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PACIFICORP

Lassen Substation Project

Biological Resources Habitat Assessment

PROJECT NUMBER:
136412

PROJECT CONTACT:
Michael Strand

EMAIL:
mstrand@powereng.com

PHONE:
208-288-6152

POWER ENGINEERS

Biological Resources Habitat Assessment

PREPARED FOR: PACIFICORP

PREPARED BY: KEN MCDONALD

714-507-2729

KEN.MCDONALD@POWERENG.COM

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1.0 INTRODUCTION

At the request of PacifiCorp, POWER Engineers, Inc. (POWER) conducted a biological resources habitat assessment for the Lassen Substation Project (Project). PacifiCorp proposes to replace the existing Mt. Shasta Substation with a new substation, Lassen Substation, on a site adjacent to the existing Mt. Shasta Substation. The proposed Lassen Substation site consists of two parcels (APN 036-220-280 and APN 036-220-170) comprising approximately 4.5 acres. The existing substation would be removed once the Lassen Substation is operational.

As part of the proposed Project, 36 existing wood poles along the existing 69 kV transmission line (Line 2, approximately 1.5 linear miles) would be replaced to accommodate an upgraded distribution underbuild conductor and to comply with the California Code of Regulations, Title 8 and CPUC GO-95 load requirements. The transmission line would operate at 69 kV, but would be constructed as a 115 kV transmission line. The proposed Project would increase capacity to meet current and future projected demand.

The Project also includes upgrades to the existing distribution system to meet current capacity requirements and to meet future load growth. The distribution lines would be upgraded from a 4.16 kV line to a 12.47 kV line. The distribution lines would be partially reconductored and the 12.47 kV distribution lines would be reconnected in a new configuration to receive supply from three breakers at the proposed Lassen Substation. As part of the distribution line upgrade, approximately 1,200 feet of underground cable would be installed to increase capacity of an existing underground line.

The new substation would connect to Line 2 and would contain a 69 kV/12.5 kV, 15/20/25 MVA-rated transformer with a load tap changer supplying enclosed 12.5 kV switchgear and a 12.5 kV capacitor bank.

Because the new substation would not provide a 4.16 kV source, the 3.3 MVA of 4.16 kV load located within the central portion of the City of Mt. Shasta would be served from three banks of 12.5 to 4.16 kV stepdown transformers to be added on the 12.5kV distribution feeders near the existing 4.16 kV load.

A single-circuit, 115 kV 795 thousand circular mil (kcmil) aluminum conductor steel reinforced (ACSR) transmission line approximately 200 feet long would carry the 69 kV Line 2 through the proposed new Lassen Substation. Thirty-six existing wood poles, from Pole 19/47 north of the existing substation to Pole 2A/49 south of the existing substation, would be upgraded to accommodate an upgraded underbuild distribution conductor and to comply with the CPUC GO-95 load requirements.

Three 12.5 kV distribution circuits, approximately 300 feet long, would be installed underground from a cable pulling vault just outside of the proposed Lassen Substation south to a new wood transmission/distribution pole between existing Poles 15/48 and 16/48.

There would be two temporary transmission feeds to the existing Mt. Shasta Substation so that the transmission line work and connection to the new Lassen Substation can be made without loss of power supply. When the new substation is energized and the 12.5 kV feeder construction is ready, the tie-in would be made while the line is live, if possible, to avoid a distribution interruption in electrical service.

When the new Lassen Substation is completed and energized, the existing Mt. Shasta Substation electrical equipment would be removed, with only the fence, concrete foundations, and gravel pad remaining.

1.1 Project Location

The proposed Project is located in in the City of Mt. Shasta, in unincorporated Siskiyou County. The existing Mt. Shasta Substation and proposed Lassen Substation sites are both located west of Interstate 5 (I-5), in the south central portion of Siskiyou County (refer to Figure 1). The Lassen Substation site is mapped in Township 40 North, Range 04 West, Section 21 northwest quadrant, of the City of Mt. Shasta Quadrangle of the U.S. Geological Survey's (USGS) 7.5-Minute Topographic Series.

Land uses in the vicinity of the existing and proposed substation sites and along the existing Line 2 are primarily rural residential, agricultural, and forest-related. The physical address for the proposed Lassen Substation site is 504 South Old Stage Road, Mt. Shasta, California, Assessor's Parcel Number (APN) 036-220-280. PacifiCorp also owns the adjacent property located at 506 South Old Stage Road (APN 036-220-170). The overhead and underground distribution line locations are located in the Siskiyou County and extend into the City of Mt. Shasta. The area in the vicinity of the distribution line upgrade consist of residences, a mobile home park, a hotel, a senior apartment community, undeveloped land, I-5, a power substation, a gasoline station, and commercial buildings.

The proposed 1.5 mile reconstruction of the existing transmission line and the overhead and underground distribution line locations are within existing easements held by PacifiCorp.

1.2 Regulatory Setting

1.2.1 Federal

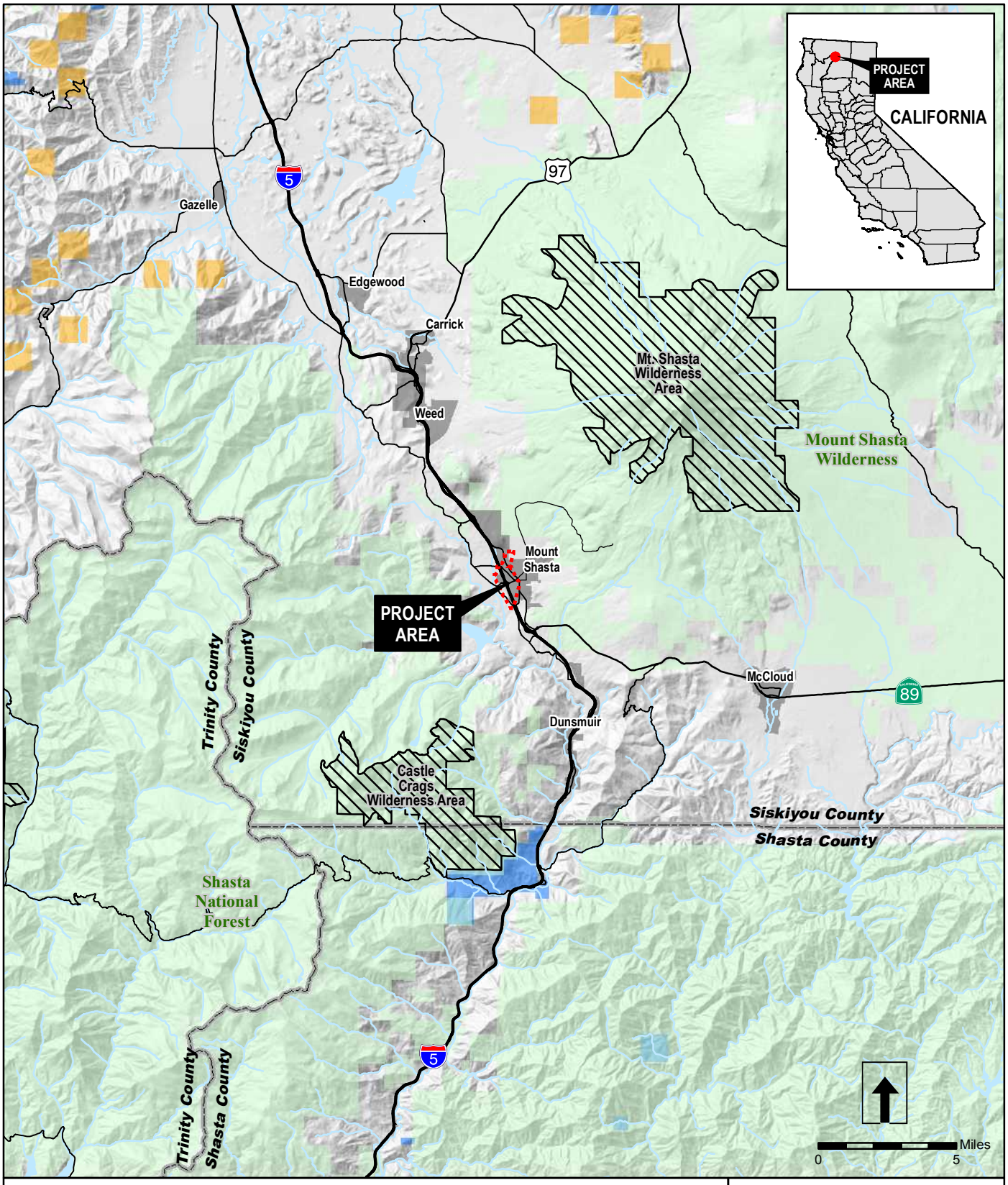
National Environmental Policy Act *(*42 U.S.C. §4321 et seq.*)*

The National Environmental Policy Act (NEPA) and its supporting federal regulations establish certain requirements that must be adhered to for any project "financed, assisted, conducted or approved by a federal agency." In making a decision on the issuance of federal grant monies for elements of a proposed project, the federally designated lead agency pursuant to NEPA is required to "determine whether the proposed action may significantly affect the quality of the human environment."

Federal Endangered Species Act *(*16 U.S.C. §1531 et seq.*)*

The Federal Endangered Species Act (ESA) imparts provisions for the protection of species listed as threatened or endangered as well as their designated critical habitats. It prohibits the "take" of listed species; however, "incidental take" as the result of otherwise legal project activities may be authorized pursuant to ESA Section 7 (with federal project nexus) or Section 10. Section 10 provides provisions for the development of habitat conservation plans. The United States Fish and Wildlife Service (USFWS) advises that proposed and candidate species may be listed at any time and should be considered during project planning.

ESA administration is managed by the USFWS for terrestrial species and the National Marine Fisheries Service for species with a significant marine life history component.



LEGEND

- PROJECT AREA
- CITY LIMITS
- COUNTY BOUNDARY
- WILDERNESS AREA
- USDA FOREST SERVICE
- BUREAU OF LAND MANAGEMENT
- STATE LANDS

FIGURE 1
REGIONAL LOCATION

PACIFICORP
LASSEN SUBSTATION
PROJECT

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Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act, as amended in 1964, was enacted to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The statute requires federal agencies to take into consideration the effect that water-related projects would have on fish and wildlife resources. Consultation and coordination with USFWS and California Department of Fish and Wildlife (CDFW) are required to address ways to prevent loss of and damage to fish and wildlife resources and to further develop and improve these resources.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) domestically implements a series of international treaties that provide for migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds. The act further provides that it is unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…" (16 United States Code [USC] §703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA can be found in the March 1, 2010 *Federal Register* (75 Federal Register [FR] 9281). This list comprises several hundred species, including essentially all native birds. Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and of personal property. USFWS publishes a list of birds of conservation concern (BCC) to identify migratory nongame birds that are likely to become candidates for listing under ESA without additional conservation actions. The BCC list is intended to stimulate coordinated and collaborative conservation efforts among federal, state, tribal, and private parties. The Project has the potential to affect migratory birds regulated by the MBTA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC §668) prohibits take and disturbance of individuals and nests. Take permits for birds or body parts are limited to religious, scientific, or falconry pursuits. However, BGEPA was amended in 1978 to allow mining developers to apply to USFWS for permits to remove inactive golden eagle (*Aquila chrysaetos*) nests in the course of *resource development or recovery* operations. With the 2007 removal of bald eagle from the ESA list of threatened and endangered species, USFWS issued new regulations to authorize the limited take of bald eagles and golden eagles under the BGEPA, where the take to be authorized is associated with otherwise lawful activities. A final Eagle Permit Rule was published on September 11, 2009 (74 FR 46836–46879; 50 Code of Federal Regulations [CFR] 22.26).

A permit authorizes limited, non-purposeful take of bald eagles and golden eagles. Individuals, companies, government agencies (including tribal governments), and other organizations can apply for permits to allow disturbance or otherwise take eagles in the course of conducting lawful activities, such as operating utilities and airports. Under BGEPA, *take* is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest or disturb." *Disturb* is defined in the regulations as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." Most permits issued under the regulations authorize disturbance. In limited cases, a permit may authorize the physical take of eagles, but only if every precaution is first taken to avoid physical take.

USFWS issued the *Eagle Conservation Plan Guidance* (Eagle Guidance) to assist parties to avoid, minimize, and mitigate adverse effects on bald and golden eagles (USFWS 2013). The Eagle

Guidance calls for scientifically rigorous surveys, monitoring, assessment, and research designs proportionate to the risk to eagles. The Eagle Guidance describes a process by which wind energy developers can collect and analyze information that, if necessary, could lead to a programmatic permit to authorize unintentional take of eagles at wind energy facilities. USFWS recommends that eagle conservation plans be developed in five stages. Each stage builds on the prior stage, such that together the process is a progressive, increasingly intensive look at likely effects on eagles of the development and operation of a particular site and configuration. Additional refinements to the Eagle Guidance are expected at some point in the future. To date, USFWS has not issued any programmatic eagle take permits.

Clean Water Act

The Clean Water Act (CWA) was passed by Congress in 1972 with a broad mandate "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The chief purpose of the CWA is to establish the basic structure for regulating discharges of pollutants into the waters of the United States. CWA authorizes EPA to set national water quality standards and effluent limitations and includes programs addressing both point-source and nonpoint-source pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. During permit review, the permitting agency is required (under ESA) to evaluate the impact of the discharge on species federally listed as threatened or endangered. Aquatic resources (i.e., streams, wetlands, ponds) are present in the Project area and could be regulated under CWA Section 404 (see below).

Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must apply for certification from the state. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval such as a Section 404 permit) must comply with CWA Section 401. Aquatic resources that would qualify as waters of the United States are present in the Project area. Construction and foundation removal activities have the potential to result in a discharge of pollutants into waters of the United States; therefore, a Section 401 Water Quality Certification may be required.

Permits for Fill Placement in Waters and Wetlands (Section 404)

Wetlands and other waters of the United States are protected under Section 404 of the CWA. Any activity that involves any discharge of dredged or fill material into waters of the United States, including wetlands, is subject to regulation by the U.S. Army Corps of Engineers (USACE). *Waters of the United States* is defined to encompass navigable waters of the United States; interstate waters; all other waters where their use, degradation, or destruction could affect interstate or foreign commerce; tributaries of any of these waters; and wetlands that meet any of these criteria or are adjacent to any of these waters or their tributaries.

Project activities have the potential to result in a discharge of fill material into waters of the United States; therefore, a Section 404 CWA permit may be required for the Initial and Full Repower phases.

Executive Order 11990: Protection of Wetlands

Executive Order 11990 (May 24, 1977) established the protection of wetlands and riparian systems as the official policy of the federal government. The executive order requires all federal agencies to consider wetland protection as an important part of their policies; take action to minimize the destruction, loss, or degradation of wetlands; and preserve and enhance the natural and beneficial values of wetlands. The proposed Project may affect wetlands and therefore federal agencies would be required to consider this Executive Order prior to issuing permits.

Executive Order 11312: Invasive Species

Executive Order 11312 (February 3, 1999) directs all federal agencies to prevent and control the introduction and spread of invasive nonnative species in a cost-effective and environmentally sound manner to minimize their effects on economic, ecological, and human health. The executive order was intended to build upon existing laws, such as NEPA, the Nonindigenous Aquatic Nuisance Prevention and Control Act, the Lacey Act, the Plant Pest Act, the Federal Noxious Weed Act, and ESA. The executive order established a national Invasive Species Council composed of federal agencies and departments, as well as a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The council and advisory committee oversee and facilitate implementation of the executive order, including preparation of the National Invasive Species Management Plan. Federal activities addressing invasive aquatic species are now coordinated through this council and through the National Aquatic Nuisance Species Task Force. The proposed Project may introduce invasive species and therefore federal agencies would be required to consider this Executive Order prior to issuing permits.

Riparian Communities in California

USFWS mitigation policy identifies California's riparian habitats as belonging to resource Category 2, for which no net loss of existing habitat value is recommended (46 FR 7644, January 23, 1981). Riparian communities have a variety of functions, including providing high-quality habitat for resident and migrant wildlife, streambank stabilization, and runoff water filtration. Throughout the United States, riparian habitats have declined substantially in extent and quality compared with their historical distribution and condition. These declines have increased concerns about dependent plant and wildlife species, leading federal agencies to adopt policies to arrest further loss.

