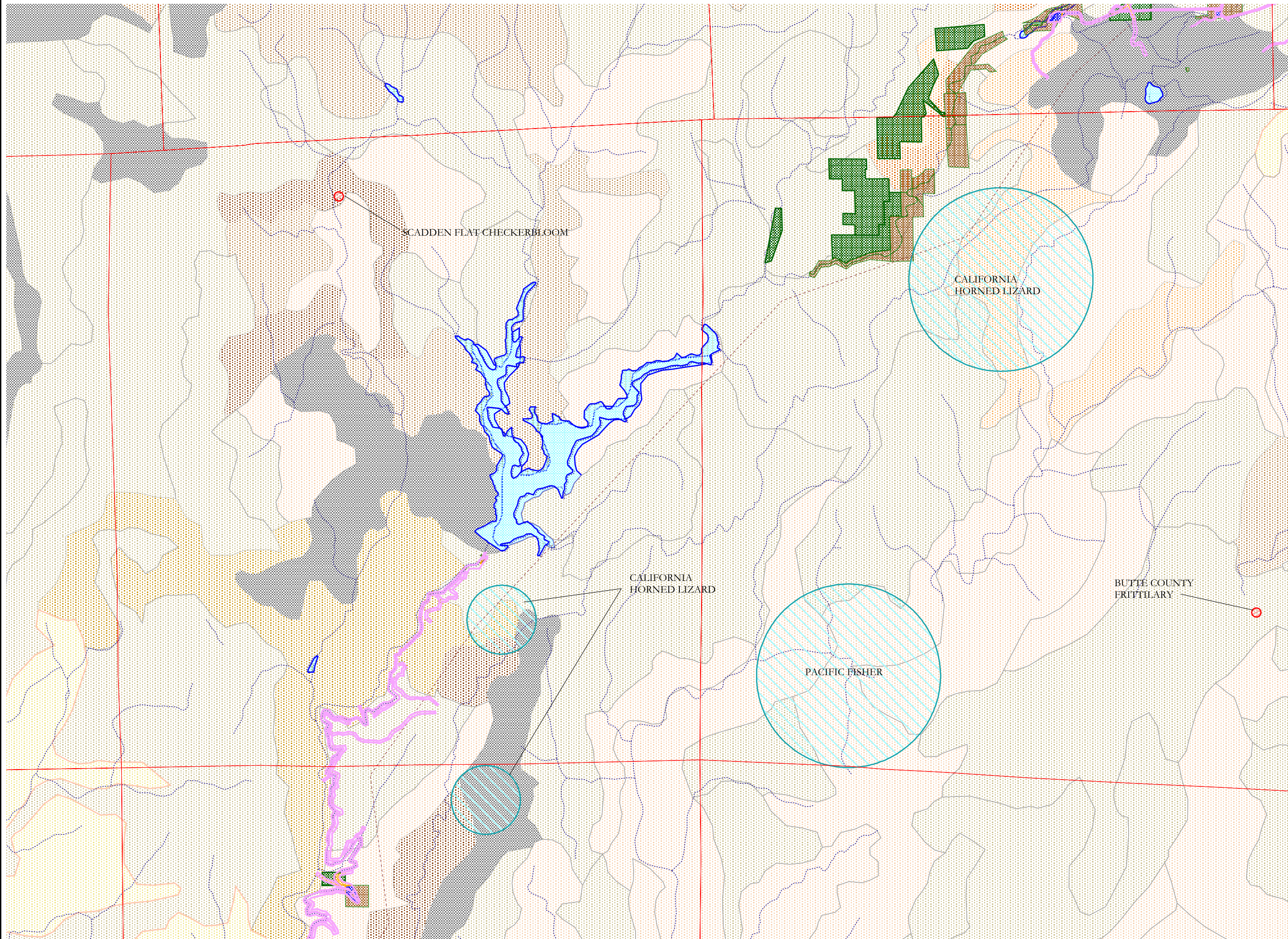


**Figure 4.5 - 30**

**Species Occurrences**

**Drum Regional Bundle**

**(Spaulding)**




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Special-Status Species


 Animal


 Plant


 Habitat


 FERC License Area


 Water


 Land


 Watershed Lands

 Contiguous Land


 Associated Land


 Lake / Reservoir


 County Boundary


 Township and Range Lines


Habitat Type


 Annual Grassland


 Blue Oak Woodland


 Blue Oak-Foothill Pine


 Cropland

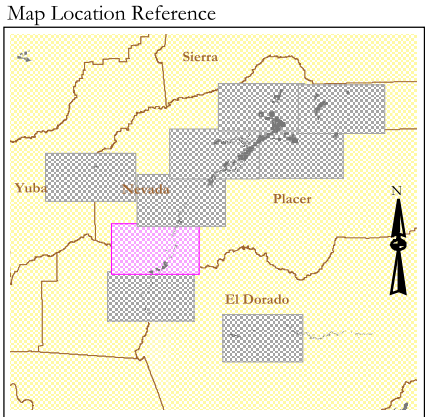
 Jeffrey Pine

 Montane Hardwood

 Montane Hardwood-Conifer

 Ponderosa Pine

 Urban



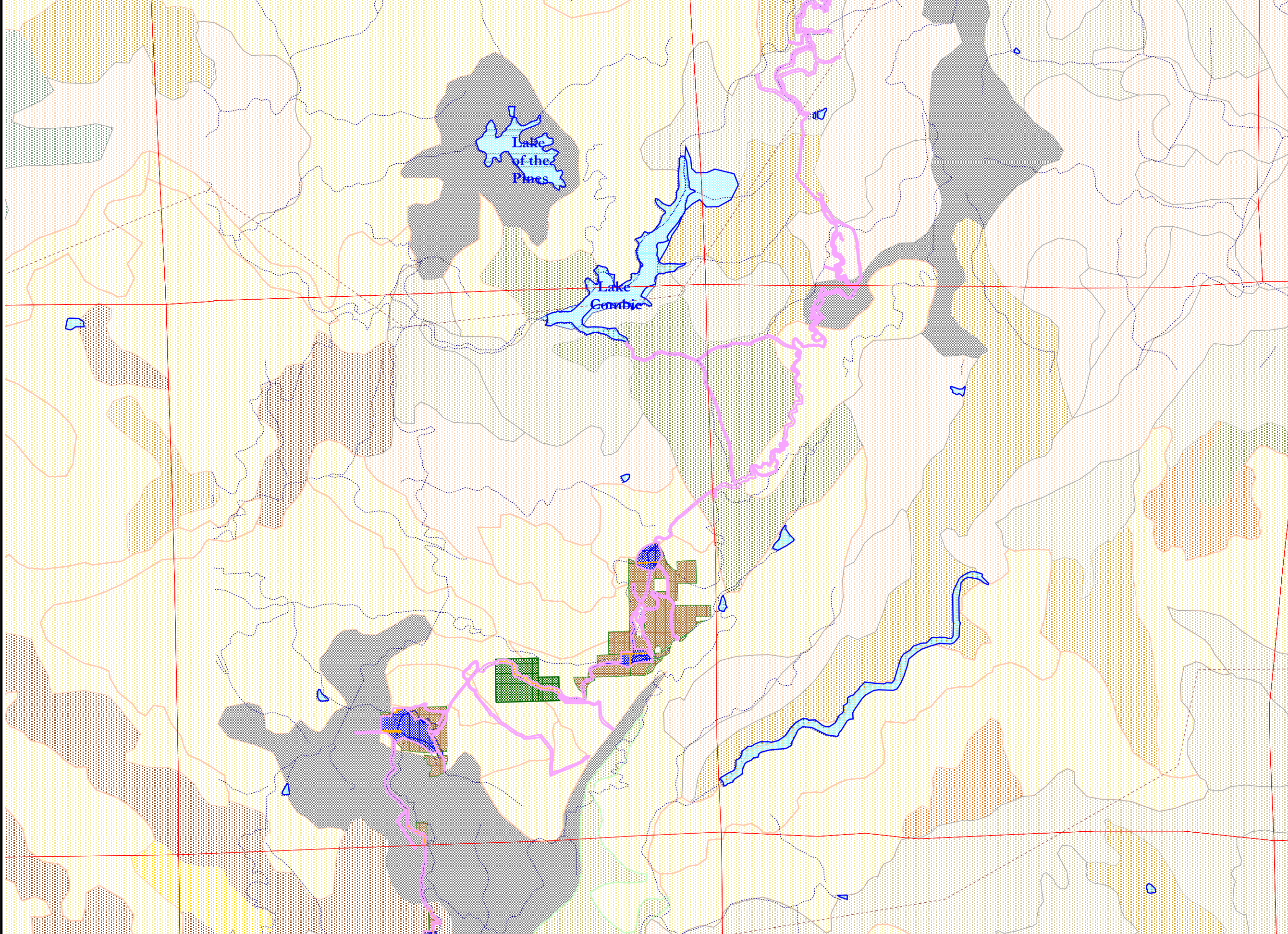
Hydrodivestiture Project EIR

**Figure 4.5 - 31**

**Species Occurrences**

**Drum Regional Bundle**

**(Spaulding)**





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Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

Habitat Type

Annual GrasslandBlue Oak-Foothill PineChamise-Redshank ChaparralCroplandMontane ChaparralMontane HardwoodPonderosa PineUrban

