

## Environmental Constraints

### J.1 DETAILED DESCRIPTION OF BIOLOGICAL RESOURCES

The biological resources in the vicinity of the proposed alternatives include general wildlife habitats and vegetation communities, sensitive habitats, special-status plant species, and special-status wildlife species.

#### GENERAL WILDLIFE HABITATS/VEGETATION COMMUNITIES

Ten wildlife habitats are present in the vicinity of the alternatives, including blue oak woodland, chamise-redshank chaparral, mixed chaparral, montane chaparral, annual grassland, montane hardwood, Sierran mixed conifer, agriculture, and urban. Maps illustrating the location and extent of each of these wildlife habitats are provided in Chapter 6. The diversity of wildlife found within each wildlife habitat is dependent on the vegetation present. For each wildlife habitat, there are one or more corresponding vegetation community classifications. A discussion of the wildlife habitats/vegetation communities that are present in the vicinity of the alternatives is provided below. Classification is based on Mayer and Laudenslayer (1988), cross-referenced to Holland (1986) and Sawyer and Keeler-Wolf (1995).

#### **BLUE OAK WOODLAND**

Blue oak woodland is a highly variable community dominated by blue oak (*Quercus douglasii*) but usually consisting of several other oak species, as well as foothill pine (*Pinus sabiniana*). This community typically occurs in well-drained soils below 3,000-4,000 feet in elevation. It varies from open savannas with grassy understories to fairly dense woodlands with shrubby understories. Blue oak woodland is the Holland vegetation community that makes up this habitat (Holland 1986). Some common species found in this vegetation community are California buckeye (*Aesculus californica*), manzanita (*Arctostaphylos* ssp.), ceanothus (*Ceanothus* spp.), and black oak (*Quercus kelloggii*). Mature blue oak woodlands provide suitable or optimal habitat for numerous wildlife species, including but not limited to red-tailed hawk (*Buteo jamaicensis*), western scrub jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), oak titmouse (*Baeolophus inornatus*), coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), and western gray squirrel (*Sciurus griseus*).

#### **CHAMISE-REDSHANK CHAPARRAL**

This habitat is typically found below 4,000 feet on thin soils with little organic matter accumulation, on steep slopes and ridges (Mayer and Laudenslayer 1988). In northern California, chamise-redshank chaparral generally grades into annual grassland and blue oak-gray pine below it. The Holland vegetation communities that can make up this habitat include chamise chaparral, redshank chaparral, and gabbroic northern mixed chaparral. Gabbroic northern mixed chaparral is dominated by chamise (*Adenostoma fasciculatum*) and is restricted to the ultramafic gabbros of the Rescue stony loam soils in

the Pine Hill area of El Dorado County. Characteristic plant species found in gabbroic northern mixed chaparral include Mariposa manzanita (*Arctostaphylos viscida*), Lemmon's ceanothus (*Ceanothus lemmonii*), Pine Hill ceanothus (*Ceanothus roderickii*), Red Hills soaproot (*Chlorogalum grandiflorum*), Pine Hill flannelbush (*Fremontodendron decumbens*), El Dorado bedstraw (*Galium californicum* ssp. *sierrae*), Layne's ragwort (*Senecio layneae*), El Dorado County mule ears (*Wyethia reticulata*), Bisbee Peak rush-rose (*Helianthemum suffrutescens*), and Stebbin's morning-glory (*Calystegia stebbinsii*). All but two of these plant species (Mariposa manzanita and Lemmon's ceanothus) are considered special-status by state, federal, or local resource agencies. Common wildlife species found in chamise-redshank chaparral are similar to those found in mixed and montane chaparral habitats but also include squirrels, chipmunks, California kangaroo rat (*Dipodomys californicus*), and several species of sparrows and hawks.

### **MIXED CHAPARRAL**

Mixed chaparral occurs on south-facing, dry, rocky, and often steep slopes with little soil. Northern mixed chaparral is characterized by dense vegetation that is usually less than five feet tall. This vegetation type is dominated by whiteleaf manzanita (*Arctostaphylos viscida*), ceanothus, and small black oaks (*Quercus kelloggii*). The herbaceous layer is sparse, consisting mainly of annual grasses and herbs. There are nineteen vegetation communities described by Holland (1986) that are considered as mixed chaparral habitat. Seven of these vegetation communities could occur in El Dorado County including upper sonoran mixed chaparral, serpentine chaparral, scrub oak chaparral, interior live oak chaparral, upper sonoran manzanita chaparral, mesic north slope chaparral, poison oak chaparral, upper sonoran subshrub scrub, and foothill pine-chaparral woodland. Common wildlife species that occur in this habitat include but are not limited to; western fence lizard, California quail, wrentit, Bewick's wren, California thrasher, gray fox, and coyote.