1.2.2 State

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires California public agencies to identify and mitigate the significant environmental impacts of projects that they are considering for approval. A project normally has a significant environmental impact on biological resources if it substantially affects a rare or endangered species or the habitat of that species, substantially interferes with the movement of resident or migratory fish or wildlife, or substantially diminishes habitat for fish, wildlife, or plants. The State CEQA Guidelines define rare, threatened, and endangered species as those listed under ESA or the California Endangered Species Act (CESA) or any other species that meet the criteria of the resource agencies or local agencies (e.g., species of special concern, as designated by CDFW). The State CEQA Guidelines state that the lead agency preparing an Environmental Impact Report must confer with CDFW concerning project impacts on species listed as endangered or threatened. The effects of a proposed project on these resources are important in determining whether the project has significant environmental impacts under CEQA. CEQA ultimately authorizes the lead agency to require mitigation measures that avoid, minimize, or mitigate potentially significant impacts.

- **CEQA Public Resources Code Section 15380**

  The California Environmental Quality Act (CEQA) (Public Resources Code Section 15380) defines "rare" in a broader sense than CESA and CDFW's definitions of threatened, endangered, or species of special concern. Under this definition, CDFW can request additional consideration of species not otherwise protected. CEQA requires that the effects of a project on environmental resources must be analyzed and assessed using criteria determined by the lead agency.

- **CEQA Public Resources Code Section 21000 et seq.**

  CEQA establishes state policy to prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures. CEQA applies to actions directly undertaken, financed, or permitted by State lead agencies. CEQA guidelines establish an overall process for the environmental evaluation of projects. Significant impacts to the environment are typically mitigated through the environmental review process in accordance with existing laws and regulations.

- **CEQA Public Resources Code Section 25000 et seq.**

  California Public Resources Code, Section 25000, et seq. is a CEQA-equivalent process implemented by the California Energy Commission (CEC). Section 25500 provides that the CEC has exclusive power to certify all power plant sites and related facilities exceeding 50 megawatts, whether a new site and related facility or a change or addition to an existing facility. The issuance of a certificate by the CEC is in lieu of any permit, certificate, or similar document required by any State, local, or regional agency and supersedes any applicable statute, ordinance, or regulation of any State, local, or regional agency. Projects that will substantially affect rare or endangered species are considered to have a significant effect on the environment.

California Endangered Species Act

CESA (California Fish and Game Code Sections 2050–2116) was implemented in 1984 to prohibit the take of species that are listed as endangered or threatened. Section 86 of the California Department of Fish and Game Code defines *take* as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CDFW administers CESA and authorizes incidental take through either California Fish and Game Code Section 2080.1 (consistency determination) or Section 2081 (Incidental Take Permit). State-listed species have the potential to be affected by the Project and would require consultation with CDFW under CESA.

For Swainson's hawks (*Buteo swainsoni*), CDFW has developed survey guidance, conservation strategies, and best practices for avoiding, minimizing, and mitigating project impacts on the species. This guidance is published in CDFW's *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California* (California Department of Fish and Game [CDFW] 1994).

Fully Protected Species

Sections 3511, 3513, 4700, and 5050 of the California Fish and Game Code pertain to fully protected wildlife species (birds in Sections 3511 and 3513, mammals in Section 4700, and reptiles and amphibians in Section 5050) and strictly prohibit the take of these species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock or if a Natural Community Conservation Planning has been adopted. Specifically, Section 3513 prohibits any take or possession of birds designated by the MBTA as

migratory non-game birds except as allowed by federal rules and regulations pursuant to the MBTA. Based on observations during the habitat assessment, the Project has the potential to affect golden eagle, a fully protected species.

Protection of Birds and Raptors

Section 3503 of the Fish and Game Code prohibits the killing of birds and/or the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and/or the destruction of raptor nests. Typical violations include destruction of active bird and raptor nests as a result of tree removal, and failure of nesting attempts (loss of eggs and/or young) as a result of disturbance of nesting pairs caused by nearby human activity. The Project has the potential to adversely affect birds and raptors protected under Sections 3503 and 3503.5 of the Fish and Game Code. For burrowing owls (*Athene cunicularia*), CDFW has developed survey guidance, conservation strategies, and best practices for avoiding, minimizing, and mitigating project impacts on the species. This guidance has been recently revised in their *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).

Lake and Streambed Alteration

CDFW regulates activities that would interfere with the natural flow of or substantially alter the channel, bed, or bank of a lake, river, or stream including disturbance of riparian vegetation under Fish and Game Code Sections 1600–1616. CDFW requires a Lake and Streambed Alteration Agreement (LSAA) permit for these activities. Requirements to protect the integrity of biological resources and water quality are often conditions of streambed alteration agreements. CDFW may establish conditions that include avoiding or minimizing vegetation removal, use of standard erosion control measures, limitations on the use of heavy equipment, limitations on work periods to avoid impacts on fisheries and wildlife resources and requirements to restore degraded sites or compensate for permanent habitat losses. Aquatic resources (e.g., streams and ponds) that would be regulated by CDFW are present in the Project area. The Project would not likely involve modifications or improvements to stream crossings or modifications to the bed, bank, or channel of a stream, and would therefore not likely require an LSAA. If modifications are necessary, then an LSAA would be pursued.

California Native Plant Protection Act

The California Native Plant Protection Act (CNPPA) of 1977 prohibits importation of rare and endangered plants into California, take of rare and endangered plants, or sale of rare and endangered plants. CESA defers to the CNPPA, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA. For the Initial and Full Repower, plants listed as rare under the CNPPA are not protected under CESA, but rather under CEQA. Several rare and endangered plants have potential to occur in the Project area and could be adversely affected by Project activities.

Title 14 California Code of Regulations (Sections 670.2 and 670.5)

Title 14, California Code of Regulations (Sections 670.2 and 670.5) lists animals designated as threatened or endangered in California. Administration of the code is through CDFW.

Porter-Cologne Water Quality Control Act

The California Water Code addresses the full range of water issues in the state, and includes Division 7, known as the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (Sections 13000–16104 of the California Water Code). Section 13260 requires “any person discharging waste, or proposing to discharge waste, in any region that could affect the waters of the State to file a report of discharge (an application for waste discharge requirements [WDRs])” with the appropriate Regional

Water Quality Control Board (Regional Water Board). Under this act, each of the nine Regional Water Boards must prepare and periodically update water quality control basin plans (basin plans). Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution. Projects that affect wetlands or waters must meet the waste discharge requirements of the Regional Water Board. Pursuant to CWA Section 401, an applicant for a Section 404 permit to conduct any activity that may result in discharge into navigable waters must provide a certification from the Regional Water Board that such discharge will comply with state water quality standards. As part of the wetlands permitting process under Section 404, a project applicant may be required to apply for a water quality certification from the applicable Regional Water Board if necessary.

Section 13050 of the Porter-Cologne Act authorizes the State Water Resources Control Board (State Water Board) and the relevant Regional Water Board to regulate biological pollutants. The California Water Code generally regulates more substances contained in discharges and defines *discharges to receiving waters* more broadly than the CWA does. Waters of the State could be directly or indirectly affected during activities associated with the Project.

California Wetlands Conservation Policy

The goals of the California Wetlands Conservation Policy, adopted in 1993 (Executive Order W-59-93), are "to ensure no overall net loss, and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California, in a manner that fosters creativity, stewardship, and respect for private property;" to reduce procedural complexity in the administration of state and federal wetlands conservation programs; and to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetlands conservation.

1.2.3 Local

Siskiyou County General Plan

The Conservation Element of the Siskiyou County General Plan (amended 2000) includes general objectives relating to biological resources. These objectives include: 1) "to preserve, protect and manage the Forest Lands as both wild habitat and a productive economic resource"; and 2) "to preserve and maintain streams, lakes and forest open space as a means of providing natural habitat for species of wildlife".

2.0 METHODS

2.1 Approach to Data Collection

The first step in the approach to data collection for this analysis included the identification and characterization of biological resources, including vegetation community types, riparian habitats, and special-status plant and animal species that are known to occur or have potential to occur in the Project area and the larger biological survey area (BSA). The Project area (footprint of disturbance) is defined as the area directly affected by the proposed construction and consists of an assumed 50-foot by 50-foot construction workspace area for each pole, the ROW, staging areas, and new and existing access routes. The BSA that was assessed includes the overall site, as presented in Figure 2. The BSA was defined as approximately 250 feet from the ROW centerline to compile adequate biological resources information that would encompass sufficient area to assess the potential for indirect effects from site preparation activities and construction. Should the Project area change prior to construction, it is expected that the actual footprint would still be within the limits of the BSA.

"Special-status," as used in this report, refers to species that are:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the Federal Endangered Species Act (FESA) (50 Code of Federal Regulations [CFR] Part 17.12 [listed plants], 50 CFR Part 17.11 [listed animals], 67 Federal Register [FR] 40657 [candidate species], wait listed (WL) species, Birds of Conservation Concern (BCC), and various notices in the FR [proposed species]);
- Listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (CDFW 2015a-c);
- Identified by the California Department of Fish and Wildlife (CDFW) as fully protected species, including fish and wildlife that do not have State or federal threatened or endangered status but may still be threatened with extinction (CDFW 2015a-c);
- California Species of Special Concern: vertebrate species that have been designated as "species of special concern" by the CDFW because declining population levels, limited range, and/or continuing threats have made them vulnerable to extinction (CDFW 2015a-c);
- Included in the California Native Plant Society (CNPS) Rare Plant Inventory (CNPS 2015); or
- Otherwise defined as rare, threatened, or endangered under the California Environmental Quality Act (CEQA)

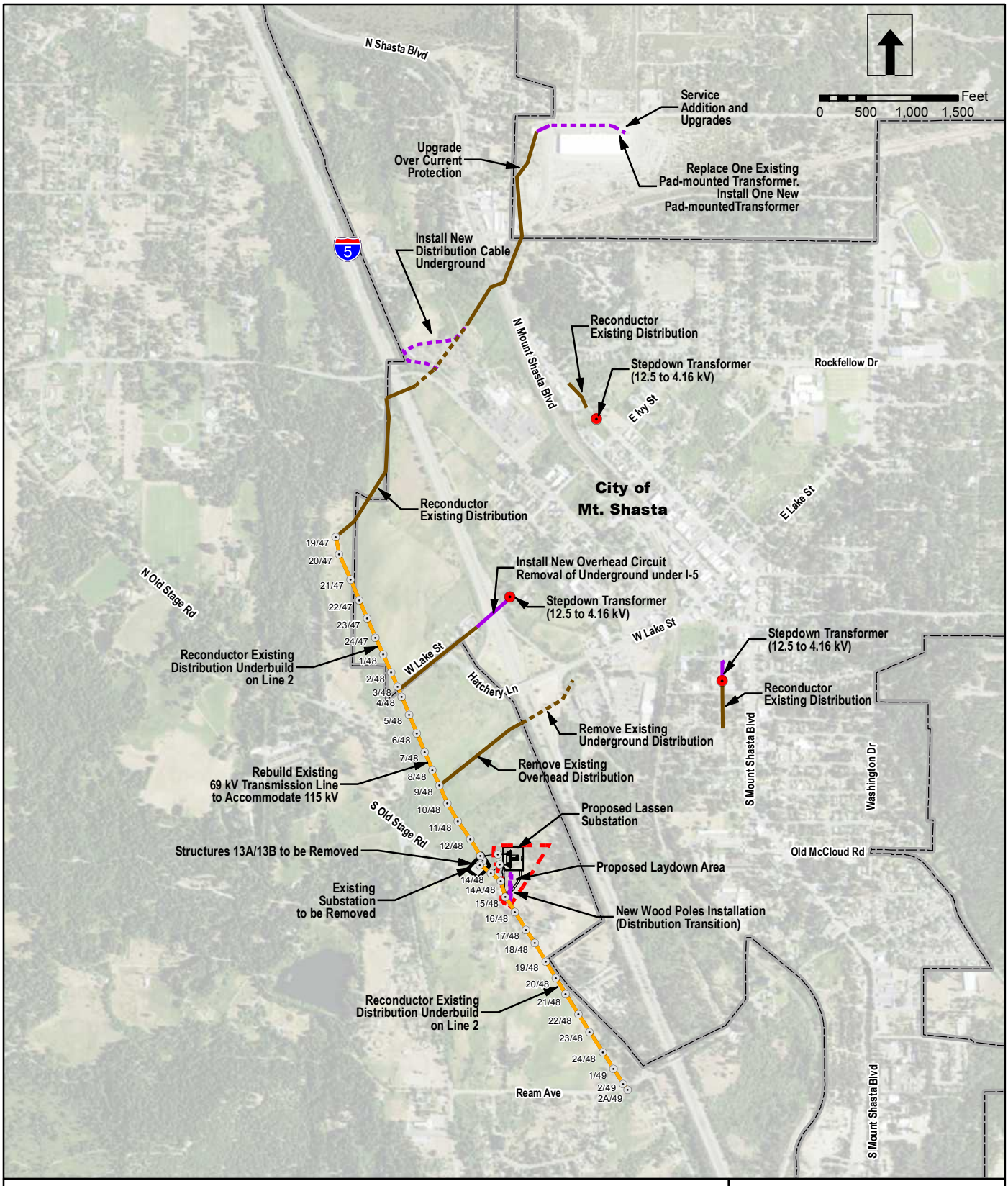
Prior to conducting fieldwork, the biologists reviewed records of known occurrences to identify special-status species that may occur within the BSA, including the defined Project area. Those records were then compared with lists of federal- or State-listed threatened, endangered, or other special-status species. Details of all survey work and approaches to collecting data are described below.

2.2 Literature Review

Preliminary investigation included review of information obtained from literature searches, examinations of habitat as discernible from aerial photographs, and database searches including CNPS and the California Natural Diversity Database (CNDDB) records (CDFW 2015a-c). To identify the existing and potential biological resources present in the vicinity of the proposed Project, a geographic information system (GIS) search was performed. This consisted of mapping baseline biological resource data (vegetation mapping, CNDDB records, and water resources).

2.3 Field Survey

An initial reconnaissance-level biological resource survey was conducted by POWER biologist Melissa Lippincott with Allison Carver concurrently providing support for jurisdictional water resources on September 14, 15, and 16, 2014. A second reconnaissance-level survey was conducted by the same biologists on July 15 and 16, 2015 to account for updates in the project ROW. Weather ranged from clear and sunny, to partly cloudy. Temperature ranged from the low 60s to mid-90s Fahrenheit (°F). The reconnaissance-level survey included vegetation mapping of the entire BSA. General botanical and wildlife observations were noted within and adjacent to the Project area. Vegetation communities were classified according to Holland (1986). The botanical observations of the sites were floristic in nature, meaning that plants incidentally observed were identified to the taxonomic level needed to determine whether they were special-status plant species. Wildlife species were detected either by observation, by vocalization, or by sign (e.g., tracks, burrows, scat).



LEGEND

- TRANSMISSION STRUCTURE
- EXISTING TRANSMISSION LINE TO BE REBUILT
- EXISTING OVERHEAD DISTRIBUTION
- EXISTING UNDERGROUND DISTRIBUTION
- PROPOSED OVERHEAD DISTRIBUTION
- PROPOSED UNDERGROUND DISTRIBUTION
- INSTALL 12.47 TO 4.16 KV STEPDOWN
- PROPOSED LASSEN SUBSTATION SITE
- EXISTING SUBSTATION (MT. SHASTA)
- CITY LIMITS

FIGURE 2
PROPOSED PROJECT

PACIFICORP
LASSEN SUBSTATION
PROJECT

Source: ArcGIS Imagery, 2010.

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3.0 RESULTS

3.1 Vegetation Community Descriptions

The following vegetation communities were mapped, classified according to Holland (1986), within the BSA, and are presented in Figure 3. Table 1 presents the acreages of the observed vegetation communities within the Project area and within the BSA as a whole.

TABLE 1 VEGETATION COMMUNITY TYPES (ACRES)

VEGETATION COMMUNITY TYPE	BSA (ACRES)	PROJECT AREA (ACRES)
Lower Montane Coniferous Forest	3,391.6	21.9
Montane Meadows	8.2	50.9
Transmontane Freshwater Marsh	3.4	11.9
Riparian Scrub	7.0	25.8
Non-native Grassland	4.6	8.8
Disturbed/Developed	20.1	100.9
Total	3434.9	220.1

Lower Montane Coniferous Forest

Lower montane coniferous forest is an open-to-dense forest dominated by conifers, and found at lower and middle elevations in the mountains. Broadleaved trees may be present in the understory. The shrub understory may contain dense assemblages of chaparral species, especially in seral stands (CNPS 2015). Lower montane coniferous forest in the Project area resembles the Sierran Mixed Conifer Forest natural community described by Holland (1986). This community is dominated by ponderosa pine (*Pinus ponderosa*), with incense cedar (*Calocedrus decurrens*), black oak (*Quercus kelloggii*), and Douglas-fir (*Pseudotsuga menziesii*). The shrub layer contains scattered dogwood (*Cornus* spp.), gooseberry (*Ribes* spp.), and wild cherry (*Prunus* spp.). The understory varies, but is often dominated by creeping snowberry (*Symphoricarpos mollis*) with native perennial grasses and forbs. Mixed Conifer Forest (*Pinus ponderosa – Calocedrus decurrens* Forest Alliance) is the Sawyer, Keeler-Wolf and Evens (2009) equivalent.