Map Location Reference

10000

0

10000

Miles

Hydrodivestiture EIR

Figure 4.5 - 32

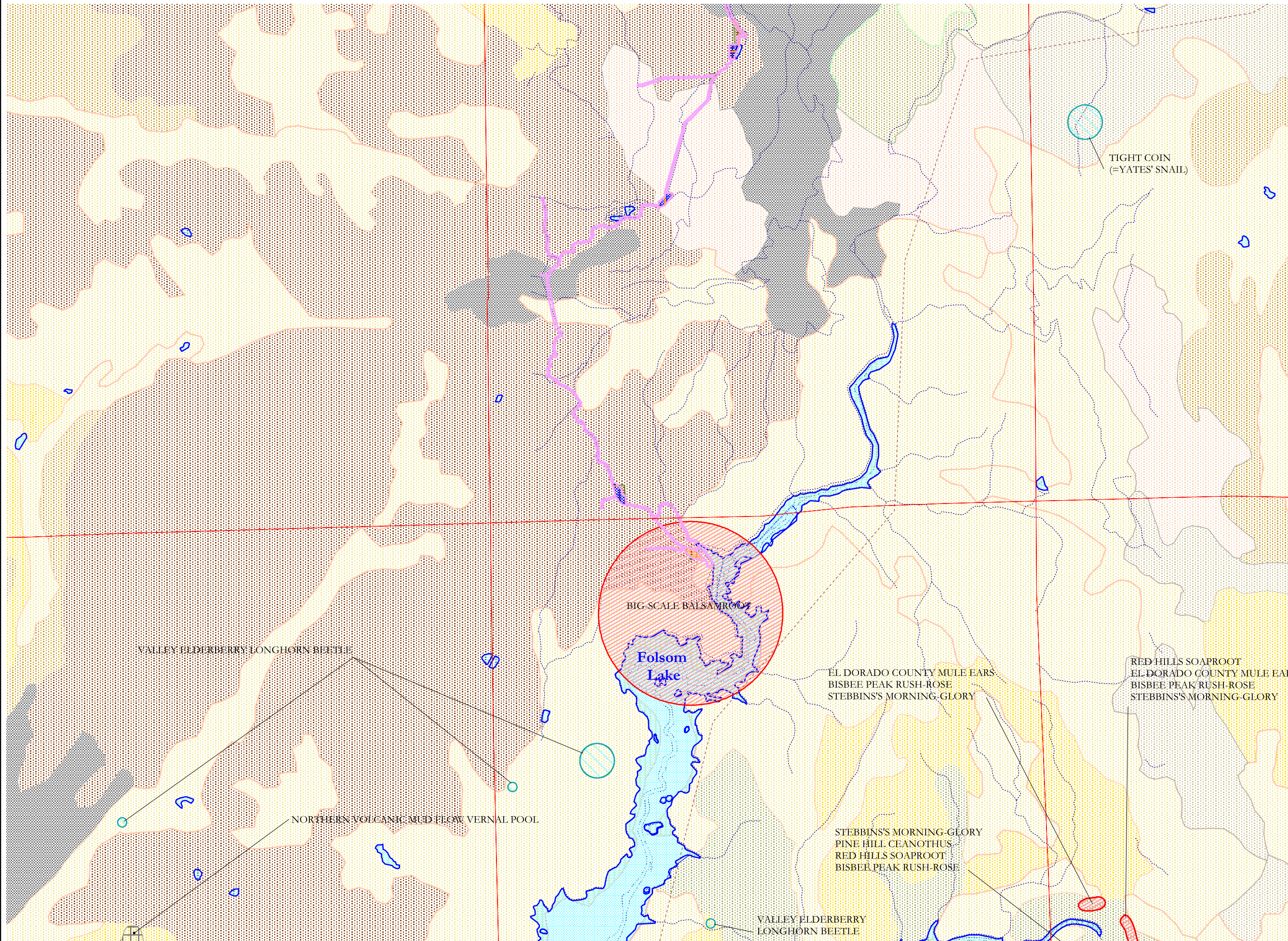
Species Occurrences

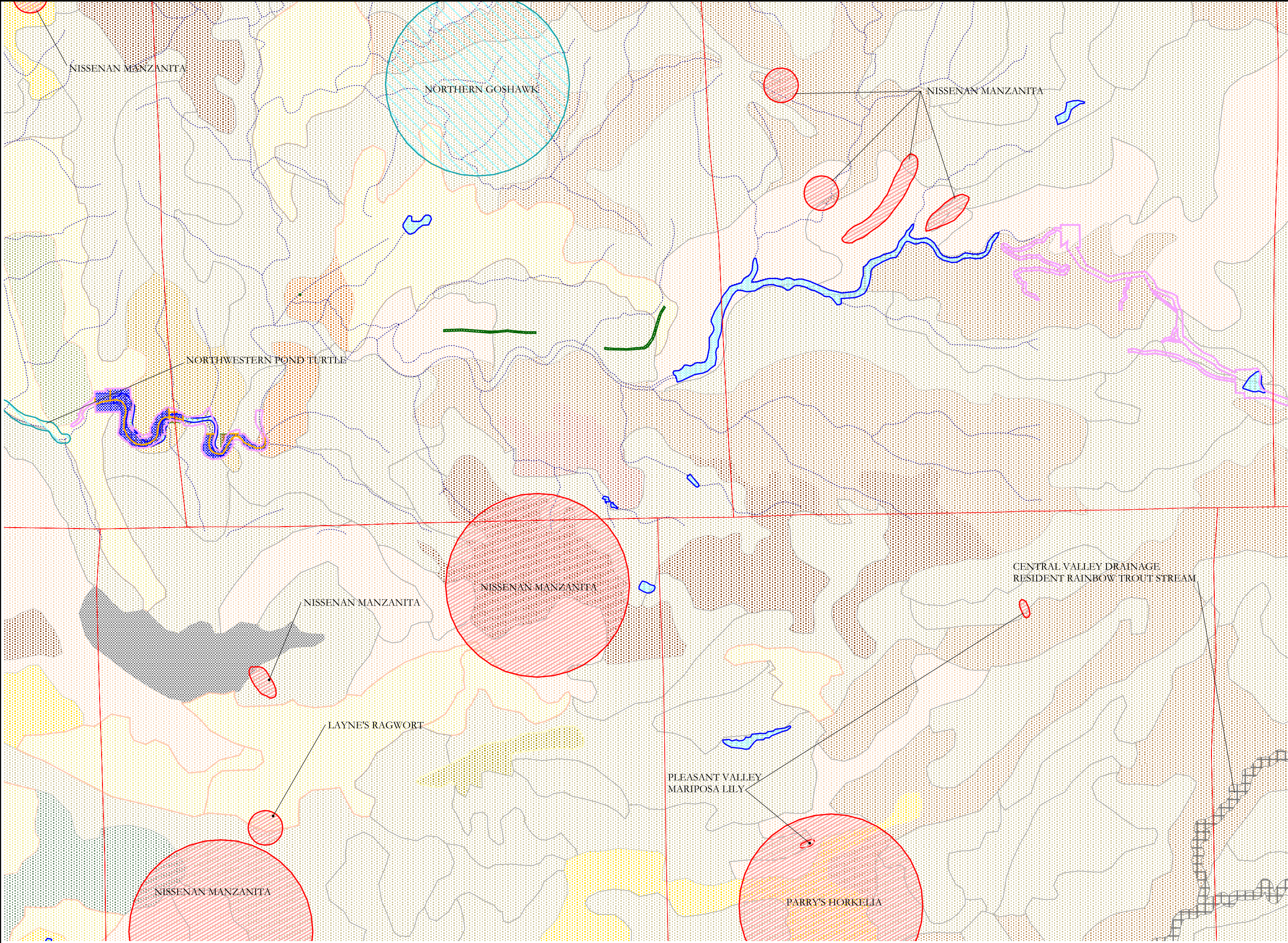
Drum Regional Bundle

(Spaulding)

Aspen

Environmental Group





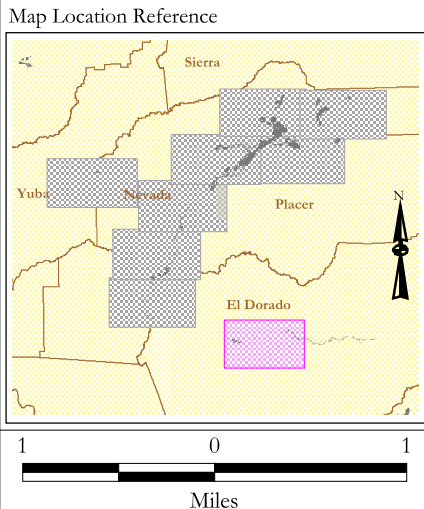
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- Special-Status Species**
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type**
- Annual Grassland
  - Blue Oak Woodland
  - Blue Oak-Foothill Pine
  - Chamise-Redshank Chaparral
  - Cropland
  - Mixed Chaparral
  - Montane Chaparral
  - Montane Hardwood
  - Orchard and Vineyard
  - Sierran Mixed Conifer



**Hydrodivestiture EIR**

**Figure 4.5 - 33**

**Species Occurrences**

**Drum Regional Bundle**

**(Spaulding)**

**Aspen**  
Environmental Group

Hydrodivestiture Draft EIR



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Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

Habitat Type

Barren

Jeffrey Pine

Lodgepole Pine

Mixed Chaparral

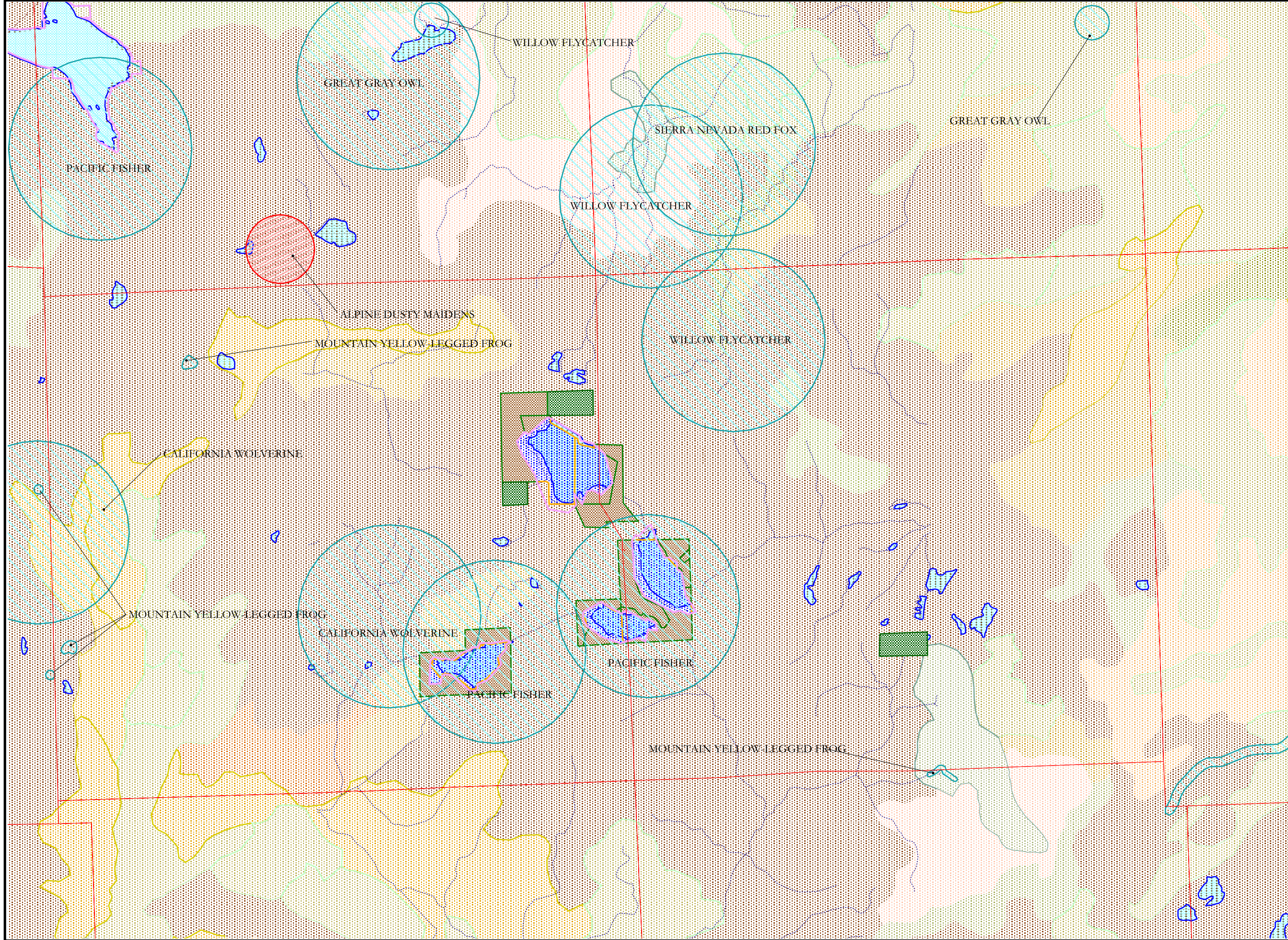
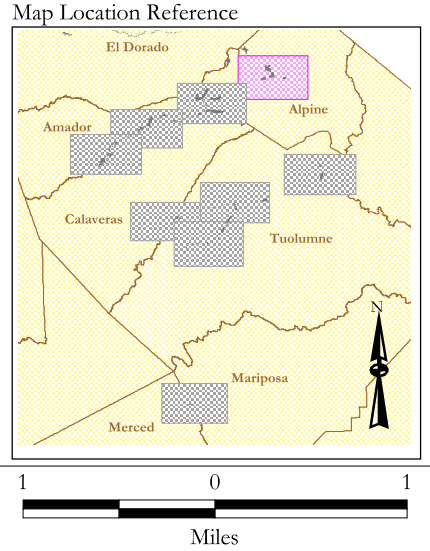
Montane Chaparral

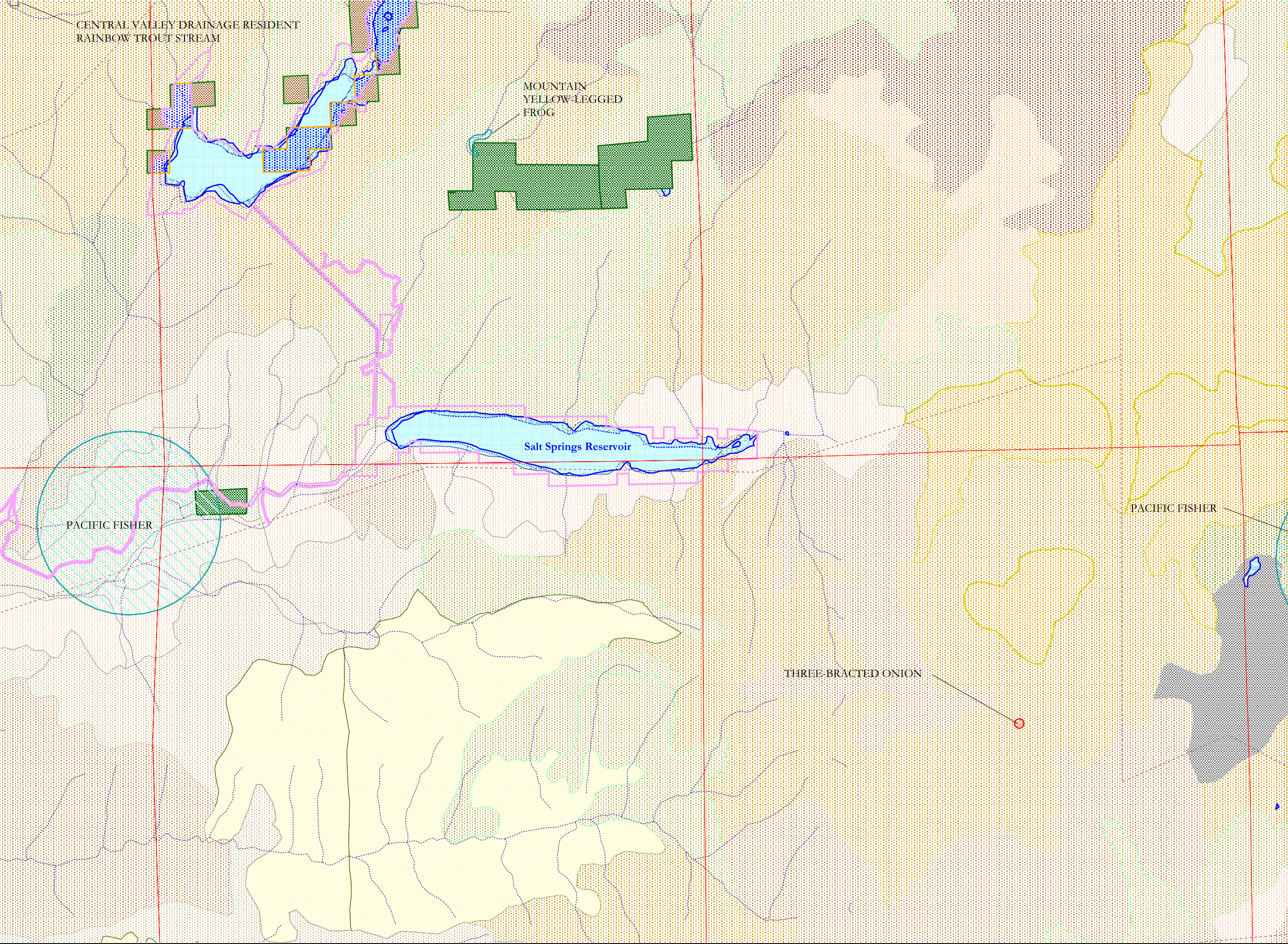
Montane Riparian

Ponderosa Pine

Red Fir

Subalpine Conifer



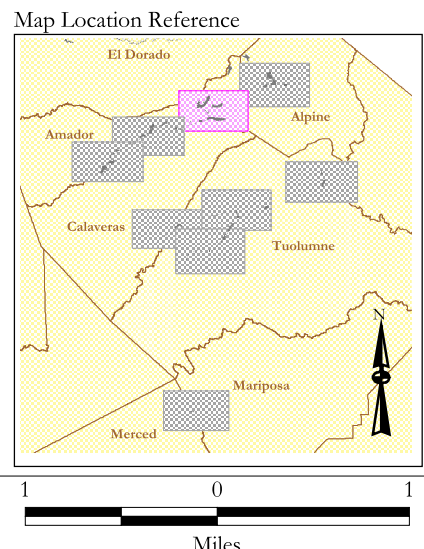


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- Special-Status Species**
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type**
- Barren
  - Jeffrey Pine
  - Montane Hardwood
  - Montane Hardwood-Conifer
  - Ponderosa Pine
  - Red Fir
  - Sierran Mixed Conifer
  - Subalpine Conifer
  - White Fir