### **MONTANE CHAPARRAL**

This habitat occurs in mountainous terrain from 3,000 to 10,000 feet in elevation. Species structure ranges from prostrate to treelike and mature stands can become so dense that mammals cannot penetrate them. Species composition is quite variable in montane chaparral and depends on elevation, geographic range, soil type, and aspect. There are four vegetation communities described by Holland (1986) that are considered as montane chaparral including montane dwarf scrub, montane manzanita chaparral, montane ceanothus chaparral, and mixed montane chaparral. In the vicinity of the alternatives, mixed montane chaparral is the predominant montane chaparral community. Mixed montane chaparral is dominated by Sierra chinquapin (*Chrysolepis sempervirens*), and several species of manzanita or ceanothus, particularly greenleaf manzanita (*Arctostaphylos patula*), Mariposa manzanita (*Arctostaphylos viscida*), pinemat manzanita (*Arctostaphylos nevadensis*), mountain whitethorn (*Ceanothus cordulatus*), and deerbrush (*Ceanothus integerrimus*) are present. Herbaceous understory is usually sparse, except in the first season immediately following a fire. Montane chaparral provides critical summer range forage, escape cover, and fawning habitat for mule deer (*Odocoileus hemionus*). Other common wildlife species that occur in this habitat include but are not limited to; western fence lizard (*Sceloporus occidentalis*), California quail (*Callipepla californica*), mountain quail (*Oreortyx pictus*), wrentit (*Chamaea fasciata*), Bewick's wren (*Thryomanes bewickii*), California thrasher (*Toxostoma redivivum*), gray fox (*Urocyon cinereoargenteus*), and coyote. The proposed reservoir on Alder Creek is within montane chaparral habitat.

### **ANNUAL GRASSLAND**

This habitat type is found in the non-native grassland vegetation community. Non-native grassland consists of a dense to sparse cover of annual grasses often associated with native wildflowers, especially in years with favorable rainfall. This community is distributed below 3,000 feet in the valleys and foothills of most of California, except for the north coast and desert regions. Characteristic species include wild oat (*Avena barbata* and *A. fatua*), ripgut brome (*Bromus diandrus*) and other bromes (*Bromus* spp.), barley (*Hordeum* spp.), fescue (*Festuca* spp. and *Vulpia* spp.), stork's bill (*Erodium* spp.), California poppy (*Eschscholzia californica*), gilias (*Gilia* spp.), and lupines (*Lupinus* spp.). Common wildlife species typically found in this habitat include, but are not limited to, western fence lizard, western rattlesnake (*Crotalus viridis*), turkey vulture (*Cathartes aura*), American kestrel (*Falco sparverius*), California ground squirrel, Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), black-tailed jackrabbit (*Lepus californicus*), and coyote.

### **MONTANE HARDWOOD**

This habitat occurs throughout California at elevations from 300 to 9,000 feet west of the Cascade-Sierra Nevada crest, and in localized areas of El Dorado, Placer, Alpine, and San Bernardino counties east of the crest. Montane hardwood habitat is composed of a pronounced hardwood tree layer, a poorly developed shrub layer, and a sparse herbaceous understory. In El Dorado County, characteristic species include California black oak and mixed conifer in the higher elevations and foothill pine, knobcone pine (*Pinus attenuata*), tanoak (*Lithocarpus densiflorus*), Pacific madrone (*Arbutus menziesii*), and California laurel (*Umbellularia californica*) in the lower elevations. Associated understory vegetation includes currant (*Ribes* spp.), wood rose (*Rosa woodsii*), snowberry (*Symphoricarpos* spp.), manzanita, poison oak (*Toxicodendron diversilobum*), and a few forbs and grasses. Characteristic species in this habitat include, but are not limited to, scrub jay, Stellar's jay, acorn woodpecker (*Melanerpes formicivorus*), western gray squirrel, mountain quail, band-tailed pigeon (*Columba fasciata*), California ground squirrel, and mule deer.

### **SIERRAN MIXED CONIFER FOREST**

Sierran mixed conifer forest is a lower montane coniferous forest type, typically found between 5,000 and 7,000 feet in elevation. This forest type has several dominant species including ponderosa pine (*Pinus ponderosa*), fir (*Abies* spp.), and sugar pine (*Pinus lambertiana*). Other species present include incense cedar (*Calocedrus decurrens*), black oak (*Quercus kelloggii*), Jeffrey pine (*Pinus jeffreyi*), and Douglas fir (*Pseudotsuga menziesii*). The understory is usually sparse and may include young trees as well as shrub and herbaceous species found in Jeffrey pine forest. Common wildlife species that occur in this habitat include but are not limited to; western fence lizard, dark-eyed junco (*Junco hyemalis*), mountain chickadee (*Parus gambeli*), Stellar's jay (*Cyanocitta stelleri*), northern flicker (*Colaptes auratus*), olive-sided flycatcher (*Contopus borealis*), western wood pewee (*C. sordidulus*), hermit thrush (*Catharus guttatus*), western gray squirrel, and mule deer.

### **AGRICULTURE**

This habitat is usually represented by a monoculture of a cultivated plant species and is found on flat to gently rolling terrain. Vegetation in this habitat varies in size, shape, and growing patterns. Most crops

are grown in rows but alfalfa and small grains form dense stands with up to 100 percent canopy cover. Agricultural habitats typically consist of exotic annual plant species. Many species of rodents and birds have adapted to agricultural habitats. Some species of wildlife that use agricultural habitats include, but are not limited to, black-tailed jackrabbit, mule deer, raptors, doves, and ring-necked pheasant (*Phasianus colchicus*).