Lower montane coniferous forest borders the northwest and southeast ends of the Project area. Fragments of lower montane coniferous forest occur adjacent to ornamental vegetation near residences. Fragmented lower montane coniferous forest is mapped as disturbed lower montane coniferous forest. It has mature conifers and black oaks, but lacks the native shrub layer. The herbaceous layer is dominated by both native and non-native grasses and forbs.

Montane Meadows

Montane Meadows are described in Holland (1986). Two types of Montane Meadows, Wet Montane Meadow and Dry Montane Meadow, are described; both types can occur in a single meadow. Wet and Dry Montane Meadows were differentiated in the field by soil moisture and vegetation. Wet meadows had saturated soils and standing water and were dominated by sedges and bulrushes. Dry meadows had moist, unsaturated soils and were dominated by grasses and both rhizomatous and clump-forming rushes. Both types occur within the Project area. Wet and Dry Montane Meadows were mapped and described separately for this report.

Wet Montane Meadows are wetlands associated with swamps, fens, or bogs in waterlogged soils or may be adjacent to forest or scrub in better-drained soils. Wet montane meadows are characterized by

dense growth of sedges (*Carex* spp.) or other perennial herbs such as rushes (*Juncus* spp.) and bulrushes (*Scirpus* spp.), usually from 0.5 to 2 meters high. Soils of Wet Montane Meadows remain saturated throughout the year (Holland 1986).

Wet Montane Meadows occur in the Project area north of Hatchery Lane. A small creek flows from the northeast corner of the parcel southwest filling the wetland that makes up the majority of the parcel. Soils were saturated with standing water and vegetation was dominated by obligate wetland species, including sedges, rushes, and cattails (*Typha* spp.). Wet Montane Meadow along the ROW north of Hatchery Lane was disturbed by heavy grazing on the west side of the fenceline and light grazing on the east side of the fenceline. Wet meadows provide nesting and foraging habitat for greater sandhill crane (*Grus canadensis tabida*).

Dry Montane Meadows are seasonal wetlands, typically adjacent to Wet Montane Meadows, and are often associated with fens, bogs, and swamps. Dry Montane Meadows may not have capillary water available year-round and dry out seasonally. Dry Montane Meadows occur on fine-textured soils and are often adjacent to forest or scrub on better-drained soils.

Dry Montane Meadows near and along the proposed Project are seasonal wetlands in nature, but are not considered "vernal" in current literature on vernal pool distribution (Holland 1998, Zedler 2003). Vernal pools are significant because they provide limited habitat that can support the Siskiyou County endemic plants, including Shasta orthocarpus (*Orthocarpus pachystachyus*) and three special-status species of fairy shrimp, conservancy fairy shrimp (*Branchinecta conservatio*), long-horn fairy shrimp (*Branchinecta longiantenna*), and vernal pool fairy shrimp (*Branchinecta lynchi*) (USFWS 2007a, b, c). No vernal pools occur within the Project area or the BSA.

Dry Montane Meadows occur in the Project area east of Old Stage Road. Soils varied from dry to moist. Vegetation was dominated by facultative and obligate wetland species. Dry Montane Meadow along the ROW north of Hatchery Lane was heavily grazed.

Transmontane Freshwater Marsh

Transmontane Freshwater Marsh is dominated by perennial, emergent monocots including cattails and rushes which may form completely closed canopies (Holland 1986). Sites are semi-permanently flooded by freshwater, lack a significant current, and are often located adjacent to rivers or streams. Prolonged saturation accumulates deep, peaty soils. The growing season is relatively short with cold winters. Cattail Marshes (*Typha* Herbaceous Alliance) is the Sawyer, Keeler-Wolf and Evens (2009) equivalent.

Transmontane Freshwater Marsh was located in the northern portion of the Project area on both sides of Hatchery Lane (Figures 2 and 3). Soils were saturated with standing water present, and vegetation was dominated by stands of cattails and bulrush. The existing Transmontane Freshwater Marsh is associated with the montane meadow community described above. Both the Transmontane Freshwater Marsh and montane meadows communities form the Morgan – Merrill Wetland Mitigation site (Theiss and Associates 1990; Enplan 2008) south of Hatchery Lane Road and north of the Mt. Shasta Substation. The Transmontane Freshwater Marsh in the Project area north of Hatchery Lane Road is currently grazed by cattle and horses. The boundary between Transmontane Freshwater Marsh and Wet Montane Meadow was distinguished by vegetation dominance.

Wetlands, including freshwater marshes, provide nesting and foraging habitat for many species including special-status species within the Project area.

Riparian Scrub

Riparian scrub is a dense, winter-deciduous thicket occurring along streams dominated by one or more species of willow (*Salix* spp.), as well as by other fast-growing shrubs and vines, including alders (*Alnus* spp.) and/or dogwoods. Most plants re-colonize following flood disturbance (CNPS 2015). Several riparian scrubs are described by Holland (1986); the closest match is Montane Riparian Scrub, although the elevation range is above that of the Project area. Arroyo willow thickets (*Salix lasiolepis* Shrubland Alliance) are the Sawyer, Keeler-Wolf and Evens (2009) equivalent.

Within the BSA, riparian scrub is dominated by willows, dogwood, and western black hawthorn (*Crataegus douglasii*), with a dense cover of Himalayan blackberry (*Rubus discolor*) brambles along riparian edges in disturbed locations.

Fen

Fen habitat occurs in highly saturated freshwater conditions. It generally forms as depressions with accumulations of organic matter, and is associated with springs, seeps, and streams (Sawyer and Keeler-Wolf 1995). Fens often occur in meadow complexes consisting of areas of wet meadow intermixed with fens that stay saturated for most of the year. A meadow complex may also contain areas of dry meadow, which are wet for only a few weeks during snowmelt. Meadows are dominated by herbaceous plants, while fens may also have high cover of woody vegetation and/or mosses. Most fens in California are less than a hectare (2.47 acres) in size (Sikes et al. 2010). Characteristic species usually include common lady-fern (*Athyrium felix-femina*), deer fern (*Blechnum spicant*), swamp bellflower (*Campanula californica*), sedges, reeds, bog orchid (*Plantanthera dilatata*), sphagnum moss (*Spagnum* ssp.), and other bryophytes.

Wetlands north of Hatchery Lane were previously mapped and recorded in the CNDDB as a Fen. However, the suite of vegetation present has changed, possibly due to the adjacent mitigation bank, and the fen community appears to have developed into marsh. Transmontane Freshwater Marshes, Montane Meadows, and Fens share similar characteristics and may have overlapping species, but Fens have a rich, diverse flora and lack cattails. Portions of the CNDDB mapped Fen community are dominated by cattails and do not match the Fen community description provided by Holland (1986).

Within the BSA, vegetation within the previously mapped community and neighboring Wet Montane Meadow was dominated by sedges, rushes, and various perennial, rhizomatous grasses, and forbs. Cattails occurred in areas with standing water which braided in and out of the ROW. Shrubs and trees including willows, white alder (*Alnus rhombifolia*), wild cherry, rose (*Rosa* sp.), and cedar occurred along the raised fenceline and the stream channel in the northern portion of the wetland.

Although this community no longer appears within the ROW, fens are threatened by resource use affecting the watershed such as livestock grazing and trampling, timber harvest, road building, water pumping, and water pollution. Any condition or activity that disturbs the hydrologic regime or soil temperature of a fen, causing drying or warming, is a threat to the function of that fen (Sikes et al. 2010).

Non-Native Grassland

Non-native grassland is a result of extensive grazing or other soil disturbance. Non-native annual grassland is dominated by a variety of non-native grasses and forbs (Holland 1986). Non-native grassland on the Project area was heavily grazed and occurs on the west side of Old Stage Road and within the large fenced residential yards of the proposed Lassen Substation site. Dominant species included creeping bentgrass (*Agrostis stolonifera*), orchard grass (*Dactylis glomerata*), annual bluegrass (*Poa annua*), and velvet grass (*Holcus lanatus*). Bent grass – tall fescue meadows (*Agrostis*

stolonifera – Festuca arundinaceae) is the Sawyer, Keeler-Wolf and Evens (2009) equivalent. Additionally, a creek was mapped within non-native grassland near the southern portion of the ROW.

Disturbed/Developed

Disturbed/developed areas are generally devoid of native vegetation (cleared, graded, or containing buildings and offices) including dirt and paved roads, or areas dominated by a sparse cover of ruderal vegetation or ornamental vegetation, including areas mapped as Himalayan blackberry brambles. Disturbed or developed areas occur throughout the BSA.

3.2 Special-Status Plant Species

A total of 66 special-status plant species were determined by the literature review to potentially occur within the BSA. Their habitat description, status, and potential for occurrence within the BSA are provided in Table 2 at the end of this section. Potential for occurrence was based on habitat, elevation, soil, and proximity to known recorded occurrences of a species.

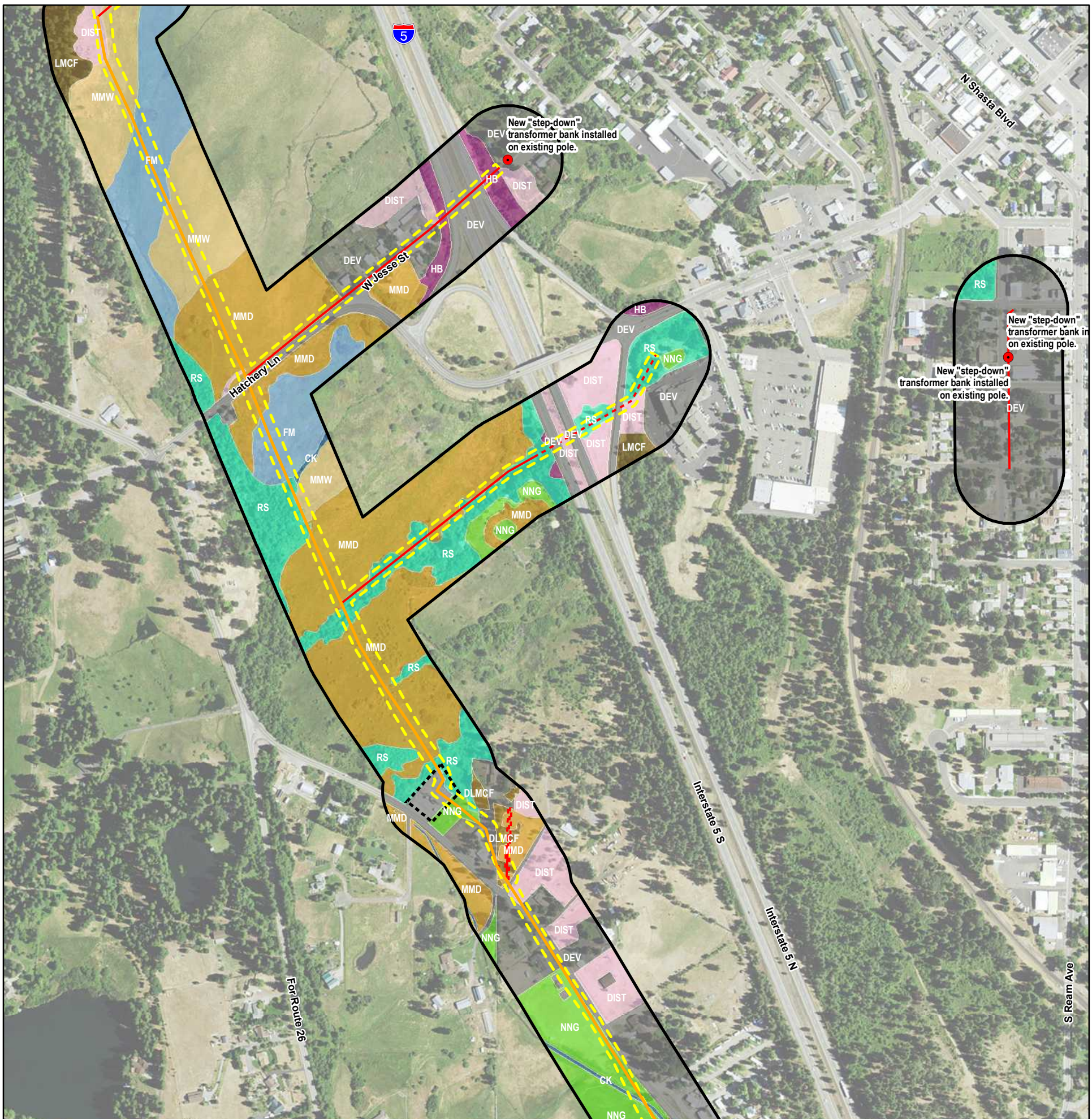
Special-status botanical species were not detected during the field surveys; however, species-specific plant surveys were not conducted as part of the habitat assessment, as the reconnaissance surveys were conducted outside of the suitable blooming periods for some species. The BSA provides habitat that could support special-status species; however, the Project area provides much of the same suitable habitat, to a lesser degree, that could support special-status species.

Of the 66 plant species considered to have a potential to occur within the BSA, 14 were determined to have a high potential for occurrence, 10 had moderate potential, and one had low potential while the rest were determined to be absent. For the Project area, six species had a high potential for occurrence, 14 had moderate potential, and five had low potential, while the rest were determined to be absent. Species determined to have potential to occur within the Project area are discussed below, while species that were determined to be absent are not discussed further. A list of plant species observed during the survey is provided in Appendix A.

Marbled Wild Ginger (*Asarum marmoratum*)

Marbled wild ginger is a perennial rhizomatous herb that is found in the understory of lower montane coniferous forests. This species blooms from April through August, and is found from elevations of 650 feet through 5,900 feet (200 meters to 1,800 meters). The only recorded occurrence of marbled wild ginger in the Project vicinity is from a specimen collected in 1894 from a location given only as “Sisson”, which is now the City of Mt. Shasta (CDFW 2015a and c).

The Project area contains lower montane coniferous forest near the northwest and southeast ends of the transmission line, and fragments of disturbed lower montane coniferous forest occur adjacent to the proposed Lassen Substation site. These fragments lack a native shrub understory; the understory is dominated by non-native grasses and forbs. Given the lack of recorded observations of marbled wild ginger since 1894, as well as the absence of native understory, this species has a low potential to occur in the Project area.