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Special-Status Species

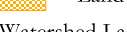
 Animal


 Plant


 Habitat

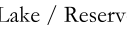
 FERC License Area

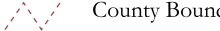
 Water


 Land


 Watershed Lands

 Contiguous Land

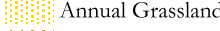
 Associated Land

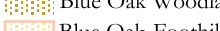
 Lake / Reservoir

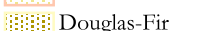
 County Boundary

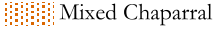
 Township and Range Lines

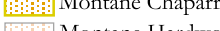
Habitat Type


 Annual Grassland

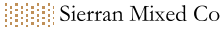
 Blue Oak Woodland


 Blue Oak-Foothill Pine


 Douglas-Fir

 Mixed Chaparral

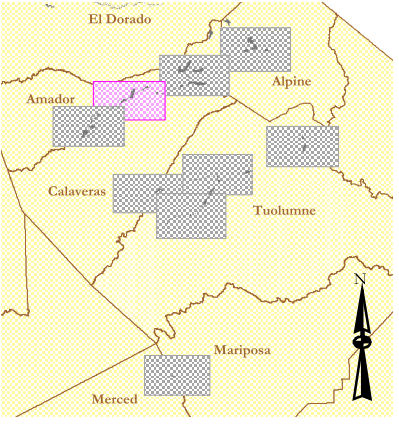
 Montane Chaparral

 Montane Hardwood

 Ponderosa Pine

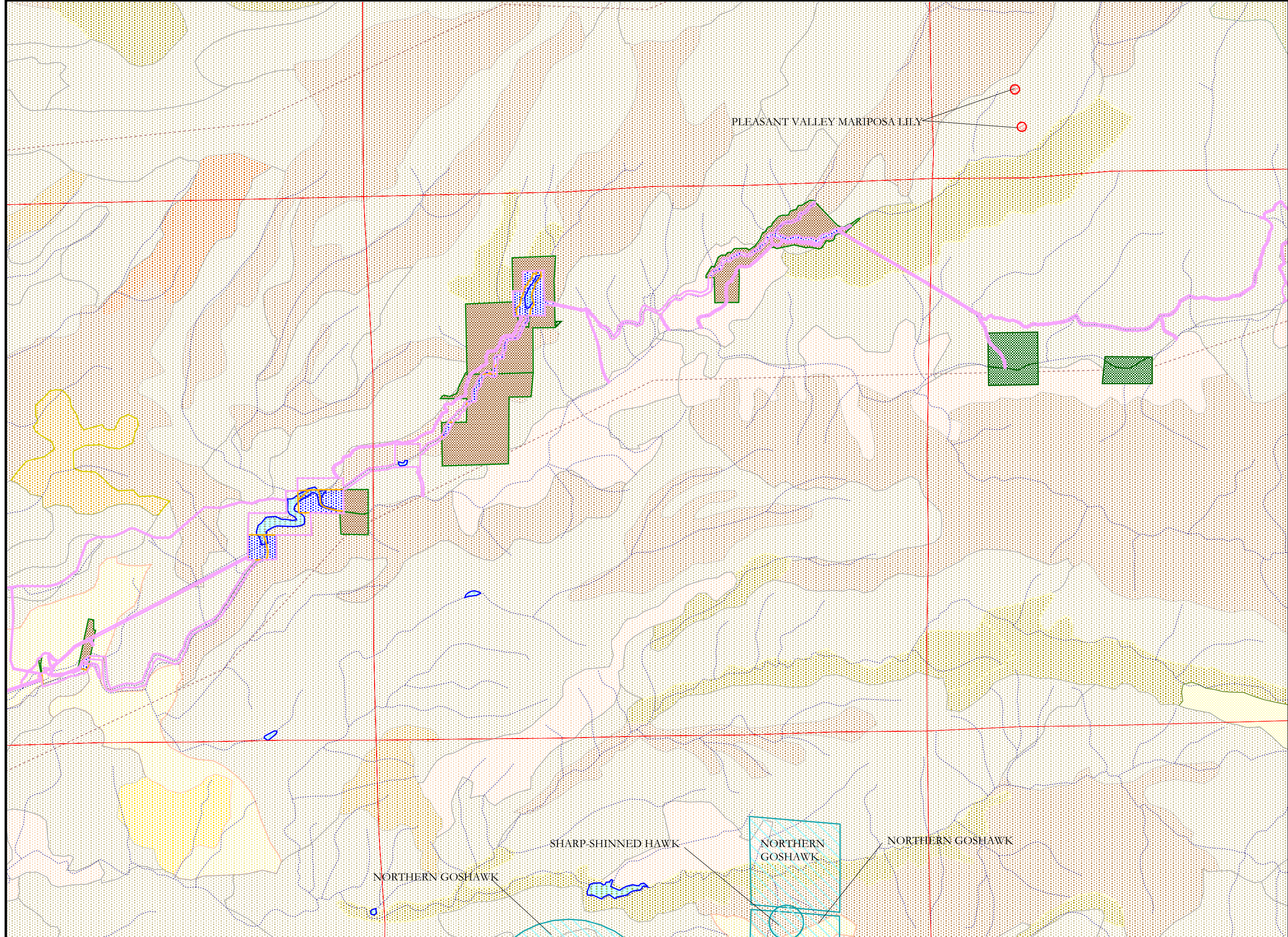
 Sierran Mixed Conifer

Map Location Reference



10 Miles

10 Miles



Hydroinvestiture EIR

Figure 4.5 - 36

Species Occurrences

Motherlode Regional Bundle

Aspen Environmental Group

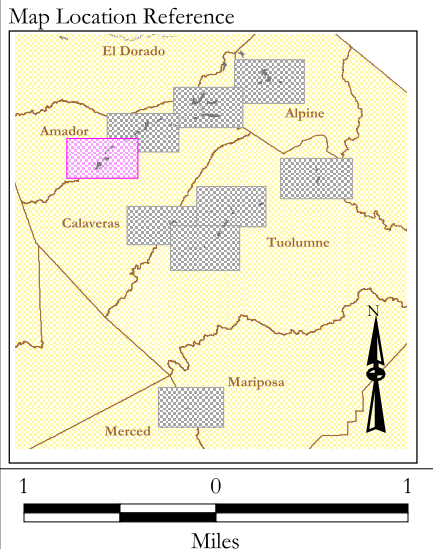
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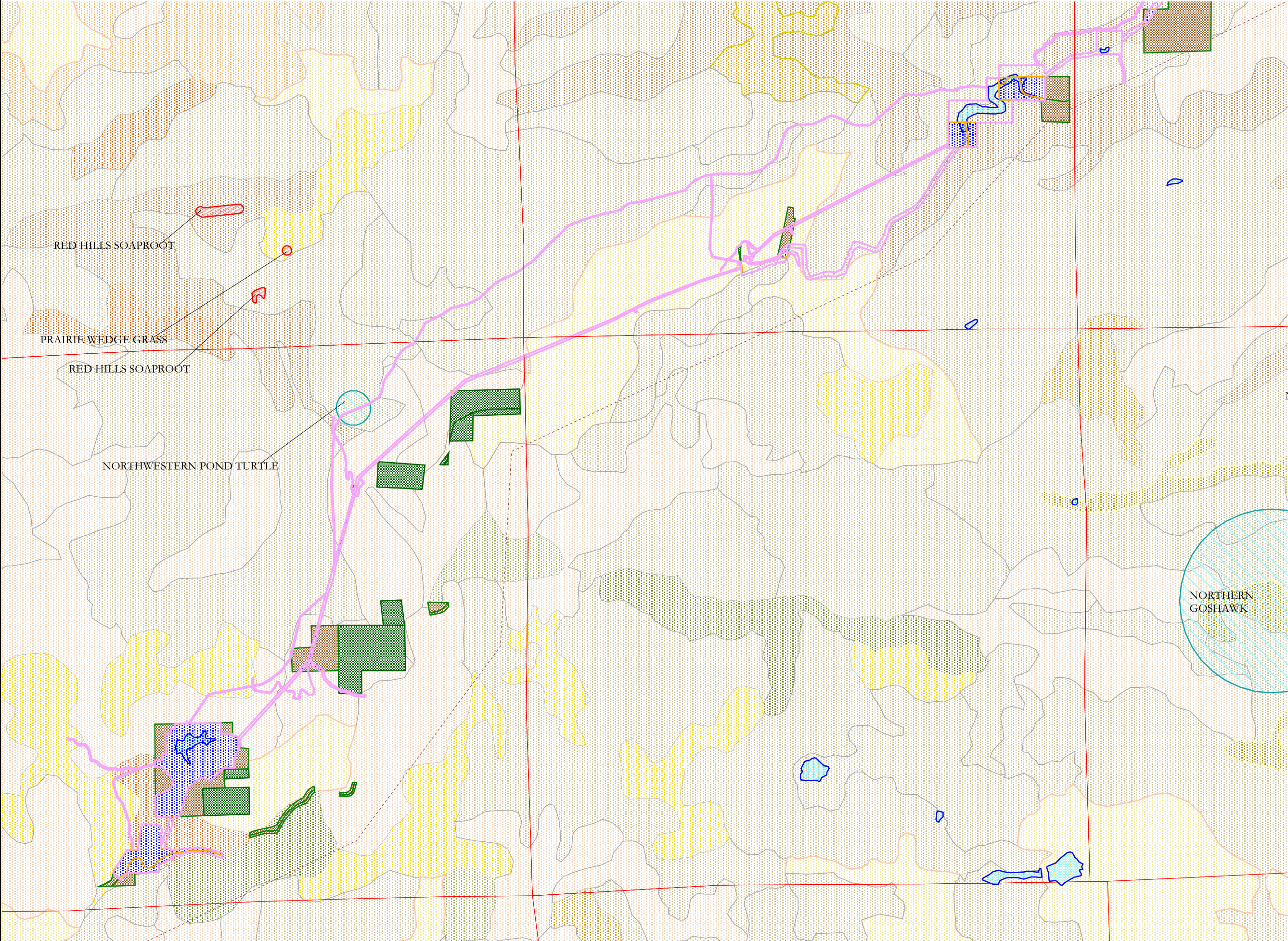
Source: Pacific Gas and Electric Company GIS Data Files; FERC Boundary, Hydrology, Parcels; California Department of Fish and Game GIS Data Files: CNDDB Special Status Species, Gap Vegetation (WHR1), August 2000; and EIP Associates GIS Program August 2000. GIS Data Projection: UTM Zone 10, NAD 83, Units Meters.

- Special-Status Species
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type
- Annual Grassland
  - Blue Oak-Foothill Pine
  - Chamise-Redshank Chaparral
  - Cropland
  - Douglas-Fir
  - Mixed Chaparral
  - Montane Hardwood
  - Montane Hardwood-Conifer
  - Ponderosa Pine



**Hydroinvestiture EIR**

**Figure 4.5 - 37**  
**Species Occurrences**  
**Motherlode Regional Bundle**  
**Aspen**  
*Environmental Group*





DISCLAIMER

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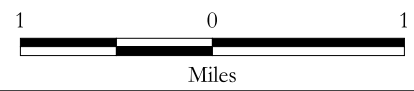
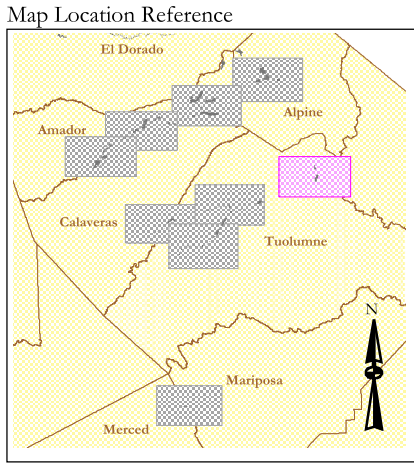
Source: Pacific Gas and Electric Company GIS Data Files; FERC Boundary, Hydrology, Parcels; California Department of Fish and Game GIS Data Files; CNDDB Special Status Species; Gap Vegetation (WHR), August 2000; and EIP Associates GIS Program August 2000. GIS Data Projection: UTM Zone 10, NAD 83, Units Meters.