### **URBAN**

Urban areas are comprised of areas disturbed by prior construction, on-going maintenance activities, access roads, recreational activities, and urban encroachment. These areas tend to support exotic species, particularly in areas of high traffic or soil disturbance. Common exotic species in the urban areas include annual grasses, thistles, Klamathweed (*Hypericum perforatum*), plantain (*Plantago* sp.), Scotch broom (*Cytisus scoparius*), woolly mullein (*Verbascum thapsus*), periwinkle (*Vinca major*), English ivy (*Hedera helix*), Himalayan blackberry (*Rubus discolor*), and cut-leaved blackberry (*R. laciniatus*). Native species typically found in these disturbed areas include self-heal (*Prunella vulgaris*), deerbrush, mountain dogwood (*Cornus nuttallii*), thimbleberry (*Rubus parviflorus*), and honeysuckle (*Lonicera* spp.). Common wildlife species include, but are not limited to, western fence lizard, gopher snake (*Pituophis melanoleucus*), mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), opossum (*Didelphis marsupialis*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*).

### **SPECIAL-STATUS BIOLOGICAL RESOURCES**

Following is a discussion of the plant and wildlife species that have been afforded special recognition by federal, state, or local resource agencies and organizations. Special-status species include species federally listed as endangered or threatened (FT/FE), federal candidate species for listing (FC), federal species of special concern (FSC), species protected by the State of California as endangered, threatened, or rare (CE, CT, CR), state species of special concern (CSC), and species identified by the California Native Plant Society (CNPS) as rare or of limited distribution (CNPS). Table 1 in Chapter 6 summarizes the status, general habitat, and potential for occurrence of special-status plant and wildlife species that were obtained through a search of the *California Natural Diversity Database* (CNDDDB; CDFG 2002a) and *CNPS Inventory of Rare and Endangered Plants of California* (CNPS 2001). Species potential for occurrence in the project area is based on the presence of suitable habitat as mapped from the WHR system spatial data obtained from CaSIL (CDFG 2002b). Only species that are known to occur within 5 miles of the proposed alternatives are discussed in detail below. Other special-status species may occur in the project area, as described in Table 1. Plant species descriptions are adapted from the *Inventory of Rare and Endangered Plants of California* (CNPS 2001) and wildlife species descriptions are from *California's Wildlife Volumes I, II, and III* (Zeiner et al. 1988-1990) unless otherwise noted.

### **SENSITIVE HABITATS**

#### **Waters of the United States**

Waters of the United States are subject to §404 of the Clean Water Act and are regulated by the U.S. Army Corps of Engineers (ACOE). They include “navigable” waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate

or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Intermittent drainages are also protected under Sections 1601 through 1603 of the California Fish and Game Code. Wetlands are defined as "... those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (ACOE 1987). The majority of wetlands considered "jurisdictional" meet three wetland criteria: hydrophytic vegetation (plants that grow in water or very moist ground), hydric soils (wet soils), and wetland hydrology.

Waters of the U.S. Identified within 5 miles of the Alternatives Include:

- Rivers
- Lakes and Reservoirs
- Sphagnum Bog
- Northern Hardpan Vernal Pool
- Central Valley Drainage Stream
- Central Valley Drainage Hardhead/Squawfish Stream
- Central Valley Drainage Resident Rainbow Trout Stream

### **SOILS**

Rescue soils are derived from gabbroic rock or 'gabbro'. Gabbro is a medium or coarse grained rock consisting primarily of plagioclase feldspar and pyroxene. Gabbro is highly variable in mineralogy and composition. Gabbro soils are usually red in color, mildly acidic, rich in iron and magnesium, and may contain other heavy metals such as chromium. There are four species of Rescue soils: Rescue clayey, Rescue sandy loam, Rescue very stony sandy loam, and Rescue extremely stony sandy loam. The Rescue soils series is named after the nearby town of Rescue, California and occurs in western El Dorado County over a 30,000 acre, oval-shaped area centering around Green Valley Road and stretching from Folsom Lake in the north to Highway 50 in the south. The gabbroic northern mixed chaparral vegetation community is found only on the rescue stony loam soils found here.

Serpentine soils are derived from the weathering of serpentinite rock. Serpentine soil habitats are distinct because of chemical and physical characteristics that make them poor in nutrients and sometimes toxic due to heavy metals content. These habitats may also have lower soil moisture availability. Low nitrogen and phosphorus content, low calcium in relation to high magnesium, high erodibility, and low moisture availability in serpentine habitats has led to highly specialized flora (Kruckberg 1984).

There are a number of special-status plant species associated with Rescue and serpentine soils including: Layne's ragwort, Pine Hill ceanothus, Pine Hill Flannelbush, Stebbin's morning-glory, El Dorado County mule ears, Bisbee peak rush-rose, Red Hills soaproot, and El Dorado bedstraw.

### **RARE PLANT PRESERVES**

The Pine Hill Ecological Preserve was established to protect the rare plants and plant communities that occur on the Rescue soils series found in the western portion of El Dorado County. There are eight special-status plant species found in the preserve including Layne's ragwort, Pine Hill ceanothus, Pine

Hill Flannelbush, Stebbin's morning-glory, El Dorado County mule ears, Bisbee Peak rush-rose, Red Hills soaproot, and El Dorado bedstraw. Four of these species (Stebbin's morning-glory, Pine Hill ceanothus, Pine Hill flannelbush, El Dorado bedstraw, and El Dorado County mule ears) are not known to occur outside of this portion of El Dorado County (USFWS 2002b). Five of these species: Stebbin's morning-glory, El Dorado bedstraw, Pine Hill ceanothus, and Pine Hill flannelbush have been protected by the Federal Endangered Species Act since 1996 (USFWS 2002b). As part of the recovery plan for these listed species, the USFWS has recommended preservation of at least 5,100 acres of the gabbro soils in western El Dorado County.

