

# BIOLOGICAL CHARACTERIZATION REPORT

EMPIRE MINE STATE HISTORIC PARK REMEDIATION PROJECT  
NEVADA COUNTY, CALIFORNIA



*Prepared for*

**Golder Associates**

*Prepared by*



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**DECEMBER 2008**

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**70806**

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## Section 1 INTRODUCTION

To support various planning and remediation measures proposed for the Empire Mine State Historic Park, VESTRA Resources, Inc., was retained to conduct biological studies. The results of these studies are presented in this Biological Characterization Report. This characterization report describes the current biological resources within the project area, including a general description of vegetation types and identification of potentially occurring special-status plant and wildlife species. Though focused surveys for many specified potentially occurring species are outside the scope of this biological characterization, incidental observations of special-status flora and fauna resources were documented and included within this report. Some special-status species protocol-level surveys were performed including California red-legged frog, California spotted owl, northwestern pond turtle, California horned lizard, willow flycatcher, and raptor point count surveys.

### SITE LOCATION

The Empire Mine State Historic Park is located in Nevada County on the western slope of California's Sierra Nevada Mountains, within Section 26, 34, and 35, Township 16 North, Range 8 East, MDBM, in the USGS Grass Valley Quadrangle. The park is bordered by the city of Grass Valley on the east, East Bennett Road to the north, Osborne Hill Road to the southeast, and private property on the remaining borders. Relatively undisturbed Bureau of Land Management land borders the park to the southeast. The park is divided by Colfax State Scenic Highway 174 which extends east to west, splitting the park into two segments, a northern and a southern parcel. Both parcels are owned and operated by the California Department of Parks and Recreation (CDPR), Gold Mine District. The general site location is shown on Figure 1. The park layout is shown on Figure 2.

### PROJECT BACKGROUND

The Empire Mine State Historic Park is one of the largest tourist attractions in the area. The primary historic and recreational attraction is located south of Highway 174 and East Empire Street. The area to the north of Highway 174 is less used. Mining operations within the present boundaries of the park began in 1851 and were active until 1956. The Empire Mine was purchased in 1975 by CDPR and designated a historic district in 1976. This designation listing was due to the historic buildings, machinery, and mine shafts present at the time of purchase.

Historic mine areas in the park have been found to contain elevated levels of metals in soils and surface water. The Central Valley Regional Water Quality and Control Board (RWQCB) issued a Time Schedule order for Clean Water Act Compliance at the Magenta Drain in June 2006. The RWQCB issued a Cleanup and Abatement Order, and the Department of Toxic Substances Control (DTSC) issued an Imminent and/or Substantial Endangerment Determination in October 2006. In November 2006, the CDPR and Newmont USA, Ltd. (the previous mine owner), signed the DTSC Consent Order. DTSC advised CDPR to conduct a Preliminary Endangerment Assessment (PEA). The PEA addressed the area roughly bounded by the emergent wetland and associated dam to the west, Little Wolf Creek to the south, the former

cyanide plant to the north, and the stamp mill to the east (approximately 340 of the park's 856 acres). The PEA was finished in 1993 and determined that arsenic, lead, mercury, and cadmium were present in soils at elevated levels. The recommendation of the PEA was to conduct a full remedial investigation and to close all trails south of the former cyanide plant. CDPR and Newmont have completed investigations in numerous areas of the park, and remedial actions to reduce environmental and human health risks are planned. The trails are currently closed with fencing and signage.

## Section 2 SITE DESCRIPTION

### TOPOGRAPHY

The topography of the project area is very diverse. Steep to very steep rolling hills with perennial drainages are interspersed with more gentle plateaus and shallow drainages. These geomorphic occurrences are representative of the western foothills of the Sierra Nevada Mountain Range. Elevations within the project area range from 1900 to 2900 feet above mean sea level. Mine tailing piles are dispersed throughout the park. In these areas, large piles of cobble and sand are present with little vegetative growth.

### CURRENT LAND USE

The Empire Mine State Historic Park currently offers recreation in the form of hiking, bird watching, biking, and equestrian activities in addition to day use and educational events. There are currently 20 full- and part-time park personnel including rangers, biologists, and administrative and maintenance personnel. Mostly open space and residential areas surround the park.

### CLIMATE

The Grass Valley area occurs in a Mediterranean climate with relatively cold, moist winters and hot, dry summers. The average daily maximum temperature is 52.8 degrees Fahrenheit in January and 90.9 degrees in July. The average daily minimum temperature is 34.2 degrees in January and 61.5 degrees in July. Annual precipitation averages 53.2 inches. These figures are based upon the period of record from 1893 to 1966 at the National Climatic Data Center Station Historical Listing for the National Weather Service Cooperative Network, Grass Valley, Station 043571 (Western Regional Climate Center, 2008).

### SOILS

The Empire Mine State Historic Park is characterized by many soil types that together create the diverse landscape and habitat occurring within the project area. The park soil matrices include Musick sandy loam, Sites loam, Sites very stony loam, and Placer diggings. These soil types are shown on Figure 3 and are further described below.

#### **Musick Sandy Loam**

There are two different types of Musick sandy loam found in the park area: MrC- 5 to 15 percent slopes and MrE- 15 to 50 percent slopes

The Musick sandy loams are a series of well-drained soils with a high available water capacity. Profiles range from 40 to 100 inches deep to bedrock. Where mapped, the Musick and similar soils compose 85 percent of the soil makeup while other minor components make up the remaining 15 percent. The Musick sandy loams are composed primarily of a weathered granodiorite (Web Soil Survey).

## **Sites Loam**

There are three different series of Sites loams, with the deciphering characteristic being slope: SID- 15 to 30 percent slopes, SIC- 9 to 15 percent slopes, and SIB- 2 to 9 percent slopes. These three associated soil types comprise 85 percent of the area within their mapped zone. The profile ranges between 40 to 80 inches deep to bedrock. The soils are well drained and have a high available water capacity. The parent material from which these soils are formed is metasedimentary rock weathered to metabasic residuum (Web Soil Survey).

## **Sites Very Stony Loam**

This Sites loam (SmE) is a stony loam with a 15 to 50 percent slope and a high available water capacity. Typically, the profile is a cobbly loam from 0 to 12 inches proceeded by layers of clays and clay loams until bedrock is reached within 80 inches of the soil surface. Like the Sites loam, the parent material is metasedimentary rock weathered to metabasic residuum (Web Soil Survey).

## **Placer Diggings**

The Placer diggings are on a wide range of slopes, from 2 to 75 percent. Their available water capacity is limited. Typical profile and parent materials are variable. Bedrock is usually reached within 60 inches of the soil surface (Web Soil Survey).

The Placer diggings soil is the main soil around the historic mining areas, and it is the most prevalent soil type within the greater part of the proposed project area. It tends to support a variety of habitats, with open shrublands or riparian areas with limited coniferous growth being most common.

## **GEOLOGY**

The Empire Mine State Historic Park lies in the foothills of the Sierra Nevada Mountain Range. The geology of the area is representative of the Sierra Nevada batholith. This geologic trend is comprised of plutonic granitic rocks of Mesozoic age. The batholith is flanked on the western foothills by the western metamorphic belt, a terrain of strongly deformed but weakly metamorphosed sedimentary and volcanic rocks. The famed Mother Lode passes through the heart of the area and resulted in the extensive historic mining activities that occurred near the project area (Jennings, 1977).

## **HYDROLOGY/AQUATIC HABITAT TYPES**

The hydrology of the project area consists of perennial streams, an ephemeral pond, man-made drainage ditches (seasonal), and an emergent wetland. These water features are shown on Figure 4.

### **Perennial Stream**

There are three perennial streams within the Empire Mine State Park: South Fork Wolf Creek, Little Wolf Creek, and Magenta Drain. Little Wolf Creek and South Fork Wolf Creek are the



most significant hydrological features existing in the park. South Fork Wolf Creek and Little Wolf Creek flow into Wolf Creek, a significant tributary of the Bear River, which ultimately merges with the Sacramento River.

Little Wolf Creek enters the park on the east side and flows west to its confluence with the emergent wetland in the southeast portion of the park, then continues west out of the park to its confluence with Wolf Creek. The littoral substrate of Little Wolf Creek is comprised of a diverse stratum of silt, woody debris, cobble, and fragmented granitic bedrock.

South Fork Wolf Creek also enters the park from the east and flows west where it eventually confluences with the main stem of Wolf Creek. While this creek does occur within the park boundaries, it is outside of the project area. It is described here because it was included in the California red-legged frog surveys per United States Fish and Wildlife Service (USFWS) survey protocol. South Fork Wolf Creek exhibits a diverse hydrologic corridor characterized by deep pools, riffles, and gradual runs. The littoral substrate is composed of woody debris, silt, and cobble. This creek is associated with a very dense riparian corridor but minimal aquatic vegetation.

These streams potentially provide habitat for many species of amphibians, fish, and other aquatic fauna. South Fork Wolf Creek and Little Wolf Creek are approximately equal in size, averaging 1 foot deep and 4 feet wide, and contain many deep pools up to 4 feet deep. These pools are slower moving and provide preferable habitat for most aquatic life.

The Magenta Drain is a man-made drainage corridor that serves to convey water from the Magenta Mine and other associated mines. The water source is a combination of local groundwater and underground mine workings that are now flooded. The source is likely to include water that has leached through the soil, shallow groundwater, or surface water that has entered the mine from elsewhere. It is assumed that the Magenta Drain also collects surface water flow. The water flowing from the drain contains elevated levels of arsenic, iron, and manganese, which causes the stream to exhibit an orange iron precipitate. The constructed drain eventually flows into an unnamed creek that has been historically referred to as Woodpecker Ravine. According to 2006 water quality analysis conducted by MFG of Fort Collins, Colorado, the Magenta Drain discharge contains arsenic, iron, and manganese. Water quality in the Magenta Drain is too poor to support aquatic insects, thus it is unlikely to support amphibian or fish species either. It is associated with a small riparian corridor consisting of willow (*Salix* sp.), cottonwoods (*Populus* sp.) and Himalayan blackberry (*Rubus armeniacus*, formerly *discolor*).

## Emphemeral Pond

The seasonal pond on the project area is Stacy Lane Pond. This pond holds water for only a few months during the wet season. It was dry during the first site visit in May 2008, but has an area of approximately 0.39 acres and potential to hold up to 8 feet of water. Water sources include nearby mine shafts and precipitation. The surrounding vegetation consists of ponderosa pine (*Pinus ponderosa*), Himalayan blackberry, and numerous grass species. Within the pond there are well-established willow and cottonwood (*Populus fremontii*) trees. The substrate and bank soils are sandy, allowing for rapid infiltration of water. The littoral substrate consists of sand and woody debris.

## Emergent Wetland

Approximately 16 acres of emergent wetland are located within the project area, in the southwest section of the park. The emergent wetland is associated with a rock dam, constructed in 1917 to contain mine tailings exiting from a stamp mill and cyanide plant upstream. The wetland consists of a series of seasonal ponds interspersed with upland areas of bare ground and patches of upland vegetation. Upland islands within the wetland area are inhabited by ponderosa pine, Himalayan blackberry, and manzanita (*Arctostaphylos* spp.). The wetland portions support rushes (*Juncus* sp.), sedges, willows, and cottonwoods.

The emergent wetland is fed throughout the year by Little Wolf Creek and during the winter months by additional runoff from the southern portion of the park, including the cyanide conveyance channel. Three primary hydrologic features contribute to this emergent wetland area: Little Wolf Creek, a seasonal drainage ditch referred to as the "conveyance corridor," and another unnamed seasonal feature along the northern portion of the emergent wetland and associated dam area. Little Wolf Creek enters the emergent wetland area at its southeastern edge and feeds the wetland throughout the year. The two ephemeral features convey stormwater runoff from upgradient areas during winter months, entering the wetland area at its northern edge.

Upon arrival to the site in May 2008, the emergent wetland had 90 percent surface water and was approximately 5 feet deep at its deepest point. When surveys were completed in July, surface water coverage had reduced to 20 percent. During a site visit in September, the emergent wetland was completely dry. Throughout the study period, available water was teeming with amphibious life, predominantly Pacific chorus frogs (*Pseudacris regilla*). As the wetland dried, thousands of dead tadpoles were observed, indicating that survival probability is low during the early life stages. The dense vegetation in combination with seasonal water concentrations provides a suitable and productive habitat for wildlife including amphibians, birds, and mammals.

The wetland and associated dam are within an exclusion area, closed to all unauthorized public access due to elevated levels of harmful metals found within the sand, soil, and water.

## Drainage Ditches

There are numerous drainage ditches in the project area, but none were flowing while surveys were being conducted. It is assumed that these ditches only flow during times of high rainfall in late winter or early spring. Although they have some wetland characteristics, there is no notable difference in wildlife activity from these drainage ditches and adjacent upland sites. Many of these drainages do contain aquatic plant species, however, so they are categorized as an additional habitat type.

The drainage ditches were built to convey stormwater from the historic cyanide plant and red dirt pile areas into the adjacent emergent wetland. These recently reclaimed areas lack established vegetation and can accumulate large amounts of storm flows during the wet season. These features possess a narrow bed, defined bank, and evidence of flow such as sediment

deposits. The ditches are constructed of large cobble with coatings of concrete to smooth the surface and promote rapid water conveyance.

## Concrete Pool

Most of the concrete pools are found in the area that provides tours of the historical buildings and is extensively landscaped. Two of these pools are round with fountains in the center. Below these two pools, a network of stair-stepping pools eventually feeds into a much larger pool. The pools have a maximum depth of approximately 2.5 feet. They contain ornamental aquatic plants and the area directly surrounding these pools is extensively landscaped. They provide reproductive habitat for amphibians (primarily Pacific chorus frogs) with still, calm water and few predators. There is one additional concrete pool measuring 2 feet by 4 feet near the cyanide plant, which holds rainfall and provides similar habitat for Pacific chorus frog reproduction.

## UPLAND HABITAT TYPES

Current California State Park standards utilize a vegetation classification system presented in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995), but previous biological characterization work (URS, 2004) completed for the park identified the vegetation types through a former standard of vegetation classification written by Holland (1986). Six Sawyer/Keeler-Wolf upland vegetation series were identified within the action area: Ponderosa Pine Series, Mixed Conifer Series, Black Oak (*Quercus kelloggii*) Series (these three collectively Holland type Westside Ponderosa Pine), Whiteleaf Manzanita (*Arctostaphylos viscida*) Series (Holland type Montane Manzanita Chaparral), Arroyo Willow (*Salix lasiolepis*) Series, and White Alder (*Alnus rhombifolia*) Series (these two collectively Holland type Montane Riparian Scrub). These vegetation types are displayed on Figure 5 and are described below.

### Ponderosa Pine/Mixed Conifer/Black Oak Series

These three vegetation types make up the majority of the project area (~251 acres). They occupy large, continuous stands throughout Empire Mine State Historic Park. These series tend to be relatively open forests with sparse understories consisting of scattered shrubs and young trees (Holland, 1986). Most growth occurs within a few months of the wet season (late spring and early summer; Holland, 1986). These vegetation types are abundant on the west side of the Cascade Range and Sierra Nevadas from the Siskiyou Mountains to northern Kern County. They range in elevation from 2000 to 5000 feet (Holland, 1986). Vegetation series that include ponderosa pine as a dominant species were historically subject to frequent understory burning; however, in the absence of a regular fire regime, as has become common with modern fire suppression tactics, fires tend to burn more intensely when ignited. These fires can have a catastrophic effect on overstory vegetation (Pollet and Omi, 2002).

In the project area, the understory consists of large patches of whiteleaf manzanita and ponderosa pine saplings. Douglas-fir (*Pseudotsuga menziesii*), black oak, and incense cedar (*Calocedrus decurrens*) are other significant overstory species. The large trees in the area are approximately 100 feet tall, and the manzanita understory reaches over 12 feet in height in several areas. Other, less significant species observed in the overstory include Pacific madrone

(*Arbutus menziesii*), big-leaf maple (*Acer macrophyllum*), and California buckeye (*Aesculus californica*). Common species that occur in the shrub layer include poison-oak (*Toxicodendron diversilobum*) and the non-native Himalayan blackberry. Small patches of the native California blackberry (*R. ursinus*) can be found throughout the forest as well. Other minor shrub species include buckbrush (*Ceanothus cuneatus*), deer brush (*Ceanothus integerrimus*), California coffeeberry (*Rhamnus californica*), and wood rose (*Rosa gymnocarpa*). The herbaceous layer is dominated by everlasting pea (*Lathyrus latifolius*), which often forms extensive patches, Sierran mountain misery (*Chamaebatia foliolosa*), and sky lupine (*Lupinus nanus*). Other, less common herbaceous species found include rainbow iris (*Iris hartwegii*), honeysuckle (*Lonicera* sp.), Davy's gumplant (*Grindelia hirsutula* var. *davyi*), soap plant (*Chlorogalum pomeridianum*), California indian pink (*Silene californica*), miner's lettuce (*Claytonia parviflora*), and creeping honeysuckle (*Lonicera hispidula*).