Special-Status Species

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

Habitat Type

- Aspen
- Barren
- Jeffrey Pine
- Montane Chaparral
- Pinyon-Juniper
- Red Fir
- Sagebrush
- Sierran Mixed Conifer
- Subalpine Conifer



**Hydrodivestiture EIR**

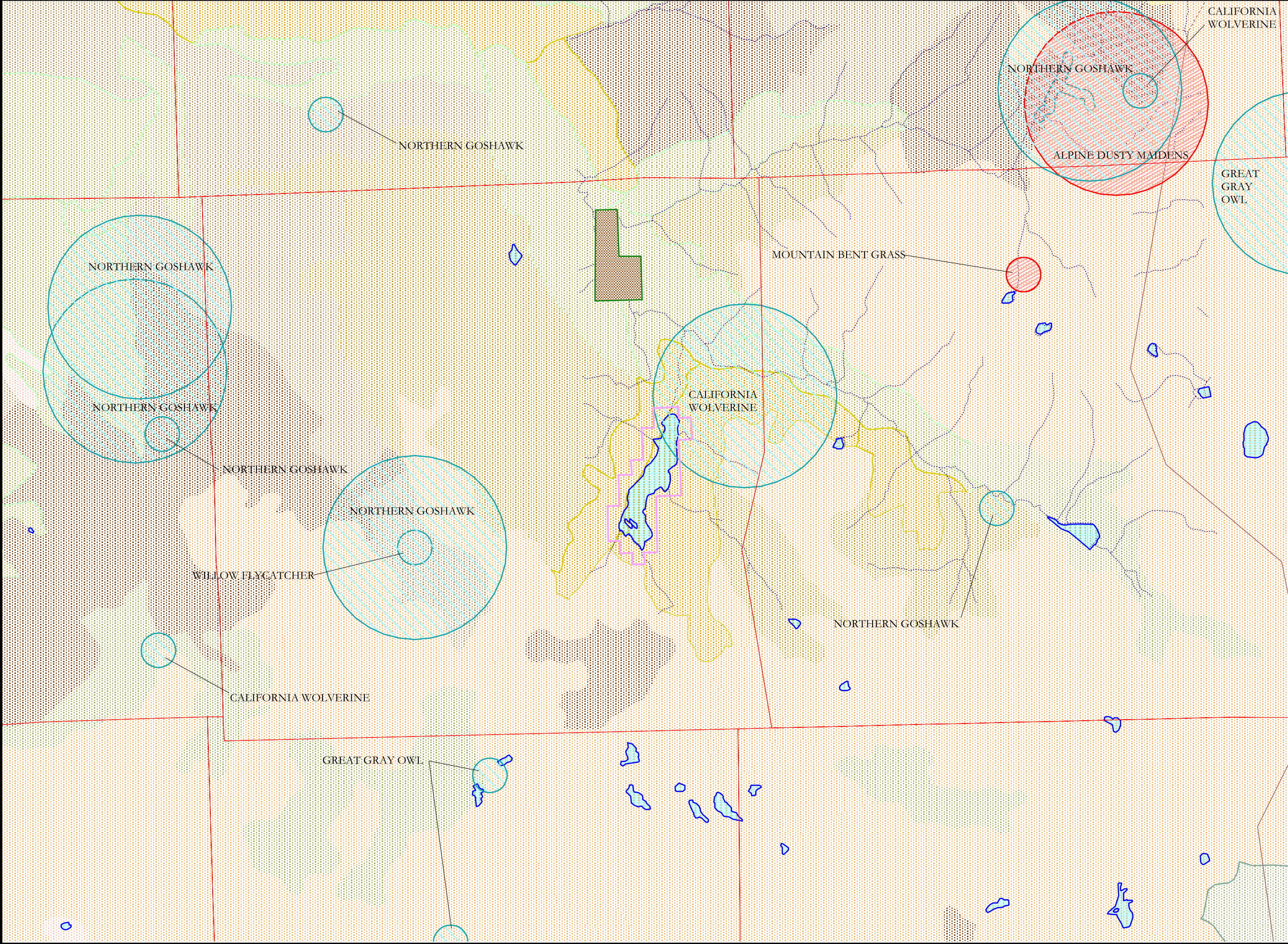
**Figure 4.5 - 38**

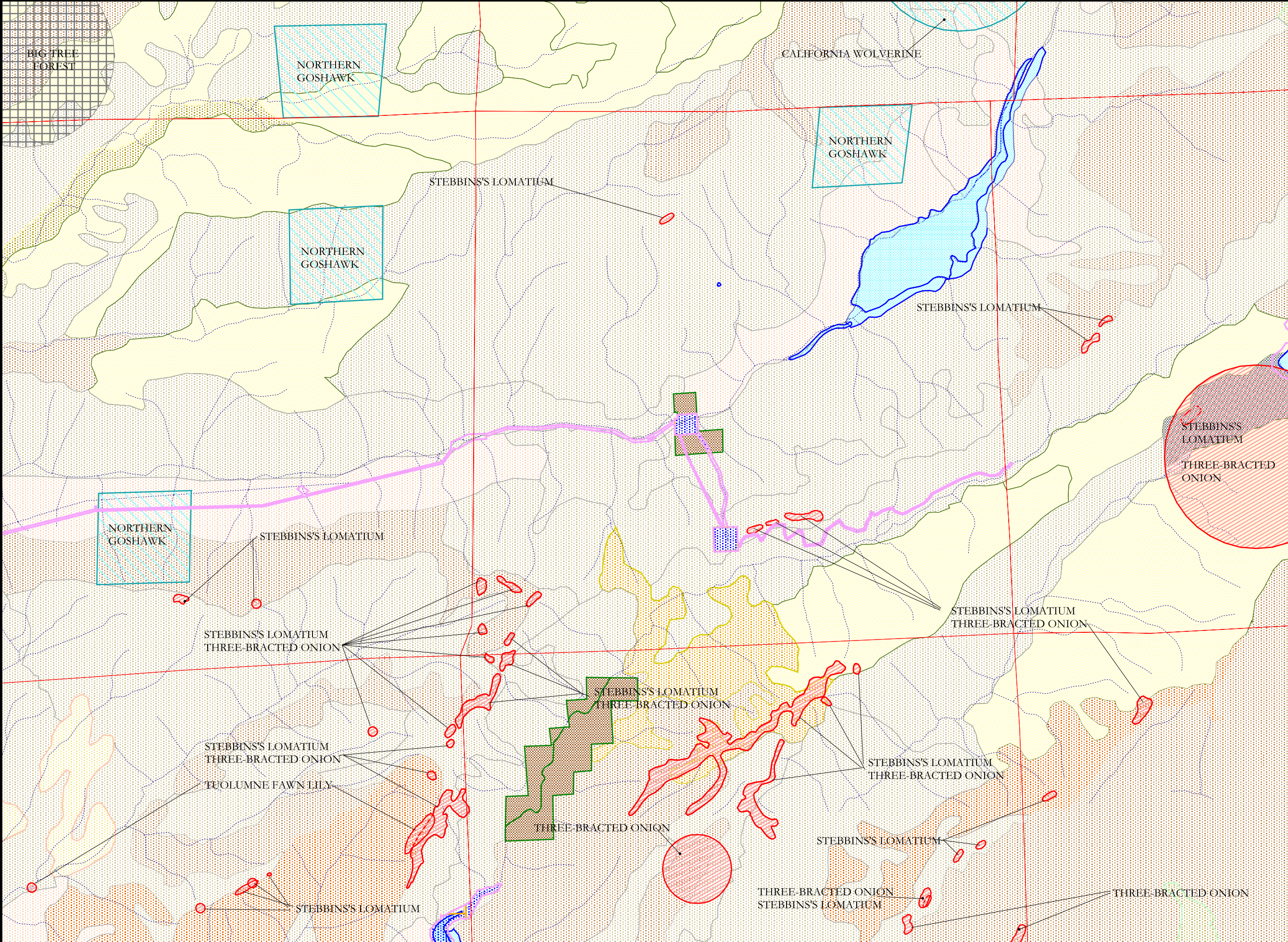
**Species Occurrences**

**Motherlode Regional Bundle**

**Aspen**

*Environmental Group*





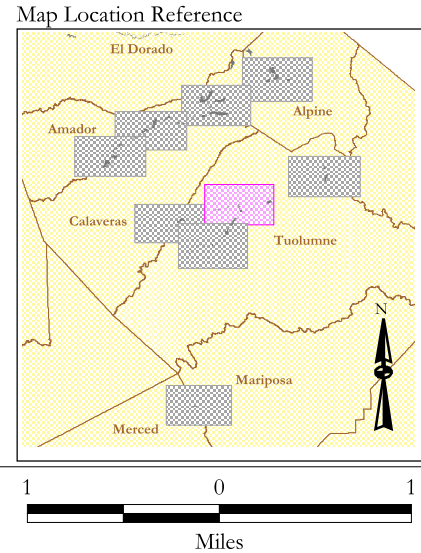
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- Special-Status Species
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type
- Blue Oak-Foothill Pine
  - Jeffrey Pine
  - Mixed Chaparral
  - Montane Chaparral
  - Montane Hardwood
  - Ponderosa Pine
  - Sierran Mixed Conifer
  - White Fir



**Hydroinvestiture EIR**

**Figure 4.5 - 39**  
**Species Occurrences**  
**Motherlade Regional Bundle**  
**Aspen**  
Environmental Group

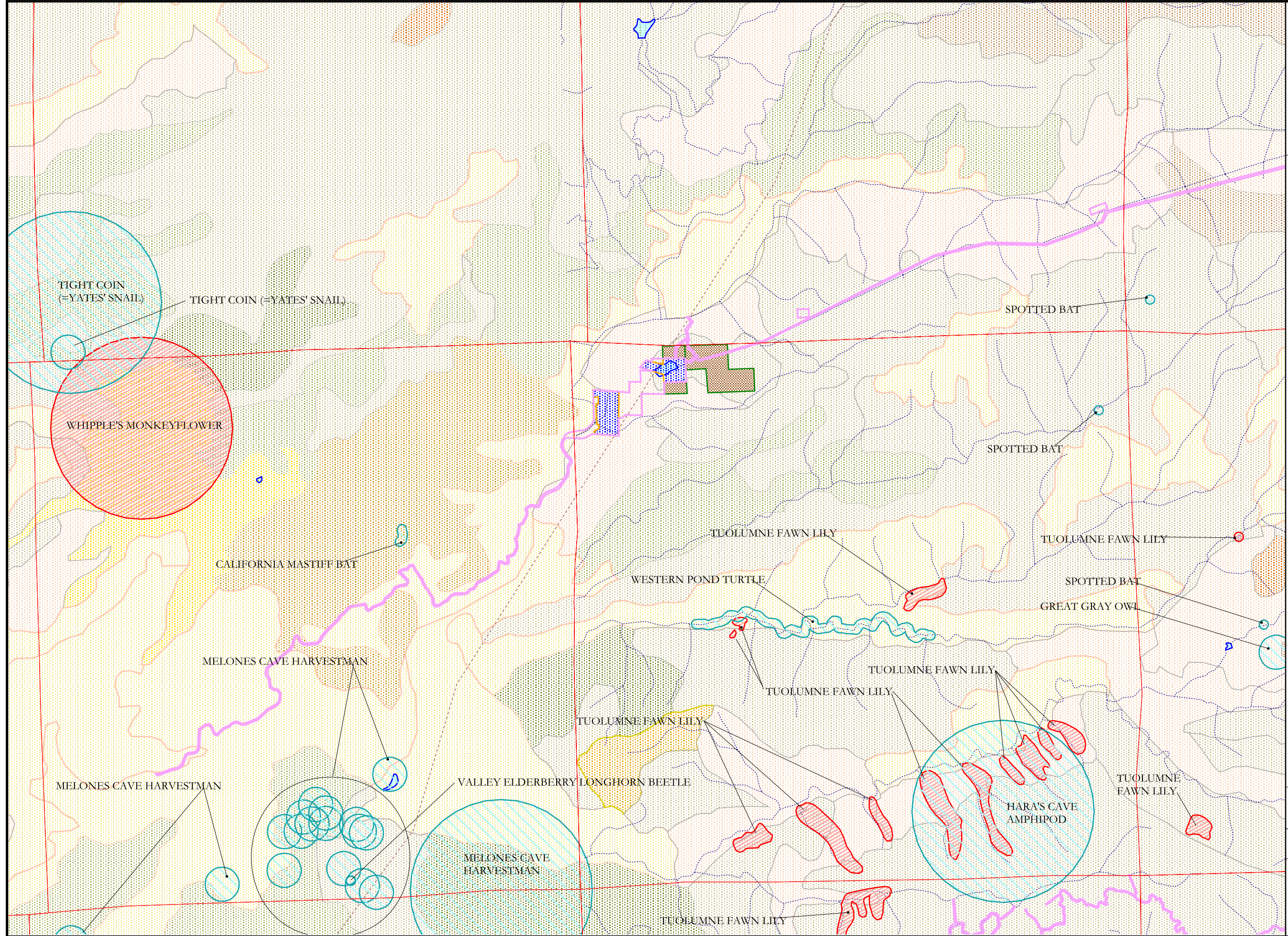


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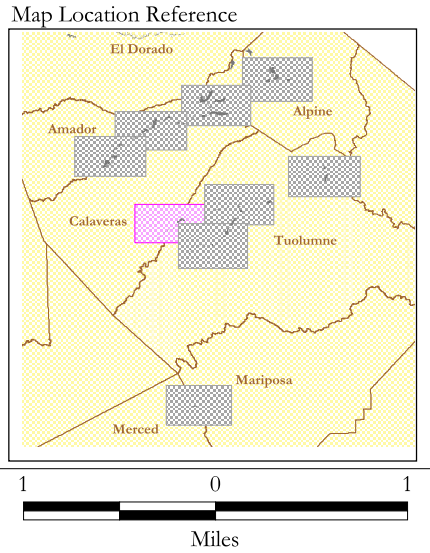