In 1992, El Dorado County established a Rare Plant Advisory Committee to identify preserve sites and management strategies to protect the unique ecosystem in the Pine Hill area. The committee has recommended a total area of 3,500 acres for preserve sites but only 1,518 acres have been protected to date (USFWS 1999). As part of the El Dorado County General Plan (1996), the county has established a policy to protect the eight sensitive plant species known as the Pine Hill endemics and their habitats through the establishment of the Pine Hill Ecological Preserve.

The preserve consists of five units including the Cameron Park Unit to the south, the Pine Hill Unit (centrally located), the Penny Lane Unit east of Pine Hill, the Martel Creek Unit west of Pine Hill, and the Salmon Falls Unit to the North. These five units are discontinuous but are managed as a single preserve (El Dorado County 2002). The preserve is a collaborative project supported by the California Department of Fish and Game, California Department of Forestry and Fire Protection, El Dorado County, El Dorado Irrigation District, U.S. Bureau of Land Management, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, and the American River Conservancy (El Dorado County 2002).

### ***SPECIAL-STATUS PLANT SPECIES***

#### **Nissenan Manzanita (*Arctostaphylos nissenana*) – FSC, CNPS 1B**

Nissenan manzanita is a perennial shrub that occurs on open, rocky ridges and closed-cone coniferous forests. This species flowers from February to March. Nissenan manzanita is known only from El Dorado and Tuolumne counties and occurs at elevations from 1,476 to 3,600 feet. One known occurrence of Nissenan manzanita was identified within 5 miles of the proposed reservoir on Canyon Creek and four known occurrences were identified within 5 miles of the proposed Texas Hill Reservoir. The species is reported within 5 miles of the BWTP and Placerville Ridge Conduit, Weber Reservoir, the Crawford Ditch System, and Ringold Creek Pipeline, Placerville and 49'er extensions, Reservoir 10, Texas Hill Reservoir, Reservoir 9 Pipeline, Reservoir 11 Pipeline, and Canyon Creek Dam.

#### **Big Scale Balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*) – FSC, CNPS 1B**

Big scale balsamroot occurs in chaparral, cismontane woodland, and valley and foothill grassland from 295 to 5,000 feet. It will sometimes occur on serpentine substrates. It blooms from March to June. This species is recorded within 5 miles of the Folsom North Pumping Project.

#### **Pleasant Valley Mariposa Lily (*Calochortus clavatus* var. *avius*) – FSC, CNPS 1B**

Pleasant Valley mariposa lily is a perennial herb that occurs in lower montane coniferous forests in Josephine silt loam and volcanic soils. This species flowers from May to July. It is known only from El Dorado, Amador, and Mariposa counties and occurs at elevations from 1,000 to 5,900 feet. This species

is recorded within 5 miles of Weber Reservoir, Crawford Ditch and Ringold Creek Pipeline, and Alder Creek Dam and Conveyance Routes.

**Stebbin's Morning-glory (*Calystegia stebbinsi*) – FE, CE, and CNPS 1B**

Stebbin's morning-glory is a perennial herb that grows in chaparral openings and cismontane woodlands in serpentinite or gabbroic soils. This morning-glory species flowers from April to July. It is known only from El Dorado and Nevada counties from less than 15 occurrences. The elevational range of this species is 600 to 2,400 feet. Eight known occurrences of Stebbin's morning-glory were identified within 5 miles of the components at Folsom Lake. The species is recorded in serpentine and gabbro soils within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.

**Pine Hill Ceanothus (*Ceanothus roderickii*) – FE and CNPS 1B**

Pine Hill ceanothus is an evergreen shrub that grows in chaparral and cismontane woodlands on serpentinite or gabbroic soils. This ceanothus flowers from May to June. It is known only from El Dorado County from approximately eleven occurrences. Eleven known occurrences of Pine Hill ceanothus were identified within 5 miles of the components at Folsom Lake. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.

**Red Hills Soaproot (*Chlorogalum grandiflorum*) – FSC and CNPS 1B**

Red Hills soaproot is a perennial herb that grows in cismontane woodlands and chaparral on serpentinite or gabbroic soils. This soaproot species flowers from May to June. It is known only from El Dorado, Amador, Placer, and Tuolumne counties and occurs at elevations ranging from 800 to 3,300 feet. Two known occurrences of Red Hills soaproot were identified within 5 miles of the components at Folsom Lake. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.

**Pine Hill Flannelbush (*Fremontodendron decumbens*) – FE, CR, and CNPS 1B**

Pine Hill flannelbush is an evergreen shrub that is endemic to the gabbroic chaparral community in El Dorado County. It is known from fewer than eleven occurrences. This species blooms from April through July and occurs at elevations ranging from 100 to 4,500 feet. Eight known occurrences of Pine Hill flannelbush were identified within 5 miles of the components at Folsom Lake. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.

**El Dorado Bedstraw (*Galium californicum* ssp. *sierrae*) – FE, CR, and CNPS 1B**

El Dorado bedstraw is a perennial herb that is endemic to the gabbroic communities in western El Dorado County. It is known from fewer than ten occurrences. This species flowers from May to June and its elevational range is from 328 to 1,918 feet. Eight known occurrences of El Dorado bedstraw were identified within 5 miles of the components at Folsom Lake. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.

