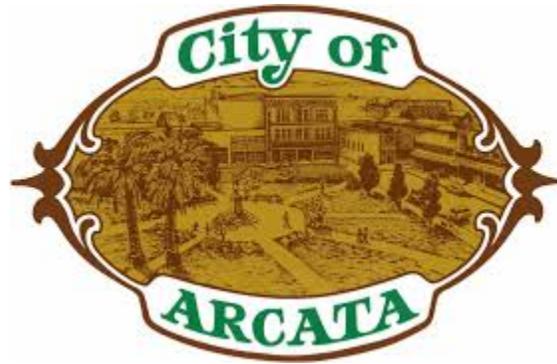


Biological Resource Assessment Report for APN 500-022-004 Arcata Ridge Trail Project

March 2020

Prepared For:

The City of Arcata



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Introduction

This Biological Resource Assessment (BRA) was prepared to provide baseline data about the type and extent of biological resources under the jurisdiction of the California Department of Fish and Wildlife (CDFW) and US Fish and Wildlife Service (USFWS) that are either currently present, or have the potential to be found, at the project location.

Project Location

The project area is a 6.17-acre parcel (APN 500-022-004) located off Fickle Hill Road in Arcata, Humboldt County, California (Figure 1). The legal location is Section 34, T6N, R1E, Humboldt Meridian, of the U.S. Geological Survey (USGS) Arcata South 7.5-minute quadrangle map. Access to the property is approximately 1.5 miles east of the intersection of Fickle Hill and Park Avenue in Arcata, and about 2 miles from Highway 101 as measured to the nearest off-ramp at 14th Street.

Project Description

The proposed project will add approximately 1,600 linear feet to the Arcata Ridge Trail by constructing a new segment of recreational trail, known as the Fickle Hill Segment. The new trail segment will connect two properties owned by the City of Arcata: the Arcata Community Forest area north of Fickle Hill Road with the Sunnybrae Forest tract to the south. The Fickle Hill Segment begins at a crossing at Fickle Hill Road and extends along the length of parcel APN 500-022-004 (Figure 2). The project involves construction, operation, and maintenance of an unpaved all-season recreational trail. The trail will be a non-motorized multi-use trail and will include hiking, horseback riding, and mountain biking.

Environmental Setting

Soils, Topography, Hydrology

The property is located in the Jacoby Creek watershed within the greater Eureka Plain watershed. Elevations are approximately 720-880 feet above sea level and slopes range from 15 to 30 percent. The Köppen (1936) climate designation for the region is Mediterranean as the area experiences warm summers and cool, mild winters, and most precipitation occurs during winter months.

Two soil types are mapped in the project areas from the Natural Resources Conservation Service Web Soil Survey (<https://websoilsurvey.sc.egov.usda.gov>): the Coppercreek-Tectah-Slidecreek complex (map ID 580) and the Coppercreek-Slidecreek-Tectah complex (581) (Figure 3). These soils are not considered hydric and consist of very deep, moderately well drained soils formed in colluvium and residuum from various rock sources including schist, sandstone, and mudstone.

The Coppercreek series consists of very deep, well drained soils that formed in colluvium and residuum from schist, sandstone, and mudstone. Coppercreek soils are on mountain slopes and broad ridgetops with slope gradients of 9 to 75 percent. Soil formation is associated with mean annual precipitation of 85 inches (2160 millimeters) and mean annual temperature of 52 degrees F (11 degrees C). This series is found at elevations between about 50-2870 feet (15 to 874 meters) with medium to high runoff and produces moderately high saturated hydraulic conductivity.

The Tectah series consists of very deep, well drained soils formed in colluvium and residuum derived from sandstone, mudstone and metasedimentary rocks. Tectah soils are found on broad ridges and mountain slopes with slopes of 0 to 50 percent. Elevational ranges are between 80-2,300 feet (24 to 702 meters) with medium to very high runoff and moderately low to low saturated hydraulic conductivity. The soil is associated with mean annual precipitation of 85 inches (2160 millimeters) and mean annual temperature of 52 degrees F (11 degrees C).

The Slidecreek series consists of very deep, well drained soils that formed in colluvium and residuum weathered from sandstone and mudstone. Slidecreek soils are found on mountain sides in highly dissected terrain and slopes of 9 to 75 percent. This series has high to very high runoff with moderately high to moderately low saturated hydraulic conductivity. They are found at broad elevational ranges of 80-2,500 feet (24-768 meters). Associated mean annual precipitation is 85 inches (2160 millimeters) and mean annual temperature is 52 degrees F (11 degrees C).

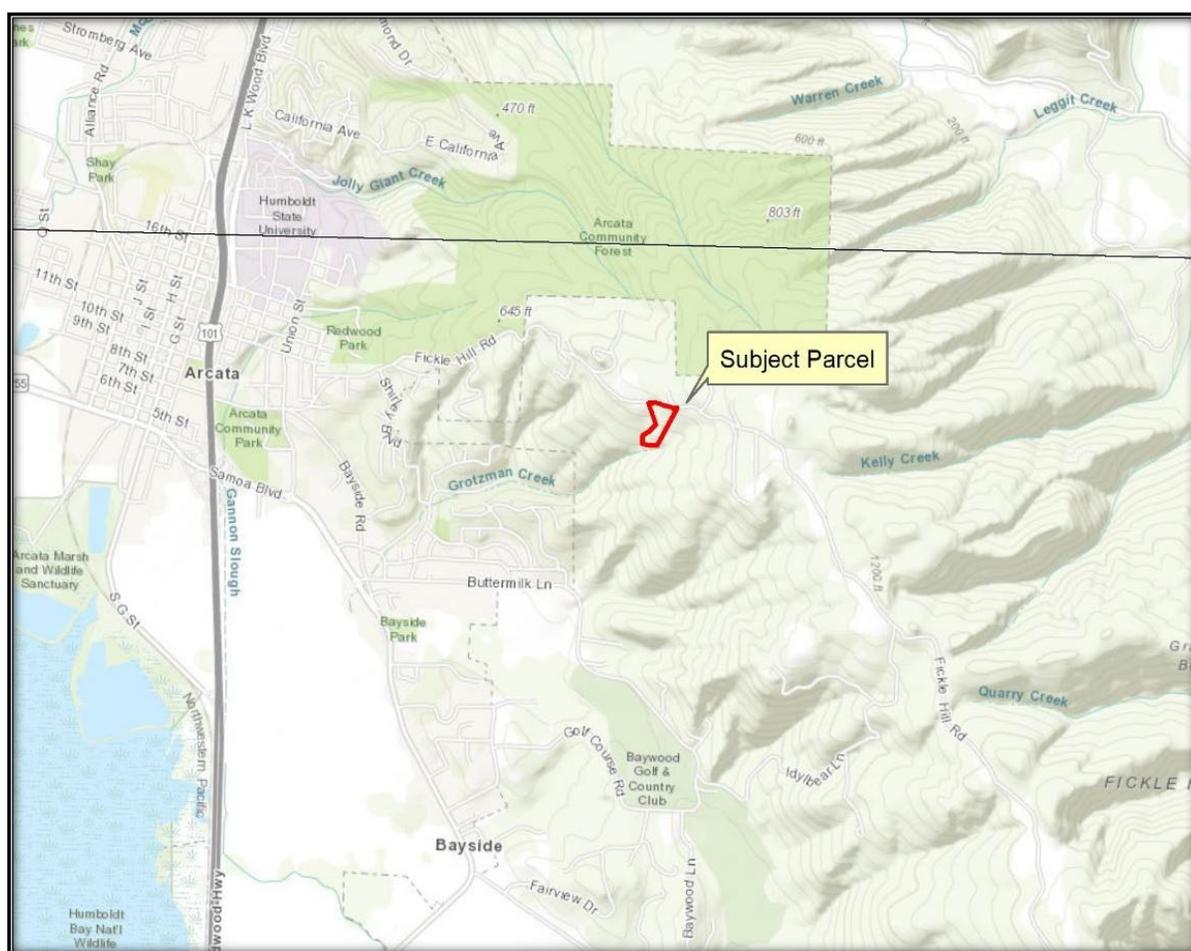


Figure 1. Map showing the project location to the east of Arcata off Fickle Hill Road. (Not to scale)