**Special-Status Species**

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

**Habitat Type**

- Annual Grassland
- Blue Oak Woodland
- Blue Oak-Foothill Pine
- Chamise-Redshank Chaparral
- Montane Chaparral
- Montane Hardwood-Conifer
- Ponderosa Pine



**Hydrodivestiture EIR**


**Figure 4.5 - 40**  
**Species Occurrences**  
**Motherlode Regional Bundle**  
**Aspen**  
*Environmental Group*





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Special-Status Species


 Animal


 Plant


 Habitat


 FERC License Area


 Water


 Land


 Watershed Lands

 Contiguous Land


 Associated Land


 Lake / Reservoir


 County Boundary


 Township and Range Lines


Habitat Type


 Blue Oak-Foothill Pine


 Chamise-Redshank Chaparral


 Mixed Chaparral


 Montane Chaparral


 Montane Hardwood

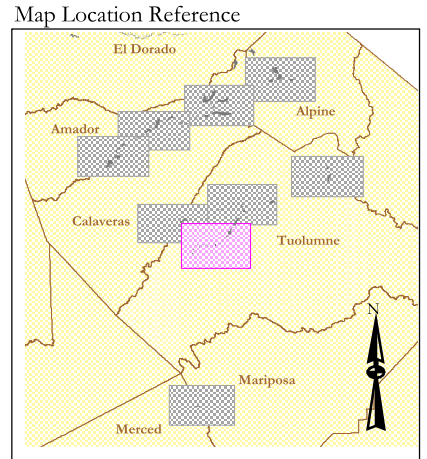
 Montane Hardwood-Conifer

 Ponderosa Pine

 Sierran Mixed Conifer

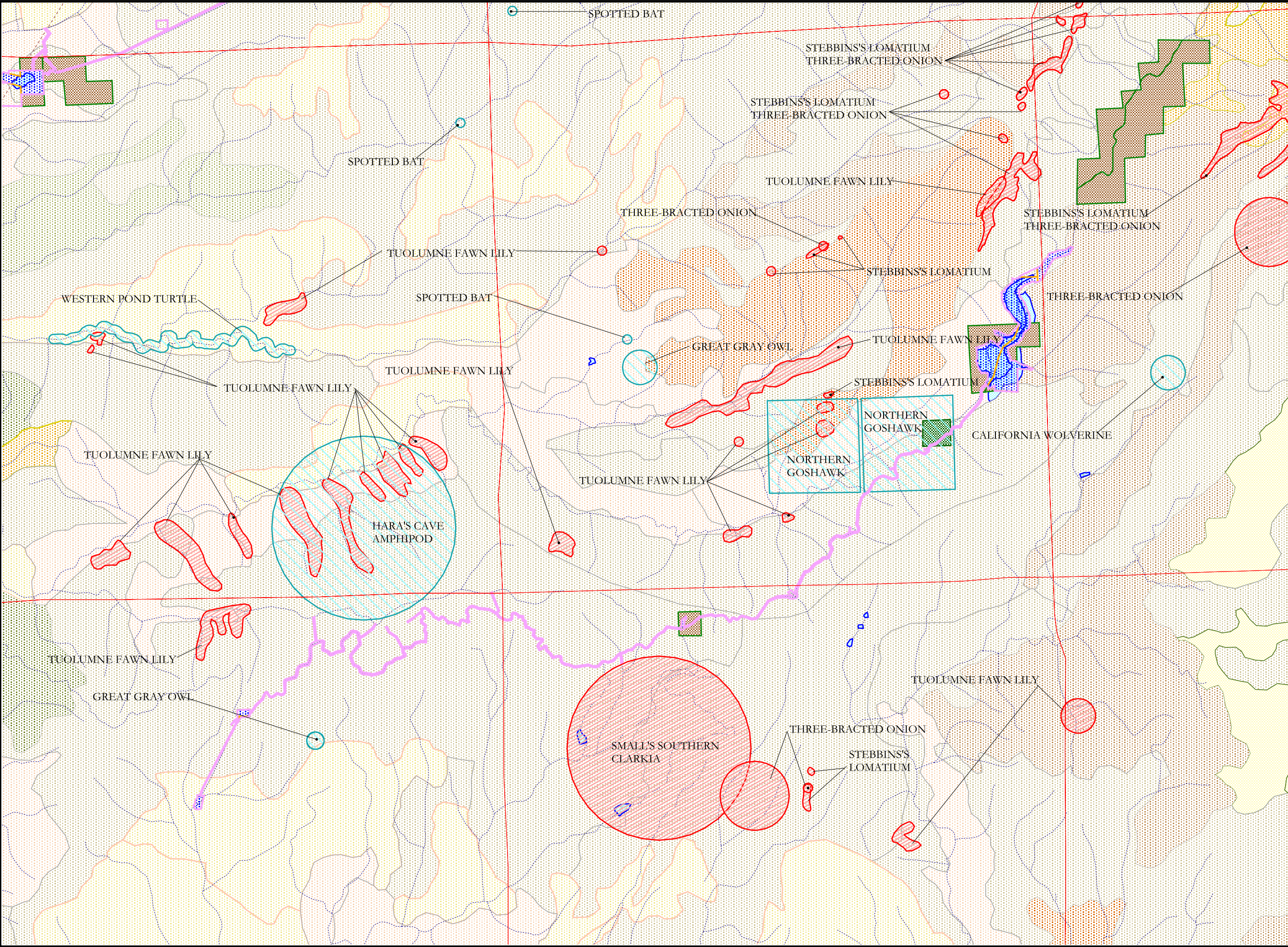
 Urban

 White Fir



Hydrodivestiture EIR

**Figure 4.5 - 41**  
**Species Occurrences**  
**Motherlode Regional Bundle**  
**Aspen**  
Environmental Group



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Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

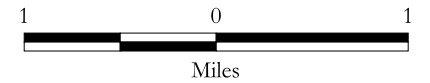
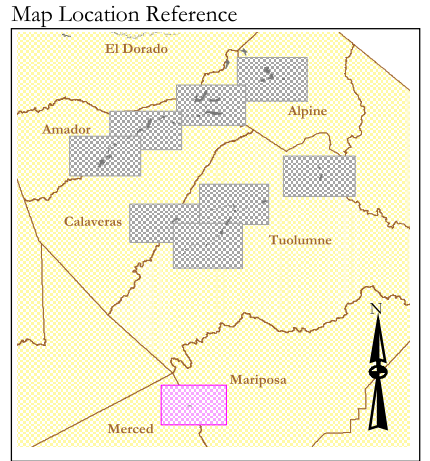
Habitat Type

Annual Grassland

Blue Oak Woodland

Blue Oak-Foothill Pine

Cropland



Hydrodivestiture EIR

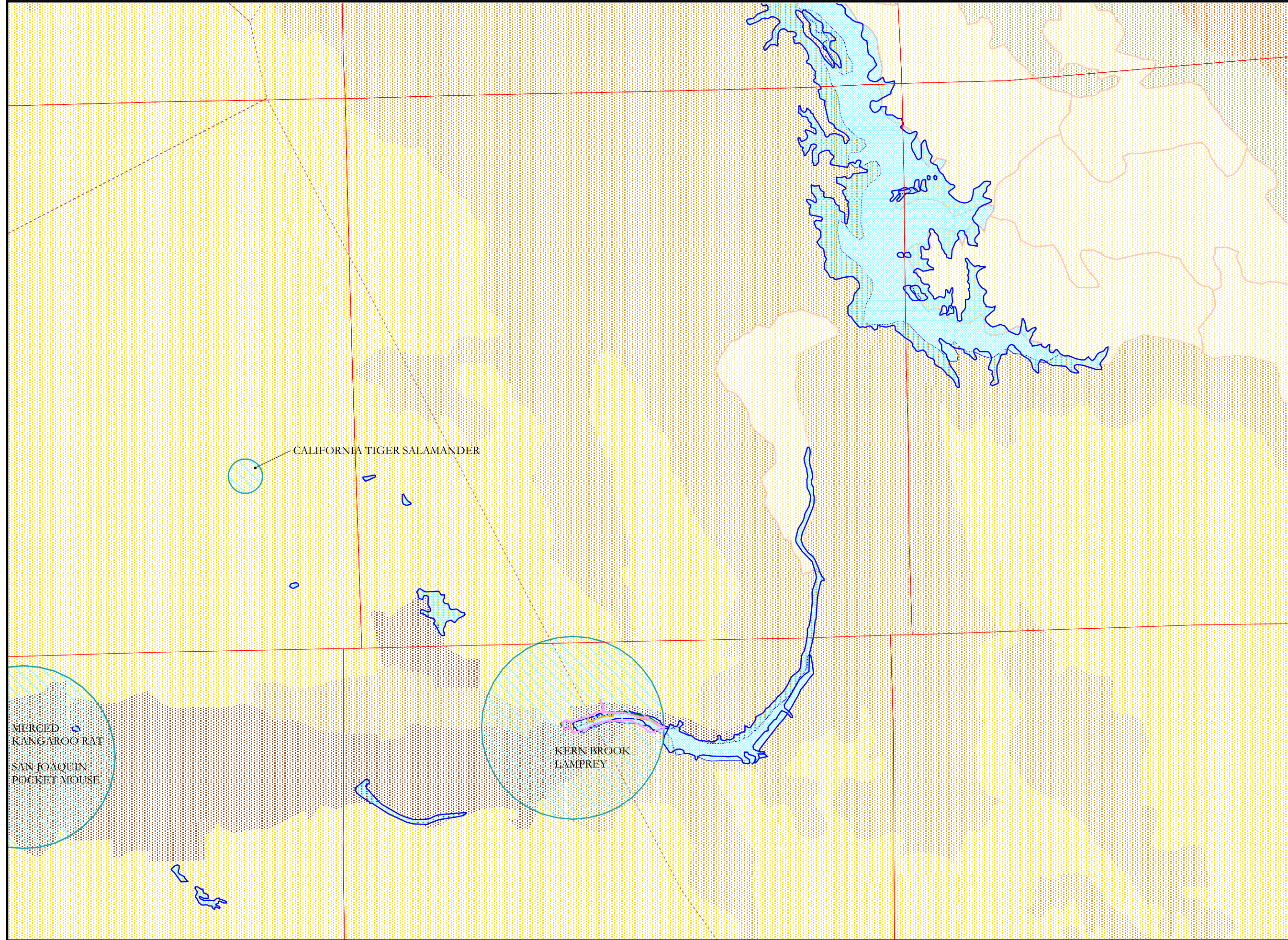
Figure 4.5 - 42

Species Occurrences

Motherlode Regional Bundle

Aspen

Environmental Group





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Source: Pacific Gas and Electric Company GIS Data Files: FERC Boundary, Hydrology, Parcels; California Department of Fish and Game GIS Data Files: CNDDB Special-Status Species, Gap Vegetation (WHRI), Lakes, August 2000; and EIP Associates GIS Program August 2000. GIS Data Projection: UTM Zone 10, NAD 83, Units Meters.

Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

Habitat Type

Barren

Blue Oak Woodland

Blue Oak-Foothill Pine

Cropland

Montane Hardwood

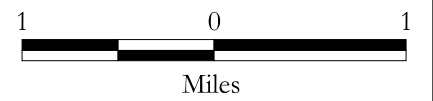
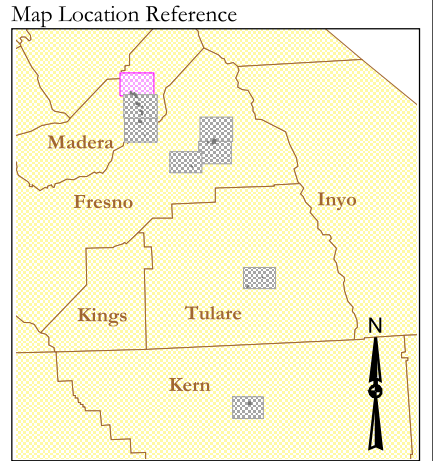
Montane Hardwood-Conifer

Ponderosa Pine

Red Fir

Sierran Mixed Conifer

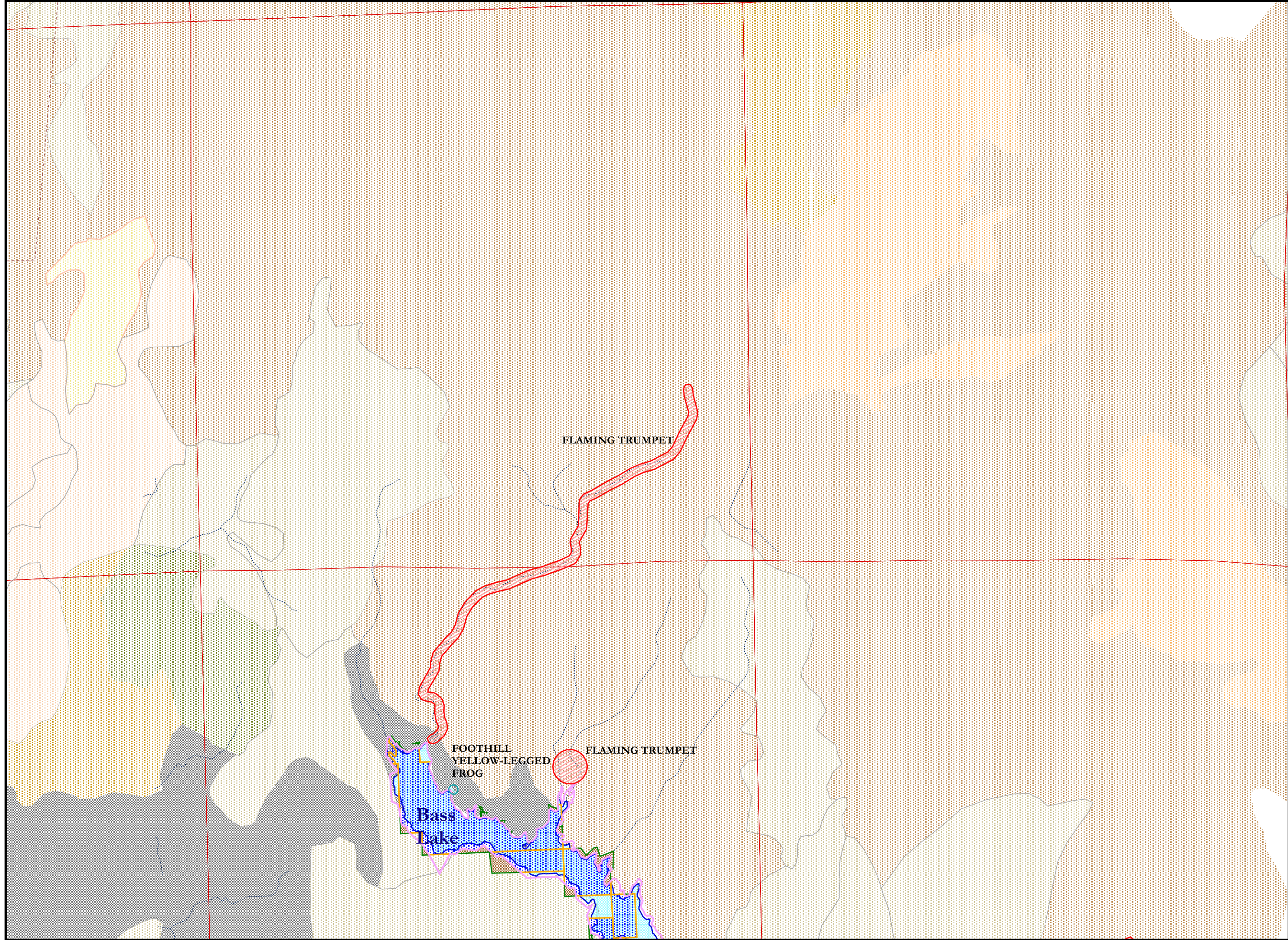
Urban



Hydroinvestiture EIR

Figure 4.5 - 43  
Species Occurrences  
Kings Crane-Helms  
Regional Bundle

Aspen  
Environmental Group

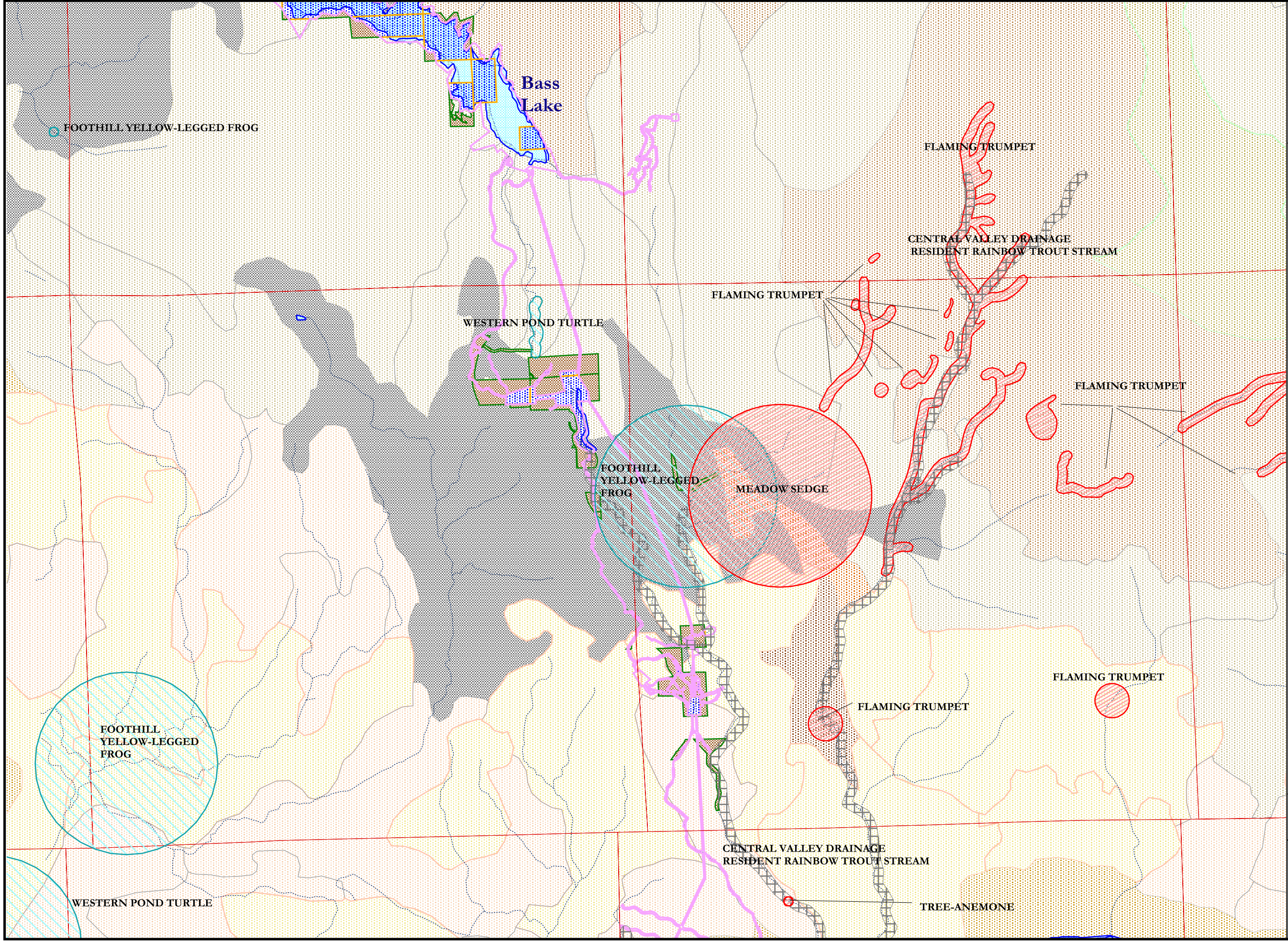


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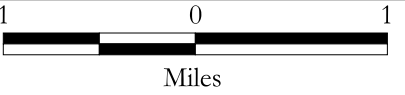
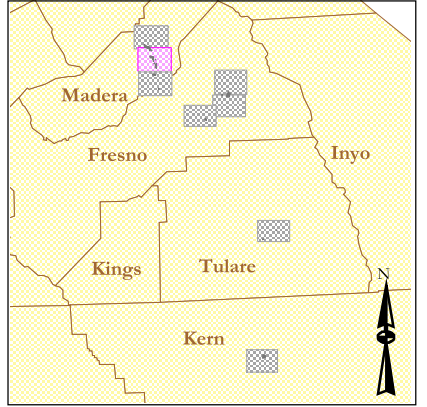
Special-Status Species

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

Habitat Type

- Blue Oak Woodland
- Blue Oak-Foothill Pine
- Cropland
- Jeffrey Pine
- Mixed Chaparral
- Montane Hardwood
- Ponderosa Pine
- Sierran Mixed Conifer
- Urban

Map Location Reference



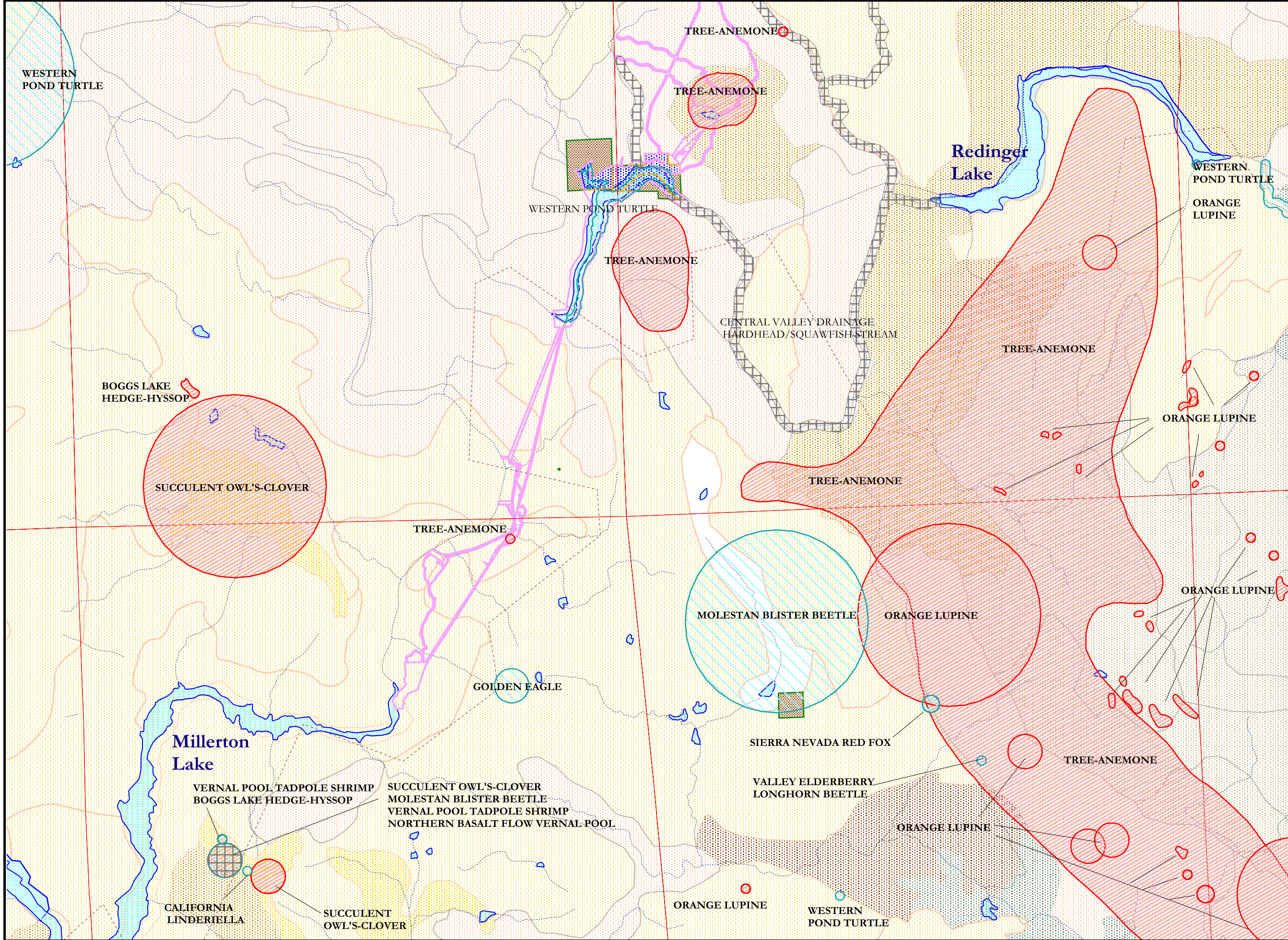
**Hydrodivestiture EIR**

**Figure 4.5 - 44**  
**Species Occurrences**  
**Kings Crane-Helms**  
**Regional Bundle**

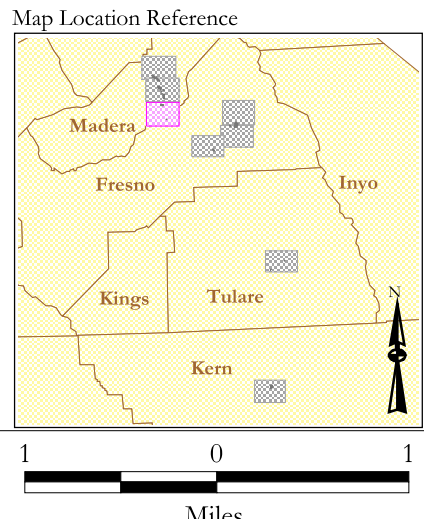
**Aspen**  
Environmental Group



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- Special-Status Species**
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type**
- Annual Grassland
  - Blue Oak Woodland
  - Blue Oak-Foothill Pine
  - Cropland
  - Mixed Chaparral
  - Montane Hardwood
  - Ponderosa Pine
  - Riverine
  - Valley Oak Woodland