The historic mining operations in the park area impacted the above vegetation types. In these areas, the vegetation is regenerating and currently consists of early successional stages of the Ponderosa Pine, Mixed Conifer and Black Oak Series. These vegetation types occur primarily in areas that were subject to vegetation clearing and topsoil removal during mining operations.

The combination of these woodland types provides a diverse habitat for wildlife. Mature forests can provide important cavity nesting habitat for many species, but mature stands are scarce within the park. Acorns, berries, grasses, forbs, and shrubs provide food and foraging habitat for many browsers and bird species, and the complex multilayered structure with adjacent open areas provides foraging habitat for many raptors and other predators. Amphibians and reptiles can make use of the leaf litter and woody debris in the understory for cover. Some species that could be observed at the project area include Western fence lizard (*Sceloporus occidentalis*), Western diamond-backed rattlesnake (*Crotalus atrox*), gopher snake (*Pituophis catenifer*), and common garter snake (*Thamnophis sirtalis*). Small mammals may also use the understory for cover including woodrats (*Neotoma* spp.) and deer mice (*Peromyscus maniculatus*). Other mammal species that could occur in these woodland habitats include raccoons (*Procyon lotor*), black-tailed deer (*Odocoileus hemionus*), and black-tailed jackrabbits (*Lepus californicus*). Woodpeckers, including acorn woodpeckers (*Melanerpes formicivorus*), hairy woodpeckers (*Picoides villosus*), pileated woodpeckers (*Dryocopus pileatus*), and northern flickers (*Colaptes auratus*), are also associated with mature forests and woodlands.

### **Whiteleaf Manzanita Series**

Typically, the Whiteleaf Manzanita Series is a dense chaparral, with shrub heights reaching approximately 6 to 16 feet tall (CNPS). Manzanita chaparrals often occur as early successional stages in ponderosa pine dominated forest types after burning has occurred (Holland, 1986). Manzanita burns readily once ignited, resulting in altered fire regimes when areas are colonized by manzanita (Holland, 1986).

This vegetation community is scattered throughout California including in the montane and foothill areas of the Cascade, Klamath, and Sierra Nevada Ranges and in the North Coast area (CNPS). The elevational range of this series is 500 to 6000 feet (CNPS).

Whiteleaf manzanita is the dominant species in chaparral areas throughout the park. Toyon (*Heteromeles arbutifolia*) and occasionally indian manzanita (*Arctostaphylos mewukka* var. *mewukka*)

also occur in these chaparral areas. *Arctostaphylos mewukka* var. *truei* (a CNPS list 4 species) has been documented within the park but was not found within project boundaries. The Whiteleaf Manzanita Series accounts for approximately 26 acres of the project area.

### **Arroyo Willow/White Alder Series**

These two riparian habitats occur in the project area, amounting to approximately 12 acres (not including the area in the emergent wetland). Typically, Arroyo Willow and White Alder Series occur in riparian corridors along streams (CNPS). This riparian habitat tends to be densely shrubby with sparse herbaceous layers and some willow and tree species (Holland, 1986). This vegetation type is widely scattered throughout California including the foothill and montane areas of the Klamath, Sierra Nevada, and Cascade ranges, all along the California coast, and the central valley.

The patches of Arroyo Willow Series and White Alder Series in the park are dominated by a mix of riparian trees, primarily arroyo willow and white alder, with some Fremont's cottonwood (*Populus fremontii*), shining willow (*Salix lucida*), big-leaf maple (*Acer macrophyllum*), and mountain dogwood (*Cornus nuttallii*). The understory is dominated by dense Himalayan blackberry, but in areas where the Himalayan blackberry is less dominant, other shrubs occur including Pacific ninebark (*Physocarpus capitatus*), western azalea (*Rhododendron occidentale*), and California blackberry. The herbaceous layer consists of soft rush (*Juncus effusus*), cattail (*Typha* sp.), seep spring monkey-flower (*Mimulus guttatus*), water cress (*Nasturtium officinale*), giant horsetail (*Equisetum telmateia*), yellow flag iris (*Iris pseudacorus*), creeping buttercup (*Ranunculus repens*), tall flatsedge/nut sedge (*Cyperus eragrostis*), American brooklime (*Veronica americana*), small-fruited sedge (*Scirpus microcarpus*), and iris-leaved rush (*Juncus xiphioides*).

### **California Annual Grass Series**

A small area of non-native annual grass was planted as part of remediation activities on a polluted area called the Red Dirt Pile. The grass was planted for erosion control of the disturbed area after remediation activities were completed. Non-native annual grasslands are extensively naturalized in the valleys and foothills of California (Sawyer and Keeler-Wolf, 1995).

Annual grasslands can provide habitats for many wildlife species. Rodents, such as deer mice and ground squirrels, and some bird species, such as savannah sparrows (*Passerculus sandwichensis*), western meadowlarks (*Sturnella neglecta*), and white-crowned sparrows (*Zonotrichia leucophrys*), are especially associated with grasslands. The presence of these species attracts predatory species to grasslands for foraging, including coyotes (*Canis latrans*), raptor species, and snakes.

### **Other Habitat**

#### **Barren/Mine Tailings**

Sizes of cobble in the mine tailing piles vary across the project area. In the vicinity of the emergent wetlands and associated dam, the tailings are fine and sand-like in consistency. Other mine tailing piles consist of cobble up to 14 inches in diameter. The mine tailing piles fragment areas of ponderosa pine forest and serve as denning habitat for small mammals and

herpetofauna. This juxtaposition of forest and open habitat provides foraging habitat for wildlife species found within the forest, including raptors.

### **Developed**

The developed habitat at Empire Mine State Historic Park consists of multiple historic buildings, water pipes, landscaped areas, and mining equipment. Some wildlife species have adapted to be tolerant of human disturbance, including some introduced species such as European starlings (*Sturnus vulgaris*) and house mice (*Mus musculus*). Some native species are tolerant of human disturbance as well, including American robin (*Turdus migratorius*), Steller's and Western scrub jays (*Cyanocitta stelleri* and *Aphelocoma californica* respectively), raccoons, and striped skunks (*Mephitis mephitis*). Reptiles, amphibians, and small mammals, including bats, may use the historic mine structures for resting habitat as well.

### **Mine Shafts**

Tunnels and mine shafts in the park provide habitat with a consistent temperature and moisture conditions. Wildlife may use these underground areas to escape aboveground conditions during the hot, dry summer months and cold winters. Mine tunnels provide habitat for small mammals, including bats, and amphibians throughout the year.

### **Unoccupied Nests**

During incidental surveys, numerous unoccupied nests were found and marked with a GPS unit. These nests, though unoccupied, are potential habitat for many bird and small mammal species (i.e., tree squirrels), and some raptors return to previously used nests or use nests that were built by other raptors in previous years.

## Section 3 SURVEY METHODOLOGY

### LITERATURE REVIEW AND DATABASE SEARCHES

Database searches for potentially occurring special-status plant and wildlife species were conducted using the California Natural Diversity Database (CNDDDB), the California Wildlife Habitat Relationship System Database (CWHR) and the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS). The CNDDDB was reviewed for records of special-status plant and wildlife species in the area surrounding the project area. Reported sightings in the project area quadrangle and the surrounding eight quadrangles are included on Figure 6. The CNDDDB, however, is limited to reported sightings and is not a comprehensive list of special-status plant and wildlife species that may occur in a particular area. The CWHR and CNPS databases were used to support the CNDDDB. The CWHR is a scientifically based program that outputs a list of wildlife species that potentially occur within the project area based on habitats present, habitat elements, and geographic location. The CNPS database outputs a list of rare plants (CNPS priority listing 1 through 3) that have been documented within the nine-quadrangle search area.

For the purpose of this study, all state and federal special-status plants and wildlife that could potentially occur in the area have been included. This includes all Federally Endangered, Federally Threatened, Federally Sensitive (by U.S. Forest Service and Bureau of Land Management), California Endangered, California Threatened, California Fully Protected, California Protected, California Species of Special Concern, and CNPS 1 through 3 listed species. In addition, due to known localities within the park of the Humboldt lily (*Lilium humboldtii*) and True's manzanita (*Arctostaphylos mewukkea* var. *truei*), these two CNPS listed 4 species were included in the botanical analysis of the park.

### RECONNAISSANCE SURVEYS

The project area was surveyed in May and June 2008 for wildlife and plant species of concern as well as potential habitat for these species. The reconnaissance-level biological surveys included documentation of incidental observations of special-status plants and wildlife during field work.

### VEGETATION MAPPING AND BOTANICAL SURVEYS

Vegetation communities were described using *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995). Vegetation communities were described and mapped during early-season reconnaissance and botanical surveys.

The field surveys were conducted during the early- and late-season blooming periods and in accordance with guidelines established by CNPS (2001) and the California Department of Fish and Game (CDFG, 2000).

Botanists traversed the project area on foot, navigating from recent true-color aerial photographs, sampling vegetation along meandering cross-country transects. The transects were intuitively controlled; that is, the location and direction of transects were determined by visually





assessing the terrain for microhabitats with high potential for the occurrence of target species. This visual assessment was based on the plant community present, the topography, the slope, the aspect, and the presence of features such as riparian corridors or wetland habitats.

During the survey, all plant species were recorded and identified whenever possible to the lowest taxonomic level necessary to determine if they were special-status plants or species with unusual or significant range extensions. For some species, the characters necessary to establish identification (e.g., fruit) were not present at the time of the surveys. Nomenclature follows *The Jepson Manual* (Hickman, 1993) and updates published online by the Jepson Flora Project, Jepson Online Interchange (available at: <http://ucjeps.berkeley.edu/interchange.html>).

## **PROTOCOL-LEVEL SURVEYS**

Through queries of the CNDDDB and CWHR and consultation with the CDFG and USFWS, species-specific surveys were deemed necessary for the following species:

- California red-legged frog
- California horned lizard
- Willow flycatcher
- Special-status raptor species
- Northwestern pond turtle.

The methods used for protocol-level surveys are pursuant to current USFWS guidelines found at <http://www.fws.gov/sacramento/es/protocol.htm> and are briefly described below relative to the respective species of study.

### **California Red-Legged Frog**

Information obtained from the analysis of aerial photography, reconnaissance surveys, and interviews with CDPR biologists was used to locate potential suitable habitat for the California red-legged frog within and at a distance of 1 mile from the project area. Suitable habitat includes any that may be conducive to support the frog's dispersal, foraging, or breeding activities. Protocol-level surveys pursuant to current USFWS survey guidelines were conducted at six sites. These included two locations outside of the project boundaries. Diurnal and nocturnal visual encounter surveys were conducted to assess the possible occurrence of the frog. Survey locations are shown on Figure 7.

### **California Horned Lizard**

Information obtained from the analysis of aerial photography, reconnaissance surveys, and interviews with CDPR biologists was used to locate potential suitable habitat for the California horned lizard within the park. Protocol-level visual encounter surveys were conducted throughout the park where suitable habitat exists. Survey locations are shown on Figure 8.

## **Willow Flycatcher**

Information obtained from the analysis of aerial photography and reconnaissance surveys was used to locate suitable willow flycatcher riparian habitat within the park. Protocol-level point count surveys were conducted throughout the park to detect the possible presence of this species. An acoustic calling device was used to detect the presence or absence of the species through vocalization response. Survey locations are shown on Figure 9.

## **Special-Status Raptors**

Empire Mine State Historic Park contains a diverse forest ecosystem. The mature mixed conifer forest, fragmented habitat, and adjacency to public forest are a suitable combination of factors to support a diverse population of birds of prey. Point count surveys using an acoustic calling device were conducted for the Cooper's hawk, goshawk, and California spotted owl. Survey locations are shown on Figure 10.

## **Northwestern Pond Turtle**

After completion of reconnaissance surveys and analysis of wetlands existing in the park, three suitable wetland habitats were identified as having the potential to support the northwestern pond turtle. Turtle traps were deployed in all three locations, and analysis of aquatic and terrestrial habitats and visual encounter surveys were conducted. Survey locations are shown on Figure 11.

## Section 4 RESULTS

### DATABASE AND LITERATURE SEARCHES

A list of special-status wildlife species with the potential to occur in the Grass Valley USGS 7.5-minute quadrangle was obtained through queries of the CNDDDB and the CWHR. These queries identified 44 species of concern at the State level (19 of which are also species of concern at the federal level) that have the potential to occur in the project area. The list of potentially occurring special-status wildlife species is summarized in Table 1. A list of habitats that occur in the park and potentially occurring wildlife species that are associated with each habitat is included in Table 2. Each species is further described below.

A list of potentially occurring special-status plant species on the project area determined through queries of the CNDDDB, CWHR, and CNPS databases is summarized in Table 3. Each species is further described below.

### RECONNAISSANCE SURVEYS

Moderately to highly suitable habitat was found for 26 of the 44 potentially occurring special-status wildlife species identified through the database searches. Habitat suitability for each species was determined based upon literature review and field surveys and is summarized in Table 1. Two special status species were observed during surveys: the Cooper's hawk and the California spotted owl.

There is moderately suitable habitat on the project area for four of the 17 special-status plant species with potential to occur on the project area. All other potential species were identified as having no appropriate habitat or only marginal habitat on the project area. One of these species was located during reconnaissance surveys: Humboldt lily. Habitat suitability for each species was determined based upon literature review and field surveys and is summarized in Table 3.

A wide variety of wildlife was observed during reconnaissance surveys. These species can be divided into five different groups: birds, mammals, herpetofauna, fish and crustaceans. Birds were the most commonly observed group with 20 species seen during surveys. Seven different mammal species or their signs were observed as well as unidentified bats. As the bats were not identified, it cannot be assumed that only one species of bat was present on the project area. Eight species of herpetofauna, two species of fish, and one species of crayfish were observed during reconnaissance surveys.

Because the surveys were performed only during the summer months, the results are biased towards species composition on the project area during summer. Some species of wildlife are more likely to be present on the project area during other seasons. Incidental observations of nocturnal species were recorded when encountered during protocol-level spotted owl and herpetofauna nocturnal surveys; therefore, the results are not skewed towards diurnal species. A list of observed wildlife species is included in Appendix A. A list of plant species observed is included in Appendix B.