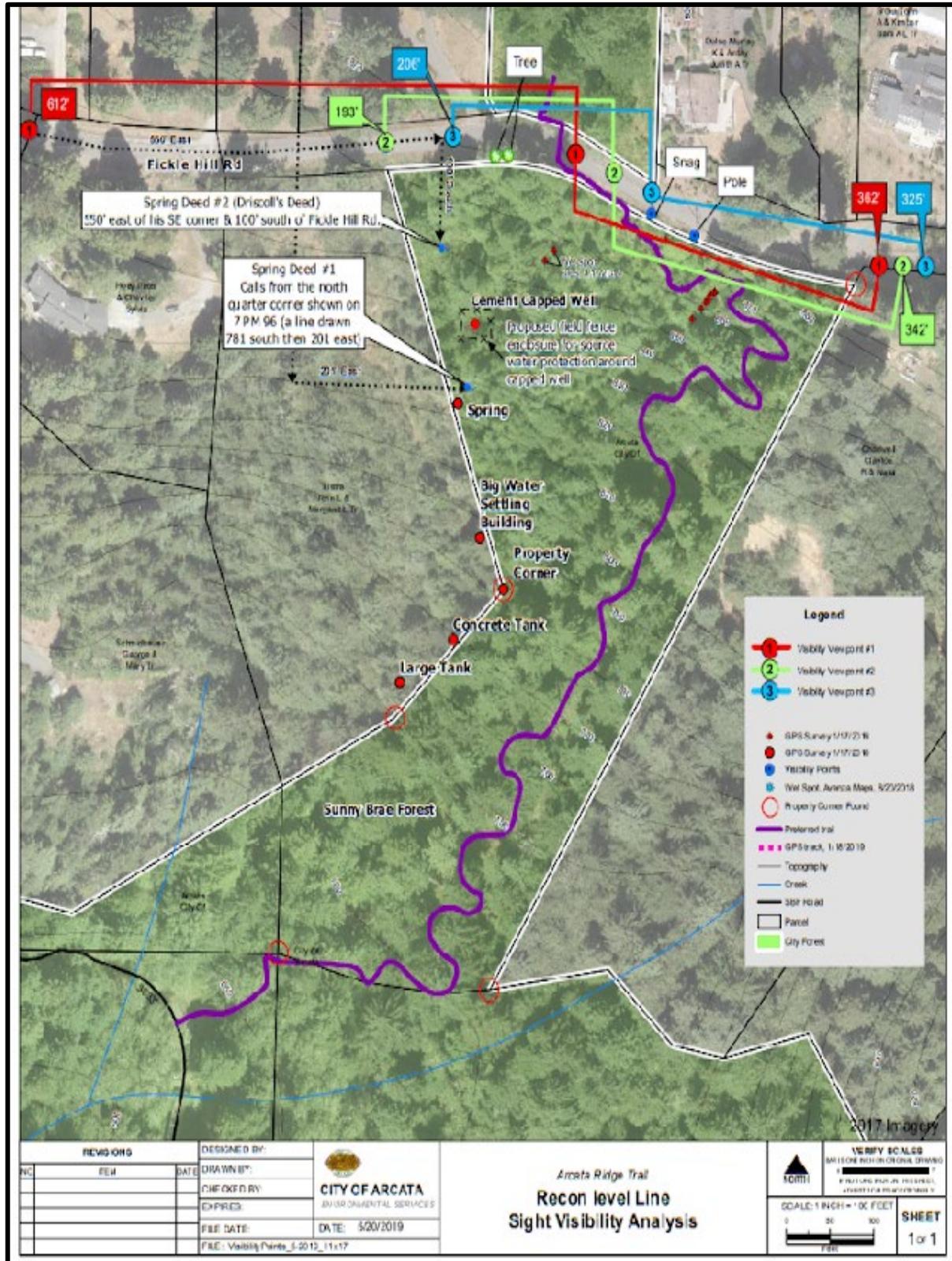


Figure 2. Map prepared by the City of Arcata showing proposed project plans.



Figure 3. Soil types mapped on the property from the National Resources Conservation Service Web Soil Survey. (Parcel boundaries are approximated.)

The project area contains various unnamed tributaries that drain to Grotzman Creek. From the Humboldt GIS Portal (<https://humboldt.gov/1357/Web-GIS>), the Streamside Management Area of Grotzman Creek lies just outside the parcel approximately 150 feet southwest of the project area (Figure 4). Although the National Wetland Inventory (NWI) (<https://www.fws.gov/wetlands>) and Humboldt GIS Portal databases did not show wetlands mapped on the property, a concurrent Wetland Delineation study by TransTerra identified 0.23 acres of jurisdictional wetlands in the project area.

From the Humboldt GIS Portal, the project area is mapped as possessing moderate to high levels of instability. The area has a National Earthquake Hazards Reduction Program (NEHRP) soil geological unit rating of C, meaning the soils will propagate high shear-wave velocities during earthquakes. The project area is located on the pressure ridge of the Fickle Hill fault, which is part of the Mad River Fault Zone (Hart, 1999). The area is not prone to liquefaction or lateral spreading, but would be prone to landslides. The area is listed as having a high fire hazard severity, but no fires have been documented in this area within the last two decades.

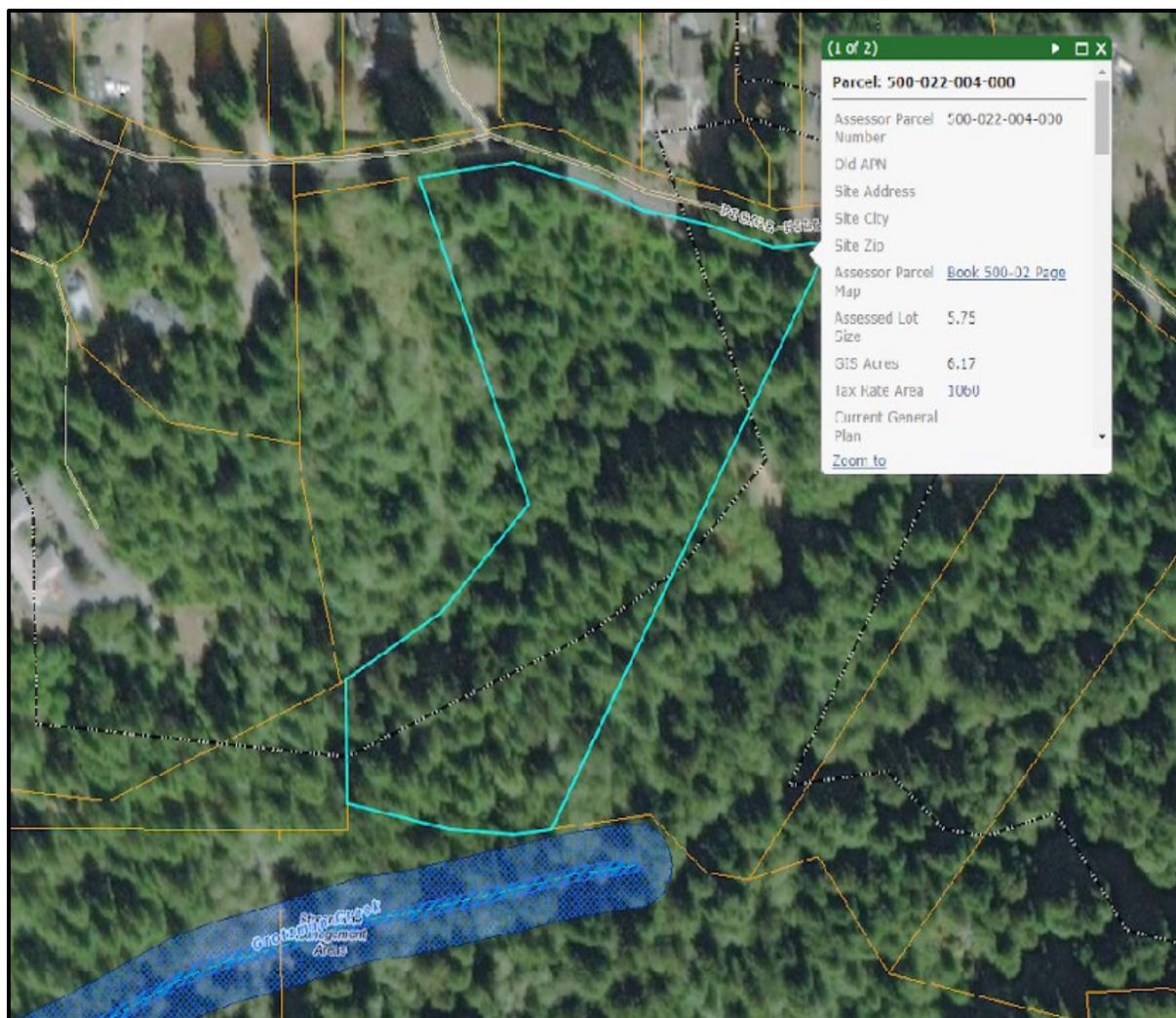


Figure 1. Streamside Management Areas (SMA) and National Wetland Inventory (NWI) wetlands mapped in and adjacent to the project site (from the Humboldt GIS Web Portal). (Note: the locations of streambeds may be approximate in these GIS layers).

Regulatory Setting

Federal Regulatory Requirements

Federal Endangered Species Act

Section 9 of the federal Endangered Species Act of 1973, as amended (ESA), prohibits acts of disturbance that result in the "take" of threatened or endangered species. As defined by the ESA, "endangered" refers to any species that is in danger of extinction throughout all or a significant portion of its current range. The term "threatened" is applied to any species likely to become endangered within the foreseeable future throughout all or a significant portion of its current range. Take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Sections 7 and 10 of the ESA provide a method for permitting an action that may result in "incidental take" of a federally listed species. Incidental take refers to take of a listed species that is incidental to, but not the primary purpose of, an otherwise lawful activity. Incidental take is permitted

under Section 7 for projects on federal land or involving a federal action, while Section 10 provides a method for permitting incidental take resulting from state or private action.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a federal fisheries management plan. The MSA requires federal agencies to consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agencies that may adversely affect EFH (MSA section 305[b][2]). A component of this consultation process is the preparation and submittal of an Essential Fish Habitat Assessment (EFHA).

The EFH mandate applies to all species managed under a fisheries management plan. For the Pacific coast (excluding Alaska), there are three fisheries management plans covering groundfish, coastal pelagic species, and Pacific salmon.

Federal Clean Water Act Section 404

The objective of the Clean Water Act (CWA, 1977, as amended) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In 1987, the U.S. Army Corps of Engineers (Corps) published a manual standardizing the manner in which wetlands were to be delineated nationwide. An updated manual focusing on western states in the U.S. was published in 2010 (USACE, 2010). To determine whether areas that appear to be wetlands are subject to Corps jurisdiction (i.e., are "jurisdictional" wetlands), a wetlands delineation must be performed that maps the areas meeting the three-parameter wetland definition (i.e., presence of dominant hydrophytic vegetation, hydric soils, and wetland hydrology) and the resulting map of the wetland boundaries verified in writing by the Corps (compared to the one-parameter wetland definition under the California Coastal Act Section 2.2.6 below). Wetlands generally include riparian, swamps, marshes, bogs, and similar areas.

In addition to verifying wetlands for potential jurisdiction, the Corps is responsible for the issuance of permits for projects that propose the filling of wetlands. Any permanent loss of a jurisdictional wetland as a result of project construction activities is considered a significant impact. Permits under Section 404 of the CWA, as amended, are required for the placement of dredged or fill materials into all waters of the United States, including wetlands and "other waters." Projects are permitted under either individual or general (e.g., nationwide) permits.

Federal Clean Water Act Section 401

The California Regional Water Quality Control Board (RWQCB), North Coast Region, is responsible for enforcing water quality criteria and protecting water resources in the project area. The RWQCB is responsible for controlling discharges to surface waters of the state by issuing waste discharge requirements.

Section 401 of the CWA requires that a project proponent obtain a water quality certification or a waiver for projects requiring a federal permit to allow for discharges of dredged or fill material (i.e., CWA Section 404 permits).

Federal Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21).