LEGEND

- DISTRIBUTION FEATURE
- TRANSMISSION STRUCTURE
- TRANSMISSION LINE
- OVERHEAD DISTRIBUTION
- UNDERGROUND DISTRIBUTION
- EXISTING SUBSTATION (MT. SHASTA)
- SURVEY AREA
- RIGHT OF WAY (ROW)
- DEVELOPED (DEV)
- DISTURBED (DIST)
- RUDERAL (R)
- CREEK (CK)
- FRESHWATER MARSH (FM)
- RIPARIAN SCRUB (RS)
- MONTANE MEADOW-DRY (MMD)
- MONTANE MEADOW-WET (MMW)
- NON-NATIVE GRASSLAND (NNG)
- HIMALAYAN BLACKBERRY BRAMBLES (HB)
- LOWER MONTANE CONIFEROUS FOREST (LMCF)
- DISTURBED LOWER MONTANE CONIFEROUS FOREST (DLMCF)

FIGURE 3A
HABITAT

PACIFICORP
LASSEN SUBSTATION
PROJECT

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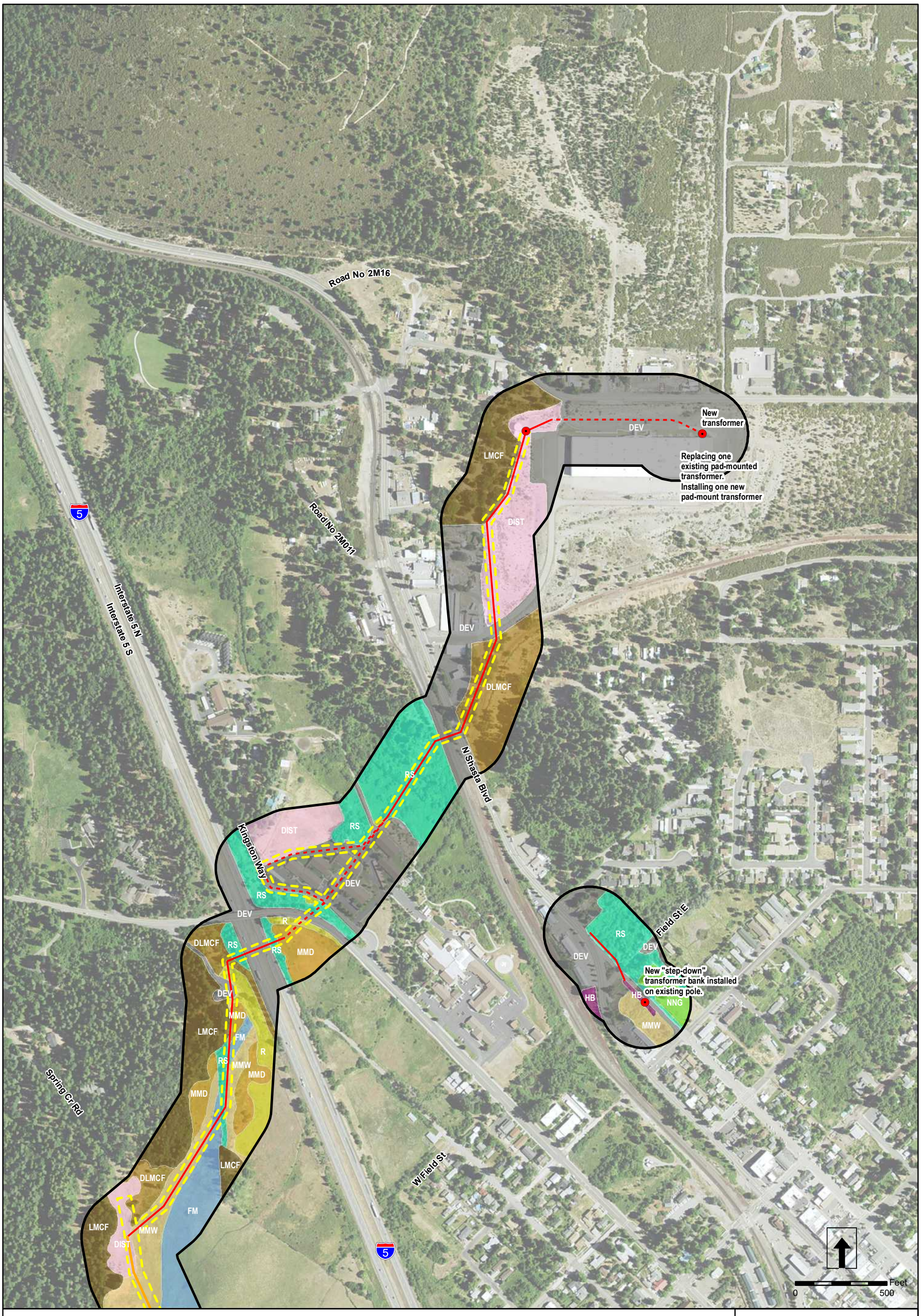

LEGEND

- DISTRIBUTION FEATURE
- TRANSMISSION STRUCTURE
- TRANSMISSION LINE
- OVERHEAD DISTRIBUTION
- UNDERGROUND DISTRIBUTION
- EXISTING SUBSTATION (MT. SHASTA)
- SURVEY AREA
- RIGHT OF WAY (ROW)
- DEVELOPED (DEV)
- DISTURBED (DIST)
- RUDERAL (R)
- CREEK (CK)
- FRESHWATER MARSH (FM)
- RIPARIAN SCRUB (RS)
- MONTANE MEADOW-DRY (MMD)
- MONTANE MEADOW-WET (MMW)
- NON-NATIVE GRASSLAND (NNG)
- HIMALAYAN BLACKBERRY BRAMBLES (HB)
- LOWER MONTANE CONIFEROUS FOREST (LMCF)
- DISTURBED LOWER MONTANE CONIFEROUS FOREST (DLMCF)

FIGURE 3B
HABITAT

PACIFICORP
LASSEN SUBSTATION
PROJECT

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Woolly balsamroot (*Balsamorhiza lanata*)

Woolly balsamroot is a perennial herb that occurs on rocky, volcanic soils in cismontane woodland, open woods, and occasionally on grassy slopes. This species blooms from April through June, and is found at elevations from 2,600 feet to 6,200 feet (800 meters to 1,895 meters). The CNDDB records multiple occurrences of wooly balsamroot in the Project vicinity, most of which occur between the City of Weed, approximately six miles north of the Project, and Parks Creek. Most of these sites are grassy slopes and open areas, including several recorded sites along the shoulder of Interstate 5 between Weed and the Weed Airport. However, one occurrence is within approximately 1 mile of the Project area. The CNDDB records the location as "Pioneer", and maps it as the being in the vicinity of South Mt. Shasta Boulevard and Church Street (CDFW 2015a and c).

Suitable habitat for woolly balsamroot exists near the northern half of the Project, outside the wetlands and wet meadows. Woolly balsamroot has a moderate potential to occur in the Project area.

Rattlesnake Fern (Botrypus virginianus)

Rattlesnake fern is a perennial herb that occurs in bogs, fens, meadows, seeps, and lower montane coniferous forests. It blooms from June through September and is found at elevations from 3,000 feet to 4,250 feet (728 meters to 1,300 meters). The CNDDB records 11 occurrences of rattlesnake fern within the Project vicinity, all of which are south of Highway 89. The occurrence of rattlesnake fern nearest to the Project is located approximately 3.5 miles south of the Project area (CDFW 2015a and c).

Suitable habitat occurs in the Project area. Rattlesnake fern has a high potential to occur in the Project area.

Greene's Mariposa Lily (*Calochortus greenei*)

Greene's mariposa lily is a bulbiferous herb that occurs on volcanic outcrops or open, dry, gravelly soils in meadows, seeps, cismontane woodland, pinyon and juniper woodland, and upper montane coniferous forest. This species blooms from June through August, and is found at elevations from 3,400 feet to 6,200 feet (1,035 meters to 1,895 meters). The CNDDB has only one record of Greene's mariposa lily in the Project vicinity, near Castle Lake in the Shasta National Forest approximately 6 miles south of the Project (CDFW 2015a and c).

The Project area contains suitable habitat required for Greene's mariposa lily in the form of volcanic soils and meadows. Greene's mariposa lily has a moderate potential to occur in the Project area.

Siskiyou Paintbrush (*Castilleja elata*)

The Siskiyou paintbrush is a hemiparasitic perennial herb that is limited to mesic serpentine soils, and occurs in bogs, fens, seeps, and lower montane coniferous forests. This species blooms from May through August, and is found at elevations from 0 feet to 5,740 feet (0 meters to 1,750 meters). In 2011, the CNDDB recorded a population of this species under its synonym *Castilleja miniata* ssp. *elata* approximately 7 miles northeast of the Project, near Panther Meadows; however, in December 2015 this record was no longer in the CNDDB under either name (CDFW 2015a and c).

Suitable habitat occurs in the Project area. The Siskiyou paintbrush has a moderate potential to occur in the Project area.

Northern Clarkia (*Clarkia borealis* ssp. *borealis*)

Northern clarkia is an annual herb that occurs in chaparral, cismontane woodland, and lower montane coniferous forest; often, this species is found along the sides of cut roads. Northern clarkia blooms from July through September and is found at elevations from 2,300 feet to 4,400 feet (400 meters to 1,340 meters). The CNDDB has one record of this species occurring in the Project vicinity, north of Castle Crags approximately 6.25 miles south of the Project (CDFW 2015a and c).

Suitable habitat occurs on the Project site. Northern clarkia has a moderate potential to occur in the Project area.

Pallid Bird's-beak (Cordylanthus tenuis ssp. pallescens)

Pallid bird's-beak is a hemiparasitic annual herb that occurs in gravelly openings in brush patches or on volcanic alluvium in lower montane coniferous forests. This species blooms from July through September and is found at elevations from 2,280 feet to 5,400 feet (695 meters to 1,645 meters). The CNDDB has 12 records of this species occurring in the Project vicinity, most of which are clustered around Black Butte and the City of Weed. The nearest recorded population of pallid bird's-beak to the Project is located near the intersection of North Old Stage Road and Audubon Road in 1995 (CDFW 2015a and c).

Suitable habitat for pallid bird's-beak occurs in the Project area. Pallid bird's-beak has a moderate potential to occur in the Project area.

Jepson's dodder (*Cuscuta jepsonii*)

Jepson's dodder is an annual parasitic vine. It occurs in North Coast coniferous forest, along streambanks. This species blooms from July through September, and occurs at elevations of 3,937 to 7,545 feet (1,200 to 2,300 meters) (CNPS 2015).

Suitable habitat for Jepson's dodder occurs in the Project area. Jepson's dodder has a moderate potential to occur in the Project area.

Oregon Fireweed (*Epilobium oregonum*)

Oregon fireweed is a perennial herb that occurs sometimes on serpentine near springs, in bogs, fens, meadows, and upper and lower montane coniferous forests. This species blooms from June through September and is found at elevations from 1,650 feet to 8,560 feet (500 to 2,610 meters). The CNDDB has three records of this species occurring in the Project vicinity, two of which are historic. The third record is undated and was mapped as occurring in the area of Deetz Station near Black Butte approximately 5 miles northwest of the Project (CDFW 2015a and c).

Suitable habitat for Oregon fireweed occurs in the Project area. Oregon fireweed has a high potential to occur in the Project area.

Pink-margined monkeyflower (*Erythanthe trinitiensis*)

The pink-margined monkeyflower is an annual herb that occurs in cismontane woodland, upper and lower montane coniferous forest, and meadows and seeps. This species often occurs on serpentinite soils, and along roadsides. It blooms from June through July, and sometimes into August, and is found at elevations from 1,312 to 7,497 feet (400 to 2,285 meters) (CNPS 2015).

Suitable habitat for pink-margined monkeyflower occurs in the Project area, although the species hasn't been recently located in the vicinity. Pink-margined monkeyflower has a moderate potential to occur in the Project area.

Coast Fawn Lily (Erythronium revolutum)

The coast fawn lily is a bulbiferous herb that occurs in bogs, fens, and along mesic stream banks in broadleaf upland forest and North Coast coniferous forest. This species blooms from May through July and occurs at elevations from 0 feet to 4,400 feet (0 meters to 1,350 meters). The only CNDDB record of this species in the Project vicinity is from a 1910 collection made in the Edgewood area, approximately 11.5 miles northwest of the project (CDFW 2015a and c).

Suitable habitat for coast fawn lily occurs in the Project area. Coast fawn lily has a moderate potential to occur in the Project area.

Scott Mountain Bedstraw (Galium serpenticum ssp. scotticum)

Scott Mountain bedstraw is a perennial herb that occurs in lower montane coniferous forest, generally on north-facing slopes on serpentine soils, often in mixed coniferous forest. This species blooms from May through August and is found at elevations of 3,300 feet to 6,800 feet (1,000 meters to 2,075 meters). The CNDDB has only one record of Scott Mountain bedstraw in the Project vicinity, located on a slope above the North Fork Sacramento River south of Mount Eddy, approximately eight miles east of the Project (CDFW 2015a and c).

Suitable habitat for Scott Mountain bedstraw occurs in the Project area. Scott Mountain bedstraw has a moderate potential to occur in the Project area.

Aleppo Avens (*Geum aleppicum*)

Aleppo avens is a perennial herb found in meadows and seeps, great basin scrub, and lower montane coniferous forest. This species blooms from June through August, and is found at elevations of 1,457 feet to 4,900 feet (450 meters to 1,500 meters). The CNDDB records three occurrences of this species in the Project vicinity. The recent record of aleppo avens is a based on a 2002 observation of this species on private property between Wagon Creek and Cold Creek, approximately 0.75 mile south of the Project (CDFW 2015a and c).

Suitable habitat occurs on the Project site. Aleppo avens has a high potential to occur in the Project area is low.

Alkali hymenoxys (*Hymenoxys lemmoni*)

Alkali hymenoxys is a perennial herb that occurs in sub-alkaline soils of meadows and seeps, great basin scrub, and lower montane coniferous forest. It blooms from June through August, and is found at elevations from 790 feet to 3,300 feet (240 meters to 1,000 meters). The CNDDB records four occurrences of alkali hymenoxys in the Project vicinity; all are north or east of the City of Weed and none are more recent than 1972 (CDFW 2015a and c). The population nearest to the Project is also the most recent (1972), and is located west of the community of Edgewood, approximately 13.25 miles northeast of the Project.

Suitable habitat for alkali hymenoxys occurs on the Project site, but it is fragmented and degraded; meadows are heavily grazed by cattle and horses and lower montane coniferous forest is fragmented and lacks a native understory. Potential for alkali hymenoxys to occur in the Project area is low.

Baker's Globe Mallow (*Iliamna bakeri*)

Baker's globe mallow is a perennial herb that occurs on rocky loam or volcanic soils in chaparral, pinyon-juniper woodland, and lower montane coniferous forest. This species blooms from June through September, and occurs at elevations from 3,300 feet to 8,200 feet (1,000 meters to 2,500

meters). The CNDDB has only one record of this species occurring in the Project vicinity; a collection of this species was made in 1940 and the location has been mapped by the CNDDB as the area around McBride Springs Campground, approximately 3.6 miles northeast of the Project (CDFW 2015a and c).

Suitable habitat for this species occurs in the Project area. Baker's globe mallow has a moderate potential to occur in the Project area.

Pickering's Ivesia (*Ivesia pickeringii*)

Pickering's ivesia is a perennial herb that is typically associated with serpentine soils, and occurs on mesic sites such as wet meadows, seeps, and mesic lower montane coniferous forest. This species blooms from June through August, and occurs at elevations from 2,600 feet to 4,950 feet (800 meters to 1,510 meters). The CNDDB has one record of Pickering's ivesia in the Project vicinity occurring approximately 11.5 miles north of the Project, east of the community of Edgewood (CDFW 2015a and c).

Some suitable habitat occurs in the Project area. Pickering's ivesia has a low potential to occur in the Project area.

Hutchinson's Lewisia (Lewisia kelloggii ssp. hutchisonii)

Hutchinson's lewisia is a perennial herb that occurs in openings and ridgetops in upper montane coniferous forest, often on slate or rhyolite tuff. This species blooms from May through August, although sometimes as early as April, at elevations of 2,510 to 7,760 feet (765 to 2,365 meters) (CNPS 2015).

Marginal suitable habitat occurs in the Project area. Potential for Hutchinson's lewisia to occur is low.

Peck's Lomatium (*Lomatium peckianum*)

Peck's lomatium is a perennial herb that occurs in volcanic soils on rocky slopes, flats, and sometimes grassy openings, in lower montane coniferous forest, chaparral, cismontane woodland, and pinyon and juniper woodland. This species blooms from April through May and occurs at elevation from 2,300 feet to 5,900 feet (700 meters to 1,800 meters). The CNDDB has one record of Peck's lomatium occurring in the Project vicinity at the Weed Airport, approximately 12.74 miles north of the Project (CDFW 2015a and c).

Suitable habitat occurs in the Project area. Peck's lomatium has a moderate potential to occur in the Project area.

Woodnymph (Moneses uniflora)

Woodnymph is a perennial rhizomatous herb that occurs in broadleaf upland forest and North Coast coniferous forest. This species blooms from May through August and is found at elevations from 325 feet to 3,600 feet (100 meters to 1,100 meters). The CNDDB has only one undated record of this species occurring in the Project vicinity, with the location given only as Sisson, currently City of Mt. Shasta (CDFW 2015a and c).

Suitable habitat for woodnymph occurs in the Project area. Woodnymph has a moderate potential to occur in the Project area.

Northern Adder's Tongue (*Ophioglossum pusillum*)

Northern adder's tongue is a rhizomatous herb that occurs in marshes, swamps, and mesic valley and foothill grassland. This species blooms in July, and occurs at elevations from 3,300 feet to 6,500 feet (1000 meters to 2,000 meters). The CNDDB has one recorded occurrence of this species in the Project vicinity, dating from 1894 and mapped near Sisson, in the vicinity of an open swamp in what is now the Mt. Shasta Fish Hatchery approximately 0.5 mile northeast of the Project (CDFW 2015a and c).

Suitable habitat for northern adder's tongue occurs in the Project area. Northern adder's tongue has a high potential to occur in the Project area.

Thread-leaved Beardtongue (*Penstemon filiformis*)

Thread-leaved beardtongue is a perennial herb that occurs occasionally on serpentine, also in dry stony sites, grassy openings, meadows, cismontane woodland, and lower montane coniferous forest. This species blooms from May through July and occurs at elevations from 1,475 feet to 6,000 feet (450 meters to 1,830 meters). The CNDDB records three occurrences of this species in the Project vicinity, the nearest of which is mapped along the Everett Memorial Highway approximately 2.5 miles north of the City of Mt. Shasta and 5.5 miles from the Project (CDFW 2015a and c).

Suitable habitat occurs in the Project area. Thread-leaved beardtongue has a moderate potential to occur in the Project area.