Table 1

## POTENTIALLY OCCURRING SPECIAL-STATUS FAUNA

Common/Scientific Species Name	Federal/State Status	Distribution	Preferred Habitats	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record (miles)
American Badger ( <i>Taxidea taxus</i> )	--/CSC	North America except eastern and southern United States	Open forests, shrub/ grasslands with friable soils.	Low - Habitat marginal due to lack of friable soils; no badgers or badger sign was observed;	46
American Marten ( <i>Martes americana sierrae</i> )	FS/--	Sierra Nevadas and Cascades	Red fir, lodgepole pine, mixed conifer, subalpine conifer, Jeffrey pine, eastside pine. Require denning cavities in mature trees.	Moderate - Suitable habitat occurs on project area; no martens or marten sign was observed;	44
Black-Crowned Night Heron ( <i>Nycticorax nycticorax</i> )	FS/--	Throughout North America.	Along streams, reservoirs, marshes. Nest in dense foliage in trees and edges of marshes.	Moderate - Suitable habitat occurs on project area; no black-crowned night-herons were observed	38
California Black Rail ( <i>Laterallus jamaicensis coturniculus</i> )	--/CT	Small, distinct, scattered populations in California	Saline, brackish and fresh emergents wetlands.	Moderate - Suitable habitat occurs on project area; no black rails were observed	12
Black Swift ( <i>Cypseloides niger</i> )	--/CSC	West coast of North and Central America, and the West Indies. In California found along the coast and the western Sierra Nevadas.	Nest in moist places in cliffs above the ocean and behind waterfalls. Forage near water	None - No suitable habitat occurs on project area due to lack of waterfalls and cliffs near water; no black swifts were observed	17
Burrowing Owl ( <i>Athene cunicularia</i> )	FS/CSC	Throughout North America. Shasta County only in winter	Dry grasslands and deserts, open ponderosa pine and juniper forests	Moderate - Annual grassland suitability is low because of its manicured nature and proximity to human use areas (disturbance); ponderosa forest too dense; no burrowing owls were observed	19
California Horned Lizard ( <i>Phrynosoma coronatum</i> )	FS/CSC	Historically, from Baja California north to the Bay Area. As far east as Shasta Reservoir but west of deserts and Sierras. Current range more fragmented.	Sandy soils and low vegetation up to 8000 ft. Grasslands, coniferous forests, woodlands, and chaparral with open areas and patches of loose soil.	Moderate - Habitat suitability may be low due to lack of loose soils; no California horned lizards were observed during protocol level surveys	1
California Mountain Kingsnake ( <i>Lampropeltis zonata</i> )	FS/CSC	From northern Baja to southern Washington, in the south coast ranges and Mt. Diablo range, in the north coast range, east throughout the Sierra Nevadas.	Habitat generalist: coniferous forest, oak-pine woodlands, riparian woodlands, chaparral, coastal sage scrub.	Moderate - Suitable habitat occurs on project area; no California mountain kingsnakes were observed	382

Table 1  
POTENTIALLY OCCURRING SPECIAL-STATUS FAUNA

Common/Scientific Species Name	Federal/State Status	Distribution	Preferred Habitats	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record (miles)
California Red-Legged Frog ( <i>Rana draytonii</i> )	FT/CSC	Endemic to California and northern Baja California. From Baja California north along the coast to Mendocino County and east through the northern Sacramento Valley into the Sierra Nevada foothills.	Humid forests, woodlands, grasslands, and streambanks with plant cover. Mostly in lowlands and foothills. Breeding habitat in permanent water sources: lakes, ponds, reservoirs, slow streams, marshes.	Low - Habitat suitability on project area is low due to poor water quality, long distances through high human use areas between aquatic features preventing dispersal, seasonal nature of some habitat features, and presence of predators in high numbers; no California red-legged frogs were observed during protocol level surveys	8
California Spotted Owl ( <i>Strix occidentalis occidentalis</i> )	--/CSC	Southern Cascades to Northern Sierra Nevadas. From Burney, Shasta County, south to Lebec, Kern County, California. In California coastal range from Monterey County south to Santa Barbara County. Transverse Ranges and Peninsula Ranges south to northern Baja, California.	Nesting habitat requires hardwood or conifer forests with structural complexity, high canopy closure and presence of large trees. Foraging habitat more variable including intermediate-aged and older-aged stands. Tend to use less fragmented forest areas.	High - Pair of California spotted owls observed in park, but outside of remediation project boundaries; habitat suitability is low within project boundaries due to lack of mature forest stands.	Observed onsite
Cooper's Hawk ( <i>Accipiter cooperi</i> )	--/CSC	Southern Canada south throughout the United States and most of Mexico.	Deciduous, mixed and evergreen forests. Tolerant of human disturbance and fragmentation. Also uses urban and suburban areas.	High - Suitable habitat occurs on project area; Cooper's hawk was observed;	Observed onsite
Foothill Yellow-Legged Frog ( <i>Rana boylei</i> )	FS/CSC	Ranges from northern Oregon west of the Cascades south along the coast to the San Gabriel Mountains, and south along the western side of the Sierra Nevadas to Kern County	Frequents shallow, slow, gravelly streams and rivers with sunny banks, in forests, chaparral, woodlands. Sea level to 6700 ft.	Low - Habitat suitability is low due to poor water quality, and dense canopy of riparian corridors along streams; no foothill yellow-legged frogs were observed	6
Fringed Myotis ( <i>Myotis thysanodes</i> )	FS/--	Western United States except for the Central Valley of California and arid southwest	Pinyon-juniper, hardwood conifer, and valley foothill hardwood habitats. Caves, mines, buildings, crevices for roosting.	Moderate - Suitable habitat occurs on project area; bat surveys were not performed;	25
Golden Eagle ( <i>Aquila chrysaetos</i> )	FS/CSC	Western half of North America	Open terrain for foraging including deserts, grasslands, chaparrals. Nest in cliffs.	Low - Habitat suitability is low due to relatively small patches of open habitats and lack of cliffs for nesting; no Golden Eagles were observed	55

**Table 1  
POTENTIALLY OCCURRING SPECIAL-STATUS FAUNA**

Common/Scientific Species Name	Federal/State Status	Distribution	Preferred Habitats	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record (miles)
Horned Lark ( <i>Eremophila alpestris</i> )	--/CSC	Throughout North America	Open habitats with short grass or barren ground.	Moderate - Suitable habitat occurs on project area; no horned larks were observed	101
Loggerhead Shrike ( <i>Lanius ludovicianus</i> )	Candidate/CSC	Central Canada, all of the United States and Mexico	Open habitats with scattered shrubs, trees or other perches.	Moderate - Suitable habitat occurs on project area; no loggerhead shrikes were observed	41
Long-eared Myotis ( <i>Myotis evotis</i> )	FS/--	Western United States except the Central Valley in California and arid southwest	Brush, woodland and forest habitats. Requires buildings, crevices, spaces under bark or hollow snags for roosting	Moderate - Suitable habitat occurs on project area; bat surveys were not performed	25
Long-Eared Owl ( <i>Asio otus</i> )	--/CSC	Breeds in northern Canada south to northeastern states and south as far as Baja in the West. Winters in southern Canada south through western states as far south as parts of Mexico.	Nests in dense vegetation adjacent to foraging habitat in open grasslands, shrublands, and forests.	Moderate - Suitable habitat occurs on project area; no long-eared owls were observed	13
Merlin ( <i>Falco columbarius</i> )	--/CSC	Breeds in Canada (including far north) and Alaska south to far northern United States. Winters from southern Canada as far south as northern South America. Winter range includes western half of United States, coastal Gulf States, and eastern seaboard.	Nests near forest openings and in fragmented woodlots usually near rivers, lakes, or bogs. Open forests and grasslands important for foraging purposes. Have been seen in cities and around farms.	Moderate - Suitable habitat occurs on project area; no merlins were observed	38
Northern Goshawk ( <i>Accipiter gentilis</i> )	FS/CSC	Holarctic distribution. Range in North America includes Alaska, Canada and northwestern U.S., south as far as northern half of California and as far south as New Mexico, Arizona, and part of Mexico.	Nests in most forest types within range. Prefer stands with old-growth trees, high canopy closure, and sparse ground cover.	Low - Habitat suitability is low on the project area due to lack of mature forest stands. Some areas within the park but outside of the remediation project area could provide suitable habitat; no northern goshawks were observed.	10
Northern Harrier ( <i>Circus cyaneus</i> )	--/CSC	Throughout North America	Open habitats such as grasslands, meadows, open rangelands.	Low - Habitat suitability is low on the project area due to small patch size of the annual grassland; no northern harriers were observed	18

Table 1  
POTENTIALLY OCCURRING SPECIAL-STATUS FAUNA

Common/Scientific Species Name	Federal/State Status	Distribution	Preferred Habitats	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record (miles)
Northwestern Pond Turtle ( <i>Ambystoma marmorata marmorata</i> )	Candidate/CSC	San Francisco Bay north to Washington and British Columbia. West of the crest of the Cascades and Sierras.	Ponds, lakes, rivers, streams, marshes and irrigation ditches with abundant vegetation with rocky or muddy bottoms. Prefers pools to shallower areas.	Low - Suitable habitat occurs on project area; no northwestern pond turtles were observed during protocol level surveys	8
Pacific Fisher ( <i>Martes pennanti</i> )	Candidate/CSC	Historically, throughout the Sierra Nevadas north to Mount Shasta, west through the North Coast and Klamath ranges.	Coniferous and mixed forests with dense canopy closure and cavities for den establishment.	Low - Habitat suitability is low due to lack of mature stands, fragmented forests patches, and open canopy; no Pacific fisher or fisher sign was observed during surveys	10
Pallid Bat ( <i>Antrozous pallidus</i> )	FS/CSC	Western North America	Riparian habitats, arid deserts and grasslands near water. Rock crevices, hollow trees, caves and mines for roosting	Moderate - Suitable habitat occurs on project area; bat surveys were not performed	27
Peregrine Falcon ( <i>Falco peregrinus</i> )	FS/CE	Throughout North America	Riparian and other habitats near water; cliffs, ledges, mounds and banks used for nesting	Low - Habitat suitability is low due to lack of appropriate nesting habitat; no peregrine falcons were observed	132
Prairie Falcon ( <i>Falco mexicanus</i> )	--/CSC	Western half of the United States and central Mexico.	Open habitats, especially grasslands, but open shrublands as well. Require cliffs or bluffs for nesting.	Low - Habitat suitability is low due to lack of appropriate nesting habitat and small patch size of open habitats; no prairie falcons were observed	Not in CNDDDB
Purple Martin ( <i>Progne subis</i> )	--/CSC	Eastern and western United States.	Open forests, woodlands and riparian areas. Requires cavities for nesting but will readily use bird houses	Moderate - Suitable habitat occurs on project area; no purple martins were observed	31
Ringtail ( <i>Basoriscus astutus</i> )	--/CFP	Southwestern United States, most of California, all of Mexico	Shrubby habitats and shrub understories of forests. Snags with cavities and talus slopes with cavities used for denning	Moderate - Suitable habitat occurs on project area; no ringtails were observed	Not in CNDDDB
Sharp-Shinned Hawk ( <i>Accipiter striatus</i> )	--/CSC	Breeds in northern Canadian and Alaska south to northeastern and northwestern United States. Some breeding as far south as central Mexico and Central America. Wintering range throughout North and Central America.	Nest in most forest types within range preferring those with at least some conifer. Prefers dense forests with relatively closed canopy. Hunts in forests and along forest edges.	Low-Habitat suitability is low on project area due to open forests and canopy; no sharp-shinned hawks were observed	43

**Table 1  
POTENTIALLY OCCURRING SPECIAL-STATUS FAUNA**

Common/Scientific Species Name	Federal/State Status	Distribution	Preferred Habitats	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record (miles)
Short-Eared Owl ( <i>Aio flammeus</i> )	--/CSC	Throughout North America south to central Mexico.	Open habitats, especially grasslands.	Low - Habitat suitability is low on project area due to limited open habitats and high levels of human disturbance; no short-eared owls were observed	88
Sierra Nevada Mountain Beaver ( <i>Aplodontia rufa californica</i> )	--/CSC	Sierra Nevada mountains and foothills.	Dense riparian areas and open, brushy stages of most forest types.	Moderate - Suitable habitat on project area; no mountain beavers were observed	28
Sierra Nevada Red Fox ( <i>Vulpes vulpes necator</i> )	--/CT	Only found in the Sierra Nevada and Cascade ranges.	Conifer forests and alpine landscapes from 4000 to 12000 ft.	None - Project area is too low in elevation for this species.	40
Snowshoe Hare ( <i>Lepus americanus kelamathensis</i> )	--/CSC	Endemic to northern California	Montane riparian habitats with thickets of alder and willow.	Low- Suitable habitat on project area, but out of elevational range. No snowshoe hares were observed	106
Spotted Bat ( <i>Euderma maculatum</i> )	FS/CSC	Arid areas of the western United States.	Mixed conifer, pine forests, pinyon-juniper, grasslands. Caves, crevices in cliffs and canyon walls for roosting	Moderate - Suitable habitat occurs on project area; bat surveys were not performed	46
Townsend's Western Big-Eared Bat ( <i>Corynorhinus townsendii</i> )	--/CSC	Range includes much of the western United States east to the western half of Texas. North to southern British Columbia and south through a large part of Mexico.	Roosting habitat includes mines, caves, buildings, and lava tubes. Foraging habitat includes open spaces over grasslands and forest canopies.	Moderate - Suitable habitat occurs on project area; bat surveys were not performed	22
Tricolored blackbird ( <i>Agelaius tricolor</i> )	FS/CSC	Central Valley and northeastern corner of California, small populations in Oregon and Nevada	Nest near fresh water in adjacent vegetation, especially near marshes. Forage in grasslands and croplands.	Moderate - Suitable habitat on project area; no tricolored blackbirds were observed	19
Vaux's Swift ( <i>Chaetura vauxi</i> )	--/CSC	Pacific Northwest, in California along the coast and the western slope of the Sierra Nevadas	Old growth forests with hollow trees and snags for nesting.	Low - Habitat suitability is low on project area due to lack of old-growth forest; no Vaux's swifts were observed	Not in CNDDDB
Western Mastiff Bat ( <i>Eumops perotis</i> )	FS/CSC	Western North America	Arid habitats. Roosts in crevices and shallow caves in cliffs and rock walls.	Moderate - Suitable habitat occurs on project area; bat surveys were not performed	34
Western Red Bat ( <i>Lasiurus blossevillii</i> )	FS/--	Western half of the United States, most of Mexico, and throughout South America.	Found on habitat edges that offer trees for roosting and open areas for foraging. Often near riparian areas.	Moderate - Suitable habitat occurs on project area; bat surveys were not performed	14



**Table 1  
POTENTIALLY OCCURRING SPECIAL-STATUS FAUNA**

Common/Scientific Species Name	Federal/State Status	Distribution	Preferred Habitats	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record (miles)
Western Small-footed Myotis ( <i>Myotis ciliolabrum</i> )	FS/--	Arid areas of the western United States  Breeds through much of the northern United States and parts of southern Canada. The subspecies in the project area breeds in the western Sierra Nevadas and Cascades extending to the coast in northern California. Winters in coastal Mexico, Central America and South America.	Arid woody and brushy habitats near water. Require buildings, caves or mines for roosting	Moderate - Suitable habitat occurs on project area; bat surveys were not performed	50
Willow Flycatcher ( <i>Empidonax traillii brewsteri</i> )	--/CE		Moist, shrubby areas near standing or running water. In California, especially associated with willow ( <i>Salix</i> spp.) thickets.	Low- Suitable habitat occurs on project area; no willow flycatchers were observed during protocol level surveys	32
Wolverine ( <i>Gulo gulo</i> )	--/CFP	Western United States	Mixed conifer, lodgepole pine, subalpine conifer, wet meadow, riparian	Low - Suitable habitat occurs on project area; very rare in California. May be extirpated from the state	28
Yellow-Breasted Chat ( <i>Icteria virens</i> )	--/CSC	Breeds sporadically throughout the United States; winters in parts of Mexico and Central America. In California, found primarily in the northern portion of state.	Shrubby areas and early successional forests. Often found in riparian thickets.	Moderate- Suitable habitat on project area; no yellow breasted chats were observed	72
Yellow Warbler ( <i>Dendroica petechia</i> )	--/CSC	Northern portion of North America during breeding season; Central and South America during winter	Wet, deciduous habitats, primarily riparian	Moderate - Suitable habitat on project area; no yellow warblers were observed.	12
Yuma Myotis ( <i>Myotis yumanensis</i> )	FS/CSC	Western United States	Open forests and woodlands near water. Buildings, caves, bridges, mines for roosting	Moderate - Suitable habitat occurs on project area; bat surveys were not performed	14

Key: Federally Endangered (FE); Federally Threatened (FT); Federally Sensitive (FS); California Endangered (CE); California Threatened (CT); California Fully Protected (CFP); California Species of Special Concern (CSC)