**Bisbee Peak Rush-Rose (*Helianthemum suffrutescens*) – FSC and CNPS 3**

Bisbee Peak rush-rose is an evergreen shrub that grows in chaparral often on serpentine, Ione, or gabbroic soils. Serpentine and gabbroic soils are found within the project area (Exhibit 4). This species flowers from April to June. It is known from El Dorado, Amador, Calaveras, Sacramento, and Tuolumne counties and occurs at elevations ranging from 148 to 2,755 feet. Nine known occurrences of Bisbee Peak rush-rose were identified within 5 miles of the components at Folsom Lake. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline. These occurrences are associated with gabbroic and serpentine soils (Exhibit 4).

**Parry's Horkelia (*Horkelia parryi*) – FSC and CNPS 1B**

Parry's horkelia is a perennial herb that grows in chaparral and cismontane woodlands. This horkelia species flowers from April to June. It is known from El Dorado, Amador, Calaveras, and Mariposa counties and occurs at elevations ranging from 260 to 3,395 feet. Two known occurrences of Parry's horkelia were identified within 5 miles of the Crawford Ditch. The species is recorded within 5 miles of Weber Creek Reservoir, Crawford Ditch System, and Ringold Creek Pipeline.

**Stebbin's Phacelia (*Phacelia stebbinsi*) – FSC and CNPS 1B**

Stebbin's phacelia is an annual herb that grows in cismontane woodland, lower montane coniferous forest, and meadows and seeps. This phacelia flowers from June to July. It is known only from El Dorado, Placer, and Nevada counties and occurs at elevations ranging from 2,000 to 6,590 feet. Seven known occurrences of Stebbin's phacelia were identified within 5 miles of the Rubicon River components. The species is recorded within 5 miles of the Rubicon River Project.

**Layne's Ragwort (*Senecio layneae*) – FT and CNPS 1B**

Layne's ragwort is a perennial herb that grows in chaparral and cismontane woodland in serpentinite or gabbroic soils. This ragwort species flowers from April to July. It is known only from El Dorado, Tuolumne, and Yuba counties and occurs at elevations ranging from 650 to 3,280 feet. Twenty-four known occurrences of Layne's ragwort were identified within 5 miles of the Folsom Lake components and twenty known occurrences of Layne's ragwort were identified within 5 miles of the Weber Creek components. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, Weber Reservoir, Crawford Ditch and Ringold Creek Pipeline, Placerville and 49'er extensions, Texas Hill Reservoir, the Reservoir 9 Pipeline, and the Reservoir 11 Pipeline.

**El Dorado County Mule Ears (*Wyethia reticulata*) – FSC and CNPS 1B**

El Dorado County mule ears is a perennial herb that grows in chaparral, cismontane woodland, and lower montane coniferous forest in clay or gabbroic soils. This species of mule ears flowers from May to July. It is known only from El Dorado County and occurs at elevations ranging from 600 to 2,070 feet. The species is reported within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline

**SPECIAL-STATUS WILDLIFE SPECIES****Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) - FT**

The VELB was listed as federally threatened by USFWS in 1980 (USFWS 1980). This species is completely dependent on its host plant, elderberry (*Sambucus* spp.) and is associated with various species of elderberry below 3,000 feet in elevation. The VELB generally occurs along waterways and in floodplains that support remnant stands of riparian vegetation. Both larvae and adult VELB feed on elderberries. Larvae feed internally on the pith of the trunk and larger branches, while adult beetles appear to feed externally on elderberry flowers and foliage. Prior to metamorphosing into the adult life stage, VELB larvae chew an exit hole in the elderberry trunk, through which the adult beetle later exits the plant. The life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of the elderberry plant. The largest percentage of specimens have been collected in May. During this period the beetles mate, and the females lay eggs on living elderberry plants. Seven known occurrences of VELB were identified in the alternatives. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, and BLWTP and facilities.

**Vernal Pool Tadpole Shrimp (*Lepidurus packardii*) – FE**

The vernal pool tadpole shrimp is known from 18 populations in the Central Valley, ranging from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Merced County, and from a single vernal pool complex on the San Francisco Bay National Wildlife Refuge in the City of Fremont, Alameda County. Vernal pool tadpole shrimp adults reach a length of 2 inches in length. The life history of the vernal pool tadpole shrimp is linked to the seasonal cycle of the vernal pool. After winter rainwater fills the pool, the population is reestablished from cysts that lie dormant in the dry pool sediments. Sexually mature adults have been observed in vernal pools three to four weeks after the pools had been filled. Some cysts hatch immediately and the others remain dormant in the soil to hatch during later rainy seasons. This animal inhabits vernal pools containing clear to highly turbid water, ranging in size from 54 square feet in the former Mather Air Force Base area of Sacramento County, to the 89-acre Olcott Lake at Jepson Prairie (USFWS 2002). The species has been recorded approximately 7.5 miles southwest of the Oak Ridge Pump Station south of Highway 50 in Sacramento County.

**Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) – FT**

The vernal pool tadpole shrimp is known from 18 populations in the Central Valley, ranging from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Merced County, and from a single vernal pool complex on the San Francisco Bay National Wildlife Refuge in the City of Fremont, Alameda County. Vernal pool tadpole shrimp adults reach a length of 2 inches in length. The life history of the vernal pool tadpole shrimp is linked to the seasonal cycle of the vernal pool. After winter rainwater fills the pool, the population is reestablished from cysts that lie dormant in the dry pool sediments. Sexually mature adults have been observed in vernal pools three to four weeks after the pools had been filled. Some cysts hatch immediately and the others remain dormant in the soil to hatch during later rainy seasons. This animal inhabits vernal pools containing clear to highly turbid water, ranging in size from 54 square feet in the former Mather Air Force Base area of Sacramento County, to the 89-acre Olcott Lake at Jepson Prairie (USFWS 2002b). The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF and BLWTP and facilities.