Cook's Phacelia (*Phacelia cookei*)

Cook's pahcelia is an annual herb that occurs in disturbed areas of loose, ashy, volcanic sand, at the edges of old roads, in great basin scrub, and lower montane coniferous forest. This species blooms from June through July and occurs at elevations from 3,600 feet to 5,600 feet (1,095 meters to 1,700 meters). The CNDDB has one record of this species occurring in the Project vicinity, based on a 1965 collection and mapped generally to the area of Bolam Creek on the north side of Mt. Shasta and approximately 13 miles northeast of the Project (CDFW 2015a and c).

Some suitable habitat occurs in the Project area. Cook's phacelia has a low potential to occur in the Project area.

Marsh Skullcap (Scutellaria galericulata)

Marsh skullcap is a perennial rhizomatous herb that occurs in marshes, swamps, seeps, meadows, and lower montane coniferous forests. This species blooms from June through September and is found at elevations from 0 feet to 6,900 feet (0 meters to 2,100 meters). The CNDDB has only one record of this species occurring in the Project vicinity, from a collection made in 1894 and mapped generally to Sisson, currently the City of Mt. Shasta (CDFW 2015a and c).

Suitable habitat for marsh skullcap occurs in the Project area. Marsh skullcap has a high potential to occur in the Project area.

Cylindrical Trichodon (*Trichodon cylindricus*)

Cylindrical trichodon is a moss that occurs on sandy exposed soil and roadside banks in broadleaf upland forest, meadows, seeps, and upper montane coniferous forest. This species is found at elevations from 165 feet to 6,550 feet (50 meters to 2,000 meters). The CNDDB has one record of this species occurring in the Project vicinity, near Castle Lake approximately 6 miles south of the Project (CDFW 2015a and c).

Suitable habitat occurs in the Project area. Cylindrical trichodon has a moderate potential to occur in the Project area.

Siskiyou clover (Trifolium siskiyouense)

Siskiyou clover is a perennial herb that occurs in meadows and seeps on mesic soils, and sometime along streambanks. This species is found at elevations of 2,887 to 4,920 feet (880 to 1,500 meters) (CNPS 2015).

Suitable habitat occurs in the Project area. Potential for Siskiyou clover to occur in the Project area is high.

3.3 Non-native Plant Species

A general plant inventory, including non-native species, was taken during the reconnaissance surveys. Non-native plants are rated by the California Invasive Plant Council (Cal-IPC) as falling into one of three categories (Cal-IPC 2015):

- **High** – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- **Moderate** – These species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- **Limited** – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Some species are not currently rated due to lack of adequate information or lack of significant impacts on native communities.

The non-native plant species that were detected during reconnaissance surveys that have a rating by Cal-IPC are as follows:

- Canada thistle (*Cirsium arvense*) – rated as moderate
- Bull thistle (*Cirsium vulgare*) – rated as moderate
- Greater periwinkle (*Vinca major*) – rated as moderate
- Common St. John's wort (*Hypericum perforatum*) – rated as moderate
- Fuller's teasle (*Dipsacus fullonum*) – rated as moderate
- Horehound (*Marrubium vulgare*) – rated as limited
- Creeping buttercup (*Ranunculus repens*) – rated as limited
- Wooly mullein (*Verbascum thapsus*) – rated as limited
- Creeping bentgrass (*Agrostis stolonifera*) – rated as limited
- Orchard grass (*Dactylis glomerata*) – rated as limited
- Tall fescue (*Festuca arundinacea*) – rated as moderate
- Waxy mannagrass (*Glyceria declinata*) – rated as moderate
- Velvet grass (*Holcus lanatus*) – rated as moderate
- Rye grass (*Lolium* sp.) – rated as moderate
- Kentucky bluegrass (*Poa pratensis*) – rated as limited
- Medusa head (*Taeniatherum caput-medusae*) – rated as high

TABLE 2 SPECIAL-STATUS PLANT SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE BIOLOGICAL SURVEY AREA

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Anthoxanthum nitens spp.*nitens* nodding vanilla grass	Fed: None State: None CNPS: List 2B.3	Perennial rhizomatous herb. Occurs in meadows and seeps, from 1,500 to 1,895 meters in elevation.	April – July	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Arctostaphylos klamathensis Klamath manzanita	Fed: None State: None CNPS: List 1B.2 BLM: Sensitive	Evergreen shrub. Occurs in rocky, serpentinite or gabbroic soils in chaparral, lower montane coniferous forest, sub-alpine coniferous forest, upper montane coniferous forest from 1,570 – 2,250 meters in elevation.	May – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Asarum marmoratum marbled wild ginger	Fed: None State: None CNPS: List 2B.3	Rhizomatous herb. Occurs in lower montane coniferous forest, from 200 – 1,800 meters in elevation.	April – August	Moderate. Suitable habitat for this species occurs within the BSA.	Low. Some suitable habitat for this species occurs within the Project area.
Balsamorhiza lanata woolly balsamroot	Fed: None State: None CNPS: List 1B.2 BLM: Sensitive	Perennial herb. Occurs in rocky volcanic soils in cismontane woodland, from 800 – 1,895 meters in elevation.	April – June	High. Suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Botrychium crenulatum scalloped moonwort	Fed: None State: None CNPS: List 2B.2 FS: Sensitive	Perennial rhizomatous herb. Occurs in bogs and fens, meadows and seeps, freshwater marshes and swamps, lower and upper montane coniferous forests from 1,265 – 3,280 meters in elevation.	June – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Botrychium minganense Mingan moonwort	Fed: None State: None CNPS: List 2B.2 FS: Sensitive	Perennial rhizomatous herb. Occurs in mesic habitats such as bogs and fens, streambanks in mixed, lower, and upper montane coniferous forests from 1,455 – 2,180 meters in elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Botrychium pinnatum northwestern moonwort	Fed: None State: None CNPS: List 2B.3 FS: Sensitive	Perennial rhizomatous herb. Occurs in lower montane coniferous forest and meadows and seeps and upper montane coniferous forest, from 1,770 – 2,040 meters in elevation.	July – October	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Botrychium pumicola pumice moonwort	Fed: None State: None CNPS: List 2B.2 FS: Sensitive	Perennial rhizomatous herb. Occurs in alpine boulder and rock field communities, and subalpine coniferous forest at 2,750 meters in elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Botrypus virginianus rattlesnake fern	Fed: None State: None CNPS: List 2B.2	Perennial herb. Occurs in bogs, fens, lower montane coniferous forest, meadows and seeps, and riparian forests along streams, from 715 – 1,355 meters in elevation.	June – September	High. Suitable habitat for this species occurs within the BSA.	High. Suitable habitat for this species occurs within the Project area.
Calochortus greenei Greene's mariposa lily	Fed: None State: None CNPS: List 1B.2 BLM/FS: Sensitive	Perennial bulbiferous herb. Occurs in cismontane woodland, meadows, seeps, pinyon and Juniper woodland and upper montane coniferous forest, on volcanic soils, from 1,035 – 1,890 meters in elevation.	June – August	Moderate. Some suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Campanula shetleri Castle Crags harebell	Fed: None State: None CNPS: List 1B.1 BLM/FS: Sensitive	Perennial rhizomatous herb. Occurs in rocky soils in lower montane coniferous forest from 1,220 – 1,830 meters in elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Campanula wilkinsiana Wilkins harebell	Fed: None State: None CNPS: List 1B.2 FS: Sensitive	Perennial rhizomatous herb. Occurs in meadows, seeps, and upper montane and subalpine coniferous forest from 1,270 – 2,600 meters in elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Cardamine angulata seaside bittercress	Fed: None State: None CNPS: List 2B.1	Perennial herb. Occurs in wet areas and streambanks in lower montane coniferous forests and North Coast coniferous forest, from 65 – 915 meters in elevation.	March – July	Absent. The BSA is above the known elevation range for the species.	Absent. The Project area is above the known elevation range for the species.
Carex limosa mud sedge	Fed: None State: None CNPS: List 2B.2	Perennial rhizomatous herb. Occurs in bogs, fens, upper and lower montane coniferous forest, meadows, seeps, marshes, and swamps, from 1,200 – 2,700 meters in elevation.	June – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Castilleja elata Siskiyou paintbrush	Fed: None State: None CNPS: List 2B.2	Perennial hemiparasitic herb. Occurs in bogs, fens, seeps, and lower montane coniferous forest; limited to mesic, often serpentine, soils up to 1,750 meters in elevation.	May – August	High. Suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Chaenactis douglasii var. *alpina* alpine dusty maidens	Fed: None State: None CNPS: List 2B.3	Perennial herb occurring in alpine boulder and rock field, on granitic soils. From 2,865 – 3,400 meters in elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Chaenactis suffrutescens Shasta chaenactis	Fed: None State: None CNPS: List 1B.3 BLM/FS: Sensitive	Perennial herb. Occurs in upper and lower montane coniferous forest, on sandy serpentinite soils from 750 – 2,800 meters in elevation.	May – September	Absent. The BSA does not support the appropriate soils required t for the species.	Absent. The Project area does not support the appropriate soils required for the species.
Clarkia borealis ssp. *borealis* northern clarkia	Fed: None State: None CNPS: List 1B.1 BLM/FS: Sensitive	Annual herb. Occurs in chaparral, cismontane woodland and lower montane coniferous forest, often found on road cuts, from 400 – 1,390 meters in elevation.	June – September	Moderate. Some suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Claytonia umbellata Great Basin claytonia	Fed: None State: None CNPS: List 2B.3	Perennial herb occurring in subalpine coniferous forest, generally on talus, from 1,705 – 3,500 meters in elevation.	May – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Cordylanthus tenuis ssp. *pallescens* pallid bird's-beak	Fed: None State: None CNPS: List 1B.2 BLM/FS: Sensitive	Annual hemiparasitic herb. Occurs in gravelly or volcanic alluvium in lower montane coniferous forest from 695 – 1,645 meters in elevation.	July – September	High. Suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Cuscuta jepsonii Jepson's dodder	Fed: None State: None CNPS: List 1B.2	Annual parasitic vine occurring in volcanic alluvium in coniferous forest, usually along streambanks from 695 – 1,645 meters in elevation	July – September	High. Suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Draba aureola golden alpine draba	Fed: None State: None CNPS: List 1B.3	Perennial herb. Occurs in alpine boulder and rock field, and subalpine coniferous forest, on serpentine or volcanic outcrops. From 2,000 – 3,355 meters in elevation.	July – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Draba carnosula *Mt. Eddy draba*	Fed: None State: None CNPS: List 1B.2 FS: Sensitive	Perennial herb. Occurs in subalpine coniferous forest, upper montane coniferous forest, on rocky or serpentinite soils. From 1,935 – 3,000 meters in elevation.	July – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Epilobium oregonum Oregon fireweed	Fed: None State: None CNPS: List 1B.2 BLM/FS: Sensitive	Perennial herb. Occurs in bogs and fens, meadows and seeps, and upper and lower montane coniferous forest, on mesic soils. From 500 – 2,240 meters in elevation.	June – September	High. Suitable habitat for this species occurs within the BSA.	High. Suitable habitat for this species occurs within the Project area.
Epilobium siskiyouense Siskiyou fireweed	Fed: None State: None CNPS: List 1B.3 BLM: Sensitive	Perennial herb occurring in alpine boulder and rock field, subalpine and upper montane coniferous forest on rocky, on rocky or serpentinite soils. From 1,700 – 2,500 meters in elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Erigeron bloomeri var. *nudatus* Waldo daisy	Fed: None State: None CNPS: List 2B.3	Perennial herb. Occurs in lower and upper montane coniferous forest, on serpentinite soils, from 600 – 2,300 meters in elevation.	June – July	Absent. The BSA does not support the appropriate soils required t for the species.	Absent. The Project area does not support the appropriate soils required for the species.
Erigeron nivalis Snow fleabane daisy	Fed: None State: None CNPS: List 2B.3	Perennial herb. Occurs in volcanic rock outcrops in cracks and crevices, alpine boulder and rock fields, meadows and seeps, and subalpine coniferous forest from 1,735 – 2,900 meters in elevation.	July – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Eriogonum alpinum trinity buckwheat	Fed: None State: Endangered CNPS: List 1B.2 FS: Sensitive	Perennial rhizomatous herb. Occurs in subalpine coniferous forest, upper montane coniferous forest, alpine boulder and rock fields; rocky soils and scree slopes, slopes in open and windswept areas on serpentine substrate. From 2,185 – 2,900 meters in elevation.	June – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Eriogonum pyrolifolium var. *pyrolifolium* pyrola-leaved buckwheat	Fed: None State: None CNPS: List 2B.3	Perennial herb. Alpine boulder and rock fields, sandy or gravelly sites, sometimes on pumice. From 1,675 – 3,200 meters in elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Erythranthe trinitiensis pink-margined monkeyflower	Fed: None State: None CNPS: List 1B.3	Annual herb occurring in cismontane woodland, upper and lower montane coniferous forest, and meadows and seeps, often on serpentinite and along roadsides, from 400 to 2,285 meters in elevation.	June – July	High. Suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Erythronium klamathense Klamath fawn lily	Fed: None State: None CNPS: List 2B.2	Perennial bulbiferous herb. Occurs in meadows, seeps and upper montane coniferous forest, from 1,200 to 1,850 meters in elevation.	April – July	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Erythronium revolutum coast fawn lily	Fed: None State: None CNPS: List 2B.2	Perennial bulbiferous s herb. Occurs in bogs, fens, and along mesic stream banks in broadleaf upland forest and north coast coniferous forest, up to 1,600 meters in elevation.	March – July	High. Suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Eurybia merita sub-alpine aster	Fed: None State: None CNPS: List 2B.3 BLM: Sensitive	Perennial herb. Occurs in upper montane coniferous forest in the USGS Mt. Eddy Quadrangle. From 1,300 – 2,000 meters in elevation. Easily confused with *Eurybia radulina.*	July – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Galium serpenticum ssp. *scotticum* Scott Mountain bedstraw	Fed: None State: None CNPS: List 1B.2 BLM: Sensitive	Perennial herb. Occurs in lower montane coniferous forest from 1,000 to 2,075 meters in elevation.	May – August	Moderate. Some suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Geum aleppicum Aleppo avens	Fed: None State: None CNPS: List 2B.2	Perennial herb. Occurs in great basin scrub, lower montane coniferous forest and meadows and seeps from 450 – 1,500 meters in elevation.	June – August	High. Suitable habitat for this species occurs within the BSA.	High. Suitable habitat for this species occurs within the Project area.
Howellanthus dalesianus Scott Mountain howellanthus	Fed: None State: None CNPS: List 4.3	Perennial herb. Occurs in upper and lower montane coniferous forest, meadows, subalpine coniferous forest, dry meadows, or openings in coniferous forest communities; on serpentine soils. From 1,015 to 2,105 meters in elevation.	May – July	Absent. The BSA does not support the appropriate soils required t for the species.	Absent. The Project area does not support the appropriate soils required for the species.
Hulsea nana little hulsea	Fed: None State: None CNPS: List 2B.3	Perennial herb. Occurs in alpine boulder and rock fields and sub-alpine coniferous forest with rocky, gravelly volcanic soils. From 1,720 – 3,355 meters in elevation.	July – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Hymenoxys lemmoni alkali hymenoxys	Fed: None State: None CNPS: List 2B.2	Perennial herb. Occurs in great basin scrub, lower montane coniferous forest and sub-alkaline meadows and seeps from 240 – 3,390 meters in elevation.	June – August	Moderate. Some suitable habitat for this species occurs within the BSA.	Low. Marginal suitable habitat for this species occurs within the Project area.
Iliamna bakeri Baker's globe mallow	Fed: None State: None CNPS: List 4.2	Perennial herb. Occurs in chaparral, Great Basin scrub, lower montane coniferous forest, and pinyon-juniper woodland; on rocky loam or volcanic soils, and often in burned areas. From 1,000 – 2,500 meters in elevation.	June – September	High. Suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Ivesia longibracteata Castle Crags ivesia	Fed: None State: None CNPS: List 1B.3 BLM/FS: Sensitive	Perennial herb. Occurs on granitic, rocky soils in lower montane coniferous forest from 1,200 – 1,400 meters in elevation. Known only from Castle Crags.	June	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Ivesia pickeringii Pickering's ivesia	Fed: None State: None CNPS: List 1B.2 BLM/FS: Sensitive	Perennial herb. Occurs in mesic lower montane coniferous forest, meadows and seeps. Typically associated with serpentine soils. Elevation ranges from 800 – 1,510 meters in elevation	June – August	Moderate. Some suitable habitat for this species occurs within the BSA.	Low. Marginal suitable habitat for this species occurs within the Project area.
Lewisia kelloggii ssp. *hutchisonii* Hutchinson's lewisia	Fed: None State: None CNPS: List 3.2	Perennial herb occurring in openings and ridgetops in upper montane coniferous forest, meadows, and seeps, in mesic soils, often on slate or rhyolite tuff. From 765 – 2,365 meters in elevation.	May – August	Moderate. Some suitable habitat for this species occurs within the BSA.	Low. Marginal suitable habitat for this species occurs within the Project area.
Lewisia kelloggii ssp. *kelloggii* *Kellogg's lewisia*	Fed: None State: None CNPS: List 3.2	Perennial herb occurring in openings and ridgetops in upper montane coniferous forest, often on slate and sometimes rhyolite tuff. From 1,465 – 2,365 meters in elevation.	May – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Lomatium peckianum Peck's lomatium	Fed: None State: None CNPS: List 2B.2	Perennial herb. Occurs in lower montane coniferous forest, chaparral, cismontane woodland and pinyon and Juniper woodland with volcanic soils, from 700 – 1,800 meters in elevation.	April – May	Moderate. Some suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Meesia triquetra three-ranked hump moss	Fed: None State: None CNPS: List 4.2	Moss. Occurs in bogs and fens, meadows and seeps, upper montane coniferous forest and sub-alpine coniferous forest on mesic soils, from 1,300 – 2,953 meters in elevation.	July	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Meesia ulignosa broad-nerved hump moss	Fed: None State: None CNPS: List 2B.2 FS: Sensitive	Moss. Occurs in bogs, fens, seeps, and on damp soils in meadows, upper montane coniferous forest and sub-alpine coniferous forest on damp soil, from 1,210 – 2,804 meters in elevation.	October	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Moneses uniflora woodnymph	Fed: None State: None CNPS: List 2B.2	Perennial rhizomatous herb. Occurs in broadleafed upland forests and North Coast coniferous forests, from 100 – 1,100 meters in elevation.	May – August	Moderate. Some suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Ophioglossum pusillum northern adder's tongue	Fed: None State: None CNPS: List 1B.2 FS: Sensitive	Perennial rhizomatous herb. Occurs in meadows and seeps, and marsh and swamp margins, from 1,000 – 2,000 meters in elevation.	July	High. Suitable habitat for this species occurs within the BSA.	High. Suitable habitat for this species occurs within the Project area.
Orthocarpus pachystachyus Shasta orthocarpus	Fed: None State: None CNPS: List 1B.1 BLM: Sensitive	Annual herb. Occurs in great basin scrub, meadows, seeps, and valley and foothill grasslands, at approximately 850 meters in elevation.	May	Absent. The BSA is above the known elevation range for the species.	Absent. The Project area is above the known elevation range for the species.
Parnassia cirrata var. *intermedia* Cascades grass-of-Parnassus	Fed: None State: None CNPS: List 1B.3 FS: Sensitive	Perennial herb. Occurs in bogs, fens, meadows and seeps with rocky, serpentine soils, from 780 – 1,980 meters in elevation.	August – September	Absent. The BSA does not support the appropriate soils required t for the species.	Absent. The Project area does not support the appropriate soils required for the species.
Penstemon filiformis thread-leaved beardtongue	Fed: None State: None CNPS: List 1B.3 BLM: Sensitive	Perennial herb. Occurs in rocky cismontane woodland and lower montane coniferous forest, from 450 – 1,875 meters in elevation	May – August	Moderate. Some suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Phacelia cookei Cook's phacelia	Fed: None State: None CNPS: List 1B.3 BLM/FS: Sensitive	Annual herb. Occurs in great basin scrub and lower montane coniferous forest on sandy, volcanic soils, from 1,095 – 1,700 meters in elevation.	June – July	Low. Marginal suitable habitat for this species occurs within the BSA.	Low. Marginal suitable habitat for this species occurs within the Project area.
Phacelia leonis Siskiyou phacelia	Fed: None State: None CNPS: List 1B.3 BLM: Sensitive	Annual herb. Occurs in meadows, seeps and openings in upper montane coniferous forest, often on serpentinite soils, from 1,200 to 2,000 meters in elevation.	June – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Pinguicula macroceras horned butterwort	Fed: None State: None CNPS: List 2B.2	Perennial carnivorous herb. Occurs in bogs and fens, on serpentinite soils, from 40 – 1,920 meters in elevation.	April – June	Absent. The BSA does not support the appropriate soils required t for the species.	Absent. The Project area does not support the appropriate soils required for the species.
Polemonium eddyense Mt. Eddy sky pilot	Fed: None State: None CNPS: List 1B.2 BLM: Sensitive	Perennial herb. Occurs in alpine boulder and rock fields, subalpine coniferous forest, gravelly slopes and rocky ledges on serpentinite or peridotite, rocky soils. From 2,480 to 2,750 meters in elevation.	June – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Polemonium pulcherrimum var. *shastense* Mt. Shasta sky pilot	Fed: None State: None CNPS: List 1B.2	Perennial herb occurring in alpine boulder and rock field, and subalpine and upper montane coniferous forest, sometimes on volcanic soils from 2,175 – 3,900 meters in elevation.	June – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Polystichum lonchitis northern holly fern	Fed: None State: None CNPS: List 3	Perennial rhizomatous herb. Occurs in subalpine and upper montane coniferous forest, on granitic or carbonate soils. From 1,800 – 2,600 meters in elevation.	June – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Potentilla cristae crested potentilla	Fed: None State: None CNPS: List 1B.3	Perennial herb. Occurs in alpine boulder and rock fields, subalpine coniferous forest, seasonally wet swales and seeps, gravelly or rocky sites, often on serpentine. From 1,800 – 2,800 meters in elevation.	August – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Ptilidium californicum Pacific fuzzwort	Fed: None State: None CNPS: List 4.3 BLM: Sensitive	Liverwort occurring in lower montane coniferous forest and upper montane coniferous forest growing as an epiphyte on trees, fallen and decaying logs and stumps, and occasionally on humus on boulders, at approximately 1,800 meters in elevation.	May – August	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.