<p style="text-align: center;"><b>Table 2</b>  <b>HABITATS THAT OCCUR ON PROJECT SITE AND ASSOCIATED POTENTIAL SPECIAL-STATUS SPECIES</b></p>		
<b>Habitat Series/Type</b>	<b>Habitat Description</b>	<b>Species Common Name</b>
Ponderosa Pine Series	Open canopy, open understory; some areas with dense manzanita understory	American badger, American marten, California horned lizard, California mountain kingsnake, California spotted owl, Cooper's hawk, fringed myotis, long-eared myotis, long-eared owl, merlin, northern goshawk, Pacific fisher, purple martin, ringtail, sharp-shinned hawk, Sierra Nevada mountain beaver, spotted bat, Townsend's big-eared bat, Vaux's swift, wolverine, yuma myotis.
Mixed Conifer Series	Open canopy, open understory; some areas with dense Himalayan blackberry understory	American badger, American marten, California horned lizard, California mountain kingsnake, California spotted owl, Cooper's hawk, fringed myotis, long-eared myotis, long-eared owl, merlin, northern goshawk, Pacific fisher, purple martin, ringtail, sharp-shinned hawk, Sierra Nevada mountain beaver, spotted bat, Townsend's big-eared bat, Vaux's swift, wolverine, yuma myotis.
Black Oak Series	Open canopy, dense understory of Himalayan blackberry	American badger, California horned lizard, California mountain kingsnake, California spotted owl, Cooper's hawk, fringed myotis, long-eared myotis, long-eared owl, merlin, northern goshawk, Pacific fisher, purple martin, ringtail, Townsend's big-eared bat, Sierra Nevada mountain beaver, Vaux's swift, yuma myotis.
Whiteleaf Manzanita Series	Some dense and some open chaparral areas.	American badger, California horned lizard, California mountain kingsnake, golden eagle, horned lark, loggerhead shrike, long-eared myotis, long-eared owl, ringtail, short-eared owl, yellow-breasted chat
Arroyo Willow Series	Dense riparian habitat surrounded by ponderosa pine and/or mixed conifer series; relatively closed canopy and dense understory.	Black-crowned night-heron, California mountain kingsnake, California red-legged frog, foothill yellow-legged frog, pallid bat, peregrine falcon, Sierra Nevada mountain beaver, showshoe hare, tricolored blackbird, western red bat, western small-footed myotis, willow flycatcher, wolverine, yellow-breasted chat, yellow warbler, Yuma myotis
White Alder Series	Dense riparian habitat surrounded by ponderosa pine and/or mixed conifer series; relatively closed canopy and dense understory.	Black-crowned night-heron, California mountain kingsnake, California red-legged frog, foothill yellow-legged frog, pallid bat, peregrine falcon, Sierra Nevada mountain beaver, showshoe hare, tricolored blackbird, western red bat, western small-footed myotis, willow flycatcher, wolverine, yellow-breasted chat, yellow warbler, Yuma myotis
Annual Grassland Series	One small area of planted annual grass in an area that has already been remediated	American badger, burrowing owl, California mountain kingsnake, golden eagle, horned lark, loggerhead shrike, long-eared owl, merlin, northern harrier, pallid bat, prairie falcon, short-eared owl, spotted bat, Townsend's big-eared bat
Perennial Stream	One foot deep, up to 4 feet wide with pools up to 4 feet deep. Water quality compromised in one of the three perennial streams.	Black-crowned night-heron, California red-legged frog, foothill yellow-legged frog
Ephemeral Pond	Small seasonal pond only holds water a few months of the year. Some wetland plant species but mostly surrounded by upland vegetation	Black-crowned night-heron, California red-legged frog

<p style="text-align: center;"><b>Table 2</b>  <b>HABITATS THAT OCCUR ON PROJECT SITE AND ASSOCIATED POTENTIAL SPECIAL-STATUS SPECIES</b></p>		
<b>Habitat Series/Type</b>	<b>Habitat Description</b>	<b>Species Common Name</b>
Emergent Wetland	Seasonal wetland associated with one of the three perennial streams on site. Abundant wetland vegetation with water levels up to 5 feet deep during the wet season.	Black-crowned night-heron, California red-legged frog
Drainage Ditches	Seasonal ditches that drain uplands; some wetland plant species	Black-crowned night-heron
Concrete Pools	Concrete pools and fountains in a highly landscaped area around the historic buildings; some contain ornamental aquatic plants	Black-crowned night-heron, California red-legged frog
Mine Tailings	Mine tailings range in size from sand-sized particles to cobble up to 14 inches in diameter. Many of these areas are barren of plant growth.	Horned lark
Developed	Historic buildings, water pipes, mining equipment, landscaped areas.	Cooper's hawk, fringed myotis, horned lark, long-eared myotis, purple martin, western small-footed myotis, Yuma myotis,
Mine Shafts	Extensive network of mine shafts throughout the park; provide consistent moisture and temperature conditions.	Fringed myotis, pallid bat, spotted bat, Townsend's big-eared bat, western mastiff bat, western small-footed bat, Yuma myotis

Table 3  
POTENTIALLY OCCURRING SPECIAL-STATUS PLANTS

Common/Scientific Species Name	Status Fed/State/CNPS	Distribution	Preferred Habitat/ Blooming Period	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record
Bog Club-Moss <i>Lycopodiella inundata</i>	-/-/2.2	Humboldt and Nevada Counties; also Nevada, Idaho, Oregon, Washington	Coastal bogs and fens, mesic areas in lower montane coniferous forest, lake margins; 15-1640 ft elevation. Fertile period: September	Moderate - Suitable habitat occurs in the emergent wetland; none were observed during surveys	10
Brandegee's Clarkia <i>Clarkia biloba</i> ssp. <i>brandegeae</i>	-/-/1B.2	Butte, El Dorado, Nevada, Placer, and Yuba Counties.	Chaparral, cismontane woodland, often on roadcuts; 970-2910 ft elevation. Blooming period: May-July	Moderate - Suitable habitat occur on road cuts, none were observed during surveys	4
Brownish-Beaked Rush <i>Rhynchospora capitellata</i>	-/-/2.2	Scattered occurrences in northwestern California, northern Sierra Nevada foothills	Mesic areas in lower and upper montane coniferous forest, meadows and seeps, freshwater marshes and swamps; 1490-6560 ft elevation. Blooming period: July-August	Moderate - Suitable habitat is present in the emergent wetland; none were observed during surveys	1
Butte County Fritillary <i>Fritillaria eastwoodiae</i>	-/-/3.2	Sierra Nevada foothills from Shasta to El Dorado Counties	Chaparral, cismontane woodland, and openings in lower montane coniferous forest, sometimes on serpentine; 165-4935 ft elevation. Blooming period: March-May	Moderate - Suitable habitat is present in the forests; none were observed during surveys	6
Cantelow's Lewisia <i>Lewisia cantelovii</i>	-/-/1B.2	Canyons of the Sacramento River, North and Middle Forks of the Feather River, and Yuba River	Mesic, granitic, sometimes serpentine seeps in broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest; 1260-4300 ft elevation. Blooming period: May-October	None - No suitable habitat is present due to the lack of suitable soils	6
Cedar Crest Popcorn-Flower <i>Plagiobothrys glyptocarpus</i> var. <i>modestus</i>	-/-/3	Nevada County near Grass Valley	Cismontane woodland, moist grassland; 295-3280 ft elevation. Blooming period: April-June	Low - Habitat is marginal due to the lack of mesic areas in the forest habitats.	Not in CNDDDB
Dubious Pea <i>Lathyrus subpurreus</i> var. <i>argillaceus</i>	-/-/3	Klamath Ranges, North Coast Ranges, Sierra Nevada in Nevada County; Placer, Shasta, and Tehama Counties	Cismontane woodland, lower and upper montane coniferous forest; 490-1000 ft elevation. Blooming period: April	None - Suitable habitat is present in proposed project area but it is outside the known elevation range for the species	Not in CNDDDB

Table 3  
POTENTIALLY OCCURRING SPECIAL-STATUS PLANTS

Common/Scientific Species Name	Status Fed/State/CNPS	Distribution	Preferred Habitat/ Blooming Period	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record
Elongate Copper-Moss <i>Melichthophytia elongata</i>	-/-/2.2	Sierra Nevada from Nevada to Fresno Counties; Coast Ranges from Humboldt to Santa Cruz Counties	Cismontane woodland in vernal moist areas, metamorphic rocks; 1640-4265 ft elevation	None - Suitable habitat is not present due to the lack of metamorphic rock	8
Humboldt Lily <i>Lilium humboldtii</i>	-/-/4.2	Foothills of the Sierra Nevadas in Central California.	Cismontane woodlands, chaparral, and openings in coniferous forests.	High - Documented to occur in project area.	Occurs on project area
Follett's Monardella <i>Monardella follettii</i>	-/-/1B.2	Nevada and Plumas Counties	Lower montane coniferous forest on rocky, serpentinite soil; 1970-6560 ft elevation. Blooming period: June-September	None - Suitable soils are not present in the proposed project area.	<1
Norris' Beard-Moss <i>Digymodon norrisii</i>	-/-/2.2	Scattered occurrences in Contra Costa, Colusa, Humboldt, Lake, Madera, Monterey, Nevada, San Benito, Santa Cruz, Tehama, Tulare, and Tuolumne Counties; also in Oregon	Intermittently wet areas in rock outcrops in cismontane woodland, lower montane coniferous forest; 1970-5580 ft elevation	None - Suitable wet rocky habitat is not present in the proposed project area	4
Pine Hill Flannelbush <i>Fremontodendron decumbens</i>	E/R/1B.2	Pine Hill area in El Dorado County, Grass Valley vicinity in Nevada County, Yuba County	Rocky gabbro or serpentinite soils in chaparral, cismontane woodland; 1395-2500 ft elevation. Blooming period: April-July	None - Suitable soil types are not present in the proposed project area	<1
Red Hills Soaproot <i>Chorogalum grandiflorum</i>	-/-/1B.2	North and central Sierra Nevada Foothills: Amador, Placer, El Dorado, and Tuolumne Counties	Serpentine or gabbro soils in chaparral, lower montane coniferous forest, and cismontane woodland; 800-3840 ft elevation. Blooming period: May-June	None - Suitable soil types are not present in the proposed project area	7
Scadden Flat Checkerbloom <i>Sidalcea stipularis</i>	-/E/1B.1	Two occurrences near Scadden Flat, Nevada County	Freshwater seep, wet meadow, montane freshwater marshes and swamps; 2300-2400 ft elevation. Blooming period: July-August	Low - Although suitable habitat is present, this is a well-known and highly range-restricted species that is unlikely to occur in the project area	Not in CNDDDB

Table 3  
**POTENTIALLY OCCURRING SPECIAL-STATUS PLANTS**

Common/Scientific Species Name	Status Fed/State/CNPS	Distribution	Preferred Habitat/ Blooming Period	Occurrence Probability, Habitat Suitability, Survey Results	Nearest CNDDDB Record
Stebbin's Morning-Glory <i>Calyptegia stebbinii</i>	E/E/1B.1	Northern Sierra Nevada foothills in El Dorado and Nevada Counties	Gabbro or serpentinite soils in chaparral openings, cismontane woodland; 605-2400 ft elevation. Blooming period: April-July	None - Suitable soil types are not present in the proposed project area	3
True's Manzanita <i>Arctostaphylos manzanita</i> ssp. <i>truei</i>	-/-/4.2	Butte, El Dorado, Placer, Nevada, Plumas, and Yuba counties	Chaparral and forest habitats.	Highly suitable habitat is present on the project area in the chaparral and forests, and the species has been documented elsewhere within the park.	Occur on project area

**Status definitions:**

**Federal**  
E = listed as endangered under the federal Endangered Species Act  
T = listed as threatened under the federal Endangered Species Act  
C = species for which USFWS has sufficient information on biological vulnerability and threat(s)—support issuance of a proposed rule—list, but issuance of the proposed rule is precluded  
- = no listing

**State**  
E = listed as endangered under the California Endangered Species Act  
R = listed as Rare in California  
- = no listing

**California Native Plant Society (CNPS)**  
1B = List 1B species: rare, threatened, or endangered in California and elsewhere  
2 = List 2 species: rare, threatened, or endangered in California, but more common elsewhere  
3 = List 3 species: plants about which more information is needed to determine their status

**Threat Code Extensions**  
.1 = seriously endangered in California (over 80% of occurrences threatened—high degree and immediacy of threat)  
.2 = fairly endangered in California (20-80% occurrences threatened)

## PROTOCOL-LEVEL SURVEYS

### California Red-Legged Frog

Seven sites were identified within 1 mile of the project area to have the potential to provide habitat for the California red-legged frog: Magenta Drain, Concrete Pools, South Fork Wolf Creek, Little Wolf Creek, Upper Little Wolf Creek, the emergent wetland, and Wolf Creek. An additional site, Stacy Lane Pond, has the potential to provide seasonal habitat for the frog, but it was dry during the time the surveys were performed. The California red-legged frog surveys are detailed in the California Red-Legged Frog Assessment report (VESTRA 2008). No California red-legged frogs were observed during surveys.

Habitat is marginal at all seven sites. Magenta Drain has poor quality habitat due to poor water quality resulting from historic mining operations. Water quality was too poor to sustain aquatic insects; thus, there is no foraging or breeding potential. It has also poor quality dispersal habitat due to the poor water quality, high levels of human disturbance, and high levels of non-native predators including pets from nearby homes. South Fork Wolf Creek, Little Wolf Creek, Upper Little Wolf Creek, Wolf Creek and the emergent wetland have poor quality habitats as well. Riparian corridors associated with these streams are fragmented by roads and trails and support high predator populations (brown trout, *Salmo trutta*, and bullfrogs, *Rana catesbeiana*). The Concrete Pools have poor quality habitat because of high human disturbance level and isolation from other aquatic features (limited dispersal ability). The emergent wetland has poor quality habitat due to poor water quality resulting from historic mining operations and the presence of predator populations.

### California Horned Lizard

No California horned lizards were observed during surveys. Suitable habitat occurs on the project area for the lizards in the open areas of the forests and chaparral. They require loose soils for digging, which may be a limiting factor for this species in the project area.

### Northwestern Pond Turtle

No northwestern pond turtles were observed during protocol-level surveys. There is potential habitat on the project area in the emergent wetland and perennial streams. The emergent wetland is only marginal habitat because they are seasonal and northwestern pond turtles spend most of their lives in the water.

### Willow Flycatcher

No willow flycatchers were observed during protocol-level surveys. Suitable habitat does occur on the project area in the emergent wetland and in the riparian corridors along the perennial streams.

### Special-Status Raptors

Two special-status raptor species were confirmed to occur within the park boundaries during protocol-level surveys: California spotted owl and Cooper's hawk. No other special-status raptor species were observed within the park.

Suitable habitat occurs within the project boundaries for Cooper's hawks. Cooper's hawks could make use of all habitat types within the project area. A Cooper's hawk was observed in the vicinity of the emergent wetland during raptor surveys, and an incidental observation occurred during amphibian surveys near South Fork Wolf Creek.

No suitable spotted owl habitat occurs within the project area. All suitable spotted owl habitat occurs in an area of the park that was not included in the project area. A pair of California spotted owls was observed outside of the project area on three different occasions. Mousing surveys were undertaken to discern if they were nesting. All behavioral evidence observed during these events indicated that they were not nesting at the time that they were observed.

While no other special-status species were observed during surveys, somewhat suitable habitat does exist within the park for burrowing owls, long-eared owls, and merlins. Raptors are highly mobile, so these species could immigrate into the suitable habitat in the park before project work begins. Seven other special-status raptor species came up in the database searches. Field surveys indicated that habitat suitability was low for these species: golden eagle, northern goshawk, northern harrier, peregrine falcon, prairie falcon, sharp-shinned hawk, and short-eared owl.

## **POTENTIAL SPECIAL-STATUS WILDLIFE SPECIES AND HABITAT SUITABILITY DETERMINATION**

### **American Badger (*Taxidea taxus*)**

**Federal Status: none; California Status: Species of Concern**

Badgers are found throughout California except in the far northwestern corner. They are found throughout much of North America except the eastern and southern states of the United States. They are associated with open forest, shrub, and grassland habitats with friable soil that allows easy digging. Habitat loss is the primary factor causing decline of badgers. Badgers are unlikely to occur on the project area due to lack of friable soils.

### **American Marten (Sierra subspecies; *Martes americana sierrae*)**

**Federal Status: Sensitive; California Status: none**

The Sierra American marten occurs throughout the Sierra Nevadas and Cascades. Martens prefer habitats such as red fir, lodgepole pine, mixed conifer, subalpine conifer, Jeffrey pine, and eastside pine. Martens require denning habitat such as cavities in trees, snags, logs, or in rocky areas. They are primarily threatened by scarcity of denning structures which are more likely to occur in mature forests (NatureServe, 2008). Habitat suitability is marginal on the project area for American martens due to the lack of mature forests.

### **Black-Crowned Night-Heron (*Nycticorax nycticorax*)**

**Federal Status: Sensitive; California Status: none**

Black-crowned night-herons forage in habitats along streams, reservoirs, and marshes. They roost and nest in dense foliage in trees and in marshes, and are found throughout North America including most of California except the mountain ranges in higher elevations. The draining of marshes and swamps and cutting of trees near these habitats have reduced species numbers. Suitable habitat occurs on the project area for black-crowned night-herons in the perennial streams, associated riparian areas, and emergent wetland.



**California Black Rail (*Laterallus jamaicensis coturniculus*)**

**Federal Status: none; California Status: Threatened, Fully Protected**

The California black rail occurs locally in distinct, scattered populations within California. Black rails are only found in brackish, saline and fresh emergent marshes. They are threatened by loss of habitat due to conversion of wetlands (NatureServe, 2008). Suitable habitat occurs on the project area for the black rail in the emergent wetland.

**Black Swift (*Cypseloides niger*)**

**Federal Status: none; California Status: Species of Concern**

The black swift is a migrant that breeds in dispersed populations within the Sierra Nevadas, Cascades, and coastal areas of California. Black swift range includes the west coast of North and Central America and the West Indies. It nests in moist places in cliffs above the ocean or behind waterfalls in the interior. Information is lacking concerning the population security of this species. Breeding areas are extremely localized, so populations are naturally low (NatureServe, 2008). No suitable habitat occurs on the project area for black swifts due to the lack of cliffs and waterfalls.