### Foothill yellow-legged frog (*Rana boylei*) – FSC and CSC

The foothill yellow-legged frog occurs in the Coast Ranges from the Oregon border south to the Transverse Mountains in Los Angeles County, in most of northern California west of the Cascade crest, and along the western flank of the Sierra south to Kern County from sea level to 6,000 feet in the Sierra. The foothill yellow-legged frog is found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. Breeding and egg laying usually await the end of spring flooding and may commence any time from mid-March to May, depending on local water conditions. The breeding season at any locality is usually about two weeks for most populations. Females deposit eggs in clusters of 200 to 300. They hatch in about five days. Tadpoles transform in three to four months. The reduction in the population of this species may be due to predation by the bullfrog (Zeiner et al., 1988). The species is recorded within 5 miles of the Crawford Ditch System and Ringold Creek Pipeline.

### Mountain Yellow-legged Frog (*Rana muscosa*) – FC and CSC

The mountain yellow-legged frog (MYLF) occurs in the Sierras at elevations ranging from 4,500 to 12,000 feet. The MYLF is a pond-breeding species that associates primarily with lakes and ponds in montane riparian, lodgepole pine, subalpine conifer, and meadow habitats. Due to harsh winters and high spring runoff in the higher elevations of the MYLF's range, only large pools and ponds that maintain the low velocities required through metamorphosis are used for breeding. Breeding occurs in shallow water in low-gradient perennial streams and lakes. Tadpoles may transform after their second summer, thus the tadpoles require still, deep-water with fine sediments for overwintering. Adults are commonly observed basking at the edge of pools and along shallow sloped stream margins. Like other pond-breeding frogs and toads, the MYLF is not well-adapted to swift flowing water. However, individuals have been noted basking on open, sunny cobbles adjacent to gently flowing riffles during dispersal season. The species is recorded within 5 miles of the Rubicon River Project and the Alder Creek Dam and its conveyance routes.

### California Red-legged Frog (*Rana aurora draytonii*)– FT and CSC

The California red-legged frog (CRLF) historically occurred in aquatic, riparian, and upland habitats throughout much of California and northern Baja California. It currently ranges from sea level to approximately 3,500 feet, although historical sightings have been reported as high as 4,900 feet in the Sierra Nevada (USFWS 2002). In the foothills along the west slope of the Sierra Nevada, 5 isolated populations of CRLF are known, compared to over 60 historic locations reported (USFWS 2002). However, much of the land in the Sierra Nevada foothills is privately owned and has not been surveyed. Therefore, the actual distribution in this region is unknown. Habitat use by the CRLF varies seasonally and geographically. Breeding typically occurs at night from November to May. Breeding habitat is generally characterized as deep ( $\geq 2$  feet), still or slow-moving water, with cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), and willows (*Salix* spp.) close to water level and shading the water surface. Tadpoles are typically concealed in submergent vegetation and organic debris in shallow, open aquatic habitat. In summer, adults and juveniles seldom venture from ponds or isolated pools in intermittent streams. However, adults have been found in streams up to 1.5 miles away from breeding sites, and have been found as far as 100 feet from water in dense riparian vegetation, for up to 77 days. Federally-designated California red-legged frog critical habitat is present along Weber Creek.

### Northwestern Pond Turtle (*Clemmys marmorata marmorata*) – FSC and CSC

The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest, from sea level to 6,000 feet. The species is associated with permanent or nearly permanent water in a wide variety of habitat types, but typically occurs in areas with slow moving water. However, upland habitat and basking sites must be easily available. They overwinter in underground burrows located in upland habitats. In the warmer months, the pond turtle will bask on rocks and logs near slow moving streams. Western pond turtles lay three to 11 eggs from March to August, and sexual maturity is thought to be attained at approximately eight years of age. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, Crawford Ditch and Ringold Creek Pipeline, Placerville and 49'er extensions, Reservoir 10, Texas Hill Reservoir, Canyon Creek Dam, and Folsom North Pumping Project.

### California Horned Lizard (*Phrynosoma coronatum frontale*) – FSC and CSC

The California horned lizard is uncommon to common in valley-foothill hardwood, conifer and riparian habitats, pine-cypress, juniper, and annual grassland habitats. It ranges from the Central Valley from southern Tehama County south and in the Sierra foothills from Butte County to Tulare County below 4,000 feet. This species occurs in exposed, gravelly substrates with scattered shrubs, clearings in riparian woodlands, and annual grasslands. Eggs are apparently laid in nests constructed by females in loose soil. The reproductive season for the California horned lizard varies from year to year and geographically depending on local conditions. Egg-laying extends from late May through June with a mean clutch size of 13 eggs. Hatching probably occurs after two months. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC.

### Great Egret (*Egretta alba*) – CSC

The great egret is a common yearlong resident throughout all of California except for high mountains and deserts. This species feeds and rests in fresh and saline emergent wetlands, in irrigated agricultural land and pastures, on mudflats and salt ponds, and along the margins of estuaries, lakes, and slow-moving streams. Nesting occurs primarily from March to July in large trees near water, at heights ranging from 10 to 80 feet. Typical clutch size is three to five but ranges from two to six and incubation lasts 26 days. The young are fed by both parents and begin to fly within five to six weeks of hatching. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF and BLWTP and facilities.