Executive Order 11990 (Wetlands)

Executive Order 11990 is an overall wetlands policy for all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects. It requires federal agencies to follow avoidance, mitigation, and preservation procedures with public input before proposing new construction in wetlands. This project will not be able to completely avoid impacts to wetlands and a Wetlands Only Practicable Alternative Finding is provided in Section 4.1.3.1.

Executive Order 13112 (Invasive Species)

Executive Order 13112 directs federal agencies to use relevant programs and authorities to:

prevent the introduction of invasive species; detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; monitor invasive species populations accurately and reliably; provide for restoration of native species and habitat conditions in ecosystems that have been invaded; conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; promote public education on invasive species and the means to address them; and not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, in accordance with guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Executive Order 11988 (Floodplain Management)

Executive Order 11988 requires federal agencies to avoid the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and avoid direct and indirect support of floodplain development.

California Regulatory Requirements

Department of Fish and Game Code Section 2081, California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA), a permit from CDFW is required for projects that could result in the “take” of a plant or animal species that is listed by the state as threatened or endangered. Under CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species, but the CESA definition of take does not include “harm” or “harass,” like the ESA definition does. As a result, the threshold for take is higher under CESA than under ESA. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit.

California Native Plant Protection Act (NPPA) of 1977

The NPPA (Fish and Game Code, Sections 1900-1913) prohibits importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. The CESA defers to the NPPA, which ensures that state-listed plant species are protected when state agencies are involved, and projects are subject to CEQA. In this case, plants listed as rare under the NPPA are not protected under CESA, but rather may receive protection in response to potentially significant impacts, in accordance with CEQA

California Fish and Game Code Sections 3503 and 3503.5—Protection of Bird Nests

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 of the California Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders *Falconiformes* and *Strigiformes*), including their nests or eggs. Typical violations include destruction of active nests because of tree removal or disturbance caused by project construction or other activities that cause the adults to abandon the nest, resulting in loss of eggs and/or young.

Department of Fish and Game Code Section 3513, Migratory Birds

Migratory birds are also protected in California. The California Fish and Game Code Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA. Under Code Section 3513 the CDFW may consider impacts similar to those described above under the MBTA a significant impact. Implementation of the measures identified in Section 4.3.12.3 will ensure compliance with Fish and Game Code Section 3513.

Department of Fish and Game Code, “Fully Protected” Species

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code describe the take prohibitions for fully protected birds, mammals, reptiles and amphibians, and fish. Species listed under these statutes may not be taken or possessed at any time and no incidental take permits can be issued for these species except for scientific research purposes or for relocation to protect livestock.

Department of Fish and Game Code Section 1600, Lake or Streambed Alteration

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by CDFW under Section 1602 of the California Fish and Game Code. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do the following without first notifying CDFW:

- substantially divert or obstruct the natural flow of, or substantially change or use any material from a bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and

wildlife. A CDFW streambed alteration agreement must be obtained for any action that would result in an impact on a river, stream, or lake.

Required Permits

No discretionary permits are required for the ART-FHS project. The project is located outside of the Coastal Zone and therefore does not require a Coastal Development Permit from the California Coastal Commission (CCC) or City of Arcata (City). No state or federally listed species are known to exist within the project area or will be impacted by the project. The project does not involve dredging, filling, or discharging to waters of the US or Waters of the State and is therefore not subject to a Section 404 or 401 Water Quality Certification. It does not alter the stream bed, bank, or channel and is therefore not subject to a Lake and Streambed Alteration Agreement.

Methods

Prior to a field survey, the California Natural Diversity Database (CNDDDB) RareFind, Spotted Owl, and California Native Plant Society (CNPS) databases were queried to create lists of special status plant or animal species with the potential to be found in the project area based on nearby, previously recorded occurrences and suitable habitat on-site. The databases were searched using a 9-quad query that includes the USGS 7.5-minute quadrangle in which the project site is located plus the surrounding 8 quadrangles. An additional query focused on previously recorded occurrences of special status plant and animal species within a 1-mile radius of the project area.

On July 19, 2019, TransTerra staff environmental scientists Margaux Karp and Megan Nibbelink completed a preliminary investigation to evaluate biological resources and identify areas of potential wetlands in the project area. The wetland delineation was conducted by TransTerra Consulting Biologists Tamara Camper and Margaux Karp on March 02, 2020. Survey methods followed CDFW's (2018) *Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*.

The field survey included an assessment of the various habitats present in the project area, to include any possible sensitive habitat types or habitats associated with rare plant species; an inventory of plant species; and an inventory of wildlife signs including tracks, scat, ground dwellings, and tree habitats (e.g., cavities, nests, scrapes, or accumulated vegetation). All observations on habitats, including watercourses or wetland areas, and evidence for pertinent floral and faunal species were recorded on site, to include photo documentation. The delineation followed the guidelines of the USACE Regional Supplement to the Corps of the Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). A third site visit was conducted by Tamara Camper and Margaux Karp on March 11, 2020 to finalize the wetlands and waters boundaries.

Avenza was used for GPS points and tracking, and ArcMap was used to create the maps of the wetland boundaries and buffers. These new maps were compared to previous maps generated by City of Arcata staff and Timberland Resource Consultants, as well as with maps from historical reports for a timber harvest plan.

Results and Discussion

Vegetation

The primary natural vegetation community (Holland, 1986) of the project area is North Coast Coniferous Forest. The dominant tree canopy is *Sequoia sempervirens* (Coast redwood) with scattered *Picea sitchensis* (Sitka spruce), *Abies grandis* (Grand fir), *Acer macrophyllum* (Bigleaf maple), *Alnus rubra* (Red alder), *Notholithocarpus densiflorus* (Tanoak), and *Pseudotsuga menziesii* (Douglas fir). The understory is fairly open with patches of shrubs including *Vaccinium ovatum* (Evergreen huckleberry), *V. ovatum* (Red huckleberry), *Gaultheria shallon* (Salal), *Rubus spectabilis* (Salmonberry), *Athyrium filix-femina* (Lady fern), *Polystichum munitum* (Sword fern). The herb layer in the project area is mostly sparse and dominated by *Oxalis oregana* (Redwood sorrel), *Iris douglasiana* (Douglas iris), *Lathyrus sp.* (Peavine), *Trillium ovatum* (Trillium), *Asarum caudatum* (Wild ginger) and various grasses. Denser vegetation including *Cortaderia jubata* (Pampas grass), *Cotoneaster sp.* (Cotoneaster), and *Hedera helix* (English ivy) occurs where the ground has been previously been disturbed and along the roadsides. See Table 3 for a list of plant species observed during the field survey.

Wetlands areas

A total of 0.23 acres meeting the criteria for Palustrine Forested Wetland (Cowardin et al., 1979) was identified on the property through a jurisdictional wetland delineation completed by TransTerra Consulting in March 2020. It is likely that the wetland is hydrologically connected to the unnamed tributaries flowing into Grotzman Creek. The wetland may have previously been associated with the headwaters of a Class III drainage which was subsequently cut or filled during past logging operations. Drainage in the wetland area is restricted by an impervious clay layer approximately 16-20" below the surface. A small trail currently bisects the area. As currently designed, the trail alignment is approximately 23.5 feet from the wetland area and 14.5 feet from the observable channel of the watercourse.

Results of Database Searches

Results for the 9-quad database searches for historical or existing occurrences of special status animals and plant species are shown in Tables 1 (CNDDDB) and Table 2 (CNPS database). The results for Northern Spotted Owl are described separately below.

The metrics for determining the potential for species to be found in the project, as listed in Tables 1 and 2, are defined as:

None: there is no appropriate habitat for the species in the project area.

Low: there are no previous records of occurrence in the 9-quad area, and minimal or marginal suitable habitat in the project area.

Moderate: there are previously recorded occurrences in the 9-quad area, and there is appropriate habitat in the project area.

High: there are numerous previously recorded observations in the 9-quad area, including observations near the project area, and the project area includes highly available and appropriate habitat.

Present: species were observed during the on-site field survey.

Results of the CNPS inventory query (Table 1) showed the regional occurrences of special status plants in the 9-quad search area. The results for the CNDDDB query (Table 2) showed a total of 48 previously recorded observations of special-status animals in the search area. An additional CNDDDB query focused on special status species previously recorded within a 1-mile radius of the project area (Figure 5), and their potential to be found in the project area based on presence of suitable habitat, as described below. These results show a total of 3 previously recorded observations of special status plants and 13 observations of special status animal species within a 1-mile radius of the project area. (Figure 5).

Special Status Plant Species Previously Recorded Within 1 Mile of the Project Area

Western lily (*Lilium occidentale*) is both federally and California state listed as endangered and rated a 1B.1 by CNPS (Table 1). It occupies coastal scrub, freshwater marsh, bogs and fens, coastal bluff scrub, coastal prairie, north coast coniferous forest, as well as, marshes and swamps. This species can be found in well-drained, old beach washes overlain with wind-blown alluvium and organic topsoil. It is usually near the margins of Sitka spruce at elevations of about 10-400 feet (3-110 meters). There is a moderate potential for this species to occur in the project area due to the presence of suitable habitat.

Running pine (*Lycopodium clavatum*) is rated by the CNPS as a 4.1 denoting it a watchlist species (Table 1). It occupies lower montane coniferous forest, north coast coniferous forest, as well as, marshes and swamps. It is found in forest understory, edges, openings, and roadsides. This species occupies elevations of about 150-4,000 feet (45-1225 meters) and prefers mesic sites with partial shade and light. There is high for this species to occur in the project area due to the presence of suitable habitat. The species was not observed during the biological studies, however City of Arcata staff reported that it had been observed historically in the area.

Minute pocket moss (*Fissidens pauperculus*) has a CNPS ranking of 1B.2, meaning they are rare throughout their range. It occupies north coast coniferous forest growing on damp soil along the coast. It can be found in dry streambeds or on streambanks across elevations of about 30-3,500 feet (10-1024 meters). There is a high potential for this species to occur in the project area due to the presence of coastal forest and damp soils. The species has not been observed in the project area.

Special Status Animal Species Previously Recorded Within 1 Mile of the Project Area

Humboldt mountain beaver (*Aplodontia rufa humboldtiana*) is found in the coast range in southwestern Del Norte County and northwestern Humboldt County. They have a variety of coastal habitats, including coastal scrub, riparian forests, typically with open canopy and thickly vegetated understory. There is a moderate potential for this species to occur in the project area due to the presence of coastal forested areas.