SPECIES	STATUS	HABITAT	BLOOMING PERIOD	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Raillardella pringlei showy raillardella	Fed: None State: None CNPS: List 1B.2 BLM/FS: Sensitive	Perennial rhizomatous herb. Occurs in meadows, seeps, bogs, fens and upper montane coniferous forest, from 1,200 to 2,290 meters in elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Rosa gymnocarpa var. *serpentina* Gasquet rose	Fed: None State: None CNPS: List 1B.3	Perennial rhizomatous shrub. Occurs in chaparral and cismontane woodland, on serpentinite soils, often on roadsides, ridges, streambanks, and openings in the vegetation. From 400 – 1,725 meters in elevation.	April – June	Absent. The BSA does not support the appropriate soils required t for the species.	Absent. The Project area does not support the appropriate soils required for the species.
Scutellaria galericulata marsh skullcap	Fed: None State: None CNPS: List 2B.2	Perennial rhizomatous herb. Occurs in lower montane coniferous forest, meadows and seeps and marshes and swamps, up to 2,100 meters in elevation.	June – September	High. Suitable habitat for this species occurs within the BSA.	High. Suitable habitat for this species occurs within the Project area.
Silene suksdorfii Cascade alpine campion	Fed: None State: None CNPS: List 2B.3	Perennial herb. Occurs in alpine boulder and rock fields, subalpine and upper montane coniferous forest; rocky, volcanic soils. From 2,355 – 3,110 meters elevation.	July – September	Absent. The BSA is below the known elevation range for the species.	Absent. The Project area is below the known elevation range for the species.
Trichodon cylindricus cylindrical trichodon	Fed: None State: None CNPS: List 2B.2	Moss. Occurs on sandy exposed soil and road banks in broadleaf upland forest, meadows and seeps, and upper montane coniferous forest from 50 to 2,000 meters in elevation.	NA	High. Suitable habitat for this species occurs within the BSA.	Moderate. Some suitable habitat for this species occurs within the Project area.
Trifolium siskiyouense Siskiyou clover	Fed: None State: None CNPS: List 1B.1	Perennial herb. Occurs in meadows and seeps on mesic soils, sometimes on streambanks. From 880 – 1,500 meters in elevation.	June – July	High. Suitable habitat for this species occurs within the BSA.	High. Suitable habitat for this species occurs within the Project area.
Vaccinuium scoparium little-leaved huckleberry	Fed: None State: None CNPS: List 2B.2	Perennial deciduous shrub. Occurs in subalpine coniferous forest, rocky areas. From 1,035 – 2,200 meters in elevation.	June – August	Absent. No suitable habitat for this species occurs within the BSA.	Absent. No suitable habitat for this species occurs within the Project area.

Absent: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence.

Low: Species or sign not observed on the site, but conditions marginal for occurrence.

Moderate: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity.

High: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records.

Present: Species or sign of their presence recently observed on the site.

State status

Endangered = listed as Endangered under the California Endangered Species Act

CNPS State Rank

List 1B Plants rare, threatened, or endangered in California and elsewhere

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

List 3 Plants for which more information is needed; a review list

List 4 Plants of limited distribution; a watch list

CNPS threat extension codes

1 Seriously endangered in California

2 Fairly endangered in California

3 Not very endangered in California

3.4 Special-Status Wildlife Species

A total of 30 special-status wildlife species were determined by the literature review to potentially occur within the BSA. Their habitat description, status, and potential for occurrence within the BSA are provided in Table 3. Potential for occurrence was based on habitat requirements and proximity to known recorded occurrences of a species.

Special-status wildlife species were not detected during the field surveys; however, species-specific surveys were not conducted as part of the habitat assessment. The BSA provides habitat that could support special-status species; however, the Project area provides much of the same suitable habitat, to a lesser degree, that could support special-status species.

Of the 30 wildlife species considered to have a potential to occur within the BSA, 14 were determined to have a high potential for occurrence, 12 had moderate potential, and one had low potential, while the rest were determined to be absent. For the Project area, four species had a high potential for occurrence, 14 had moderate potential, and eight had low potential, while the rest were determined to be absent. Species determined to have potential to occur within the Project area are discussed below, while species that were determined to be absent are not discussed further. A list of wildlife species observed during the survey is provided in Appendix B.

Northern Goshawk (*Accipiter gentilis*)

The northern goshawk breeds in the North Coast Ranges through the Sierra Nevada, Klamath, Cascade, and Warner Mountains, and in Mt. Pinos and the San Jacinto, San Bernardino, and White Mountains. It is considered to be well-distributed across the Klamath and Siskiyou Mountains, with an estimate of approximately 1,000 known breeding territories statewide in California (Shuford and Gardali 2008). It typically inhabits mature, dense coniferous forests, primarily ponderosa pine, Jeffrey pine, lodgepole pine, and white fir, at middle and higher elevations, although it can also be found in foothills and deserts where it will inhabit lower elevation riparian and pinyon-juniper habitats They may also nest in deciduous trees (U.S. Forest Service [USFS] 2005).

There is one recorded northern goshawk occurrence within a five-mile radius of the Project, where fledging or nestling activity was observed in 1992, 1995, and 1996 (CDFW 2015c). There have also been recent nearby occurrences of northern goshawk from 2001, located west of Dunsmuir, where separate nests with fledglings or juveniles were observed each year from 1999 to 2001 (CDFW 2015b and c). Northern goshawk has a moderate potential to occur based on the suitable coniferous forest habitat, and this species may use the area as a flyover or foraging area.

Sierra Nevada Mountain Beaver (*Aplondontia rufa californica*)

The Sierra Nevada mountain beaver occurs in moist environments with moderate- to dense vegetation, specifically in the Pacific Northwest and the Pacific Cascades. This species requires ample surface water or succulent vegetation due to its poor ability to concentrate urine and prefers habitat with abundant willows, alder, and fir; where these species are sparse, the Sierra Nevada mountain beaver can be found in areas with abundant ferns (Beier 1989). This species is herbaceous, and in addition to using these vegetation species as cover from high temperatures the Sierra Nevada mountain beaver will also forage on ferns as well as on other herbaceous plants, trees, and shrubs.

Sierra Nevada mountain beaver make shallow, extensive tunnel systems, and are active throughout most of the year. Females began to reproduce after 2 years of age and, after a gestation period of approximately one month, give birth in the early spring. The young are weaned within 6 to 8 weeks (Nevada Department of Wildlife 2015). In the Project area, the only recorded observation of Sierra Nevada mountain beaver was in 1898, in Upper Mud Creek on the southeast side of Mount Shasta (CDFW 2015b and c). Suitable habitat occurs in the Project area, and the Sierra Nevada mountain beaver has a moderate potential to occur.

Great Blue Heron (*Ardea herodias*)

The great blue heron is a common inhabitant of most of the west coast of the United States, in both shallow estuaries and fresh and saline emergent wetlands, lake margins, tidal flats, and rivers and streams. This species can also be found in croplands, pastures, and in mountains above foothills. Great blue heron is a colonial nester and commonly utilizes tall trees and large snags, but may also nest on cliffsides and in secluded areas in emergent wetlands in proximity to foraging areas. This species feeds mostly on fish, but may also prey upon small rodents, amphibians, snakes, lizards, insects, crustaceans, and small birds (CDFW 2013a; CDFW 2015b and c).

Great blue heron has been recorded in the Project area, most recently in 2007 in a private pond just north of Browns Lake approximately 0.25 mile from the proposed Lassen Substation. Suitable habitat occurs in the Project area, and great blue heron has a high potential to occur.

Pacific Tailed Frog (*Ascaphus truei*)

The Pacific tailed frog is known to occur west of the Cascade Mountains from southern British Columbia to near Anchor Bay in California's Mendocino County (Stebbins 2003). This species prefers clear, cold, fast-flowing, rocky streams in areas typically dominated by old-growth Douglas-fir, pine, spruce, hemlock, redwood, maple, and alder (Stebbins 2003, Elliott et al. 2009). A rocky substrate is essential for hiding, attaching eggs, and foraging (Elliott et al. 2009). Water temperatures higher than 23 to 24 degrees Celsius (°C) are lethal to adults, while tadpoles will avoid temperatures greater than 22°C and will die at water temperatures greater than 30°C. This species is not known to venture more than approximately 40 feet from water (CDFW 2015b and c).

Suitable habitat occurs within the Project area. Pacific tailed frog has a moderate potential to occur within the Project area

Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*)

Suckley's cuckoo bumble bee is a brood parasite. This species has lost the ability to develop nests and feed their young, and therefore, the females invade the nests of other bees, killing the queen and taking over the colony. The female then lays her eggs and forces the workers of the existing colony to feed her and her young. Upon hatching, the young feed upon the larvae of the previous queen, and eventually disperse: the females seek out other nests to parasitize, and the males seek out mates (Hatfield et. al. 2015).

Suckley's cuckoo bumble bee is native to the U.S., and its range includes the Pacific coast from Alaska to northern California, and east to Nebraska (CDFW 2015b and c). This species is an obligate nest parasite and its relative abundance depends directly on that of its hosts, and threats include pesticide use, habitat destruction, and climate change. Suckley's cuckoo bumble bee was last recorded in the Project area in 1958; however, other species of bees occur in the area, and therefore, suitable habitat may be present. Suckley's cuckoo bumble bee has a moderate potential to occur in the Project area

Western Yellow-billed Cuckoo (Coccyzus americanus occidentalis)

Historically, the yellow-billed cuckoo was a commonly breeding species in riparian habitat throughout much of California, including small populations along the Shasta River in Siskiyou County. By 1944, the yellow-billed cuckoo had been eliminated from extensive areas "because of removal widely of essential habitat conditions". Breeding populations of greater than five pairs are currently limited to the Sacramento River and the South Fork Kern River. There are several other sites in Southern California where small populations of cuckoos (less than five pairs) breed or possibly breed (Laymon 1988). The yellow-billed cuckoo nests in riparian forest habitats along the

floodplains of large river systems. Nests are typically built in willow, cottonwood, box elder, and alder trees, but have also been found in riparian willow-cottonwood habitats with blackberry, nettle, and wild grape understory.

There are historic records of the western yellow-billed cuckoo within the general Project vicinity. One record from 1951 is near the Mt. Shasta State Fish Hatchery, located approximately 0.4 mile from the site of the proposed Lassen Substation. However, the fish hatchery no longer contains any suitable habitat to support this species. There is also one historic record of yellow-billed cuckoo along Shasta River. One individual was collected and several others were observed along the Shasta River approximately four miles northwest of Weed, California in 1899. Subsequent observations of the yellow-billed cuckoo were also made in this area in 1920, and it is thought that the birds may have nested in the willows, alders, and birch along the river at that time. No recent observations of cuckoo presence have been documented along the Shasta River (CDFW 2015b and c). There is a low potential for the western yellow-billed cuckoo to occur in the Project area due to the general lack of the complex structured riparian canopies that it requires for nesting and foraging.