**Burrowing Owl (*Athene cunicularia*)**

**Federal Status: Sensitive; California Status: Species of Concern**

Burrowing owls are most commonly observed in open, dry grassland and desert habitats, as well as open stages of ponderosa pine and juniper forests. They use rodent holes and other burrows in these habitats to roost and for nesting. Pipes, culverts and nest boxes are sometimes used where burrows are scarce. Burrowing owl range includes most of western North America. They can be found throughout California, but most of Shasta County is only used during the winter. Conversion of preferred habitat to agricultural uses and poisoning of ground squirrels has contributed to the decline of this species (Birds of North America). Habitat suitability is low on the project area for the burrowing owl due to the manicured nature of the annual grassland and the relative density of the ponderosa pine forest.

**California Horned Lizard (*Phrynosoma coronatum*)**

**Federal Status: Species of Concern; California Status: Species of Concern**

The California horned lizard inhabits lowland washes where there are scattered low bushes with opportunities for shade and sunning. The other main requirements for this species are an abundant supply of ants (their primary prey) and loose soil. They utilize loose soil to escape from predators and for thermal control by burying themselves. The California horned lizard has become scarce due to habitat destruction by development and agriculture, and it was also commonly collected for the pet and curio trade until this was banned in 1981. Currently, the lizard inhabits fragments of its historic range, which included coastal Baja, California, north to the Bay Area and east as far as Shasta Reservoir and the crest of the Sierra Nevadas (CaliforniaHerps.com). This species occurs within approximately 2 miles of the proposed project area (CNDDDB). Suitable habitat is found within the project area in the open chaparral areas, but loose soil may be a limiting factor. The lizard was not observed during protocol surveys so its presence is unlikely.

**California Mountain Kingsnake (*Lampropeltis zonata*)**

**Federal Status: Species of Concern; California Status: Species of Concern**

The California mountain kingsnake is considered a species of special concern by the State of California, especially the San Bernardino and San Diego populations. It has been threatened by

reptile collection and habitat destruction. This species is a habitat generalist, using diverse habitats including coniferous forest, oak-pine woodlands, riparian woodland, chaparral, and coastal sage scrub. The California mountain kingsnake ranges from northern Baja, California, north to Washington State. In California, it is found in most mountain ranges, especially the coastal ranges and the Sierra Nevadas (CaliforniaHerps.com). The California mountain kingsnake could potentially utilize any of the habitats within the project area.

### **California Red-Legged Frog (*Rana draytonii*)**

#### **Federal Status: Threatened; California Status: Species of Concern**

The California red-legged frog is designated as federally threatened and a species of concern in California. This species has been impacted by non-native predators, such as bullfrogs and some fish species, and human disturbance of suitable habitat. The California red-legged frog is endemic to California and northern Baja, ranging from Mendocino on the northern California coast south to Baja and east through the Sacramento Valley and the Sierra Nevada foothills. This frog inhabits numerous riparian habitat types and is considered particularly terrestrial, covering relatively long distances from foraging to burrow sites. Reproduction success depends upon slow-moving water, with depths reaching 1.5 feet or greater. Fragile egg masses can be damaged by fast-moving water (CaliforniaHerps.com). California red-legged frogs have been located approximately 8.5 miles from the project area (CNDDDB). Habitat quality on the project area is low for California red-legged frogs due to fragmentation of riparian corridors by roads and trails, poor water quality, and an abundance of non-native predators. This species was not observed during surveys.

### **California Spotted Owl (*Strix occidentalis occidentalis*)**

#### **Federal Status: none; California Status: Species of Concern**

The spotted owl is one of the most studied and well-known owls in the world. The northern and Mexican subspecies are listed as federally threatened. The California spotted owl subspecies is listed as a species of special concern by the state. Degradation of forested habitats through timber practices is the primary threat to this species. The California spotted owl is found from the southern Cascades through the northern Sierras. California spotted owl nesting habitat includes hardwood or conifer forests with a complex structure, high canopy closure, and large trees. Intermediate and older stands are used for foraging where they hunt and feed upon small to medium-sized rodents. The spotted owl usually uses nests built by other raptors. Some pairs will return to the same nest every year, while others have been found to have up to five different successful nests in 6 years (Birds of North America).

A pair of California spotted owls was located within the park; however, no active nest was located. The pair was located outside the proposed boundaries of the project area. All habitat within the park that is suitable for California spotted owls occurs outside the project area. The forest within the project area occurs in small patches, is less structurally complex and lacks mature trees. The forest area where the spotted owls were observed occurs in a larger patch, connecting with a large tract of relatively undisturbed BLM land, has higher structural complexity, and contains large trees.

### **Cooper's Hawk (*Accipiter cooperi*)**

#### **Federal Status: none; California Status: Species of Concern**

The Cooper's hawk has been identified by California as a species of special concern. It is primarily threatened by human persecution (i.e., they were being exterminated for preying on

poultry) and former pesticide use (DDT). They are found throughout the United States year-round, in Mexico primarily during the non-breeding season, and in Canada primarily during the breeding season. In California, they are found from Siskiyou County south to San Diego, in valleys of the coastal ranges, and the foothills of the Sierra Nevadas. Human persecution has declined over the years, allowing them to become more tolerant of human disturbance. In turn, they have become more common in suburban and urban areas. This is likely due to the presence of their favored prey (small birds) in these areas. Cooper's hawks have been observed hunting small birds on backyard bird feeders. They are adapted to hunting in structurally diverse forest habitats, allowing them to navigate through urban and suburban areas (Birds of North America). A Cooper's hawk was observed during reconnaissance surveys. Their adaptable nature could allow them to use most of the habitats within the project area.

#### **Foothill Yellow-Legged Frog (*Rana boylei*)**

**Federal Status: Species of Concern; California Status: Species of Concern**

California has designated the foothill yellow-legged frog a species of concern due to the absence of it from much of its former range in the state. High flows released from reservoirs and during flood events may partially explain this decline. Non-native predators, such as the bullfrog, also likely have an impact on populations. The foothill yellow-legged frog ranges from northern Oregon, west of the Cascades, and south along the coast and the western Sierra Nevadas, although much of this range has become only fragmentally inhabited. The frog tends to occupy slow-moving, gravelly streams with sunny banks in forests and chaparral. High water flows can wash away egg masses and force frogs into adjacent uplands where they may be more vulnerable to predators. It can inhabit elevations from sea level up to 6700 ft (CaliforniaHerps.com). Habitat suitability on the project area is low due to poor water quality and dense forest canopy in riparian areas. Foothill yellow-legged frogs have been documented within 10 miles of the project area (CNDDDB). None were observed on the project area during amphibian surveys.

#### **Fringed Myotis (*Myotis thysanodes*)**

**Federal Status: Sensitive; State Status: none**

The fringed myotis occurs throughout the western United States including California except for the Central Valley and the arid southeastern desert. They are associated especially with pinyon-juniper, hardwood-conifer, and valley foothill hardwood habitats. They forage over open habitats and water. Fringed myotis bats require caves, mines, buildings, or crevices for roosting and nesting. Threat factors for the fringed myotis include maternity roost disturbance by recreational cave activities, closure of old mines, habitat loss through vegetation conversion for agricultural purposes, exposure to toxins including pesticides, and destruction of water sources and riparian areas (NatureServe, 2008). Suitable habitat occurs on the project area for the fringed myotis in the mixed conifer forest, black oak woodland, and mine shafts.

#### **Golden Eagle (*Aquila chrysaetos*)**

**Federal Status: Sensitive; California Status: Species of Concern, Fully Protected**

The golden eagle is a year-round resident in most of the western half of North America including California, except the Central Valley where it is only found during the winter. Golden eagles prefer open terrain for hunting including deserts, grasslands, chaparrals, and early successional stages of forests. They nest either on cliffs or in large trees in open areas. Golden eagles are illegally shot in many areas due to suspected livestock predation. They are also sometimes poisoned or caught in traps put out by ranchers for other predators. Agricultural conversion of foraging habitats has adversely impacted golden eagle populations as well (Birds

of North America). Open habitats are scarce on the project area, and there are no cliffs for nesting, so habitat suitability is low for the golden eagle.

**Horned Lark (*Eremophilus alpestris*)**

**Federal Status: none; California Status: Species of Concern**

The horned lark is found throughout North America in open habitats with short grass or barren ground. Barren ground is preferred over areas with vegetation more than a few centimeters tall. Nest sites will be abandoned if vegetation grows too tall. Highest population densities occur in areas with the most bare ground. Agricultural conversions are the primary threat concern for this species (Birds of North America). Barren areas occur on the project area, so suitable habitat is present for horned larks.

**Loggerhead Shrike (*Lanius ludovicianus*)**

**Federal Status: Candidate for listing; California Status: Species of Concern**

The loggerhead shrike prefers open habitats with scattered shrubs, trees, or other perches. Their range includes all of the United States, central Canada, and all of Mexico. They are only found in Canada during the breeding season, but they occur in the United States year round. Populations in the western part of their range have recently been in decline, the causes of which are not fully understood (Birds of North America). Suitable habitat occurs on the project area for loggerhead shrike in the open chaparral areas.

**Long-Eared Myotis (*Myotis evotis*)**

**Federal Status: Sensitive; California Status: none**

The long-eared myotis bat is found in nearly all brush, woodland, and forest habitats throughout the western United States, but it avoids the arid Central Valley of California and the arid southwest. They forage among trees, over water, and over shrubs. These bats roost and nest in buildings, crevices, and spaces under bark and snags. They may be negatively affected by cutting of old-growth trees and snags (NatureServe, 2008). Suitable habitat occurs on the project area for long-eared myotis in the forest habitats and the historic buildings.

**Long-Eared Owl (*Asio otus*)**

**Federal Status: none; California Status: Species of Concern**

Long-eared owl populations are primarily threatened by loss of crucial nesting and roosting habitat that includes dense vegetation in riparian corridors and tree groves that occur adjacent to grasslands. Long-eared owls occur in far northern North America including Canada and the western half of the United States. Its range in California is restricted to the eastern part of the state, including the Sierra Nevadas (Birds of North America). The tree communities near the project area are fragmented with open areas potentially providing long-eared owl foraging habitat; therefore, there is suitable habitat for the long-eared owl.

**Merlin (*Falco columbarius*)**

**Federal Status: none; California Status: Species of Concern**

Merlins have been designated as a species of special concern in California due to their decline from the effects of DDT. They have also been impacted by habitat loss and degradation. Merlins occur throughout the western half of the United States and along the coast of the Gulf States and the eastern seaboard during non-breeding season. Breeding primarily takes place in Canada with some breeding occurring in Washington, Idaho, Montana, Wyoming, Oregon, and the far northeastern states. They occur as far south as Mexico and Central America during the

non-breeding season. Merlins usually nest near forest openings and in fragmented woodlots, near rivers, lakes, or bogs. This species primarily eats birds and is well known for midair attacks on flocks of smaller birds (Birds of North America). Suitable merlin habitat occurs on the project area, so it is possible that the species could occur.

**Northern Goshawk (*Accipiter gentilis*)**

**Federal Status: Species of Concern; California Status: Species of Concern**

Northern goshawks have a holarctic distribution. Their range in North America includes Alaska, Canada, and the northwestern United States, south as far as the northern half of California and as far south as New Mexico and Arizona and part of Mexico. Goshawks prefer to nest and forage in mature, dense forests with high levels of canopy closure, moderate slopes, and an open understory. Northern goshawks tend to be sensitive to human disturbance during nesting periods. Populations have been impacted by loss of habitat through timber harvesting and its associated disturbance (Birds of North America). The tree communities within the project area are fairly sparse with complex understories. Due to the lack of old-growth forests and high levels of human activity, it is unlikely that the northern goshawk is present on the project area. While habitat suitability is low within the project area, other areas of the park may provide suitable habitat.

**Northern Harrier (*Circus cyaneus*)**

**Federal Status: none; California Status: Species of Concern**

The northern harrier is a raptor that prefers foraging in open habitats such as grasslands, meadows, open rangelands, and wetlands. They are found throughout North America, using the southern parts of the United States only during winter and Canada and Alaska only during summer. They can be found in some areas of North America year round. They are permanent residents in coastal areas and in the northeastern plateau of California, and are less commonly found in the central valley. Other parts of California are sometimes used during winter, but many northern harriers migrate to Central and South America. Northern harriers are a ground-nesting bird, often nesting in shrubby areas along marshes and fields. They also roost on the ground. They have been negatively impacted by agricultural conversion of wetlands and grasslands (Birds of North America). Open habitat patch size is small on the project area, so habitat suitability is low for the northern harrier.

**Northwestern Pond Turtle (*Actinemys marmorata marmorata*)**

**Federal Status: Candidate for listing; California Status: Species of Concern**

The northwestern pond turtle lives in slow-moving rivers, streams, and ponds, and occasionally has been observed in seasonally flowing streams. Loss of habitat is the primary threat concern. These turtles spend most of their lives in the water but lay their eggs in adjacent uplands. Their young are precocial and migrate to the water upon hatching. Its range encompasses the western half of California (CaliforniaHerps.com). There is suitable northwestern pond turtle habitat on the project area, but none were observed during protocol surveys. Presence of the turtle is unlikely on the project area.

**Pacific Fisher (*Martes pennanti*)**

**Federal Status: Candidate for listing; California Status: Species of Concern**

The Pacific fisher inhabits forests with extensive, closed canopies, and mature trees. They often use hollow trees, logs, and stumps for resting and raising pups. Populations have primarily been threatened by habitat destruction and overtrapping. Trapping of the species has been banned in

many areas, and while fisher populations seem to have responded positively, they are still absent from much of their former range. Range historically has been throughout the northern mountains of the United States and Canada but currently is much more fragmented. Their range in California included the Coast Ranges and the Sierra Nevadas (North American Mammals). Open canopy and forest fragmentation make the habitat on the project area marginally suitable for the Pacific fisher. While habitat suitability is low within the project area, other areas of the park may provide suitable habitat.

**Pallid Bat (*Antrozous pallidus*)**

**Federal Status: Sensitive; California Status: Species of Concern**

The pallid bat ranges throughout most of the western North America. This bat is found in riparian habitats and is also associated with arid deserts and grasslands and often near rocky outcrops and water. This species will roost in a variety of habitats including rock crevices, hollow trees, caves, and mines. These bats are sensitive to roost disturbance, and its decline is mainly attributed to human disturbance (NatureServe, 2008). Suitable habitat occurs on the project area for this species in the riparian habitats and mine shafts.

**Peregrine Falcon (*Falco peregrinus*)**

**Federal Status: Sensitive; California Status: Endangered**

Year-round populations of peregrine falcons are scattered throughout North America. They are one of the most wide-ranging species in the world, found throughout the northern hemisphere from the tundra to the tropics. They are found throughout California except in the desert southeast and only in the Central Valley during winter. Foraging habitats are diverse. They primarily eat small birds and hunt from the air. Nesting habitat includes cliffs, ledges, mounds, and banks. They often hunt and nest near water, especially marshes. Their decline was primarily due to DDT use, and populations have recovered since DDT was banned (Birds of North America). Habitat on the project area is only marginal due to the scarcity of nesting habitat and high levels of human disturbance.

**Purple Martin (*Progne subis*)**

**Federal Status: none; California Status: Species of Concern**

The purple martin prefers open forests, woodlands and riparian areas. It is a cavity nester, requiring old cavities built by woodpeckers. They have commonly used birdhouses to nest in as well. They are found extensively throughout the eastern United States and along the coastal states of the western United States. In the western parts of the United States, loss of nest sites through logging activity has had a negative effect on populations (Birds of North America). Suitable habitat occurs on the project area for the purple martin in the forest and riparian areas but nesting habitat may be scarce.

**Ringtail (*Bassariscus astutus*)**

**Federal Status: none; California Status: Fully Protected**

The ringtail is primarily found in shrubby habitats and shrub understories of forest habitats that have snags with cavities or talus areas with cavities. They are also always found within close proximity to a water source. They occur throughout most of California except for the southern half of the Central Valley and the northeastern corner. Habitat loss through grazing and woodcutting are primary concerns for the ringtail (NatureServe, 2008). Suitable habitat occurs on the project area for ringtails in the chaparral areas and shrub understories in the forested areas, but denning sites may be scarce.