Sonoma tree vole (*Arborimus pomo*) are found only in humid coastal old-growth forests of northern California and Oregon. They primarily feed on the outer parts of conifer needles. This species has an affinity to nest and live in Douglas fir, but can also be found in Grand fir and Sitka spruce. There is a low potential for this species to occur in the project area due to the presence of suitable habitat including North coast coniferous forest and Douglas fir. The forest is not considered old-growth or late seral.

Obscure bumble bee (*Bombus caliginosus*) occupies coastal areas from Santa Barbara county to north to Washington state. Their food plant genera include *Baccharis*, *Cirsium*, *Lupinus*, *Lotus*, *Grindelia* and

Phacelia. There is a high potential for this species to occur in the location of the project area being within the species range.

Western pond turtle (*Emys (formerly Actinemys) marmorata*) was observed in the Dinsmore quadrangle and the element is mapped in a non-specific fashion into the Larabee Valley quadrangle. Threats include harvesting adults and eggs, habitat loss, invasive red-eared slider and painted turtles as well as American bullfrogs. There is a moderate potential for this species to occur in the project area due to the larger stream areas present adjacent to parcel, that lack grassy open fields or sandy banks.

Pacific lamprey (*Entosphenus tridentatus*) are found in Pacific Coast streams north of San Luis Obispo County, however they make regular runs into the Santa Clara River. The size of these runs is declining. They require swift-current gravel-bottomed areas for spawning with water temperatures between 12-18 C. The ammocoetes rely on soft sand or mud. There is a moderate potential for this species to occur in the project area due to the stream present adjacent to parcel that is likely too small for the species.

North American porcupine (*Erethizon dorsatum*) occupy a wide variety of coniferous and mixed woodland habitat. They are found in these forested habitats in the Sierra Nevada, Cascade, and Coast ranges, with scattered observations from forested areas in the Transverse Ranges. There is a moderate potential for this species to occur in the project area due to the presence of suitable habitat including North coast coniferous forest.

Coast cutthroat trout (*Oncorhynchus clarkii clarkii*) are found in small, low gradient coastal streams and estuaries from the Eel River to the Oregon border. This species needs shaded streams with water temperatures less than 18C, and small gravel present for spawning. There is a low potential for this species to occur in the project area due to the lack of suitable habitat.

Coho salmon - southern Oregon / northern California ESU (*Oncorhynchus kisutch* pop. 2) is both federally and California state listed as an endangered species. The federal listing refers to populations between Cape Blanco, Oregon and Punta Gorda, Humboldt County, California. The state listing refers to populations between the Oregon border and Punta Gorda, California. There is a low potential for this species to occur in the project area due to the lack of suitable habitat.

Osprey (*Pandion haliaetus*) prefer ocean shore, bays, freshwater lakes, and larger streams. They build large nests in tree-tops within 15 miles of a good fish-producing body of water. There is a moderate potential for this species to occur in the project area due to the proximity of fish-producing bodies of water with trees for nesting.

Northern red-legged frog (*Rana aurora*) occupies humid forests, woodlands, grasslands, and streamsides in northwestern California, usually near dense riparian cover. It is generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season. There is a moderate potential for this species to occur in the project area due to the presence of suitable habitat such as damp forests and watercourses.

Northern yellow-legged frog (*Rana boylei*) is California state listed as a threatened candidate species. It occupies partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. This species needs at least some cobble-sized substrate for egg-laying. A least 15 weeks is required to attain

metamorphosis. There is a moderate potential for this species to occur in the project area due to the presence of suitable habitat such as damp forests and watercourses.

Southern torrent salamander (*Rhyacotriton variegatus*) is found in coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats, particularly old growth forest. It prefers occupying cold, well-shaded, permanent streams and seepages, within splash zones, or on moss-covered rocks within trickling water. There is moderate potential for this species to occur in the project area due to the presence of suitable habitat.

Western bumble bee (*Bombus occidentalis*) while once common & widespread, the species has declined precipitously from central CA to southern B.C., perhaps from disease. There is a moderate potential for this species to occur in the location of the project area being within the species range.

Northern Spotted Owl

In 2016, the California Fish and Game Commission approved the listing of the Northern Spotted Owl (*Strix occidentalis caurina*) as Threatened under the California Endangered Species Act. It has been listed as Threatened under the federal Endangered Species Act since 1990. Owl pairs typically nest in broken-top trees, tree cavities, debris accumulations or nests built by other wildlife (abandoned raptor nests or rodent nests). Females generally lay one to two eggs in spring and chicks fledge and leave nests in early fall. Generally older forests with dense canopy closure are preferred for nesting and roosting, however younger stands with similar structure are also utilized. Structural components of high-quality stands include multiple canopy layers, higher species density, larger overstory trees, live trees with deformities and woody debris in the understory. Prey species include flying squirrels, woodrats, rabbits, voles, shrews, gophers, smaller birds, bats and insects. Owls are threatened by Barred Owls, habitat loss, climate change and pathogens.¹

The CDFW Northern Spotted Owl (NSO) database listed observations of NSO within one mile of the project area (Figure 6). On site, suitable habitat is present for nesting NSO because of the stand age and structure. The NSO activity centers HUM0228, HUM0586, HUM0318, and HUM0671 are all located just outside the 1-mile buffer of the project, and from the NSO, both positive and negative observations from these activity centers have been made from within the 1-mile buffer for the project. The NSO database shows no critical habitat for NSO within five miles of the project area.

Results of the Field Survey

A field survey on the project parcel was completed on July 19, 2019 and March 2 and 11, 2020. The survey focused on a search for evidence of suitable habitat or actual specimens of rare plants or special status animals. A census of vegetation types observed on the parcel was also completed and is provided in Table 3.

The results of the field survey show that is potential habitat for various rare species, however rare or sensitive species were not observed during these visits or during previous studies conducted by Timberland Resource Consultants, the City of Arcata or other groups.

¹ Northern Spotted Owls in California. California Department of Fish and Wildlife (Accessed via <https://www.wildlife.ca.gov/Conservation/Birds/Northern-Spotted-Owl>)

Potential Direct and Indirect Impacts

The potential direct, indirect, and cumulative effects of the recreational trail development and use include removal of vegetation and canopy cover, disturbance and compaction of soil, alteration of hydrologic regime, sedimentation and erosion, increase in invasive species, and noise, solid waste pollution, visual impacts, and air quality impacts.

Clearing of vegetation will be necessary to introduce a recreational trail within the project parcel. The site was well maintained, and solid waste or other hazardous materials were not observed. Evidence of past vegetation clearing, and logging was evident throughout the property. Tools creating noise will likely be utilized during the installation of the trail; However, these implementations will be short-term, only in use through the span of the installation. No tractors or heavy equipment operation is proposed. The recreational trail will likely cause non-significant increases in ambient sound while in use due to the people and domestic animals utilizing the trails. Upkeep of the trail will also cause short-term increases in noise levels with use of power tools and other items. Installment of the recreational trail will help isolate the impacts of bikers, runners, and others to a smaller area.

The recreational trail will not be paved which will help to maintain hydrological drainage but will slightly increase runoff and erosion to adjacent soils. The new trail will primarily follow an old skid trail which will reduce the cumulative disturbance of installment of the trail.

Most impacts would be short-term and would not result in significant impacts to the environment if best management practices are adhered to and sensitive species are not impacted.

Recommendations

Follow all recommendations outlined by existing agency policies for minimizing impacts to natural resources. Impacts from light, noise and chemicals can be addressed in the operations plan and best management practices can be employed to minimize impacts. Additional disturbance, clearing, and trail development would likely modify existing groundwater, and surface water patterns and could impact water quality and/or hydrophytic species. While much of the proposed trail will follow what appeared to be an old skid road with previous vegetative damage, vegetation removal shall be minimized whenever possible. Natural pathways for the introduction and dispersal of pests include wind, water or animals. Areas disturbed by both natural and human causes (roadsides, trails, log landings, energy transmission rights-of-way and construction zones) are particularly susceptible to invasion and should be targeted for prevention efforts (monitoring, equipment washing), as these are likely sources of seed or propagules for the translocation of invasive species. All temporary flagging, fencing, trash, and debris will be removed from the project site upon completion of project activities. To avoid take of habitat for nesting birds and/or raptors a qualified person will identify any valuable habitat on-site for avoidance. Any proposed tree removal will be assessed for possible take or disturbance of species by a qualified biologist within the general nesting period between February 1st to August 1st.

Preventing invasive species from becoming established can be more effective than restoring an injured ecosystem. Controlling established invasive species is difficult, and complete eradication is extremely difficult. Prevention can avoid the potentially permanent species losses that may result from a pest invasion. Based on the project description and project standard methods, the project is not likely to adversely affect listed endangered threatened or sensitive species or their habitat.