Confusion Caddisfly (*Cryptochia shasta*)

Little is known of the ecology and life history of the confusion caddisfly. This species is known from only one type locality; in 1973, a male was collected from a creek near Castle Crag State Park, approximately 7.5 miles south of the Project. Required habitat of this species is unknown; however, larvae of other *Cryptochia* species are found in small, cold, first- and second-order streams where they construct a buoyant case from woody debris. Larvae of other *Cryptochia* species then crawl onto the shore where they are suspected of feeding upon fungi (CDFW 2015b and c).

The confusion caddisfly has one recorded observation dating from 1973 near Castle Crag State Park. Other sensitive *Cryptochia* species (i.e., *Cryptochia denningi* and *C. excella*) have been recorded in Placer, Tulare, and Inyo Counties, and in the Sierra Nevada (CDFW 2015b and c). Suitable habitat for other *Cryptochia* species is present in the Project area. The confusion caddisfly is considered to have a high potential to occur.

Willow Flycatcher (*Empidonax traillii*)

Willow flycatchers historically occurred throughout California wherever suitable habitat was present (Craig and Williams 1998). Currently, it is known to occur in wet meadow and montane riparian habitats in the Sierra Nevada and Cascade Ranges, as well as along the Santa Ynez River in Santa Barbara County, several locations in San Diego County, and along the Colorado River (Sedgwick 2000, CDFW 2015c). As of 2000, in the Sierra Nevada and Cascade region in California, this species was believed to be restricted to southeastern Shasta County south to northern Kern County, including Alpine, Inyo, and Mono Counties in between (Sedgwick 2000). Characteristic habitat for this species includes willow thickets in or adjacent to standing or running water, typically in valleys, canyon bottoms, mountain seeps, and ponds and lakes (Sedgwick 2000). In California, willow clumps are often preferred.

There are two recent recorded observations of this species from the general Project vicinity. In 2004, six breeding individuals were detected along Pig Creek in an area spanning from 2.3 to 2.8 miles south-southwest of McCloud, and another site documented in 1992 as having activity (CDFW 2015b and c). The Project vicinity generally lacks a large amount of willow and riparian habitat that would be capable of supporting this species. Willow flycatcher has a low potential to occur in the Project area.

Western Pond Turtle (*Emys* [=*Clemmys*] *marmorata*)

The western pond turtle was historically present in most Pacific slope drainages between the Oregon and Mexican borders. Western pond turtles inhabit a variety of aquatic habitats, including rivers, streams, lakes, ponds, wetlands, reservoirs, and brackish estuarine waters. The species is uncommon in high gradient streams. This species requires emergent basking sites, including rocks, logs, or emergent vegetation, and have been observed to avoid areas of open water lacking them (Holland 1991). They also require upland nest sites in the vicinity of the aquatic habitat that have the proper thermal environment for incubation.

Suitable habitat for this species occurs within the Project area. Western pond turtle has a moderate potential to occur within the Project area.

Spotted Bat (Euderma maculatum)

The spotted bat is a year-round resident of eastern California, including the southeastern portion of Siskiyou County, and most of Southern California. It is present in southern British Columbia and through Washington, Oregon, California, Idaho, Montana, Wyoming, Utah, Colorado, New Mexico, Arizona, Texas, and Mexico (Reid 2006). Spotted bat occurs in variable habits ranging from arid deserts to ponderosa pine forests and grasslands, to elevations of over 10,000 feet (Reid 2006). Its preferred roosting habitat is rock crevices in cliffs, but it can also be found in caves or in buildings (CDFW 2015b and c). It may forage up to 50 miles from its roost (Reid 2006).

The recorded occurrence of this species nearest to the Project is approximately 1.25 miles south of the proposed substation site, where individuals were detected by calls in 1993. Individuals were detected by recorded calls at Castle Lake in 1993 and Castle Crags State Park in 1994 (CDFW 2015b and c). Spotted bat has a moderate potential to occur within the Project area. While there is limited roosting habitat in the Project vicinity, this species may use the Project area for foraging, especially over the various water bodies.

Western Mastiff Bat (Eumops perotis californicus)

The western mastiff bat occurs throughout Southern California, along the coast from Monterey County south, and within the California Central Valley north to the eastern half of Siskiyou County. It occurs in open semi-arid to arid habitats, such as conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. Roosting generally occurs in crevices in cliff faces, high buildings, trees, and tunnels, with at least 10 feet of space between the roost and the ground to drop-off vertically for flight (Reid 2006). This species is non-migratory and will move between different roosts either alone or with a colony of other bats. Individuals may forage up to 15 miles away from their roosts (Reid 2006).

There are two CNDDB records for this species in the Project vicinity, both from 1993 (CDFW 2015b and c). The closest is at Ney Springs, three miles south of the Project, where between one and three bats were detected, and the second occurrence is in Dunsmuir, where one to three individuals were also detected. Suitable roosting and foraging habitat is present around the Project area, and western mastiff bat has a moderate potential to occur.

American Peregrine Falcon (*Falco peregrinus anatum*)

Peregrine falcon year-round California range includes almost the entire California coast (excluding Southern California, except near the Salton Sea), northern California counties, including Siskiyou, and the northeastern half of California (CDFW 2015b and c). This species winters in the Central Valley and Southern California. Typical habitat consists of cliffs for nesting and open areas for

foraging, with nests typically constructed near water (White et al. 2002). Falcons may also use artificial, man-made habitats for nesting.

Although this species has been categorized as Recovered and delisted on the federal and state levels, the CNDDB documents occurrence records of the American peregrine falcon as sensitive, and specific locations of occurrences are unavailable. However, the CNDDB records one observation of this species in the project vicinity, in the Dunsmuir quadrangle within northern Shasta County (CDFW 2015b and c). Due to the potential for nesting around manmade structures and the various bodies of water (creeks, ponds, and Lake Siskiyou) around the Project area, the American peregrine falcon has a low potential to occur.

Bald Eagle (Haliaeetus leucocephalus)

The bald eagle is resident throughout much of California, with breeding limited to Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity Counties. The species is a relatively common local winter migrant at several inland waters in Southern California, and approximately half of the wintering population is in the Klamath Basin. Habitat generally consists of large trees and snags, especially ponderosa pine, within one mile of large water bodies where they can forage.

Bald eagles are considered to be recent occupants in the Shasta and Strawberry Valleys. A nest was discovered at the southeast end of Lake Shastina by CDFW in 1996 (2015b and c), although the success of this nest beyond 1997 is unknown. Additionally, a bald eagle nest was monitored at Lake Siskiyou from 1989 to 1997, with fledglings in at least four of these years, although its success since 1997 is also unknown. The Project vicinity contains potential nesting, roosting, and foraging habitat for the bald eagle, due to the abundance of tall coniferous trees along the perimeter of the site and the proximity of the Project to Lake Siskiyou. Bald eagle has a low potential to occur in the Project area, but a high potential to occur nearby at Lake Siskiyou.

Leaden Slug (Hesperarion plumbeus)

Leaden slug is known from only two recorded locations in northeastern Shasta County. The species' holotype was collected in in Castle Creek, west/northwest of its confluence with South Fork Castle Creek (CDFW 2015b and c). One paratype was collected the same year, in Root Creek approximately 1.4 miles northwest of its confluence with Castle Creek. Habitat requirements for this species are known only from the habitat from which they were collected: riparian areas along creeks.

Suitable habitat occurs in the Project area, and the leaden slug has a moderate potential to occur.

California Gull (*Larus californicus*)

In California, the nesting population of California gulls is scattered across the northeastern plateau region and around Mono Lake. This species is considered to be a resident only around the San Francisco Bay area and around Siskiyou County, but is a winterer in many places in California, including the Central Valley, the entire California coastline, and areas around the Salton Sea (Winkler 1996). When along the coast, its preferred habitat is characterized by sandy beaches, mudflats, the intertidal zone, areas of marine and estuarine habitat, and freshwater or saltwater wetlands. When inland, this species prefers lacustrine, riverine, and agricultural habitats, as well as landfills and urban landscaped areas. It often nests on islets on large interior lakes (CDFW 2015b and c).

There is one recorded occurrence of this species around the Project vicinity, an ongoing documentation of nesting California gulls at Lake Shastina (, CDFW 2015b and c). This population has ranged from approximately 300 nesting pairs in 1994 to 1,149 nesting pairs in 2009. The California gull has a low potential to nest within the Project area, but could occur as a flyover.

Silver-haired Bat (Lasionycteris noctivagans)

The silver-haired bat occurs in coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats at elevations below 9,000 feet (2,750 meters). This species roosts in hollow trees, snags, buildings, rock crevices, and under loose bark, and requires streams, ponds, and open brushy areas for foraging. Silver-haired bat also needs access to water due to its poor ability to concentrate urine (CDFW 2013b).

Although suitable habitat for the silver-haired bat occurs in the Project area, it has not been recorded in the vicinity since 1958 (CDFW 2015b and c). The silver-haired bat has a low potential to occur.

Pacific Marten (*Martes caurina*)

The Pacific marten is associated with structurally complex, upper montane, late-seral coniferous forests and (Zeilinski et al. 2015) or mixed evergreen forests with more than 40 percent crown closure. This species requires a variety of different-aged stands, particularly old-growth conifers and snags for denning and cover (CDFW 2015c). The Pacific marten may also use burrows, caves, and crevices in rocky areas for denning and cover, in the absence of appropriate forest cover. This species is particularly sensitive to human disturbance, especially habitat fragmentation and destruction. Pacific martens feed primarily on small mammals such as squirrels, chipmunks, mice, shrews, rabbits, hares, and pika, but may also feed on birds, insects, fruit, and fish (CDFW 2013c).

The Pacific marten has not been recorded in the Project area since 1973 (CDFW 2015b and c); however, suitable habitat occurs in the Project area, and the Pacific marten has a moderate potential to occur.

Natural Bridge Megomphix (*Megomphix californicus*)

The natural bridge megomphix is a gastropod associated with forested areas, where it has been found in moist leaf litter and under rotting logs, and also with perennial seeps and springs. Little else is known about this species. This species is known from several scattered regions in the Great Coast Range of northern California (Applegarth 2000), including within 5 miles of the proposed Project. However, since the last recorded observation of this species in the Project area was in 1941 (CDFW 2015b and c), it is determined that the natural bridge megomphix has a low potential to occur.

Osprey (Pandion haliaetus)

The osprey breeds across northern California from the Cascade Ranges south to Lake Tahoe and coastally to Marin County. It is present throughout the rest of its California range, including the California Coast to the western foothills of the Cascades, and the western edge of southeastern California desert, mainly in the winter (Poole et al. 2002). Known regular breeding locations include Shasta Lake, Eagle Lake, Lake Almanor, and other lakes, reservoirs, and rivers. Its habitat is typically characterized by ponderosa pine and mixed conifer close to large bodies of water, such as rivers, lakes, reservoirs, bays, estuaries, and surf, with abundant fish.

There are multiple osprey nests recorded within five miles of the Project area since 2001. The earliest recorded occurrence nearest the Project dates from 2003, and consisted of a nest located in a radio tower near the junction of I-5 and Highway 89; two adults were observed nesting at this location. The remaining occurrences were all detected in 2005. Two of these were located within 0.5 mile of each other, where adult ospreys were observed nesting but did not appear to be caring for any chicks. It is believed that their reproductive efforts failed that year. A third nest was detected, but no activity was observed, and the fourth nest, located on a cellular tower, was observed to be successful (CDFW 2015b and c). The osprey has a moderate potential to occur within the Project area.

West Coast Fisher (*Pekania pennanti*)

The west coast fisher is found in the Cascade Mountains west to the coast from Washington and Oregon, the North Coast from Mendocino County, California north to Oregon; east across the Klamath, Siskiyou, Trinity, and Marble Mountains, and across the southern Cascade Mountains; and south through the Sierra Nevada (USFWS 2014). This species occupies coniferous forests with intermediate- to large tree stands, and deciduous riparian areas with a high percent of canopy closure. West coast fisher requires cavities, snags, logs, and rocky areas for both cover and denning (CDFW 2015b and c).

West coast fisher has been observed multiple times in the Project area as recently as 2009 (CDFW 2015b and c). Suitable habitat for this species occurs in the Project area, and the west coast fisher has a moderate potential to occur.

Foothill Yellow-legged Frog (*Rana boylii*)

The foothill yellow-legged frog is distributed from Oregon west of the Cascades down into the Coast Range and Sierra Nevada Mountains to the Transverse Mountains of Los Angeles County (CCDFW 2015c, Elliott et al. 2009). However, it may be extirpated from Southern California and has disappeared across much of its range (Stebbins 2003). It requires slow-moving streams with riffles and a rocky substrate particularly abundant in cobble (Elliott et al. 2009, CDFW 2015c). Surrounding habitat may consist of woodland, chaparral, or forest (Stebbins 2003). It has been known to venture up to 165 feet away from water.

There are several creeks in the Project vicinity that have the potential to support this species. Multiple recorded observations from the last decade are located within a five-mile radius of the Project area, including one approximately 0.4 mile away at the Mt. Shasta State Fish Hatchery (CDFW 2015b and c). Foothill yellow-legged frog has a high potential to occur in the Project area.

Cascades Frog (*Rana cascadae*)

In California, the Cascades frog is distributed from the Shasta-Trinity region eastward toward the Modoc Plateau and southward to the Lassen region and the upper Feather River system (Stebbins 2003). Preferred habitats include montane aquatic habitats, such as mountain lakes, small streams, and ponds (CDFW 2015c), as well as moist meadows and wetlands (Elliott et al. 2009). In northern California, known populations of this species seem to be restricted to elevations higher than 1,220 meters (4,000 feet; Garwood and Welsh 2007). Recent surveys from Butte County northward through the Lassen National Park region to the Modoc Plateau area of eastern Siskiyou County failed to reveal any Cascades frogs at localities where they were historically known to occur. Only two adults of this taxon were found in each of two recent survey years in one location in Lassen Volcanic National Park. Surveys in the upper McCloud River system found moderate to abundant populations in lakes and slow stream channels that contained few or no fish.

There are no recent occurrences of this species within five miles of the Project area, although there are two historical reported occurrences within this buffer (CDFW 2015b and c), with several more recorded sightings located just outside the five-mile search radius. The Project area includes some suitable habitat for the Cascades frog, but the species does was not observed within or in the vicinity of the proposed Project. Cascades frog has a moderate potential to occur.

Castle Crags Rhyacophilan Caddisfly (*Rhyacophila lineata*)

Little is known of the Castle Crags rhyacophilan caddisfly. This species is known from only one recorded observation in 1950, when one male was collected in Castle Crags State Park (CDFW 2015c). Specific habitat requirements and the range of this species are unknown, but habitat

requirements for other species within this genus include a wide variety of running-water habitats, and some species are adapted to intermittent streams (CDFW 2015b and c).

Habitat for *Rhyacophila* spp. occurs in the Project area (e.g., Cold Creek and Big Springs Creek), and the Castle Crags rhyacophilan caddisfly has a moderate potential to occur.

Bilobed Rhyacophilan Caddisfly (*Rhyacophila mosana*)

Like the Castle Crags rhyacophilan caddisfly, little is known of the bilobed rhyacophilan caddisfly. This species is known from only one recorded observation made in 1965, in Castle Crags State Park (CDFW 2015c). Specific habitat requirements and the range of this species are unknown, but habitat requirements for other species within this genus include a wide variety of running-water habitats and some species are adapted to intermittent streams (CDFW 2015b and c).

Habitat for *Rhyacophila* spp. occurs in the Project area (e.g., Cold Creek and Big Springs Creek), and the Castle Crags rhyacophilan caddisfly has a moderate potential to occur

Siskiyou Hesperian (*Vespericola sierranus*)

Siskiyou hesperian is a freshwater mollusk distributed in Oregon near Upper Klamath Lake, Crater Lake National Park, and Klamath River in the Rogue River National Forest (Stone 2009); and in California from one recorded observation in the Shasta River two miles north of the City of Weed (CDFW 2015b and c). This species occurs in perennially moist riparian habitat including seeps, springs, deep leaf litter along streambanks, and under debris and rocks. Siskiyou hesperian is most common in the lower portions of moist valleys, ravines, gorges, or talus in area not subject to regular flooding, and may also occur in areas with running water or alongside streams and spring pools (Stone 2009).

Suitable habitat for Siskiyou hesperian occurs in the Project area, and this species has a moderate potential to occur.