### **Sharp-Shinned Hawk (*Accipiter striatus*)**

**Federal Status:** none; **California Status:** Species of Concern

Sharp-shinned hawks nest in a variety of forest types, preferring those stands with mature conifers and a well-developed canopy. This raptor requires forest openings for foraging purposes. Sharp-shinned hawks prefer to hunt in fairly open areas juxtaposed by structural features such as buildings or trees on which they perch and ambush prey. Threat factors include pesticide exposure and colliding with cars and immovable objects. They have been documented as flying into windows near bird feeders. Their diet is mostly composed of small birds, but they are opportunists and will eat anything from small mammals to large insects. Sharp-shinned hawks inhabit much of North and Central America. They breed primarily in Canada and Alaska but also in some areas of the northwestern and northeastern United States (Birds of North America). Habitat on the project area is marginal for sharp-shinned hawks due to the open forest and open canopy.

### **Short-Eared Owl (*Asio flammeus*)**

**Federal Status:** none; **California Status:** Species of Concern

Short-eared owls are one of the most widespread owl species, with a range that encompasses all of North America in addition to other continents. They are primarily found in open habitats such as grasslands and shrublands. They are ground nesters and will utilize ungrazed grasslands and some agricultural habitats, often at the base of a small, isolated bush. Loss of habitat to urbanization, agricultural conversion and grazing are the primary concerns for this species (Birds of North America). Habitat on the project area is marginal for the short-eared owl due to the small patch size of open habitats and the high levels of human disturbance.

### **Sierra Nevada Mountain Beaver (*Aplodontia rufa californica*)**

**Federal Status:** none; **California Status:** Species of Concern

The Sierra Nevada Mountain Beaver is found primarily in montane riparian habitats with a dense understory. Deep friable soils are required for burrowing. Their range includes the Sierra Nevada mountain range and foothills through central California. They are declining in some areas due to recreational pressures and urbanization (NatureServe, 2008). Suitable habitat occurs on the project area for the mountain beaver in the riparian areas.

### **Sierra Nevada Red Fox (*Vulpes vulpes necator*)**

**Federal Status:** Species of Concern; **California Status:** Threatened

The Sierra Nevada red fox is an exceedingly rare species that inhabits conifer forests and alpine landscapes between 4000 and 12000 feet. Threats to this species include grazing in montane meadows which reduces prey availability, trapping (banned in California in 1974), logging, and recreational disturbance. Its range historically included the Sierra Nevada and Cascade ranges, but currently the fox is only known to occur in Lassen National Forest (Sierra Forest Legacy, 2008). The project area elevation is too low for this species to be present.

### **Snowshoe Hare (*Lepus americanus klamathensis*)**

**Federal Status:** None; **California Status:** Species of Concern

This snowshoe hare subspecies is endemic to northern California. This small hare is typically a resident of montane riparian habitats with thickets of alder and willow and stands of young conifers interspersed with chaparral. Habitat loss and predation are the major sources of decline in this species. Suitable habitat occurs on the project area for the snowshoe hare in the riparian, chaparral and forested areas; however, the snowshoe hare tends to occur at higher elevations

than those on the project area. They have only been documented in the higher elevations of the eastern part of Nevada County.

**Spotted Bat (*Euderma maculatum*)**

**Federal Status: Sensitive; California Status: Species of Concern**

The spotted bat is found primarily in arid areas of the western United States. They use mixed conifer and pine forests, pinyon juniper woodlands, and grasslands. They roost in caves and in cracks and crevices in cliffs and canyon walls. Information is lacking about threat factors of this species, but it is speculated that inundation of cliff and canyon walls during dam building could be one threat factor (NatureServe, 2008). Suitable habitat occurs on the project area for spotted bat in the forest habitats and mine shafts.

**Townsend's Big-Eared Bat (*Corynorhinus townsendii*)**

**Federal Status: none; California Status: Species of Concern**

The Townsend's big-eared bat ranges throughout most of western North America. It is associated with desert shrub, mixed conifer, heavily vegetated streams, and piñon-juniper habitat types. Within these habitat types, their roosts typically consist of mines, caves, buildings, rock piles, and lava tubes. The Townsend's big-eared bat hibernates in the winter and reproduces in the summer, producing one pup per female and living up to 16 years. These bats are highly sensitive to roost disturbance. Human disturbance is likely the cause of population decline (Mammals, 2008). Habitat is suitable on the project area due to the occurrence of foraging and denning habitat on the project area; however, denning habitat suitability may be lowered by the high levels of human disturbance that occur in the project area.

**Tricolored Blackbird (*Agelaius tricolor*)**

**Federal Status: Sensitive; California Status: Species of Concern**

Tricolored blackbirds nest near fresh water in adjacent vegetation and feed in grasslands and cropland habitats. A few small breeding populations occur in the northeastern part of California, but they are more common in the Central Valley. They also exist in small populations in Oregon and historically in Nevada. Tricolored blackbirds are declining in numbers in California due to the conversion of their nesting habitat for agricultural purposes (NatureServe, 2008). Suitable habitat occurs on the project area for tricolored blackbirds in the emergent wetland but foraging habitat is scarce.

**Vaux's Swift (*Chaetura vauxi*)**

**Federal Status: none; California Status: Species of Concern**

Vaux's swifts require old-growth forests with large, hollow trees and snags for nesting. Their range in the United States is restricted to the Pacific northwest only during breeding. In California, they occur along the coast and the western slope of the Sierra Nevadas. They migrate to Central and South America, and some remain in those areas year round. They are primarily threatened by loss of mature forests that provide nesting habitat (Birds of North America). Habitat suitability on the project area is marginal for Vaux's swift due to the lack of mature forests.

**Western Mastiff Bat (*Eumops perotis*)**

**Federal Status: Sensitive; California Status: Species of Concern**

The mastiff bat ranges throughout most of western North America. This bat is typically found in arid environments and will roost in crevices and shallow caves on the sides of cliffs and rock



walls and occasionally buildings. These bats are highly sensitive to roost disturbance. Human disturbance is likely the cause of population decline (NatureServe, 2008). Suitable habitat occurs on the project area for this species in the dry ponderosa pine forests and the historic buildings but human disturbance may lower habitat suitability.

**Western Red Bat (*Lasiurus blossevillii*)**

**Federal Status: Sensitive; California Status: none**

The western red bat is a wide ranging species with a range that includes the western half of North America, most of Mexico and all of South America. They prefer habitat edges where forests meet open areas. They require trees for roosting adjacent to open habitats for foraging. They are often associated with riparian habitats as well. This species is threatened by loss of riparian habitats (NatureServe, 2008). Suitable habitat occurs on the project area for this species along the forest edges and riparian areas.

**Western Small-Footed Myotis (*Myotis ciliolabrum*)**

**Federal Status: Sensitive; California Status: none**

The western small-footed myotis bat occupies arid areas of the western United States. They prefer arid woody and brushy uplands near water. They require buildings, caves, or mines for roosting and nesting. Disturbance of maternity roosts is the primary threat factor (NatureServe, 2008). Suitable habitat occurs on the project area for this species in the forests, chaparrals, and mine shafts.

**Willow Flycatcher (*Empidonax traillii brewsteri*)**

**Federal Status: none; California Status: Endangered**

The willow flycatcher inhabits brushy areas within riparian corridors. Flycatchers are difficult to distinguish from one another in the field based upon sight, but the willow flycatcher is easily identified by its unique vocalization. The willow flycatcher nests in riparian brush and fledge their young as late as the middle of August. Due to the willow flycatcher's dependence upon riparian corridors for nesting habitat, they have been negatively affected by many human activities including cattle grazing (Birds of North America). The species has been listed as endangered by the state of California (CDFG, 2008). The southwestern subspecies has also been listed as endangered by the USFWS. Willow flycatcher range includes most of the northern half of the United States. In California, they are primarily restricted to the Sierra Nevadas and the southeastern corner of the state (Birds of North America). Suitable habitat exists within the project area for the willow flycatcher at the emergent wetland and the riparian areas, but none were observed during protocol surveys.

**Wolverine (*Gulo gulo*)**

**Federal Status: None; California Status: Fully Protected**

The wolverine historically ranges throughout California and other western states, though recent sightings have drastically declined. This species typically utilizes a variety of habitats including mixed conifer, lodgepole pine, subalpine conifer, wet meadow, and riparian. Hunting pressure, habitat loss, and lack of food source are the key factors in the decline of wolverines. Suitable habitat occurs on the project area for the wolverine in the forested habitats, but likelihood of presence is low due to its rarity. It is possibly extirpated from California.

**Yellow-Breasted Chat (*Icteria virens*)**

**Federal Status: none; California Status: Species of Concern**

The yellow-breasted chat inhabits shrubby areas, early successional forests with dense low lying vegetation and riparian thickets. They are found sporadically throughout North America, primarily breeding in the United States and wintering in parts of Mexico and Central America. In California, they are found primarily in the northern part of the state and the Central Valley. Yellow-breasted chat populations are threatened by habitat loss and brown-headed cowbird parasitism (Birds of North America). Suitable habitat occurs on the project area for the yellow-breasted chat in the chaparral, riparian and emergent wetland habitats.

**Yellow Warbler (*Dendroica petechia*)**

**Federal Status: none; California Status: Species of Concern**

The yellow warbler inhabits wet, deciduous habitats, especially riparian areas in California. They are found throughout much of the northern portion of North America during the breeding season, and they winter in Central and South America. Yellow warbler populations are threatened by habitat loss in the northern part of their range (Birds of North America). Suitable habitat exists on the project area for yellow warblers in the riparian and emergent wetland habitats.

**Yuma Myotis Bat (*Myotis yumanensis*)**

**Federal Status: Sensitive; California Status: none**

The yuma myotis bat inhabits open forests and woodlands near water. It is most often found foraging over waterbodies. It is widespread throughout the western United States including throughout California except for the desert southeast. They require cover objects for roosting and foraging such as buildings, caves, bridges, and mines. Threats to this species include disturbance of maternity roosts and closing of mines (NatureServe, 2008). Suitable habitat occurs on the project area for yuma myotis in the forests, stream corridors, emergent wetlands, and mine shafts.

**POTENTIAL SPECIAL-STATUS PLANT SPECIES AND HABITAT SUITABILITY DETERMINATION**

**True's Manzanita (*Arctostaphylos mewukka* ssp. *truei*)**

**Federal Status: none; California Status: none; CNPS Status: 4.2**

True's manzanita is a California endemic shrub that grows in chaparral and coniferous forest. It has only documented in Butte, El Dorado, Placer, Nevada, Plumas, and Yuba counties in California. It is threatened by logging and associated roads (CNPS). Suitable habitat occurs on the project area. True's manzanita has been documented within the park boundaries, but was not located during extensive botanical surveys of the project area.

**Bog Club-Moss (*Lycopodiella inundata*)**

**Federal Status: none; California Status: none; CNPS Status: 2.2**

Bog club-moss is a rare moss that grows in coastal bogs and fens, mesic areas within lower coniferous forests, and marshes and swamps. It is found in many areas throughout the United States, but in California it has only been documented in western Nevada County and in Humboldt County. Threats to bog club-moss are not fully studied (CNPS). Suitable habitat is

present on the proposed project area in the emergent wetland. None were observed during extensive botanical surveys.

**Brandegee's Clarkia (*Clarkia biloba* ssp. *brandegeae*)**

**Federal Status: none; California Status: none; CNPS Status: 1B.2**

Brandegee's clarkia is a California endemic annual herb that grows in chaparral and cismontane woodlands, often on road cuts. It is found in Butte, El Dorado, Nevada, Placer, Sacramento, Sierra, and Yuba Counties, in the Sierra Nevada foothills. It is threatened by fire suppression, road construction, and weed control measures (CNPS). Suitable habitat exists on the project area on road cuts. None were observed during extensive botanical surveys.

**Brownish-Beaked Rush (*Rhynchospora capitellata*)**

**Federal Status: none; California Status: none; CNPS Status: 2.2**

Brownish-beaked rush is a perennial herb found in mesic areas of montane coniferous forests, meadows, seeps, freshwater marshes, and swamps (CNPS). Its range includes northwestern California and the Sierra Nevada Range below 2000 feet in elevation (Hickman, 1996). It is threatened by grazing and development (CNPS). There is moderately suitable habitat on the project area in the emergent wetland. None were observed during extensive botanical surveys.

**Butte County Fritillary (*Fritillaria eastwoodiae*)**

**Federal Status: none; California Status: none; CNPS Status: 3.2**

Butte County fritillary is a California endemic perennial forb that grows in chaparral, cismontane woodlands, and in openings within coniferous forests (CNPS). It is sometimes associated with serpentine soils (CNPS). It is found in the Cascade Range and the northern Sierra Nevada Range between 1000 and 4000 feet (UCANR). This species is threatened by logging, development, recreation, non-native plants, overshading, road maintenance, erosion, and vehicles (CNPS). Suitable habitat is present on the project area in the chaparral and forest areas. None were observed during extensive botanical surveys.

**Cantelow's Lewisia (*Lewisia cantelovii*)**

**Federal Status: none; California Status: none; CNPS Status: 1B.2**

Cantelow's lewisia is a California endemic perennial herb usually found in broadleaf upland forest, cismontane woodland, chaparral, or montane coniferous forest. It is associated with mesic, granitic, or serpentine soils (CNPS). This species is often found on moist, north-facing cliffs and rocky outcrops with 40 to 90 percent slopes, between 1000 to 3500 feet in elevation. Its range includes the southeastern Klamath Ranges, the Southern Cascade Range, and the Sierra Nevada Range (UCANR). Horticultural collecting and road maintenance threaten Cantelow's lewisia (CNPS). No suitable habitat occurs on the project area due to the lack of granitic or serpentine soils.

**Cedar Crest Popcorn-Flower (*Plagiobothrys glyptocarpus* var. *modestus*)**

**Federal Status: none; California Status: none; CNPS Status: 3**

Cedar crest popcorn-flower is a California endemic annual herb that is associated with moist areas in grasslands and cismontane woodlands (CNPS). It has been documented in Nevada County near the town of Grass Valley (Hickman, 1996) and may also be present in Yuba County (CNPS). Threat factors are unknown due to a lack of study of this species (CNPS). Marginal habitat is present on the project area in the emergent wetland. Habitat is only marginal because the grasslands and woodlands lacked significant mesic areas.

**Dubious Pea (*Lathyrus sulphureus* var. *argillaceus*)**

**Federal Status: none; California Status: none; CNPS Status: 3**

The dubious pea is a California endemic perennial forb that is associated with cismontane woodland and montane coniferous forests. Information about the status of the dubious pea is lacking, including its distribution and rarity. It has been documented in Nevada County, but there is some question about the validity of this documentation. It is thought to be restricted to lower elevations (500-1000 feet, CNPS). Suitable habitat is present on the project area for the dubious pea, but the site is out of elevational range for this plant.

**Elongate Copper-Moss (*Mielichhoferia elongata*)**

**Federal Status: none; California Status: none; CNPS Status: 2.2**

Elongate copper-moss grows in vernal mesic areas or vernal pools within cismontane woodlands and is associated with metamorphic rock. In California, it is scattered throughout the Sierra Nevada Range and the Coast Range between 1500 and 4200 feet in elevation (CNPS). Suitable habitat is not present on the project area due to the lack of metamorphic rock.

**Follet's Monardella (*Monardella follettii*)**

**Federal Status: none; California Status: none; CNPS Status: 1B.2**

Follet's monardella is a California endemic shrub that is associated with lower montane coniferous forests with serpentine soils (CNPS). It is only found in the northern high Sierra Nevada Range (UCANR), often on steep, rocky slopes at elevations between 4200 to 6300 feet. Threats to this rare species include fire, mining, logging, and overshadowing (CNPS). No suitable soils are present on the project area, and the elevation is too low for this species to occur.

**Humboldt Lily (*Lilium humboldtii*)**

**Federal Status: none; California Status: none; CNPS Status: 4.2**

The Humboldt lily is an orange lily that grows in chaparral, woodlands and openings in coniferous forests. It is primarily found in the foothills of the Sierra Nevadas in the central part of California. It is threatened by urbanization, horticultural collecting, deer browsing, non-native plants, and road construction (CNPS). Humboldt lilies do occur on the project area and could be impacted by project activities. They were located in an area of black oak woodland south of the emergent marsh area.

**Norris' Beard-Moss (*Didymodon norrisii*)**

**Federal Status: none; California Status: none; CNPS Status: 2.2**

Norris' beard-moss is a reddish-brown, rare moss that grows in intermittently wet areas in rock outcrops, boulders, and cliffs (eflora.org). It is found primarily in cismontane woodland and lower coniferous forests (CNPS) scattered throughout California and in Oregon and British Columbia as well (eflora.org). It is threatened by road construction and maintenance and logging (CNPS). No suitable habitat for Norris' beard-moss occurs on the project area due to the lack of rock outcrops, boulders and cliffs.