Please contact me with any comments or concerns regarding this memorandum or future work required for your project. I can be reached at tami@trans-terra.com or (707) 840-4772. I have included my project experience as an attachment to this memorandum as it is often requested by agency personnel reviewing work of this nature. (Appendix A)

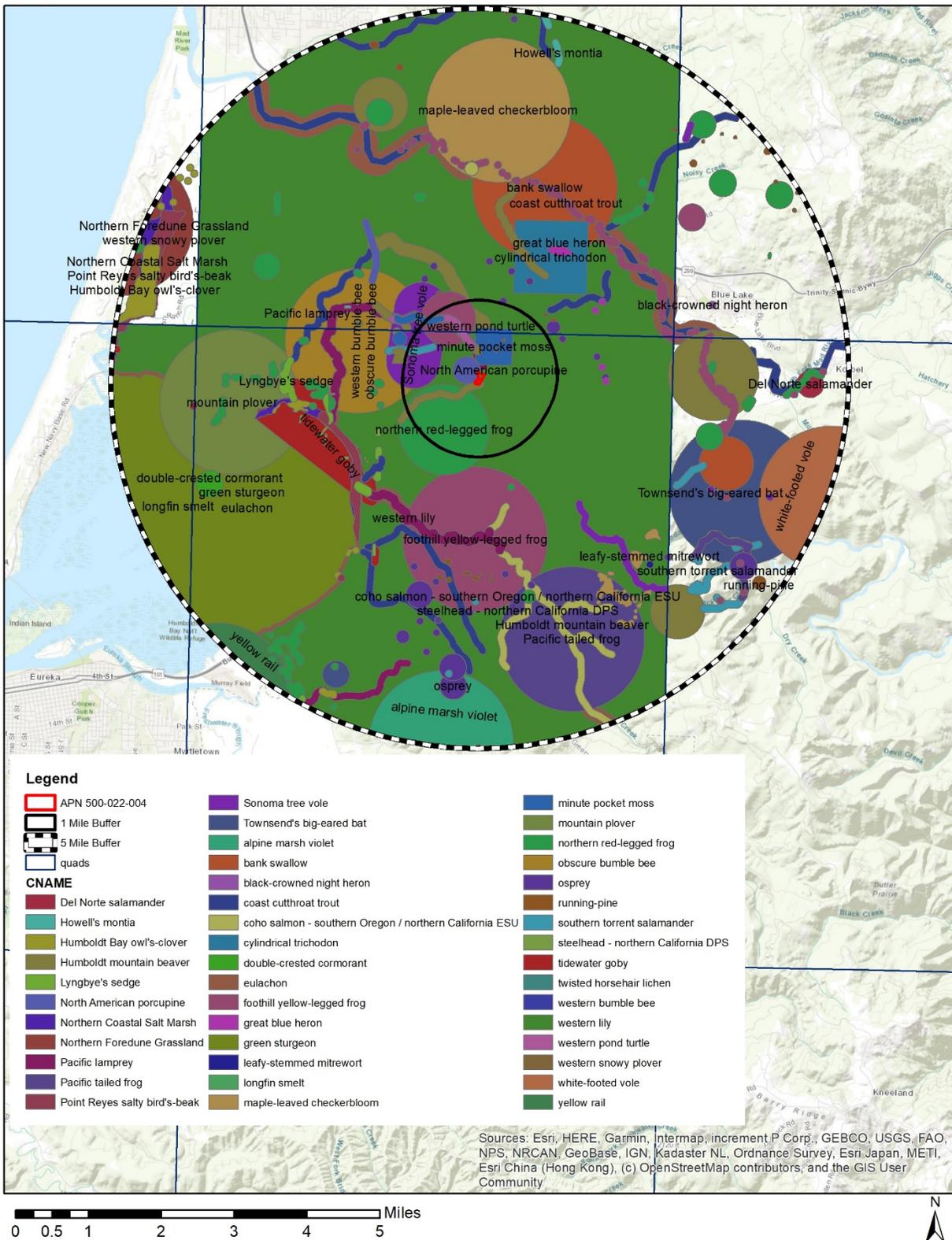


Figure 2. CNDDDB search results of observed rare plant and sensitive animal occurrences within five miles of property.

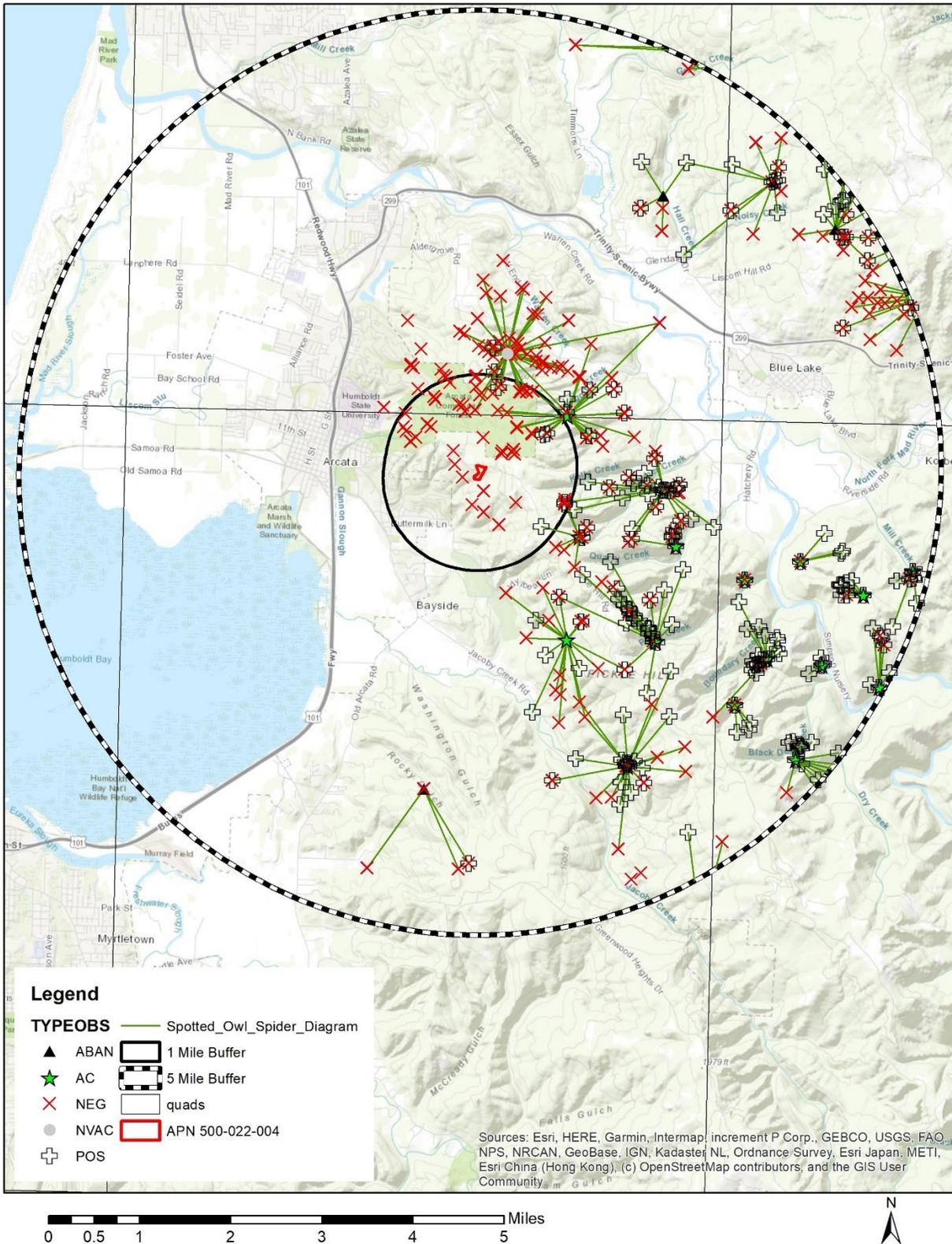


Figure 3. Northern Spotted Owls database entries within 1 mile and 5 miles of the project area.

Table 1. Plant species identified by a CNPS nine-quad database search centered on the USGS Arcata South 7.5-minute quadrangle. CRPR: California Rare Plant Ranking (<https://www.cnps.org/>).

Scientific Name	Common Name	Lifeform	CRPR	Habitat	Potential for Occurrence in the Project Area
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	perennial herb	1B.1	Coastal dunes	None - no Coastal dunes on-site
<i>Angelica lucida</i>	sea-watch	perennial herb	4.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Marshes and swamps (coastal salt)	None - no Coastal dunes, scrub, or bluff scrub on-site
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	perennial herb	1B.2	Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt, streamsides)	None - no Coastal dunes/scrub or Marshes and swamp habitat on-site
<i>Astragalus rattanii</i> var. <i>rattanii</i>	Rattan's milk-vetch	perennial herb	4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest	Low - habitat type not present on-site
<i>Astragalus umbraticus</i>	Bald Mountain milk-vetch	perennial herb	2B.3	Cismontane woodland, Lower montane coniferous forest	Low - habitat type not present on-site
<i>Bryoria pseudocapillaris</i>	false gray horsehair lichen	fruticose lichen (epiphytic)	3.2	Coastal dunes (SLO Co.), North Coast coniferous forest (immediate coast)	Low - North coast coniferous forest present but not immediate coast
<i>Bryoria spiralifera</i>	twisted horsehair lichen	fruticose lichen (epiphytic)	1B.1	North Coast coniferous forest (immediate coast)	Low - North coast coniferous forest present but not immediate coast
<i>Cardamine angulata</i>	seaside bittercress	perennial herb	2B.2	Lower montane coniferous forest, North Coast coniferous forest	Moderate - North coniferous forest present on-site
<i>Carex arcta</i>	northern clustered sedge	perennial herb	2B.2	Bogs and fens, North Coast coniferous forest (mesic)	Moderate - North coniferous forest present on-site
<i>Carex leptalea</i>	bristle-stalked sedge	perennial rhizomatous herb	2B.2	Bogs and fens, Meadows and seeps (mesic), Marshes and swamps	Low - habitat type not present on-site but some seepy areas
<i>Carex lyngbyei</i>	Lyngbye's sedge	perennial rhizomatous herb	2B.2	Marshes and swamps (brackish or freshwater)	Low - habitat type not present on-site
<i>Carex praticola</i>	northern meadow sedge	perennial herb	2B.2	Meadows and seeps (mesic)	Low - habitat type not present on-site but some seepy areas
<i>Castilleja ambigua</i> var. <i>humboldtiensis</i>	Humboldt Bay owl's-clover	annual herb (hemiparasitic)	1B.2	Marshes and swamps (coastal salt)	None - habitat type not present on-site
<i>Castilleja litoralis</i>	Oregon coast paintbrush	perennial herb (hemiparasitic)	2B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub	None - habitat type not present on-site
<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Point Reyes bird's-beak	annual herb (hemiparasitic)	1B.2	Marshes and swamps (coastal salt)	None - habitat type not present on-site