Sierra Nevada Red Fox (*Vulpes vulpes necator*)

The Sierra Nevada red fox is distributed from the Cascade Mountains south into the Sierra Nevada Range. Relatively little is known of the life history of the Sierra Nevada red fox, but it is assumed that its habits are similar to those of other red foxes. Sightings of the subspecies have been reported from between 5,000 to 7,000 feet elevation. The Sierra Nevada red fox utilizes a variety of habitats from wet meadows to forested areas. Preferred habitat types include red fir, lodgepole pine, subalpine fir, and mixed conifer types (Schempf and White 1977).

There are no records of this species within five miles of the Project area, but there are three in the general vicinity. The most recent of these are from 2006, where one adult was observed in the Shasta National Forest north of McCloud, and another adult was observed along Highway 89, 1 mile north of McCloud. In 1990, an adult was observed in the Shasta National Forest along USFS Route 40N25, approximately 5.25 miles northeast of the Project. The other two records are from 1904, where a single Sierra Nevada red fox was captured on Mount Shasta, and from 1922-1923, where four foxes were captured at a USFS lookout post on Mount Eddy (CDFW 2015b and c). There is limited habitat to support this species in the Project area, though suitable habitat still remains outside the Project area. The Sierra Nevada red fox has a low potential to occur.

TABLE 3 SPECIAL-STATUS WILDLIFE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE BIOLOGICAL SURVEY AREA

SPECIES	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Accipiter gentilis northern goshawk	Fed: None State: SSC BLM: Sensitive FS: Sensitive	Occurs in coniferous forests, particularly red fir, lodgepole pine, Jeffrey pine, and aspens. Usually nests on north-facing slopes.	High. Suitable nesting and foraging habitat and prey base occurs throughout the BSA.	Moderate. Some suitable nesting and foraging habitat and prey base occurs within the Project area.
Aplodontia rufa californica Sierra Nevada mountain beaver	Fed: None State: SSC	Occurs in riparian scrub, riparian forest, and riparian woodland.	High. Suitable habitat occurs throughout the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Ardea herodias great blue heron	Fed: None State: None	Occurs in brackish and freshwater marsh, swamps and wetlands, and riparian forests.	High. Suitable habitat occurs throughout the BSA.	High. Suitable habitat occurs within the Project area.
Ascaphus truei Pacific tailed frog	Fed: None State: SSC	Occurs in montane hardwood-conifer, redwood, Douglas-fir, and ponderosa pine habitats. Restricted to perennial streams. Tadpoles require water temperatures below 15°C.	High. Suitable habitat occurs throughout the BSA.	High. Suitable habitat occurs within the Project area.
Bombus suckleyi Suckley's cuckoo bumble bee	Fed: None State: None	A nest parasite, this species occurs where other bumble bees are present in numbers.	Moderate. Some suitable habitat occurs within the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Coccyzus americanus occidentalis western yellow-billed cuckoo	Fed: THR State: END BLM: Sensitive	Nests in multi-layered riparian habitat with canopies of willow and cottonwood with understories of blackberry, nettles, or wild grape.	Moderate. Some suitable habitat occurs within the BSA.	Low. Marginal suitable habitat occurs within the Project area.

SPECIES	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Cryptochia shasta confusion caddisfly	Fed: None State: None	Requires small, cold first-order and second-order streams.	High. Suitable habitat occurs throughout the BSA.	High. Suitable habitat occurs within the Project area.
Cypseloides niger black swift	Fed: None State: SSC	Forms small colonies on cliffs near or behind waterfalls in canyons or on bluffs.	Low. Marginal suitable habitat occurs within the BSA.	Absent. No suitable habitat occurs within the Project area.
Empidonax traillii willow flycatcher	Fed: None State: END	Nests in thick riparian habitat dominated by willows.	Moderate. Some suitable habitat occurs within the BSA.	Low. Marginal suitable habitat occurs within the Project area.
Emys marmorata western pond turtle	Fed: None State: SSC	Occurs primarily in ponds, marshes, or slow-flowing rivers, streams, and irrigation ditches. Requires basking sites inside the water or on the bank and requires sandy banks or grassy fields within 0.5 kilometers for egg-laying.	High. Suitable habitat occurs throughout the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Euderma maculatum spotted bat	Fed: None State: SSC BLM: Sensitive FS: Sensitive	Roosts in crevices in cliff faces, high buildings, trees, and tunnels in a range of arid and semi-arid habitats.	Moderate. Some suitable habitat occurs within the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Eumops perotis californicus western mastiff bat	Fed: None State: SSC BLM: Sensitive	Roosts in crevices in cliff faces, high buildings, trees, and tunnels in a range of arid and semi-arid habitats, including chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland.	High. Suitable habitat occurs throughout the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Falco peregrinus anatum American peregrine falcon	Fed: Delisted State: FP	Nests in scrapes, depressions, or ledges in open areas near water or on cliffs, dunes, or man-made structures.	Moderate. Some suitable habitat occurs within the BSA.	Low. Marginal suitable habitat occurs within the Project area.

SPECIES	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Gulo gulo California wolverine	Fed: None State: THR, FP FS: Sensitive	Occurs in high elevation caves, logs, or burrows with available nearby water. Hunts in open areas.	Absent. No suitable habitat occurs within the BSA.	Absent. No suitable habitat occurs within the Project area.
Haliaeetus leucocephalus bald eagle	Fed: Delisted State: END, FP BLM: Sensitive FS: Sensitive	Nests in large, open trees, especially ponderosa pines, generally within one mile of rivers or open water for foraging.	Moderate. Some suitable habitat occurs within the BSA.	Low. Marginal suitable habitat occurs within the Project area.
Hesperarion plumbeus leaden slug	Fed: None State: None	Occurs in riparian vegetation along creeks.	Moderate. Some suitable habitat occurs within the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Larus californicus California gull	Fed: None State: WL	Nests in colonies on islets in large interior lakes.	Moderate. Some suitable habitat occurs within the BSA.	Low. Marginal suitable habitat occurs within the Project area.
Lasionycteris noctivagans silver-haired bat	Fed: None State: None	Occurs in lower montane coniferous forest, old-growth forest, and riparian forest.	High. Suitable habitat occurs throughout the BSA.	Low. Marginal suitable habitat occurs within the Project area.
Lepus americanus klamathensis Oregon snowshoe hare	Fed: None State: SSC	Occurs in thick patches of alder and willow in riparian areas or of conifers, above the yellow pine zone.	Absent. No suitable habitat occurs within the BSA. This species occurs at elevations above the BSA.	Absent. No suitable habitat occurs within the Project area. This species occurs at elevations above the Project area.
Martes caurina Pacific marten	Fed: None State: None FS: Sensitive	Uses cavities, snags, logs, and rocky areas in large spans of mature, dense, coniferous or deciduous forests, usually old-growth.	High. Suitable habitat occurs throughout the BSA.	Moderate. Some suitable habitat occurs within the Project area.

SPECIES	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Megomphix californicus natural bridge megomphix	Fed: None State: None FS: Sensitive	Occurs in old-growth and riparian forest, preferring moist valley, ravines, gorges, and talus sites near persistent water.	Moderate. Some suitable habitat occurs within the BSA.	Low. Marginal suitable habitat occurs within the Project area.
Ochotona princeps schisticeps gray-headed pika	Fed: None State: None	Occurs in alpine talus and scree slopes.	Absent. No suitable habitat occurs within the BSA.	Absent. No suitable habitat occurs within the Project area.
Pandion haliaetus osprey	Fed: None State: WL	Nests in trees within 15 miles of water with high fish abundance, such as the ocean, lakes, or streams.	High. Suitable habitat occurs throughout the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Pekania pennanti west coast fisher	Fed: Proposed THR State: Candidate THR BLM: Sensitive FS: Sensitive	Uses cavities, snags, logs, and rocky areas in large spans of mature, dense, coniferous or deciduous forests, usually old-growth.	High. Suitable habitat occurs throughout the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Rana boylii foothill yellow-legged frog	Fed: None State: SSC BLM: Sensitive FS: Sensitive	Occurs in a large number of habitats with partly-shaded, shallow streams and riffles with rocky substrate.	High. Suitable habitat occurs throughout the BSA.	High. Suitable habitat occurs within the Project area.
Rana cascadae Cascades frog	Fed: None State: SSC FS: Sensitive	Occurs in montane aquatic habitats, including moist meadows, open wetlands, streams, pools, ponds, and lakes, as well as open coniferous forests. Requires standing water for reproduction.	High. Suitable habitat occurs throughout the BSA.	Moderate. Some suitable habitat occurs within the Project area.

SPECIES	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE – BSA	POTENTIAL FOR OCCURRENCE – PROJECT AREA
Rhyacophila lineata Castle Crags rhyacophilan caddisfly	Fed: None State: None	Occurs in aquatic habitats such as creeks and springs.	Moderate. Some suitable habitat occurs within the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Rhyacophila mosana Bilobed rhyacophilan caddisfly	Fed: None State: None	Occurs in aquatic habitats such as creeks and springs.	Moderate. Some suitable habitat occurs within the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Vespericola sierranus Siskiyou hesperian	Fed: None State: None	Occurs in riparian habitats, including springs, seeps, and deep leaf-litter along streambanks, and under rocks and debris. Preferred sites are within moist ravines, valleys, gorges, and talus sites with permanent water sources.	High. Suitable habitat occurs throughout the BSA.	Moderate. Some suitable habitat occurs within the Project area.
Vulpes vulpes necator Sierra Nevada red fox	Fed: None State: Threatened FS: Sensitive	Occurs in dense vegetation and rocky areas in forests interspersed with meadows or alpine fell-fields. Typically, alpine, alpine dwarf scrub, broadleaved upland forest, subalpine and upper montane coniferous forest, meadows, riparian scrub, and wetlands.	Moderate. Some suitable habitat occurs within the BSA.	Low. Marginal suitable habitat occurs within the Project area.

Absent: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence.

Low: Species or sign not observed on the site, but conditions marginal for occurrence.

Moderate: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity.

High: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records.

Federal status

Endangered = listed as Endangered under the federal Endangered Species Act

Threatened = listed as Threatened under the federal Endangered Species Act

Candidate = a Candidate for listing under the federal Endangered Species Act

BCC = designated as a Bird of Conservation Concern

State status

Endangered = listed as Endangered under the California Endangered Species Act

Threatened = listed as Threatened under the California Endangered Species Act

SSC = designated as a Species of Special Concern

FP = designated as a Fully Protected species

WL = designated as a Watch List species

Other

CNDDB = this species is only listed by the CNDDB and may be locally sensitive or its occurrences may be monitored to see if further protection is needed

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APPENDIX A PLANTS OBSERVED DURING THE SURVEY

SCIENTIFIC NAME	COMMON NAME
LYCOPODS	
FERNS	
EQUISETACEAE	HORSETAIL FAMILY
Equisetum arvense	common horsetail
GYMNOSPERMS	
CUPRESSACEAE	CYPRESS FAMILY
Calocedrus decurrens	incense cedar
PINACEAE	PINE FAMILY
Abies concolor	white fir
Pinus ponderosa	Ponderosa pine
Pseudotsuga menziesii	Douglas-fir
DICOTS	
APIACEAE	CARROT FAMILY
Cicuta douglasii	poison hemlock
APOCYNACEAE	PERIWINKLE FAMILY
Apocynum androsaemifolium	dogbane
*Vinca major**	greater periwinkle
ASCEPIADACEAE	MILKWEED FAMILY
Asclepias speciosa	showy milkweed
ASTERACEAE	ASTER FAMILY
Achillea millefolium	yarrow
Agoseris sp.	agoseris
Ambrosia sp.	ragweed
*Anthemis cotula**	mayweed
Baccharis sp.	baccharis
*Cirsium arvense**	Canada thistle
*Cirsium vulgare**	bull thistle
Conyza canadensis	horseweed
Madia gracilis	slender tarweed
Solidago sp.	goldenrod
Symphyotrichum sp.	Aster
BORAGINACEAE	BORAGE FAMILY
*Myosotis sylvatica**	woodland forget-me-not
BRASSICACEAE	MUSTARD FAMILY
Siymbrium sp*.	tumble-mustard
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY
Sambucus sp.	elderberry
Symphoricarpus mollis	snowberry

SCIENTIFIC NAME	COMMON NAME
CLUSIACEAE	ST. JOHN'S WORT FAMILY
*Hypericum perforatum**	common St. John's wort
CORNACEAE	DOGWOOD FAMILY
Cornus sericea	red-osier dogwood
DIPSACACEAE	TEASLE FAMILY
*Dipsacus fullonum**	Fuller's teasle
FABACEAE	PEA FAMILY
*Lathyrus latifolius**	perennial pea
Lotus purshianus	balsam birds-foot trefoil
Lotus sp.	lotus
Lupinus polyphylus	large-leaved lupine
*Melilotus alba**	white sweet clover
Trifolium ciliolatum	foothill clover
Trifolium microcephalum	small head clover
Trifolium sp.	clover
FAGACEAE	BEECH FAMILY
Quercus kelloggii	black oak
GROSSULARIACEAE	CURRANT FAMILY
Ribes sp.	currant
LAMIACEAE	MINT FAMILY
*Marrubium vulgare**	horehound
*Mentha arvensis**	field mint
Stachys sp.	hedge nettle
MALVACEAE	MALLOW FAMILY
*Malva neglecta**	common mallow
Sidalcea sp.	checker mallow
ONAGRACEAE	EVENING PRIMROSE FAMILY
Epilobium ciliatum	willowherb
Oenothera sp.	evening primrose
PHRYMACEAE	MONKEY-FLOWER FAMILY
Mimulus guttatus	seep monkey flower
POLYGONACEAE	BUCKWHEAT FAMILY
Eriogonum sp.	buckwheat
Rumex sp.	dock
RANUNCULACEAE	BUTTERCUP FAMILY
*Ranunculus repens**	creeping buttercup
ROSACEAE	ROSE FAMILY
Crataegus douglasii	western black hawthorn
Potentilla sp.	cinquefoil
Rosa sp.	wood rose

SCIENTIFIC NAME	COMMON NAME
*Rubus discolor**	Himalayan blackberry
*Spiraea douglasii**	meadowsweet
RUBIACEAE	MADDER FAMILY
Galium aparine	sticky willy
SALICACEAE	WILLOW FAMILY
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
SCROPHULARIACEAE	FIGWORT FAMILY
*Verbascum thapsus**	wooly mullein
MONOCOTS	
CYPERACEAE	SEDGE FAMILY
Carex nebrascensis	Nebraska sedge
Carex sp.	sedge
Eleocharis sp.	spikerush
Scirpus sp.	bulrush
IRIDACEAE	IRIS FAMILY
Sisyrinchium sp.	blue-eyed grass
JUNCACEAE	RUSH FAMILY
Juncus sp.	rush
Juncus effusus	common rush
Juncus balticus	Baltic rush
POACEAE	GRASS FAMILY
*Agrostis stolonifera**	ceeping bentgrass
Calamagrostis stricta	reed grass
*Dactylis glomerata**	orchard grass
*Elymus repens**	quack grass
Festuca arundinacea*	tall fescue
*Glyceria declinata**	waxy mannagrass
*Holcus lanatus**	velvet grass
Lolium sp.*	rye grass
Phalaris arundinacea	reed canary grass
*Poa pratensis**	Kentucky bluegrass
*Poa annua**	annual bluegrass
*Taeniatherum caput-medusae**	medusa head
TYPHACEAE	CATTAIL FAMILY
Typha sp.	cattail

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APPENDIX B WILDLIFE OBSERVED DURING THE SURVEY

Mammals	
mule deer	*Odocoileus hemionus*
California ground squirrel	*Spermophilus beecheyi*
western gray squirrel	*Sciurus griseus*
deer mouse	*Peromyscus maniculatus*
black bear	*Ursus*
coyote	*Canis latrans*
raccoon	*Procyon lotor*
Birds	
Canada goose	*Branta canadensis*
turkey vulture	*Cathartes aura*
red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
killdeer	*Charadrius vociferous*
mourning dove	*Zenaida macroura*
great horned owl	*Bubo virginianus*
Anna's hummingbird	*Calypte anna*
northern flicker	*Colaptes auratus*
western kingbird	*Tyrannus verticalis*
Say's phoebe	*Sayornis saya*
horned lark	*Eremophila alpestris*
Steller's jay	*Cyanocitta stelleri*
common raven	*Corvus corax*
mountain chickadee	*Poecile gambeli*
red-breasted nuthatch	*Sitta Canadensis*
marsh wren	*Cistothorus palustris*
American robin	*Turdus migratorius*
orange-crowned warbler	*Orange-crowned warbler*
yellow-rumped warbler	*Dendroica coronate*
song sparrow	*Melospiza melodia*
white-crowned sparrow	*Zonotrichia leucophrys*
dark-eyed junco	*Junco hyemalis*
western meadowlark	*Sturnella neglecta*
house finch	*Carpodacus mexicanus*
house sparrow	*Passer domesticus*