### Great Blue Heron (*Ardea herodias*) – FSC and CSC

The great blue heron is a common yearlong resident throughout most of California. This species is typically found in shallow estuaries and saline emergent wetlands but occurs less commonly along riverine and rocky marine shores, in agricultural land, and in mountains above foothills. Roosting occurs in tall, secluded trees and in offshore kelp beds. Nests are usually built at the tops of large, secluded snags or live trees and rarely nests on ground, rock ledges, cliffs, tule mats, or shrubs. The great blue heron prefers secluded groves of tall trees near shallow water. Human disturbances often cause nest desertion. Breeding occurs in February and eggs are laid from late February to March. Typical clutch size is three to four but ranges from one to eight. Incubation lasts approximately 28 days. The young are tended by both parents and may fly at seven weeks but may continue to be fed by parents

for up to 11 weeks. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF and BLWTP and facilities.

### **Bald Eagle (*Haliaeetus leucocephalus*) - CE, CFP, FT, and Federally Proposed for Delisting on 7/26/99, Nesting**

The bald eagle preys mainly on fish, and occasionally on small mammals or birds, by swooping from a perch or from mid-flight. The bald eagle is typically found in coniferous forest habitats with large, old growth trees near permanent water sources such as lakes, rivers, or ocean shorelines. It requires large bodies of water with abundant fish and adjacent snags or other perches for foraging. They prefer perches on high, large-limbed conifers, snags, broken treetops, or rocks that afford them unobstructed views of prey species. A tree selected for nesting is characteristically one of the largest in the stand or at least co-dominant with the overstory. Nest trees provide an unobstructed view of an associated water body and are often in prominent locations on the topography. Nests are usually 50 to 200 feet above the ground, and are typically found within 1 mile of a water body, along isolated and remote shorelines, free from human disturbance. Bald eagles typically breed and winter in low-to-mid elevations from January 1 to August 31. Wintering habitat is similar to nesting habitat. Old growth stands that provide perches for foraging close to water are preferred, and isolation from human disturbance is also an important component. For communal roosting habitat, bald eagles will fly further from large water bodies, compared to nesting habitat, to find habitat that affords protection from inclement weather. Protected areas, such as the lee side of a canyon are preferred. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Rubicon River Project.

### **Northern Goshawk (*Accipiter gentilis*) – FSC and CSC**

Northern goshawk breeds in the north Coast Range, through the Sierra Nevada, and in the Klamath, Cascade, and Warner mountains. The species remains yearlong in breeding areas as a scarce to uncommon resident. It prefers middle and higher elevations and mature, dense conifer forests, usually nesting on north slopes near water in the densest parts of stands, but close to openings. The species uses old nests and maintains alternate nest sites. Breeding occurs March to June. Average clutch size is 3, incubation lasts 36 to 41 days, and brooding lasts 8 to 10 days. Young may leave the nest to perch at about 40 days and usually fledge by 45 days, in August and September. Young begin to hunt by 50 days and are often independent by 70 days. The species is recorded within 5 miles of Alder Creek Dam and its conveyance route.

### **Swainson's Hawk (*Buteo swainsoni*) – FSC and CT**

Swainson's hawks are restricted to portions of the Central Valley and Great Basin regions where suitable nesting and foraging habitat is still available. Central Valley populations are centered in Sacramento, San Joaquin, and Yolo counties. Over 85 percent of Swainson's hawk territories in the Central Valley are in riparian systems adjacent to suitable foraging habitats. Swainson's hawks often nest peripherally to riparian systems of the valley, as well as utilizing lone trees or groves of trees in agricultural fields. Valley oak, Fremont cottonwood (*Populus fremontii*), California black walnut, and large willow (*Salix* spp.) with an average height of about 58 feet, and ranging from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. Swainson's hawks require large, open grasslands with abundant prey in association with suitable nest trees. Breeding occurs late March to late August, with peak activity late May through July. Typical clutch size is two to three, but sometimes eggs. Suitable

foraging areas include non-native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Potential foraging areas are those areas within ten miles of an active Swainson's hawk nest. The species is reported within 5 miles of EDHWTP and Folsom Lake RWPF.

### **Black Swift (*Cypseloides niger*) – FSC, CSC (nesting)**

The black swift breeds locally in the Sierra Nevada and Cascade Range; the San Gabriel, San Bernardino, and San Jacinto mountains; and in coastal bluffs and mountains from San Mateo County south to San Luis Obispo County. It nests in moist crevices or caves on sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons. It forages widely over many habitats. In migration, it is rare and irregular outside the breeding range and does not winter in California. Nests are constructed of mud mixed with moss, ferns, seaweed, or other plant materials and located in a deep, dark crevice, in a cave, or under an overhang. Nesting occurs in colonies of a few pairs. The breeding season lasts from early June to late August. Only one egg per year is laid, and incubation lasts 24 to 27 days. Altricial young leave the nest at about 45 days. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and Crawford Ditch and Ringold Creek Pipeline.