**Hydrodivestiture EIR**

**Figure 4.5 - 45**  
**Species Occurrences**  
**Kings Crane-Helms**  
**Aspen Regional Bundle**  
Environmental Group



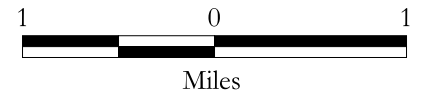
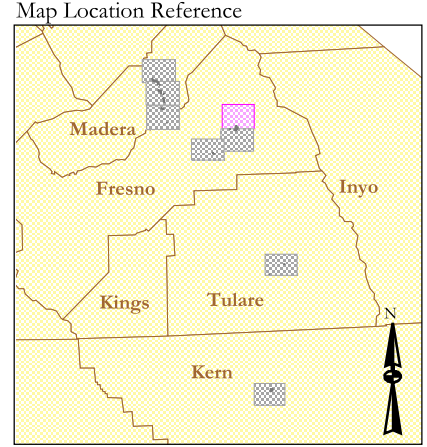
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Special-Status Species

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

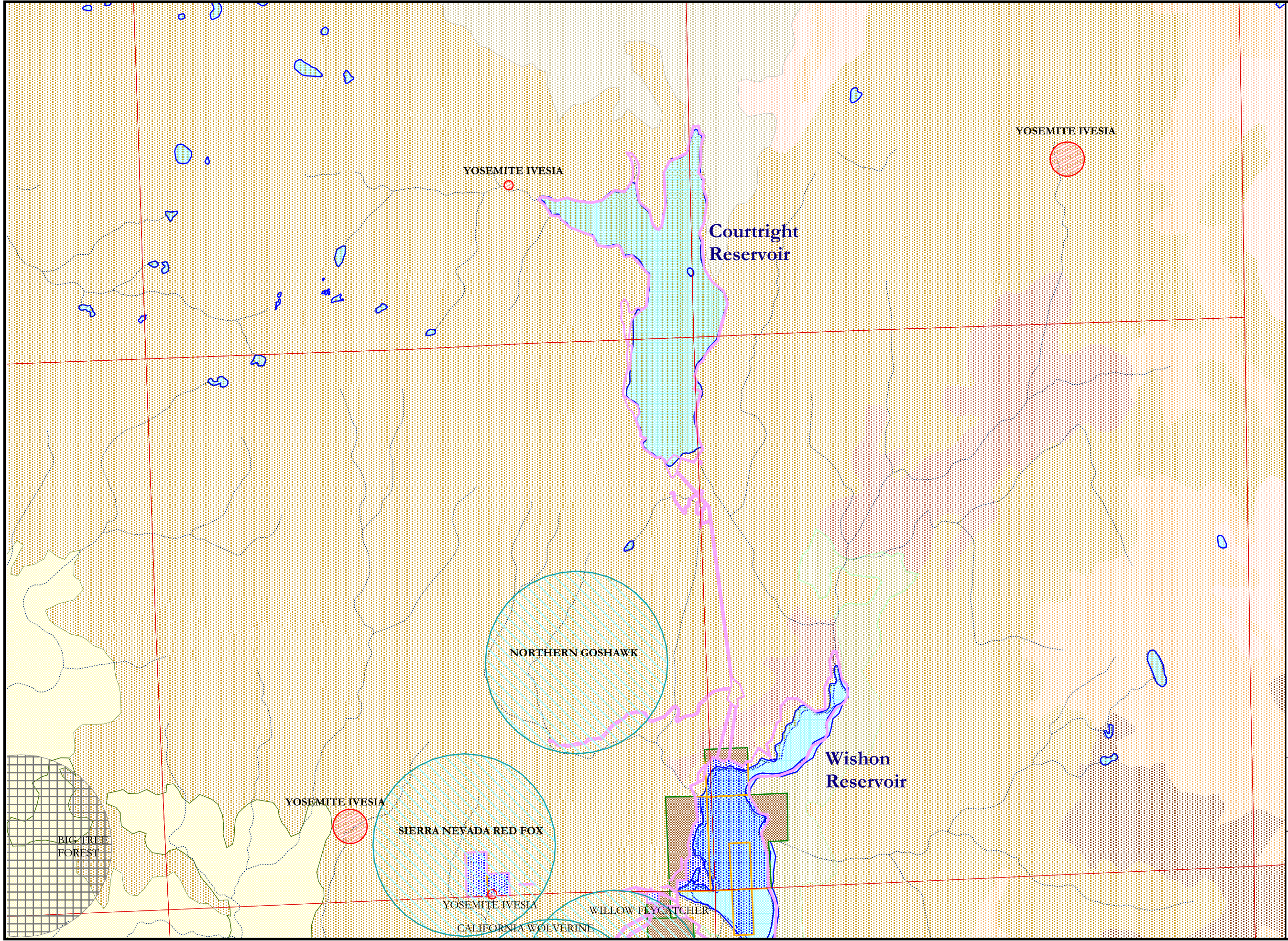
- Habitat Type
- Alpine-Dwarf Shrub
  - Barren
  - Jeffrey Pine
  - Lodgepole Pine
  - Ponderosa Pine
  - Red Fir
  - Subalpine Conifer
  - White Fir



**Hydroinvestiture EIR**

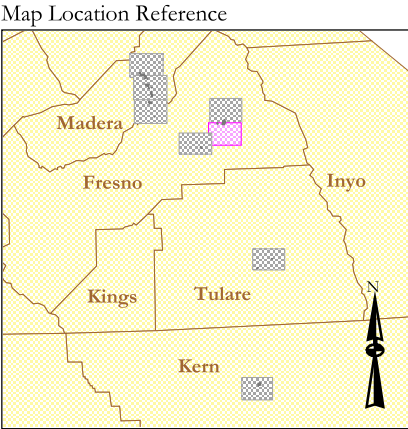
**Figure 4.5 - 46**  
**Species Occurrences**  
**Kings Crane-Helms**  
**Regional Bundle**

**Aspen**  
Environmental Group



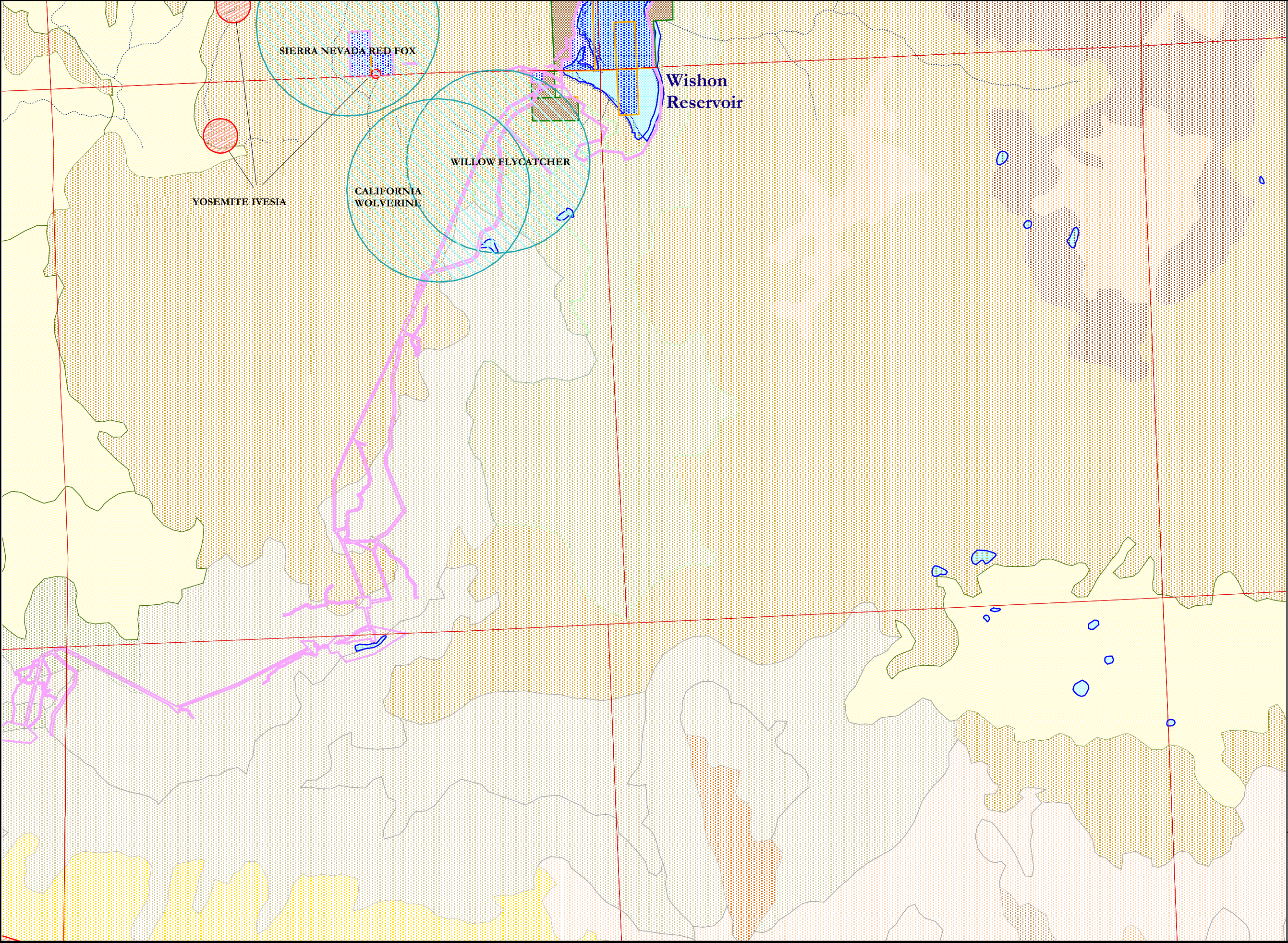
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- Special-Status Species
- Animal
  - Plant
  - Habitat
  - FERC License Area
  - Water
  - Land
  - Watershed Lands
  - Contiguous Land
  - Associated Land
  - Lake / Reservoir
  - County Boundary
  - Township and Range Lines
- Habitat Type
- Annual Grassland
  - Barren
  - Chamise-Redshank Chaparral
  - Jeffrey Pine
  - Mixed Chaparral
  - Montane Hardwood
  - Ponderosa Pine
  - Red Fir
  - Sierran Mixed Conifer
  - Subalpine Conifer
  - White Fir



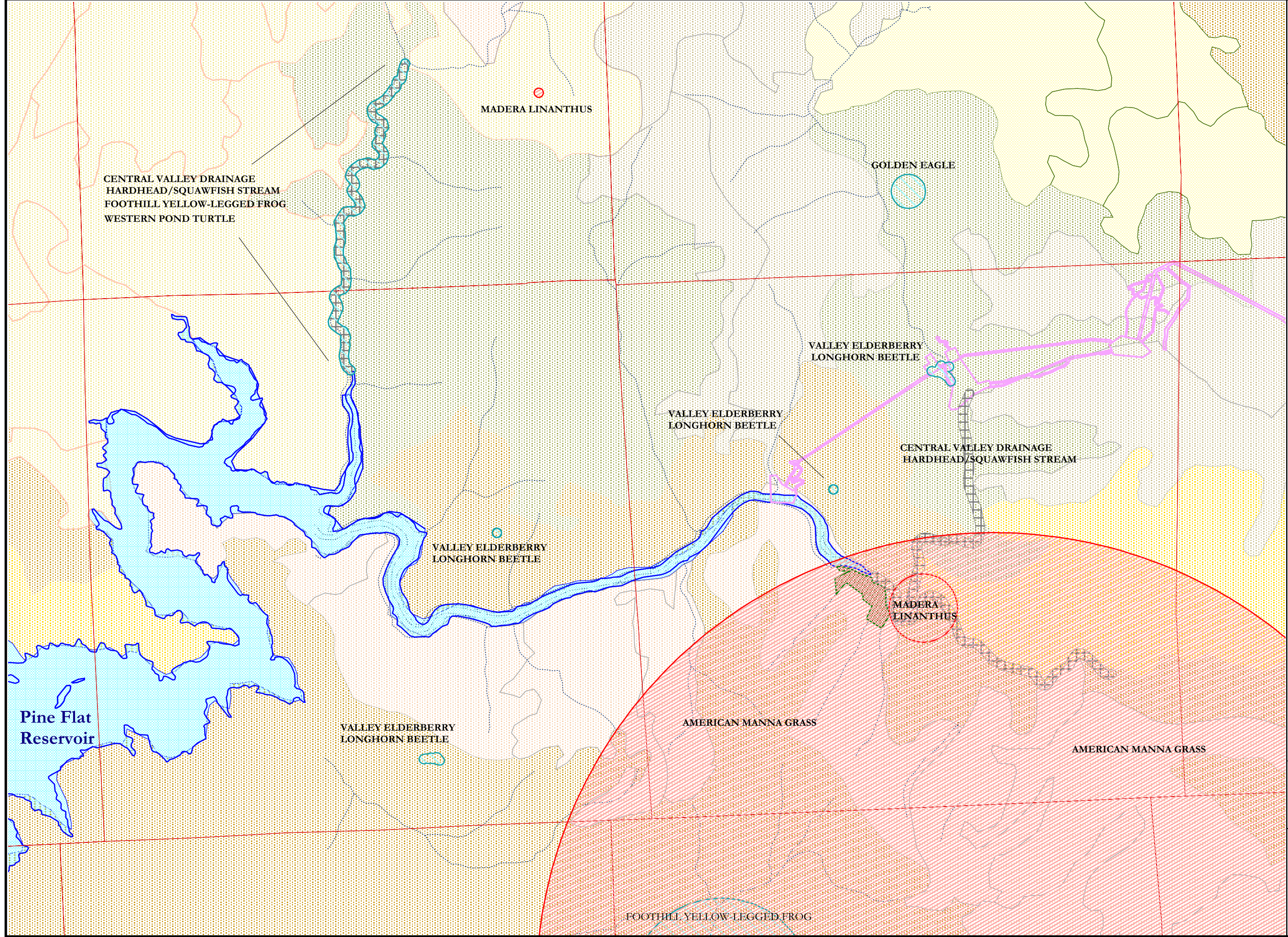
Hydrodivestiture EIR

**Figure 4.5 - 47**  
**Species Occurrences**  
**Kings Crane-Helms**  
**Aspen Regional Bundle**  
*Environmental Group*