**Pine Hill Flannelbush (*Fremontodendron decumbens*)**

**Federal Status: Endangered; California Status: Rare; CNPS Status: 1B.2**

Pine Hill flannelbush is a California endemic evergreen shrub that primarily grows in chaparral or cismontane woodlands with rocky, gabbro soils (CNPS). The only known location of this species is near Pine Hill in western El Dorado County. It may possibly occur in Yuba or Nevada Counties, but these reports have not been confirmed (USFWS). It has been threatened

by development and changes in the fire regime (CNPS). There is no suitable soil habitat on the project area for Pine Hill flannelbus due to lack of suitable soils.

**Red Hills Soaproot (*Chlorogalum grandiflorum*)**

**Federal Status: none; California Status: none; CNPS Status: 1B.2**

Red Hills soaproot is a perennial herb that grows in chaparral, lower montane woodland or cismontane forest, usually on gabbro or serpentine soils. It is threatened by development, mining, road construction, and vehicles. It has only been documented in El Dorado, Amador, Calaveras, Placer, and Tuolumne Counties (CNPS). Red Hills soaproot has not been documented in Nevada County and is not likely to be present on the project area due to the lack of gabbro and serpentine soils.

**Scadden Flat Checkerbloom (*Sidalcea stipularis*)**

**Federal Status: none; California Status: Endangered; CNPS Status: 1B.1**

Scadden Flat checkerbloom is an exceedingly rare, California endemic rhizomatous herb associated with marsh habitat that is known from only three occurrences near Grass Valley. It is threatened by altered hydrology, grazing, and non-native plants. Although suitable habitat is present on the project area, it is very unlikely that this species occurs due to its highly restricted range. It is only known from three occurrences and it was not documented during extensive botanical surveys.

**Stebbin's Morning-Glory (*Calystegia stebbinsi*)**

**Federal Status: Endangered; California Status: Endangered; CNPS Status: List 1B.1**

Stebbin's morning-glory is a California endemic flower (CNPS). It grows in chaparral or cismontane forest on gabbro or serpentine soils. It is distinguished from other morning glories by its unique palmately lobed leaf shape. It is threatened by development, clearing, off-road vehicles, road maintenance, competition with non-native plants, and alteration of fire regimes. Stebbin's morning-glory is found in two localized areas in the Sierra Nevada foothills near Pine Hill in El Dorado County, California. It is also found near a landfill in Nevada County (USFWS). No habitat exists for Stebbin's morning-glory on the project area due to lack of suitable soil types.

## Section 5 CONCLUSIONS AND RECOMMENDATIONS

### Potentially Occurring Special-Status Species

Suitable habitat was found for 26 of 44 potentially occurring special-status wildlife species and 4 of 15 special-status plant species. Of these, only one special-status wildlife species and one special-status plant species were documented to actually occur on the project area: Cooper's hawk and Humboldt lily. The California spotted owl and True's manzanita have been documented with the park but were not observed within project boundaries. Other special-status species were not documented to occur on the project area; however, some of these species may occur onsite, at least on an occasional basis, even though they were not observed during surveys. Species for which protocol-level surveys were not conducted could have been missed during surveys. Bats were observed on the project area, but were not identified to species; therefore, special-status bat species potentially occur. Furthermore, wildlife species are mobile and could immigrate onto the project area before project activities begin. It is recommended that impacts be evaluated for these species on a habitat basis, excepting species for which specific regulations exist related to take of individuals and/or nests. For these species, it is recommended that specific surveys are performed prior to construction activities.

### Special-Status Raptors

Cooper's hawks were the only special-status wildlife species confirmed to occur on the project area. Although previously believed to avoid urban landscapes, Cooper's hawks have recently proven remarkably adaptable to such areas and the associated disturbance. Affinity for human-altered habitats (including housing areas, plantations, and high-use recreational areas) is possible because developed areas generally support higher numbers of favored bird prey. Also, Cooper's hawks are adapted to hunting in structurally complex habitats, which urban/suburban environments mimic (Mannan et al., 2000). Due to the adaptive nature of this raptor and the ample foraging and nesting opportunities within the park, adverse effects on Cooper's hawks should be negligible. However, buffer areas must be established around any nesting Cooper's hawks near project areas.

The California spotted owl was documented to occur within the park but outside the project area. Habitats utilized by California spotted owls are generally complex in structure. A critical element of this complex forest structure is the presence of large trees (greater than 90 cm in diameter at breast height). Foraging habitat appears more variable and includes both intermediate-aged and older forested habitats within a home range (Call, 1990; Call et al., 1992; Gutiérrez et al., 1992). The only suitable habitat that occurs within the park is outside of the project area in a relatively undisturbed mixed conifer forest. This area of the park is also contiguous with a tract of relatively undisturbed Bureau of Land Management land. Forest habitat within the project area has low structural diversity and is fragmented with open areas, roads, and trails. Given that the forest ecosystem occurring within the park is fragmented and incurs high levels of human disturbance, the spotted owls likely would not use the area for nesting but could use the area within the park and project area as a migration corridor or for foraging.

Preconstruction surveys should be implemented prior to each project event. Any nesting raptors observed during preconstruction surveys must be avoided during project activities by providing buffer zones around the nest in which no construction related activities will occur. Remediation activities would further avoid adverse effects to raptors by avoiding impacts to suitable nesting trees whenever possible.

### **Other Protocol Survey Species**

There were no observations of the California red-legged frog, California horned lizard, northwestern pond turtle, or willow flycatcher during protocol-level surveys. The thoroughness of the protocol-level surveys allows us to state with reasonable certainty that these species did not occur in the project area during the time that protocol surveys were performed; however, these species are mobile species to varying degrees. Preconstruction surveys would be necessary in project areas that contain suitable habitat for these species to be certain that they have not immigrated onto the project area.

## Section 6 REFERENCES

- Birds of North America *Online*. July 2008. <<http://bna.birds.cornell.edu/bna/home>>
- Bureau of Land Management (BLM). *California BLM Special Status Plants*. August 2008. [http://www.blm.gov/ca/pa/ssp/lists/ssplist\\_a-b.html](http://www.blm.gov/ca/pa/ssp/lists/ssplist_a-b.html)
- California Department of Fish and Game (CDFG), Biogeographic Data Branch, California Natural Diversity Database. 2008. Special Animals. <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf>
- CaliforniaHerps.com. California Snakes. July 2008. [www.californiaherps.com/snakes/snakes.html](http://www.californiaherps.com/snakes/snakes.html)
- California Department of Fish and Game. 2000. *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (revision of 1983 guidelines). Sacramento, California.
- California Native Plant Society. 2001. CNPS botanical survey guidelines. Pages 38–40 in D. P. Tibor (ed.), *Inventory of Rare and Endangered Plants of California* (6th ed.). Rare Plant Scientific
- Advisory Committee. Sacramento, California: California Native Plant Society.
- California Native Plant Society (CNPS). 2008. *Inventory of Rare and Endangered Plants* (online edition, v7-08c). California Native Plant Society. Sacramento, California. Accessed on Thu, Aug. 14, 2008 from <http://www.cnps.org/inventory>
- Call, D. R. 1990. *Home-range and habitat use by California Spotted Owls in the central Sierra Nevada*. Master's thesis, Humboldt State University, Arcata, California.
- Call, D. R., R. J. Gutiérrez and J. Verner. 1992. *Foraging habitat and home-range characteristics of California Spotted Owls in the Sierra Nevada*. *Condor* 94: 880–888.
- Efloras.org. August 2008. <http://www.efloras.org/index.aspx>
- EnviroStor. Department of Toxic Substances. Empire Mine State Park. July 2008. [http://www.envirostor.dtsc.ca.gov/public/profile\\_report](http://www.envirostor.dtsc.ca.gov/public/profile_report)
- Gutiérrez, R. J., J. Verner, K. S. McKelvey, B. R. Noon, G. N. Steger, D. R. Call, W. S. Lahaye, B. B. Bingham and J. S. Senser. 1992. *Habitat relations of the California Spotted Owl*. Pp 79–98 in *The California Spotted Owl: a technical assessment of its current status* (J. Verner, K. S. McKelvey, B. R. Noon, R. J. Gutiérrez, G. I. Gould, Jr., and T. W. Beck, tech. coords.). Gen. Tech. Rep. PSW–GTR–133, U.S. Forest Serv., Albany, California.
- Hickman, J. C., Editor. 1996. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley.
- Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. California Department of Fish and Game. Sacramento, California.
- Jennings, C.W. 1977. *Geologic Map of California, Data Map*, California Department of Conservation, California Division of Mines and Geology.



- Mammals. *Townsend Western Big-eared bat (Corynorhinus townsendii)*. August 2008. [www.co.contra-costa.ca.us/depart/cd/water/HCP/archive/final-hcp/pdfs](http://www.co.contra-costa.ca.us/depart/cd/water/HCP/archive/final-hcp/pdfs)
- Mannan, R. W. and C. W. Boal. 2000. *Home range characteristics of male Cooper's Hawks in an urban environment*. *Wilson Bull.* 112(1): 21-27.
- Moen, C. A. 1994. *California Spotted Owl habitat selection in the central Sierra Nevada*. Master's thesis, Humboldt State Univ., Arcata, California.
- North American Mammals. Smithsonian National Museum of Natural History. August 2008. [http://www.mnh.si.edu/mna/search\\_name.cfm](http://www.mnh.si.edu/mna/search_name.cfm)
- Pollet, J and P.M. Omi. 2002. *Effect of thinning and Prescribed Burning on Crown Fire Severity in Ponderosa Pine Forests*. *International Journal of Wildland Fire* 11:1-10.
- Sierra Forest Legacy. Sierra Nevada red fox. August 2008. [http://www.sierraforestlegacy.org/FC\\_SierraNevadaWildlifeRisk/SierraNevadaRedFox.php](http://www.sierraforestlegacy.org/FC_SierraNevadaWildlifeRisk/SierraNevadaRedFox.php)
- Sawyer, J.O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento, California..
- Web Soil Survey. United States Department of Agriculture. Natural Resources Conservation Services. August 2008. <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- Western Regional Climate Center. July 2008. [www.wrcc.dri.edu](http://www.wrcc.dri.edu)
- United States Fish and Wildlife Service (USFWS). *Endangered and Threatened Plants*. August 2008. [http://www.fws.gov/sacramento/es/plant\\_spp\\_accts/acctplant.htm](http://www.fws.gov/sacramento/es/plant_spp_accts/acctplant.htm)
- United States Fish and Wildlife Service (USFWS) September 2008. <http://www.fws.gov/sacramento/es/protocol.htm>
- URS. 2004. *Final Biological Assessment for Empire Mine State Historic Park*. URS Corporation, Sacramento, California.
- VESTRA. 2008. *California Red-Legged Frog Assessment*. VESTRA Resources, Inc., Redding, California.

Appendix A  
**Observed Wildlife Species**

## Observed Wildlife Species

The following wildlife species were observed on the project area:

- Turkey Vulture (*Cathartes aura*)
- Red-Tailed Hawk (*Buteo jamaicensis*)
- Cooper's Hawk (*Accipiter cooperii*)
- Red-Shouldered Hawk (*Buteo lineatus*)
- Great Horned Owl (*Bubo virginianus*)
- California Spotted Owl (*Strix occidentalis occidentalis*)
- Common Raven (*Corvus corax*)
- Mourning Dove (*Zenaidura macroura*)
- Hairy Woodpecker (*Picoides villosus*)
- Pileated Woodpecker (*Dryocopus pileatus*)
- American Robin (*Turdus migratorius*)
- Anna's Hummingbird (*Calypte anna*)
- Black-Headed Grosbeak (*Pheucticus melanocephalus*)
- Dark-Eyed Junco (*Junco hyemalis*)
- Brown Creeper (*Certhia americana*)
- Spotted Towhee (*Pipilo maculatus*)
- Hutton's Vireo (*Vireo huttoni*)
- Brown-Headed Cowbird (*Molothrus ater*)
- Brewer's Blackbird (*Euphagus cyanocephalus*)
- House Finch (*Carpodacus mexicanus*)
- Western Gray Squirrel (*Sciurus griseus*)
- Raccoon tracks (*Procyon lotor*)
- Black Bear tracks (*Ursus americanus*)
- Black-tailed Deer (*Odocoileus hemionus*)
- Bushy-Tailed Woodrat (*Neotoma cinerea*)
- Mole (Family Talpidae)
- Coyote (*Canis latrans*)
- Unidentified Bats (Order Chiroptera)
- Pacific Tree Frog (*Pseudacris regilla*)
- Bullfrog (*Rana catesbeiana*)
- California Newt (*Taricha torosa*) egg masses
- Ring-Necked Snake (*Diadophis punctatus*)
- Western Fence Lizard (*Sceloporus occidentalis*)
- Alligator Lizard (*Elgaria coerulea*)
- Pacific Gopher Snake (*Pituophis catenifer*)
- Pacific Rattlesnake (*Crotalus oreganus*)
- Brown Trout (*Salmo trutta*)
- Bluegill (*Lepomis macrochirus*)
- Crayfish (*Procambarus* sp.)

### Previously Observed Bats (CDPR, 2003)

- Big Brown Bat (*Eptesicus fuscus*)
- Mexican Free-Tailed Bat (*Tadarida brasiliensis*)
- California Myotis Bat (*Myotis californicus*)
- Pipistrelle Bat (*Pipistrellus* sp.)
- Yuma Myotis Bat (*Myotis yumanensis*)



## Empire Mine State Historic Park

Plant List for Hiking Trails and Union Meadow, Grass Valley, California

Based on list from Karen Callahan, Redbud Chapter, CNPS

June 2005, with taxonomic updates (MJW, Aug 2008)

Family	Scientific Name	Common Name * = non-native species
Aceraceae	<i>Acer macrophyllum</i>	Big leaf maple
Anacardiaceae	<i>Toxicodendron diversilobum</i>	Poison-oak
Apiaceae	<i>Osmorhiza berteroi</i> [ <i>O. chilensis</i> ]	Sweet cicely
Apiaceae	<i>Sanicula bipinnata</i>	Poison sanicle
Apiaceae	<i>Sanicula crassicaulis</i>	Pacific snakeroot
Apiaceae	<i>Tauschia hartwegii</i>	Hartweg's tauschia
Apiaceae	<i>Torilis arvensis</i>	Hedge parsley *
Apocynaceae	<i>Apocynum androsaemifolium</i>	Bitter dogbane
Apocynaceae	<i>Vinca major</i>	Periwinkle *
Araliaceae	<i>Hedera helix</i>	English ivy *
Aristolochiaceae	<i>Asarum hartwegii</i>	Hartweg's ginger
Asclepiadaceae	<i>Asclepias cordifolia</i>	Purple milkweed
Asclepiadaceae	<i>Asclepias eriocarpa</i>	India milkweed
Asteraceae	<i>Asclepias speciosa</i>	Showy milkweed
Asteraceae	<i>Achillea millefolium</i>	Yarrow
Asteraceae	<i>Adenocaulon bicolor</i>	Trail plant
Asteraceae	<i>Agoseris grandiflora</i>	Large-flowered agoseris
Asteraceae	<i>Artemisia douglasiana</i>	Douglas mugwort
Asteraceae	<i>Eurybia</i> [ <i>Aster</i> ] <i>radulinus</i>	White aster
Asteraceae	<i>Baccharis pilularis</i>	Coyote brush
Asteraceae	<i>Baccharis salicifolia</i>	Mule fat
Asteraceae	<i>Balsamorhiza deltoidea</i>	Balsam-root
Asteraceae	<i>Carduus pycnocephalus</i>	Italian thistle *
Asteraceae	<i>Centaurea solstitialis</i>	Yellow starthistle *
Asteraceae	<i>Cichorium intybus</i>	Chicory *
Asteraceae	<i>Cirsium occidentale</i>	Cobweb thistle
Asteraceae	<i>Cirsium vulgare</i>	Bull thistle *
Asteraceae	<i>Eriophyllum lanatum</i> var. <i>achillaeoides</i>	Woolly sunflower
Asteraceae	<i>Eriophyllum lanatum</i> var. <i>croceum</i>	Woolly sunflower
Asteraceae	<i>Pseudognaphalium</i> [ <i>Gnaphalium</i> ] <i>canescens</i>	Cudweed
Asteraceae	<i>Grindelia hirsutula</i>	Gumplant
Asteraceae	<i>Ericameria arborescens</i> [ <i>Haplopappus</i> ]	Golden fleece
Asteraceae	<i>Helianthella californica</i>	California sunflower
Asteraceae	<i>Hieracium albiflorum</i>	Hawkweed
Asteraceae	<i>Hypochaeris radicata</i>	Rough cat's ear *