Scientific Name	Common Name	Lifeform	CRPR	Habitat	Potential for Occurrence in the Project Area
<i>Chrysosplenium glechomifolium</i>	Pacific golden saxifrage	perennial herb	4.3	North Coast coniferous forest, Riparian forest	Moderate - North coniferous forest present on-site
<i>Collinsia corymbosa</i>	round-headed Chinese-houses	annual herb	1B.2	Coastal dunes	None - habitat type not present on-site
<i>Coptis laciniata</i>	Oregon goldthread	perennial rhizomatous herb	4.2	Meadows and seeps, North Coast coniferous forest (streambanks)	High - North coast coniferous forest present on-site with streambanks
<i>Epilobium oregonum</i>	Oregon fireweed	perennial herb	1B.2	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	Low - habitat type not present on-site while some seepy areas are present on-site
<i>Epilobium septentrionale</i>	Humboldt County fuchsia	perennial herb	4.3	Broadleafed upland forest, North Coast coniferous forest	Moderate - North coast coniferous forest present on-site
<i>Erysimum menziesii</i>	Menzies? wallflower	perennial herb	1B.1	Coastal dunes	None - habitat type not present on-site
<i>Erythronium oregonum</i>	giant fawn lily	perennial bulbiferous herb	2B.2	Cismontane woodland, Meadows and seeps	Low - habitat type not present on-site while some seepy areas are present on-site
<i>Erythronium revolutum</i>	coast fawn lily	perennial bulbiferous herb	2B.2	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest	High - North coast coniferous forest present on-site
<i>Fissidens pauperculus</i>	minute pocket moss	moss	1B.2	North Coast coniferous forest (damp coastal soil)	High - North coast coniferous forest present on-site and observations in the database have been made within one mile of the parcel
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	annual herb	1B.2	Coastal bluff scrub, Chaparral (openings), Coastal prairie, Valley and foothill grassland	None - habitat type not present on-site
<i>Gilia millefoliata</i>	dark-eyed gilia	annual herb	1B.2	Coastal dunes	None - habitat type not present on-site
<i>Glehnia littoralis</i> ssp. <i>leiocarpa</i>	American glehnia	perennial herb	4.2	Coastal dunes	None - habitat type not present on-site
<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	annual herb	1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie	None - habitat type not present on-site
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	perennial herb	1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub	None - habitat type not present on-site
<i>Lathyrus japonicus</i>	seaside pea	perennial rhizomatous herb	2B.1	Coastal dunes	None - habitat type not present on-site

Scientific Name	Common Name	Lifeform	CRPR	Habitat	Potential for Occurrence in the Project Area
<i>Lathyrus palustris</i>	marsh pea	perennial herb	2B.2	Bogs and fens, Coastal prairie, Coastal scrub, Lower montane coniferous forest, Marshes and swamps, North Coast coniferous forest	Moderate - North coast coniferous forest habitat present on-site
<i>Layia carnosa</i>	beach layia	annual herb	1B.1	Coastal dunes, Coastal scrub (sandy)	None - habitat type not present on-site
<i>Lilium kelloggii</i>	Kellogg's lily	perennial bulbiferous herb	4.3	Lower montane coniferous forest, North Coast coniferous forest	Moderate - North coast coniferous forest habitat present on-site
<i>Lilium occidentale</i>	western lily	perennial bulbiferous herb	1B.1	Bogs and fens, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps (freshwater), North Coast coniferous forest (openings)	Moderate - North coast coniferous forest habitat present on-site with observations recorded in the databases within one mile of the parcel
<i>Listera cordata</i>	heart-leaved twayblade	perennial herb	4.2	Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest	Moderate - North coast coniferous forest habitat present on-site
<i>Lycopodium clavatum</i>	running-pine	perennial rhizomatous herb	4.1	Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic)	High North coast coniferous forest habitat present on-site with observations recorded in the databases within one mile of the parcel. Observed by City of Arcata staff historically in project vicinity.
<i>Mitellastrum caulescens</i>	leafy-stemmed mitrewort	perennial rhizomatous herb	4.2	Broadleafed upland forest, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest	Moderate - North coast coniferous forest habitat present on-site
<i>Monotropa uniflora</i>	ghost-pipe	perennial herb (achlorophyllous)	2B.2	Broadleafed upland forest, North Coast coniferous forest	Moderate - North coast coniferous forest habitat present on-site
<i>Montia howellii</i>	Howell's montia	annual herb	2B.2	Meadows and seeps, North Coast coniferous forest, Vernal pools	Moderate - North coast coniferous forest habitat present on-site
<i>Nocca fendleri</i> ssp. <i>californica</i>	Kneeland Prairie pennycress	perennial herb	1B.1	Coastal prairie (serpentinite)	None - habitat type not present on-site

Scientific Name	Common Name	Lifeform	CRPR	Habitat	Potential for Occurrence in the Project Area
<i>Oenothera wolffii</i>	Wolf's evening-primrose	perennial herb	1B.1	Coastal bluff scrub, Coastal dunes, Coastal prairie, Lower montane coniferous forest	Low- habitat type not present on-site
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	perennial rhizomatous herb	2B.2	Coastal scrub, North Coast coniferous forest	Moderate- North coast coniferous forest habitat present on-site
<i>Piperia candida</i>	white-flowered rein orchid	perennial herb	1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	Moderate- North coast coniferous forest habitat present on-site
<i>Pityopus californicus</i>	California pinefoot	perennial herb (achlorophyllous)	4.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	Moderate- North coast coniferous forest habitat present on-site
<i>Pleuropogon refractus</i>	nodding semaphore grass	perennial rhizomatous herb	4.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest	Moderate- North coast coniferous forest habitat present on-site
<i>Ribes laxiflorum</i>	trailing black currant	perennial deciduous shrub	4.3	North Coast coniferous forest	Moderate- North coast coniferous forest habitat present on-site
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	perennial herb	4.2	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland	Moderate- North coast coniferous forest habitat present on-site
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	perennial rhizomatous herb	1B.2	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest	Moderate- North coast coniferous forest habitat present on-site
<i>Sidalcea oregana</i> ssp. <i>eximia</i>	coast checkerbloom	perennial herb	1B.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest	Moderate- North coast coniferous forest habitat present on-site
<i>Silene scouleri</i> ssp. <i>scouleri</i>	Scouler's catchfly	perennial herb	2B.2	Coastal bluff scrub, Coastal prairie, Valley and foothill grassland	None- habitat type not present on-site
<i>Spergularia canadensis</i> var. <i>occidentalis</i>	western sand-spurrey	annual herb	2B.1	Marshes and swamps (coastal salt)	None- habitat type not present on-site
<i>Tiarella trifoliata</i> var. <i>trifoliata</i>	trifoliolate laceflower	perennial rhizomatous herb	3.2	Lower montane coniferous forest, North Coast coniferous forest	Moderate- North coast coniferous forest habitat present on-site
<i>Trichodon cylindricus</i>	cylindrical trichodon	moss	2B.2	Broadleafed upland forest, Meadows and seeps, Upper montane coniferous forest	Moderate- North coast coniferous forest habitat present on-site

Scientific Name	Common Name	Lifeform	CRPR	Habitat	Potential for Occurrence in the Project Area
Usnea longissima	Methuselah's beard lichen	fruticose lichen (epiphytic)	4.2	Broadleafed upland forest, North Coast coniferous forest	Moderate - North coast coniferous forest habitat present on-site
Viola palustris	alpine marsh violet	perennial rhizomatous herb	2B.2	Bogs and fens (coastal), Coastal scrub (mesic)	Low - habitat type not present on-site

Table 2. Special status animal species identified by a CNDDDB nine-quad database search centered on the USGS Arcata South 7.5-minute quadrangle. FESA: Federal Endangered Species Act. CESA: California Endangered Species Act.; C=Candidate Species; E=Endangered; T=Threatened; D=Delisted; N=Not listed).

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat	Potential for Occurrence in the Project Area
<i>Accipiter cooperii</i>	Cooper's hawk	N	N	Woodland, chiefly of open, interrupted or marginal type.	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Low - canopy primarily closed and dominated by Redwood and Douglas fir
<i>Accipiter striatus</i>	sharp-shinned hawk	N	N	Ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats. Prefers riparian areas.	North-facing slopes with plucking perches are critical requirements. Nests usually within 275 ft of water.	Low - some watercourses present on-site with primarily southern-facing slopes
<i>Acipenser medirostris</i>	green sturgeon	T	N	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento, Klamath, & Trinity Rivers.	Spawns at temps between 8-14 C. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	None - no rivers present on-site
<i>Anodonta californiensis</i>	California floater	N	N	Freshwater lakes and slow-moving streams and rivers. Taxonomy under review by specialists.	Generally in shallow water.	None - habitat type not present on-site
<i>Aplodontia rufa humboldtiana</i>	Humboldt mountain beaver	N	N	Coast Range in southwestern Del Norte County and northwestern Humboldt County.	Variety of coastal habitats, including coastal scrub, riparian forests, typically with open canopy and thickly vegetated understory.	Moderate - coastal forested areas present on-site with observations recorded in the database within one mile of the parcel
<i>Aquila chrysaetos</i>	golden eagle	N	N	Rolling foothills, mountain areas, sage-juniper flats, and desert.	Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	None - habitat type not present on-site. No cliff-walled canyons or large open areas
<i>Arborimus albipes</i>	white-footed vole	N	N	Mature coastal forests in Humboldt and Del Norte counties. Prefers areas near small, clear streams with dense alder and shrubs.	Occupies the habitat from the ground surface to the canopy. Feeds in all layers and nests on the ground under logs or rock.	Moderate - North coast coniferous forest habitat present on-site, while lacking dense alder and shrub layers near streams
<i>Arborimus pomo</i>	Sonoma tree vole	N	N	North coast fog belt from Oregon border to Sonoma County. In Douglas-fir,	Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of grand fir, hemlock or spruce.	Moderate - North coast coniferous forest present on-site with observations recorded in