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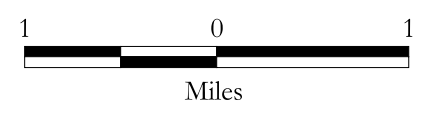
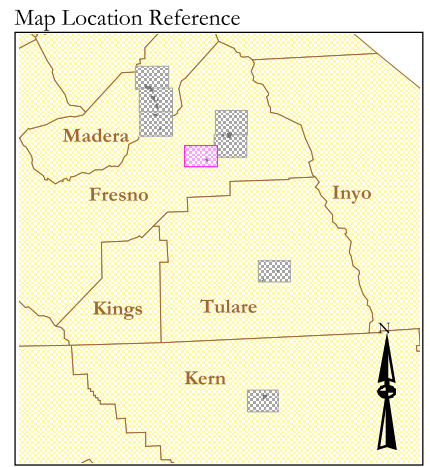


**Special-Status Species**

- Animal (Blue wavy line)
- Plant (Red wavy line)
- Habitat (Grey grid)
- FERC License Area (Pink wavy line)
- Water (Blue dotted)
- Land (Yellow dotted)
- Watershed Lands (Green wavy line)
- Contiguous Land (Brown dotted)
- Associated Land (Green dotted)
- Lake / Reservoir (Blue solid)
- County Boundary (Dashed line)
- Township and Range Lines (Red solid line)

**Habitat Type**

- Annual Grassland (Yellow dotted)
- Blue Oak Woodland (Brown dotted)
- Blue Oak-Foothill Pine (Orange dotted)
- Chamise-Redshank Chaparral (Green dotted)
- Montane Hardwood (Pink dotted)
- Ponderosa Pine (Grey dotted)
- Red Fir (Red dotted)
- White Fir (Yellow solid)



**Hydrodivestiture EIR**

**Figure 4.5 - 48**  
**Species Occurrences**  
**Kings Crane-Helms**  
**Regional Bundle**

**Aspen**  
Environmental Group

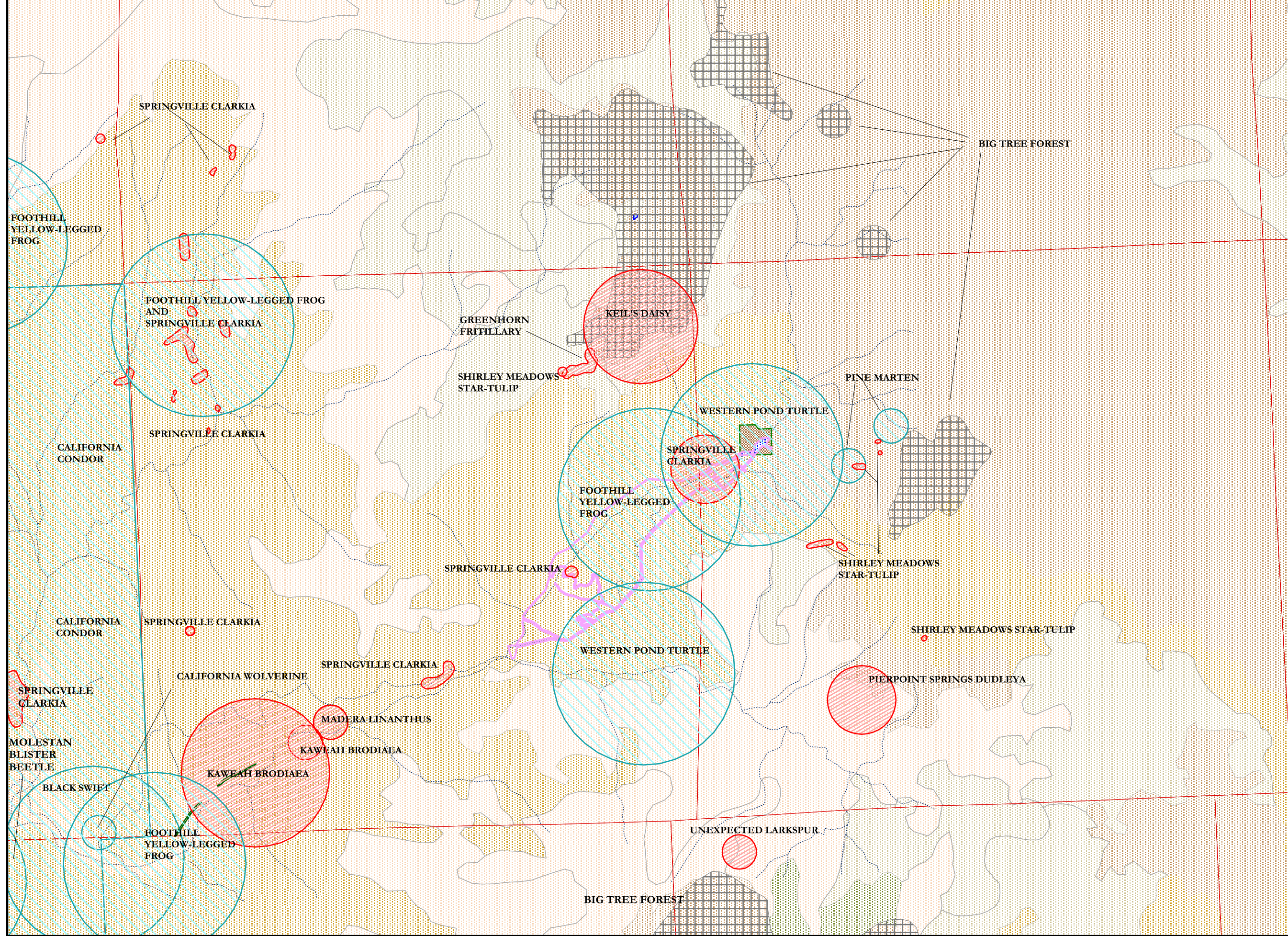


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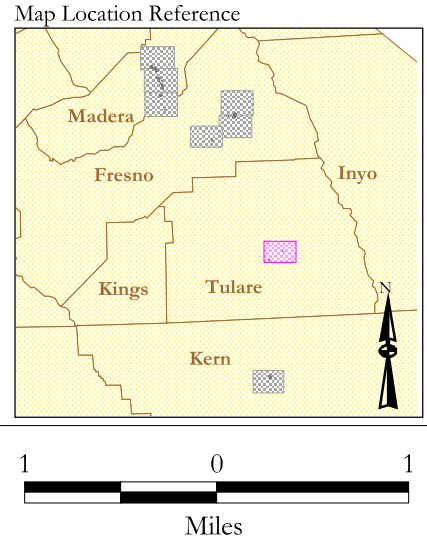


Special-Status Species

- Animal
- Plant
- Habitat
- FERC License Area
- Water
- Land
- Watershed Lands
- Contiguous Land
- Associated Land
- Lake / Reservoir
- County Boundary
- Township and Range Lines

Habitat Type

- Barren
- Blue Oak Woodland
- Montane Hardwood
- Montane Hardwood-Conifer
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer



**Hydrodivestiture EIR**

**Figure 4.5 - 49**

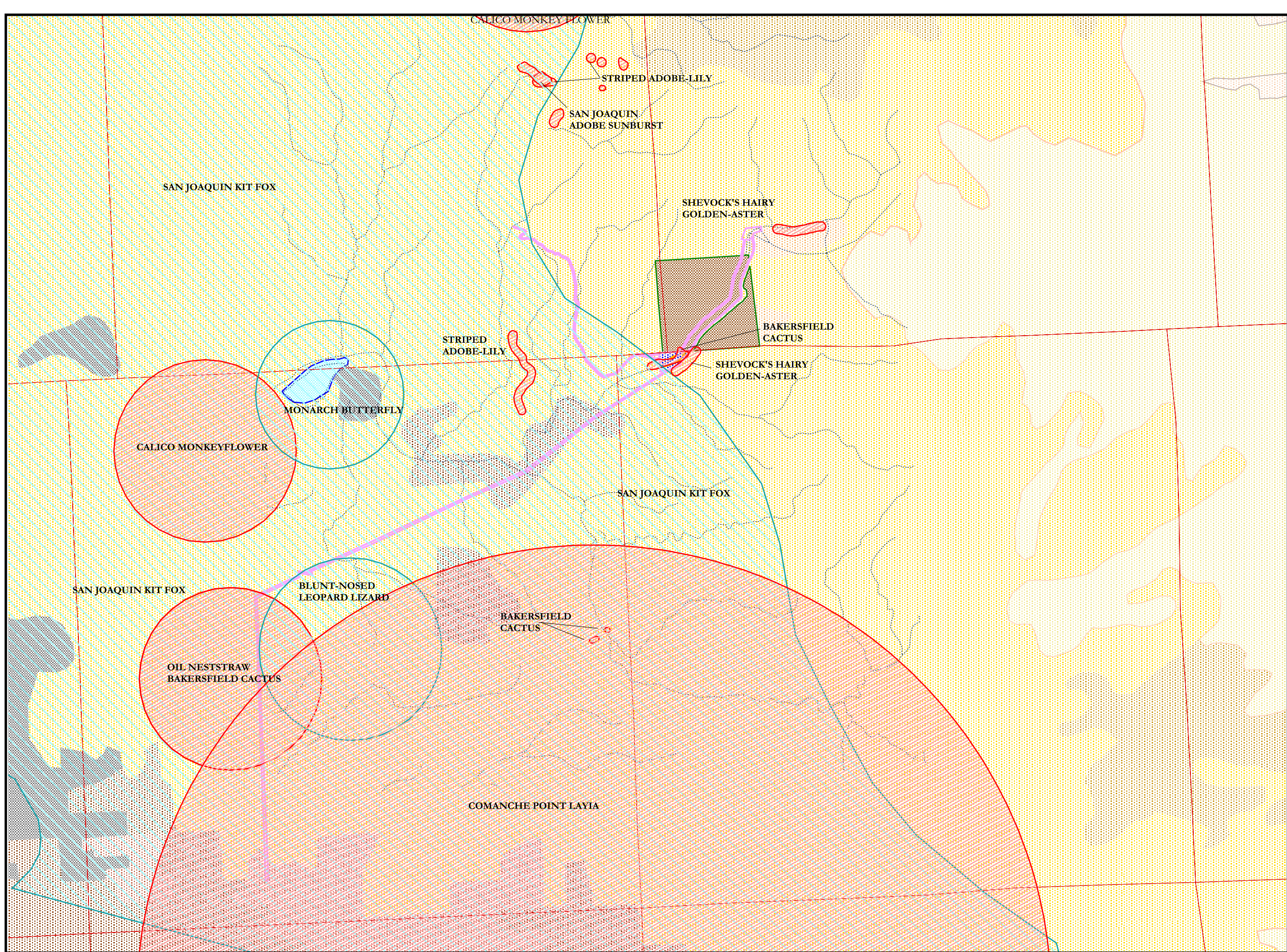
**Species Occurrences**

**Kings Crane-Helms**

**Aspen Regional Bundle**

*Environmental Group*





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Special-Status Species

Animal

Plant

Habitat

FERC License Area

Water

Land

Watershed Lands

Contiguous Land

Associated Land

Lake / Reservoir

County Boundary

Township and Range Lines

Habitat Type

Annual Grassland

Barren

Blue Oak Woodland

Blue Oak-Foothill Pine

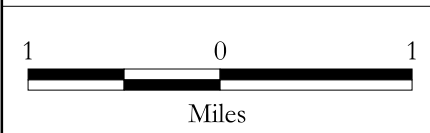
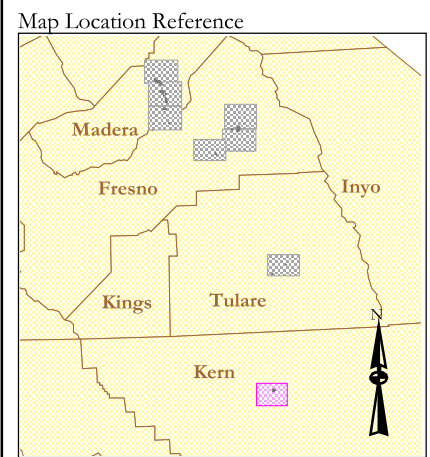
Cropland

Montane Hardwood

Montane Hardwood-Conifer

Orchard and Vineyard

Urban



Hydroinvestiture EIR

Figure 4.5 - 50

Species Occurrences

Kings Crane-Helms

Regional Bundle

Aspen Environmental Group