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Asteraceae	<i>Lactuca serriola</i>	Prickly lettuce *
Asteraceae	<i>Leucanthemum vulgare</i>	Ox-eye daisy *
Asteraceae	<i>Madia exigua</i>	Theaste madia
Asteraceae	<i>Madia gracilis</i>	Slender tarweed
Asteraceae	<i>Rafinesquia californica</i>	California chicory
Asteraceae	<i>Senecio aronicoides</i>	California butterwort
Asteraceae	<i>Solidago canadensis</i> var. <i>salebrosa</i> [S. c. ssp. <i>elongata</i> ]	Golden rod
Asteraceae	<i>Taraxacum officinale</i>	Common dandelion *
Asteraceae	<i>Tragopogon dubius</i>	Goat's beard *
Asteraceae	<i>Tragopogon porrifolius</i>	Purple salsify *
Berberidaceae	<i>Wyethia angustifolia</i>	Narrow-leaved mule ears
Berberidaceae	<i>Mahonia aquifolium</i> [ <i>Berberis a.</i> var. <i>a.</i> ]	Oregon grape, mahonia
Betulaceae	<i>Mahonia repens</i> [ <i>Berberis a.</i> var. <i>repens</i> ]	Creeping mahonia
Betulaceae	<i>Alnus rhombifolia</i>	White alder
Boraginaceae	<i>Corylus cornuta</i>	California hazelnut
Boraginaceae	<i>Cynoglossum grande</i>	Hound's tongue
Boraginaceae	<i>Lithospermum californicum</i>	Stoneseed
Brassicaceae	<i>Plagiobothrys</i> sp.	Popcorn flower
Brassicaceae	<i>Streptanthus tortuosus</i>	Mountain jewel flower
Brassicaceae	<i>Barbarea orthoceras</i>	Winter cress
Brassicaceae	<i>Brassica nigra</i>	Black mustard *
Brassicaceae	<i>Cardamine pensylvanica</i>	Bitter cress
Brassicaceae	<i>Erysimum capitatum</i>	Western wallflower
Brassicaceae	<i>Lepidium campestre</i>	Perennial pepperweed *
Brassicaceae	<i>Nasturtium officinale</i> [ <i>Rorippa nasturtium-aquaticum</i> ]	Watercress
Brassicaceae	<i>Sisymbrium officinale</i>	Hedge mustard *
Campanulaceae	<i>Campanula prenanthoides</i>	California harebell
Caprifoliaceae	<i>Lonicera hispidula</i>	Wild honeysuckle
Caprifoliaceae	<i>Symphoricarpos albus</i>	Snowberry
Caryophyllaceae	<i>Silene californica</i>	India pink
Caryophyllaceae	<i>Silene lemmonii</i>	Lemmon's catch-fly
Caryophyllaceae	<i>Dianthus armeria</i>	Grass pink *
Caryophyllaceae	<i>Petrorhagia dubia</i>	Wild carnation *
Convolvulaceae	<i>Calystegia occidentalis</i>	Morning glory
Convolvulaceae	<i>Convolvulus arvensis</i>	Bindweed *

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Cornaceae	<i>Cornus nuttallii</i>	Mountain dogwood
Cupressaceae	<i>Calocedrus decurrens</i>	Incense cedar
Cucurbitaceae	<i>Marah sp.</i>	Wild cucumber
Cuscutaceae	<i>Cuscuta sp.</i>	Dodder
Cyperaceae	<i>Carex dudleyi</i>	Dudley's sedge
Cyperaceae	<i>Carex multicaulis</i>	Sedge
Dennstaedtiaceae	<i>Pteridium aquilinum</i>	Bracken fern
Dipsacaceae	<i>Dipsacus fullonum</i>	Teasel*
Equisetaceae	<i>Equisetum hyemale</i>	Scouring rush
Ericaceae	<i>Arbutus menziesii</i>	Madrone
Ericaceae	<i>Arctostaphylos mewukka ssp. mewukka</i>	Indian manzanita
Ericaceae	<i>Arctostaphylos patula</i>	Greenleaf manzanita
Ericaceae	<i>Arctostaphylos viscida</i>	Whiteleaf manzanita
Ericaceae	<i>Chimaphila menziesii</i>	Little prince's pine
Ericaceae	<i>Chimaphila umbellata</i>	Prince's pine
Ericaceae	<i>Pyrola picta</i>	White-veined wintergreen
Ericaceae	<i>Rhododendron occidentale</i>	Western azalea
Fabaceae	<i>Cercis occidentalis</i>	Western redbud
Fabaceae	<i>Colutea arborescens</i>	Bladder senna *
Fabaceae	<i>Cytisus scoparius</i>	Scotch broom *
Fabaceae	<i>Genista monspessulana</i>	French broom *
Fabaceae	<i>Lathyrus latifolius</i>	Perennial sweet pea *
Fabaceae	<i>Lathyrus nevadensis</i>	Sierra sweet pea
Fabaceae	<i>Lathyrus sulphureus</i>	Sulfur pea
Fabaceae	<i>Lotus corniculatus</i>	Birdsfoot trefoil *
Fabaceae	<i>Lotus grandiflorus</i>	Large flower lotus
Fabaceae	<i>Lotus micranthus</i>	Miniature lotus
Fabaceae	<i>Lotus purshianus</i>	Spanish lotus
Fabaceae	<i>Lupinus albicaulis</i>	Pine lupine
Fabaceae	<i>Melilotus alba</i>	White sweetclover *
Fabaceae	<i>Robinia pseudoacacia</i>	Black locust *
Fabaceae	<i>Trifolium breweri</i>	Purple clover
Fabaceae	<i>Trifolium dubium</i>	Little hop clover *
Fabaceae	<i>Trifolium hirtum</i>	Rose clover *
Fabaceae	<i>Vicia americana</i>	American vetch
Fabaceae	<i>Vicia sativa</i>	Spring vetch *
Fabaceae	<i>Vicia villosa</i>	Winter vetch *
Fagaceae	<i>Quercus chrysolepis</i>	Canyon live oak



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Fagaceae	<i>Quercus kelloggii</i>	Black oak
Fagaceae	<i>Quercus lobata</i>	Valley oak
Gentianaceae	<i>Centaurium venustum</i>	Chanchalagua
Gentianaceae	<i>Swertia albicaulis</i>	Whitestem swertia
Geraniaceae	<i>Erodium cicutarium</i>	Redstem filaree *
Geraniaceae	<i>Geranium dissectum</i>	Cutleaf geranium *
Grossulariaceae	<i>Ribes roezlii</i>	Sierra gooseberry
Hydrophyllaceae	<i>Eriodictyon californicum</i>	Yerba santa
Hydrophyllaceae	<i>Nemophila heterophylla</i>	Canyon nemophila
Hydrophyllaceae	<i>Phacelia heterophylla</i>	Varied leaf phacelia
Hypericaceae	<i>Hypericum concinnum</i>	Gold wire
Hypericaceae	<i>Hypericum perforatum</i>	St Johns wort *
Iridaceae	<i>Iris hartwegii</i>	Hartweg's iris
Iridaceae	<i>Iris macrosiphon</i>	Foothills iris
Iridaceae	<i>Sisyrinchium bellum</i>	Blue-eyed grass
Juglandaceae	<i>Juglans species (hybrid)</i>	Walnut *
Juncaceae	<i>Juncus balticus</i>	Baltic rush
Juncaceae	<i>Juncus xiphioides</i>	Iris-leaved rush
Juncaceae	<i>Luzula comosa</i>	Hairy wood rush
Lamiaceae	<i>Lamium amplexicaule</i>	Giraffe's head *
Lamiaceae	<i>Marrubium vulgare</i>	Horehound *
Lamiaceae	<i>Mentha x piperita</i>	Peppermint *
Lamiaceae	<i>Monardella villosa</i>	Coyote mint
Lamiaceae	<i>Prunella vulgaris</i>	Self-heal *?
Lamiaceae	<i>Salvia pratensis</i>	Meadow sage
Lamiaceae	<i>Salvia sonomensis</i>	Creeping sage
Liliaceae	<i>Calochortus monophyllus</i>	Yellow star tulip
Liliaceae	<i>Chlorogalum pomeridianum</i>	Soap plant
Liliaceae	<i>Dichelostemma capitatum</i>	Blue dicks
Liliaceae	<i>Dichelostemma multiflorum</i>	Wild hyacinth
Liliaceae	<i>Fritillaria micrantha</i>	Brown bells
Liliaceae	<i>Fritillaria recurva</i>	Scarlet fritillary
Liliaceae	<i>Lilium humboldtii</i> ssp. <i>humboldtii</i>	Humboldt lily
Liliaceae	<i>Lilium pardalinum</i>	Leopard lily
Liliaceae	<i>Smilax californica</i>	Smilax
Liliaceae	<i>Trillium angustipetalum</i>	Sierra trillium
Liliaceae	<i>Triteleia ixioides</i>	Pretty faces
Linaceae	<i>Linum usitatissimum</i>	Common flax *

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Oleaceae	<i>Fraxinus latifolia</i>	Oregon ash
Onagraceae	<i>Clarkia rhomboidea</i>	Diamond clarkia
Onagraceae	<i>Epilobium species</i>	Willow herb
Orchidaceae	<i>Cephalanthera austinae [Eburophyton]</i>	Phantom orchid
Orchidaceae	<i>Corallorhiza maculata</i>	Spotted coralroot orchid
Orchidaceae	<i>Corallorhiza striata</i>	Striped coralroot orchid
Orchidaceae	<i>Goodyera oblongifolia</i>	Rattlesnake plantain orchid
Orchidaceae	<i>Piperia elongata</i>	Green-flowered rein-orchid
Orchidaceae	<i>Piperia transversa</i>	White-flowered rein-orchid
Papaveraceae	<i>Dendromecon rigida</i>	Bush poppy
Papaveraceae	<i>Dicentra formosa</i>	Bleeding heart
Papaveraceae	<i>Eschscholzia californica</i>	California poppy
Philadelphaceae	<i>Philadelphus lewisii</i>	Wild mock orange
Pinaceae	<i>Abies concolor</i>	White fir
Pinaceae	<i>Pinus lambertiana</i>	Sugar pine
Pinaceae	<i>Pinus ponderosa</i>	Western yellow pine
Pinaceae	<i>Pseudotsuga menziesii</i>	Douglas-fir
Plantaginaceae	<i>Plantago major</i>	Common plantain *
Poaceae	<i>Aegilops triuncialis</i>	Barbed goat grass *
Poaceae	<i>Bromus diandrus</i>	Ripgut brome *
Poaceae	<i>Bromus hordeaceus</i>	Soft chess *
Poaceae	<i>Bromus sterilis</i>	Poverty brome *
Poaceae	<i>Bromus madritensis</i>	Brome *
Poaceae	<i>Bromus tectorum</i>	Cheat grass *
Poaceae	<i>Dactylis glomerata</i>	Orchard grass *
Poaceae	<i>Elymus glaucus ssp. glaucus</i>	Blue wild rye
Poaceae	<i>Elymus trachycaulus</i>	Slender wheatgrass
Poaceae	<i>Festuca arundinacea</i>	Tall fescue *
Poaceae	<i>Festuca idahoensis</i>	Idaho fescue
Poaceae	<i>Festuca rubra</i>	Red fescue
Poaceae	<i>Holcus lanatus</i>	Common velvet grass *
Poaceae	<i>Hordeum marinum</i>	Mediterranean barley *
Poaceae	<i>Lolium multiflorum</i>	Italian ryegrass *
Poaceae	<i>Lolium perenne</i>	Perennial ryegrass *
Poaceae	<i>Phleum pratense</i>	Timothy grass *
Poaceae	<i>Poa annua</i>	Annual bluegrass *
Poaceae	<i>Poa pratensis ssp. pratensis</i>	Kentucky bluegrass *
Poaceae	<i>Taeniatherum caput-medusae</i>	Medusa-head *

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Poaceae	<i>Vulpia myuros</i>	Vulpia *
Polemoniaceae	<i>Collomia heterophylla</i>	Varied leaf collomia
Polemoniaceae	<i>Navarretia intertexta</i>	Navarretia
Polemoniaceae	<i>Navarretia squarrosa</i>	Skunkweed
Polygalaceae	<i>Polygala cornuta</i>	Sierra milkwort
Polygonaceae	<i>Polygonum amphibium</i>	Water smartweed *
Polygonaceae	<i>Rumex acetosella</i>	Sheep sorrel *
Polygonaceae	<i>Rumex crispus</i>	Curly dock *
Portulacaceae	<i>Claytonia perfoliata</i>	Miners lettuce
Primulaceae	<i>Dodecatheon hendersonii</i>	Shooting star
Primulaceae	<i>Trientalis latifolia</i>	Star flower
Ranunculaceae	<i>Aquilegia formosa</i>	Crimson columbine
Ranunculaceae	<i>Delphinium sp.</i>	Larkspur
Ranunculaceae	<i>Ranunculus occidentalis</i>	Buttercup
Rhamnaceae	<i>Ceanothus cuneatus</i>	Buck brush
Rhamnaceae	<i>Ceanothus integerrimus</i>	Deer brush
Rhamnaceae	<i>Ceanothus lemmonii</i>	Lemmon's ceanothus
Rhamnaceae	<i>Ceanothus prostratus</i>	Mahala mat
Rhamnaceae	<i>Frangula californica [Rhamnus c.]</i>	California coffeeberrv
Rhamnaceae	<i>Rhamnus ilicifolia</i>	Holly-leaf redberry
Rhamnaceae	<i>Frangula rubra ssp. obtusissima [Rhamnus]</i>	Sierra coffeeberry
Rosaceae	<i>Chamaebatia foliolosa</i>	Mountain misery
Rosaceae	<i>Crataegus monogyna</i>	Hawthorn *
Rosaceae	<i>Fragaria vesca</i>	Wood strawberry
Rosaceae	<i>Heteromeles arbutifolia</i>	Toyon
Rosaceae	<i>Horkelia tridentata</i>	Threetooth horkelia
Rosaceae	<i>Potentilla glandulosa</i>	Sticky cinquefoil
Rosaceae	<i>Potentilla gracilis var. fastigiata</i>	Cinquefoil
Rosaceae	<i>Prunus species</i>	Cultivated plums / cherries *
Rosaceae	<i>Prunus subcordata</i>	Sierra plum
Rosaceae	<i>Rosa bridgesii</i>	Bridge's rose
Rosaceae	<i>Rosa eglantheria</i>	Sweet-brier rose *
Rosaceae	<i>Rosa gymnocarpa</i>	Woodrose
Rosaceae	<i>Rubus discolor</i>	Himalayan blackberry *
Rosaceae	<i>Rubus laciniatus</i>	Cutleaf blackberry *
Rosaceae	<i>Rubus leucodermis</i>	Blackcap raspberry
Rosaceae	<i>Rubus parviflorus</i>	Thimbleberry

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Rosaceae	<i>Sanguisorba minor ssp. muricata</i>	Garden burnet *
Rubiaceae	<i>Galium aparine</i>	Goosegrass
Rubiaceae	<i>Galium porrigens</i>	Climbing bedstraw
Salicaceae	<i>Populus fremontii</i>	Fremont cottonwood
Salicaceae	<i>Salix exigua</i>	Narrow-leaved willow
Salicaceae	<i>Salix laevigata</i>	Red willow
Salicaceae	<i>Salix lasiolepis</i>	Arroyo willow
Salicaceae	<i>Salix lucida</i>	Shining willow
Saxifragaceae	<i>Heuchera micrantha</i>	Alum root
Scrophulariaceae	<i>Cordylanthus tenuis</i>	Bird's beak
Scrophulariaceae	<i>Mimulus guttatus</i>	Seep-spring monkeyflower
Scrophulariaceae	<i>Mimulus torreyi</i>	Torrey's mimulus
Scrophulariaceae	<i>Penstemon heterophyllus</i>	Foothill penstemon
Scrophulariaceae	<i>Penstemon laetus ssp. laetus</i>	Gay penstemon
Scrophulariaceae	<i>Verbascum blattaria</i>	Moth mullein *
Scrophulariaceae	<i>Verbascum sp.</i>	Woolly mullein *
Scrophulariaceae	<i>Veronica peregrina ssp. xalapensis</i>	Purslane speedwell
Simaroubaceae	<i>Ailanthus altissima</i>	Tree-of-heaven *
Taxaceae	<i>Taxus brevifolia</i>	Pacific yew
Violaceae	<i>Viola lobata</i>	Pine violet
Violaceae	<i>Viola purpurea</i>	Mountain violet
Violaceae	<i>Viola sheltonii</i>	Fan violet
Viscaceae	<i>Phoradendron villosum</i>	Oak mistletoe