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat	Potential for Occurrence in the Project Area
				redwood & montane hardwood-conifer forests.		the databases within one mile of the parcel
<i>Ardea alba</i>	great egret	N	N	Colonial nester in large trees.	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	None- No marshes or rookery sites located on-site
<i>Ardea herodias</i>	great blue heron	N	N	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes.	Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	None- No marshes or rookery sites located on-site
<i>Ascaphus truei</i>	Pacific tailed frog	N	N	Occurs in montane hardwood-conifer, redwood, Douglas-fir & ponderosa pine habitats.	Restricted to perennial montane streams. Tadpoles require water below 15 degrees C.	Moderate- North coast coniferous forest present on-site
<i>Bombus caliginosus</i>	obscure bumble bee	N	N	Coastal areas from Santa Barabara county to north to Washington state.	Food plant genera include Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.	Moderate - site is within habitat range with observations recorded in the databases within one mile of the parcel
<i>Bombus occidentalis</i>	western bumble bee	N	N	Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.		High- site is within habitat range with observations recorded in the databases within one mile of the parcel
<i>Brachyramphus marmoratus</i>	marbled murrelet	T	E	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz.	Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	High- North coast coniferous forest present on-site within 6 miles of the coast
<i>Charadrius alexandrinus nivosus</i>	western snowy plover	T	N	Sandy beaches, salt pond levees & shores of large alkali lakes.	Needs sandy, gravelly or friable soils for nesting.	None- no salt ponds or sandy beach habitat present on-site
<i>Charadrius montanus</i>	mountain plover	N	N	Short grasslands, freshly plowed fields, newly sprouting grain fields, & sometimes sod farms.	Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.	Low- habitat on-site primarily North coast coniferous forest with tall shrub layers
<i>Cicindela hirticollis gravida</i>	sandy beach tiger beetle	N	N	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico.	Clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.	None- no coastal dunes on-site

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat	Potential for Occurrence in the Project Area
<i>Circus hudsonius</i>	northern harrier	N	N	Coastal salt & freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas.	Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	None - no Coastal salt & freshwater marsh on-site
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	N	N	Throughout California in a wide variety of habitats. Most common in mesic sites.	Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	None - no preferential habitat present on-site
<i>Coturnicops noveboracensis</i>	yellow rail	N	N	Summer resident in eastern Sierra Nevada in Mono County.	Freshwater marshlands.	None - no Freshwater marshlands on-site
<i>Egretta thula</i>	snowy egret	N	N	Colonial nester, with nest sites situated in protected beds of dense tules.	Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	None - no preferential habitat present on-site including Marsh & swamp or Meadow & seep
<i>Elanus leucurus</i>	white-tailed kite	N	N	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland.	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	None - no Rolling foothills and valley margins with scattered oak present on-site
<i>Emys marmorata</i>	western pond turtle	N	N	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Moderate - larger stream areas present adjacent to parcel, while no grassy open fields or sandy banks present on-site with observations recorded in the databases within one mile of the parcel
<i>Entosphenus tridentatus</i>	Pacific lamprey	N	N	Found in Pacific Coast streams north of San Luis Obispo County, however regular runs in Santa Clara River. Size of runs is declining.	Swift-current gravel-bottomed areas for spawning with water temps between 12-18 C. Ammocoetes need soft sand or mud.	Moderate -larger stream areas present adjacent to parcel, while it may be too warm and/or slow with observations recorded in the databases within one mile of the parcel
<i>Erethizon dorsatum</i>	North American porcupine	N	N	Forested habitats in the Sierra Nevada, Cascade, and Coast ranges, with scattered observations from forested areas in the Transverse Ranges.	Wide variety of coniferous and mixed woodland habitat.	Moderate - North coast coniferous forest present on-site with observations in the database within one mile of the parcel

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat	Potential for Occurrence in the Project Area
<i>Eucyclogobius newberryi</i>	tidewater goby	E	N	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River.	Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	None - no brackish waters present on-site
<i>Haliaeetus leucocephalus</i>	bald eagle	D	E	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water.	Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	Low - no large body of water for feeding near site but larger live trees present on-site
<i>Margaritifera falcata</i>	western pearlshell	N	N	Aquatic.	Prefers lower velocity waters.	Moderate - lower velocity waters present on-site
<i>Martes caurina humboldtensis</i>	Humboldt marten	N	E	Occurs only in the coastal redwood zone from the Oregon border south to Sonoma County.	Associated with late-successional coniferous forests, prefer forests with low, overhead cover.	Moderate - North coast coniferous forest present on-site in coastal redwood zone
<i>Myotis evotis</i>	long-eared myotis	N	N	Found in all brush, woodland and forest habitats from sea level to about 9000 ft. Prefers coniferous woodlands and forests.	Nursery colonies in buildings, crevices, spaces under bark, and snags. Caves used primarily as night roosts.	Moderate - coniferous forest habitat present on-site with snags
<i>Northern Coastal Salt Marsh</i>	Northern Coastal Salt Marsh	N	N			Not present on-site
<i>Northern Foredune Grassland</i>	Northern Foredune Grassland	N	N			Not present on-site
<i>Nycticorax nycticorax</i>	black-crowned night heron	N	N	Colonial nester, usually in trees, occasionally in tule patches.	Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.	Low - some watercourses present on-site with forested habitat, while no marsh areas present on-site
<i>Oncorhynchus clarkii clarkii</i>	coast cutthroat trout	N	N	Small coastal streams from the Eel River to the Oregon border.	Small, low gradient coastal streams and estuaries. Needs shaded streams with water temperatures <18C, and small gravel for spawning.	Low - watercourse on property connects to small stream adjacent to parcel with observations recorded in the databases within one mile of the parcel

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat	Potential for Occurrence in the Project Area
<i>Oncorhynchus kisutch</i> pop. 2	coho salmon - southern Oregon / northern California ESU	T	T	Federal listing refers to populations between Cape Blanco, Oregon and Punta Gorda, Humboldt County, California.	State listing refers to populations between the Oregon border and Punta Gorda, California.	Low - watercourse likely too shallow on-site with observations recorded in the databases within one mile of the parcel
<i>Oncorhynchus mykiss irideus</i> pop. 16	steelhead - northern California DPS	T	N	Coastal basins from Redwood Creek south to the Gualala River, inclusive. Does not include summer-run steelhead.		Low - watercourse likely too shallow on-site
<i>Oncorhynchus mykiss irideus</i> pop. 36	summer-run steelhead trout	N	N	No. Calif coastal streams south to Middle Fork Eel River. Within range of Klamath Mtns province DPS & No. Calif DPS.	Cool, swift, shallow water & clean loose gravel for spawning, & suitably large pools in which to spend the summer.	Low - watercourse likely too shallow on-site
<i>Pandion haliaetus</i>	osprey	N	N	Ocean shore, bays, freshwater lakes, and larger streams.	Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	Moderate - parcel within 15 miles of fish-producing body of water with trees for nesting with observations recorded in the databases within one mile of the parcel
<i>Pekania pennanti</i>	fisher - West Coast DPS	N	T	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure.	Uses cavities, snags, logs and rocky areas for cover and denning. Needs large areas of mature, dense forest.	Moderate - North coast coniferous forest present
<i>Phalacrocorax auritus</i>	double-crested cormorant	N	N	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state.	Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Low - coast is likely too far from parcel
<i>Plethodon elongatus</i>	Del Norte salamander	N	N	Old-growth associated species with optimum conditions in the mixed conifer/hardwood ancient forest ecosystem.	Cool, moist, stable microclimate, a deep litter layer, closed multi-storied canopy, dominated by large, old trees.	Moderate - moist, deep littered layers with large forest growth present on-site
<i>Rallus obsoletus</i>	California Ridgway's rail	E	E	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay.	Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	None - no Brackish marsh or marshy areas present on-site
<i>Rana aurora</i>	northern red-legged frog	N	N	Humid forests, woodlands, grasslands, and streamsides in northwestern California, usually near dense riparian cover.	Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season.	Moderate - damp forests and watercourses present on-site with observations recorded in

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat	Potential for Occurrence in the Project Area
						the databases within one mile of the parcel
<i>Rana boylei</i>	foothill yellow-legged frog	N	C T	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	Moderate - damp forests and watercourses present on-site with observations recorded in the databases within one mile of the parcel
<i>Rhyacotriton variegatus</i>	southern torrent salamander	N	N	Coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats. Old growth forest.	Cold, well-shaded, permanent streams and seepages, or within splash zone or on moss-covered rocks within trickling water.	Moderate - coastal redwood areas with damp, splash zone areas present on-site with observations recorded in the databases within one mile of the parcel
<i>Riparia riparia</i>	bank swallow	N	T	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	None - no sandy banks or cliffs present on-site
<i>Spirinchus thaleichthys</i>	longfin smelt	C	T	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	None - no estuaries present on-site
<i>Thaleichthys pacificus</i>	eulachon	T	N	Found in Klamath River, Mad River, Redwood Creek, and in small numbers in Smith River and Humboldt Bay tributaries.	Spawn in lower reaches of coastal rivers with moderate water velocities and bottom of pea-sized gravel, sand, and woody debris.	None - watercourses on-site not within low reach or coastal river

Table 3. Plant species observed on-site.

Scientific Name 1993 Jepson	Scientific Name 2012 Jepson	Common Name
<i>Abies grandis</i>	<i>Abies grandis</i>	Grand fir
<i>Acer macrophyllum</i>	<i>Acer macrophyllum</i>	Bigleaf maple
<i>Actaea rubra</i>	<i>Actaea rubra</i>	Red baneberry
<i>Adiantum aleuticum</i>	<i>Adiantum aleuticum</i>	Five-finger fern
<i>Alnus rubra</i>	<i>Alnus rubra</i>	Red alder
<i>Anthoxanthum odoratum</i>	<i>Anthoxanthum odoratum</i>	Sweet vernal grass
<i>Asarum caudatum</i>	<i>Asarum caudatum</i>	Longtail wild ginger
<i>Athyrium filix-femina</i> var. <i>cyclosum</i>	<i>Athyrium filix-femina</i> var. <i>cyclosum</i>	Lady fern
<i>Bellis perennis</i>	<i>Bellis perennis</i>	English daisy
<i>Berberis nervosa</i>	<i>Berberis nervosa</i>	Dwarf Oregon-grape
<i>Blechnum spicant</i>	<i>Blechnum spicant</i>	Deer fern
<i>Briza maxima</i>	<i>Briza maxima</i>	Rattlesnake grass
<i>Briza minor</i>	<i>Briza minor</i>	Small quaking grass
<i>Bromus</i> sp.	<i>Bromus</i> sp.	Brome grass
<i>Bromus vulgaris</i>	<i>Bromus vulgaris</i>	Columbia brome
<i>Campylopus</i> sp.		
<i>Cardamine oligosperma</i>	<i>Cardamine oligosperma</i>	Western bittercress
<i>Cardamine pachystigma</i> var. <i>dissectifolia</i>	<i>Cardamine californica</i>	Milk maids
<i>Carex deweyana</i> subsp. <i>leptopoda</i>	<i>Carex leptopoda</i>	Slender-footed sedge
<i>Carex gynodynema</i>	<i>Carex gynodynema</i>	Wonder-woman sedge
<i>Carex obnupta</i>	<i>Carex obnupta</i>	Slough sedge
<i>Cirsium vulgare</i>	<i>Cirsium vulgare</i>	Bull thistle
<i>Cladonia</i> sp.		
<i>Claytonia perfoliata</i>	<i>Claytonia perfoliata</i>	Miner's lettuce
<i>Claytonia sibirica</i>	<i>Claytonia sibirica</i>	Candy flower
<i>Clintonia andrewsiana</i>	<i>Clintonia andrewsiana</i>	Bead lily
<i>Cortaderia seloana</i>	<i>Cortaderia seloana</i>	Pampas grass
<i>Cotoneaster pannosa</i>	<i>Cotoneaster pannosus</i>	Silverleaf cotoneaster
<i>Cytisus scoparius</i>	<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	<i>Dactylis glomerata</i>	Orchard grass