## **J.2 RELEVANT BIOLOGICAL REGULATIONS**

### **FEDERAL ENDANGERED SPECIES ACT**

Pursuant to the federal Endangered Species Act (ESA), USFWS has authority over projects that may affect the continued existence of a federally listed species. Species are defined as Threatened or Endangered by USFWS if they are listed in Title 50 of the Code of Federal Regulations (Sections 7.11 or 17.12). Section 9 of ESA and federal regulations prohibit the “take” of federally listed species; take is defined under ESA, in part, as killing, harming, or harassment of such species. Under federal regulations, take is further defined to include habitat modification or degradation where it actually results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. An incidental “take” permit under Section 10(a), or federal consultation under Section 7, ESA is required if the project might affect a federally listed species.

For projects where federal action is not involved and take of a listed species may occur, the project proponent must secure an incidental take permit under Section 10(a) of the federal Endangered Species Act. Typically, the Section 10(a) process is initiated when the project proponent proposes an action that may take a listed species, and there is no federal agency with permit authority over the project area. Section 10(a) of ESA allows USFWS/National Marine and Fisheries Service (NMFS) to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan (HCP) that includes components to minimize and mitigate impacts associated with the take. Following review of the HCP, USFWS/NMFS issues an opinion based on whether the project threatens the continued existence of the species and would review any plans for avoidance of impacts to the species and its habitat. After the review is completed, USFWS/NMFS releases a determination whether to issue a permit to allow the incidental take.

Take of a federally listed species may be approved through Section 7 consultation between USFWS and another federal agency, if the proposed project is sponsored by or under another federal agency's

jurisdiction. An example of when a Section 7 consultation is applicable is when the U.S. Army Corps of Engineers (USACE) issues a Section 404 permit for fill of wetlands. As part of the 404 process, USACE initiates informal consultation with USFWS/NMFS. Prior to completion of a Biological Assessment (BA), USFWS determines whether the proposed project would have “no effect” on listed Threatened or Endangered species or “may affect” these species. Should USFWS/NMFS render a “may affect” determination, formal consultation would be initiated between USFWS/NMFS and the federal lead agency via submittal of the BA to USFWS/NMFS. A BA evaluates the effects of a project on listed and proposed Threatened and Endangered species. USFWS then prepares a Biological Opinion regarding whether the project would jeopardize the continued existence of the species.

## **CLEAN WATER ACT**

Section 404 of the Clean Water Act (CWA) establishes a requirement to obtain a permit prior to any activity that involves any discharge of dredged or fill material into “Waters of the United States”, including wetlands. Waters of the U.S. include navigable waters, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Pursuant to Section 404 of the CWA, USACE regulates and issues permits for such activities. Nearly all surface waters and wetlands in California meet the criteria for Waters of the U.S., including intermittent streams and seasonal lakes and wetlands. Activities that require a permit under Section 404 include placing fill or riprap, grading, mechanized land clearing, and dredging. Any activity that results in the deposit of dredge or fill material within the “Ordinary High Water Mark” of Waters of the U.S. usually requires a permit, even if the area is dry at the time the activity takes place.

## **MIGRATORY BIRD TREATY ACT**

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, implements domestically a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former U.S.S.R., which provide for international migratory bird protection and authorize the Secretary of the Interior to regulate the taking of migratory birds. MBTA provides that it shall be unlawful, except as permitted by regulations, “at any time, by any means, or in any manner, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird, included in the terms of conventions” with certain other countries (16 U.S.C. 703). The current list of species protected by MBTA can be found in Title 50, Code of Federal Regulations §10.13. Loss of non-native species, such as house sparrow, European starling, and rock dove, are not covered by this statute.

## **CALIFORNIA ENDANGERED SPECIES ACT**

Pursuant to the California Endangered Species Act (CESA), consultation with CDFG is required for projects that could affect a state listed Threatened or Endangered species. Threatened and Endangered species are listed in Title 14, California Code of Regulations §§670.2 and 670.5. Section 2080 of CESA prohibits “take” of any of these species. The take of state listed species incidental to otherwise lawful activities requires a permit, pursuant to §2081(b) of CESA. The State has the authority to issue an incidental take permit under Section 2081 of the Fish and Game Code or to coordinate with

USFWS/NMFS during the Section 10(a) process to make the federal permit also apply to state-listed species.

### **CALIFORNIA FISH AND GAME CODE §1600 – FISH AND WILDLIFE PROTECTION AND CONSERVATION**

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources is subject to regulation by CDFG, pursuant to §§1600 through 1603 of the California Fish and Game Code. Section 1603 governs any person and includes that it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by CDFG, or use any material from the streambeds without first notifying CDFG of such activity. Stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFG's jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. A CDFG Streambed Alteration Agreement must be obtained for any project that would result in impact to a river, stream, or lake.

### **CALIFORNIA FISH AND GAME CODE §3513 - ADOPTION OF MIGRATORY BIRD TREATY ACT**

Section 3513 of the Fish and Game Code of California provides for adoption of MBTA's provisions. It states that "it is unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act or any part of such migratory non-game bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act." Therefore, as with MBTA, this state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame, migratory birds.

### **CALIFORNIA FISH AND GAME CODE §3503.5 - PROTECTION OF RAPTORS**

Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds-of-prey in the orders *Falconiformes* or *Strigiformes*." This statute does not provide for the issuance of any type of incidental take permit.

### **CALIFORNIA FISH AND GAME CODE §5937 – SUFFICIENT WATER FOR FISH EXISTING BELOW DAMS**

Section 5937 of the California Fish and Game Code states that the owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around, or through the dam to keep in good condition any fish that may be planted or exist below the dam.

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