Scientific Name 1993 Jepson	Scientific Name 2012 Jepson	Common Name
<i>Daucus carota</i>	<i>Daucus carota</i>	Queen Anne's lace
<i>Dendroalsia sp.</i>		
<i>Disporum hookeri</i>	<i>Prosartes hookeri</i>	Drops of gold
<i>Epilobium angustifolium subsp. circumvagum</i>	<i>Chamerion angustifolium subsp. circumvagum</i>	Fireweed
<i>Equisetum telmateia subsp. braunii</i>	<i>Equisetum telmateia subsp. braunii</i>	Giant horsetail
<i>Fragaria vesca</i>	<i>Fragaria vesca</i>	Wood strawberry
<i>Galium aparine</i>	<i>Galium aparine</i>	Goose grass
<i>Galium sp.</i>	<i>Galium sp.</i>	Bedstraw
<i>Gaultheria shallon</i>	<i>Gaultheria shallon</i>	Salal
<i>Genista monspessulana</i>	<i>Genista monspessulana</i>	French broom
<i>Hedera helix</i>	<i>Hedera helix</i>	English ivy
<i>Hierochloe occidentalis</i>	<i>Anthoxanthum occidentale</i>	California sweet grass
<i>Holcus lanatus</i>	<i>Holcus lanatus</i>	Common velvet grass
<i>Holodiscus discolor</i>	<i>Holodiscus discolor</i>	Oceanspray
<i>Hydrophyllum tenuipes</i>	<i>Hydrophyllum tenuipes</i>	Pacific waterleaf
<i>Hypochaeris radicata</i>	<i>Hypochaeris radicata</i>	Rough cat's-ear
<i>Ilex aquifolium</i>	<i>Ilex aquifolium</i>	English holly
<i>Iris douglasiana</i>	<i>Iris douglasiana</i>	Douglas Iris
<i>Juncus effusus</i>	<i>Juncus effusus</i>	Soft or lamp rush
<i>Juncus patens</i>	<i>Juncus patens</i>	Spreading rush
<i>Lathyrus vestitus</i>	<i>Lathyrus vestitus</i>	Pacific pea
<i>Lepraria sp.</i>		
<i>Leucanthemum vulgare</i>	<i>Leucanthemum vulgare</i>	Ox-eye daisy
<i>Lonicera ciliosa</i>	<i>Lonicera ciliosa</i>	Orange honeysuckle
<i>Lupinus rivularis</i>	<i>Lupinus rivularis</i>	Riverbank lupine
<i>Lysichiton americanum</i>	<i>Lysichiton americanum</i>	Skunk cabbage
<i>Myosotis latifolia</i>	<i>Myosotis latifolia</i>	Broadleaved forget-me-not
<i>Myrica californica</i>	<i>Morella californica</i>	Wax myrtle
<i>Neckera sp.</i>		
<i>Oemleria cerasiformis</i>	<i>Oemleria cerasiformis</i>	Oso berry
<i>Oenanthe sarmentosa</i>	<i>Oenanthe sarmentosa</i>	Pacific water-parsley
<i>Osmorhiza chilensis</i>	<i>Osmorhiza berteroi</i>	Sweet-cicely

Scientific Name 1993 Jepson	Scientific Name 2012 Jepson	Common Name
<i>Oxalis oregana</i>	<i>Oxalis oregana</i>	Redwood sorrel
<i>Petasites frigidus</i> var. <i>palmatus</i>	<i>Petasites frigidus</i> var. <i>palmatus</i>	Western sweet coltsfoot
<i>Plantago lanceolata</i>	<i>Plantago lanceolata</i>	English plantain
<i>Polystichum munitum</i>	<i>Polystichum munitum</i>	Western sword fern
<i>Prunella vulgaris</i>	<i>Prunella vulgaris</i>	Common self-heal
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	<i>Pteridium aquilinum</i> var. <i>pubescens</i>	Western bracken fern
<i>Ranunculus repens</i>	<i>Ranunculus repens</i>	Buttercup
<i>Rhamnus purshiana</i>	<i>Frangula purshiana</i>	Cascara
<i>Rhododendron macrophyllum</i>	<i>Rhododendron macrophyllum</i>	California rhododendron
<i>Ribes menziesii</i>	<i>Ribes menziesii</i>	Menzie's gooseberry
<i>Ribes sanguineum</i> var. <i>glutinosum</i>	<i>Ribes sanguineum</i> var. <i>glutinosum</i>	Red-flowering currant
<i>Rubus discolor</i>	<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus parviflorus</i>	<i>Rubus parviflorus</i>	Thimbleberry
<i>Rubus spectabilis</i>	<i>Rubus spectabilis</i>	Salmonberry
<i>Rumex crispus</i>	<i>Rumex crispus</i>	Curly dock
<i>Sambucus racemosa</i> var. <i>microbotrys</i>	<i>Sambucus racemosa</i> var. <i>racemosa</i>	Red elderberry
<i>Scoliopus bigelovii</i>	<i>Scoliopus bigelovii</i>	Slink-pod
<i>Scrophularia californica</i> subsp. <i>californica</i>	<i>Scrophularia californica</i>	California figwort
<i>Sequoia sempervirens</i>	<i>Sequoia sempervirens</i>	Coast redwood
<i>Solanum</i> sp.	<i>Solanum</i> sp.	Nightshade
<i>Stachys ajugoides</i>	<i>Stachys ajugoides</i>	Hedge-nettle
<i>Tellima grandiflora</i>	<i>Tellima grandiflora</i>	Fringe cups
<i>Tolmiea menziesii</i>	<i>Tolmiea diplomenziesii</i>	Pig-a-back plant
<i>Trientalis latifolia</i>	<i>Trientalis latifolia</i>	Western starflower
<i>Trifolium albopurpureum</i>	<i>Trifolium albopurpureum</i>	Indian clover
<i>Trifolium campestre</i>	<i>Trifolium campestre</i>	Hop clover
<i>Trillium ovatum</i>	<i>Trillium ovatum</i>	Western trillium
<i>Urtica dioica</i> subsp. <i>holosericea</i>	<i>Urtica dioica</i> subsp. <i>holosericea</i>	Hoary nettle
<i>Vaccinium ovatum</i>	<i>Vaccinium ovatum</i>	California huckleberry
<i>Vancouveria planipetala</i>	<i>Vancouveria planipetala</i>	Redwood ivy
<i>Viola sempervirens</i>	<i>Viola sempervirens</i>	Evergreen violet

Site Photographs



Photo 1. Upland forest and understory vegetation in the project area.



Photo 2. Shrub layer present on-site



Photo 3. Seepy area present on-site



Photo 4. Shrub layer habitat



Photo 5. Past disturbance of vegetation on-site



Photo 6. Watercourse and cement capped well



Photo 7. Erosion exposing underground watercourse

APPENDIX A-QUALIFICATIONS



Tami Camper
Owner-Founder

Tami is the founder of TransTerra Consulting LLC. She obtained a B.S. in Environmental Science from Western Washington University and M.S. in Biology from Humboldt State University. She has worked on publications including a rare plant guide for timberlands of Mendocino County published by MCRCD. She has worked as a professional biologist and planner for over 20 years, specializing in wetland/stream surveys, wildlife/vegetation mapping, rare species surveys, biological assessments, impact assessments, mitigation and monitoring plans, CEQA/NEPA and land-use planning. Though she has worked as an independent consultant for most of her career, she has also worked for HSU, Caltrans, Mendocino Redwood Company, and Streamline Planning (now SHN) to round out her experience. Her desire is to implement her diverse background and passion for the natural world to aid clients through the environmental process. She also is also a member of the Arcata Sunrise Rotary Club, California Native Plant Society, The Wildlife Society, The Society of Wetland Scientists and other local non-profits and professional organizations.

Margaux received her Bachelor's Degree in Molecular Biology from the California State University of Monterey Bay in 2018. She grew up in Humboldt and is very familiar with the unique geological and political landscape. Her experience encompasses restoration, environmental education, and lab techniques. She strives to utilize her molecular background to share an in depth understanding of the environmental field to promote policy and preservation.



Margaux Karp
Biologist/Planner



Holly Vadurro
Biologist/Botanist

Holly earned a Bachelor's degree in Biology from College of Charleston, in 1996. She came to Humboldt State University through the student exchange program and knew she had found her home. During her first years here, her job enabled her to explore the expanse of Humboldt County and perform various biological field surveys including botanical, fishery, mollusk, amphibian, bryophyte and migratory birds. She also performed landslide analyses. Later on, she worked at Winzler and Kelly Consulting Engineers (now GHD) as an Environmental Scientist and conducted wetland delineations, botanical surveys, and collected and analyzed water quality data.

Megan received her Bachelor's degree in Botany from Humboldt State University in 2019. She will be returning to HSU to pursue her Master's degree in Biology with a thesis focusing on fossil plants from the lower Devonian of Québec, Canada. Her previous work experience includes curation and care of an extensive living collection of plants from around the world, state-of-the-art biological lab facility and research equipment maintenance, and education. Currently, she is working on a diversity survey of ancient plants and will be presenting an oral paper at the Botanical Society of America conference this summer.



Megan Nibbelink
Botanist