

# Preliminary Biological Resource Assessment for APN 107-300-008



February 2020

Prepared For:

Guerorgui Mandelov

Prepared By:



**TransTerra Consulting**

INTEGRATED ENVIRONMENTAL SERVICES



## TABLE OF CONTENTS

Introduction.....	3
Environmental Setting.....	3
Project Location .....	3
Methods.....	7
Results and Discussion.....	8
Vegetation.....	8
Invasive Species .....	12
Wetlands and SMA areas .....	8
U.S. Army Corps of Engineers (USACE).....	8
Regional Water Quality Control Board (RWQCB) .....	9
California Department of Fish and Wildlife .....	9
Humboldt County-Streamside Management Area .....	9
Additional Laws and Policies.....	10
Northern Spotted Owl.....	10
CNDDDB and other Database Results.....	11
Potential Direct and Indirect Impacts.....	11
Recommendations.....	13
Site Photographs.....	23
APPENDIX A-QUALIFICATIONS.....	25
.....	25

## LIST OF FIGURES

Figure 1. Soil series results from Web Soil Survey with estimated parcel boundaries.....	4
Figure 2. Project Location. Map created using ArcMap 10.6.....	5
Figure 3. Proposed Project Map (created by Green Road Consulting).....	6
Figure 4. Streamside Management Areas (SMA), National Wetland Inventory (NWI) wetlands, and historic landslides mapped in and adjacent to the project site.....	7
Figure 5. CNDDDB search results of observed rare plant and sensitive animal occurrences within five miles of property. ....	16
Figure 6. Northern Spotted Owls database entries within 5 miles of property. ....	17

## LIST OF TABLES

Table 1. CNDDDB nine-quad database results for the Bull Creek 7.5' quadrangle (plants listed in CNDDDB results; C=Candidate Species, E=Endangered, T=Threatened, D=Delisted, N=None). ....	18
Table 2. CNPS nine-quad database results for the Bull Creek 7.5' quadrangle. ....	21
Table 3. Observed Species on site. ....	<b>Error! Bookmark not defined.</b>

## Introduction

This Preliminary Biological Resource Assessment (PBRA) was prepared to provide data concerning 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 currently or potentially present at the project location. The project includes commercial cannabis cultivation and associated activities. If required after agency review of the preliminary habitat assessment, protocol level surveys will be completed per recommendations by the Final Environmental Impact Report (FEIR) amendments to the Humboldt County Code Regulating Commercial Cannabis Activities.<sup>1</sup>

## Environmental Setting

### Project Location

The property is located off of Mattole Road in Honeydew of Humboldt County, California (Section 27, T2S, R1E). The project area is located on a 67.40-acre parcel within the U.S. Geological Survey's (USGS) Bull Creek 7.5-minute quadrangle map. Elevation is approximately 1680-2400 feet above sea level with a majority of the project area at slopes of 15 to 30 percent. The property is located in the Cape Mendocino Watershed. The regional climate is Mediterranean in nature with warm summers and cool winters.

The proposed project involves permitting of a commercial Cannabis cultivation facility. There are existing structures, roads, graded flats and other infrastructure. This PBRA is designed to determine the potential extent of special habitats and determine whether protocol-level special-status species surveys are necessary prior to development. There are no special-status species known or observed on the site.

There are also several jurisdictional watercourses onsite, including a Class I reach of Van Duzen River, a Class II ditch draining the grassland, and areas of potential jurisdictional wetland, although a protocol-level wetland delineation was not performed.

### Soil, Topography, Hydrology

Three (3) main soil types are mapped throughout the parcel on the Web Soil Survey.<sup>2</sup> The project area is primarily composed of Crazycoyote-Sproulish-Canoecreek complex, 50 to 75 percent slopes (5506). These series are not considered hydric and consist of very deep, well drained soils formed in colluvium and residuum derived from various minerals.

The Crazycoyote series consists of very deep, well drained soils formed in colluvium and residuum derived from sandstone and mudstone. Crazycoyote soils are on linear to slightly concave and convex

---

<sup>1</sup> Final Environmental Impact Report: Amendments to the Humboldt County Code Regulating Commercial Cannabis Activities. January 2018. Prepared by Ascent Environmental. (Accessed via <https://humboldt.gov/DocumentCenter/View/62689/Humboldt-County-Cannabis-Program-Final-EIR-60mb-PDF>)

<sup>2</sup> Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. (Accessed via <https://websoilsurvey.sc.egov.usda.gov/>.)

positions on ridges and mountain slopes. Slopes range from 15 to 75 percent at elevations of 200 to 900 m. Mean annual precipitation is about 2160 mm and the mean annual temperature is about 13 degrees C. The Sproulish series consists of very deep, well drained soils formed in colluvium and residuum derived from sandstone, mudstone, and metasedimentary rocks. Sproulish soils are found on mountains with slopes ranging from 15 to 75 percent. Sproulish soils are on linear to concave or slightly convex positions on summits, shoulders, and backslopes of mountain slopes and ridges. These soils are at elevations of 185 to 730 m. The climate is subhumid with warm, dry summers with a marine layer influence and cool, wet winters. The mean annual precipitation is 1525 to 3050 mm and the mean annual temperature is 10 to 12 degrees C. The Canoecreek series consists of very deep, well drained soils formed in colluvium and residuum derived from sandstone, mudstone, and conglomerate. Canoecreek soils are on mountains with slopes that range from 15 to 110 percent. The mean annual precipitation is about 2160 mm and the mean annual air temperature is about 11 degrees C. Canoecreek soils are on linear to concave or convex positions on summits, shoulders, and backslopes on mountain slopes and ridges. These soils are found on elevations of 185 to 730 m.



Figure 1. Soil series results from Web Soil Survey with estimated parcel boundaries.



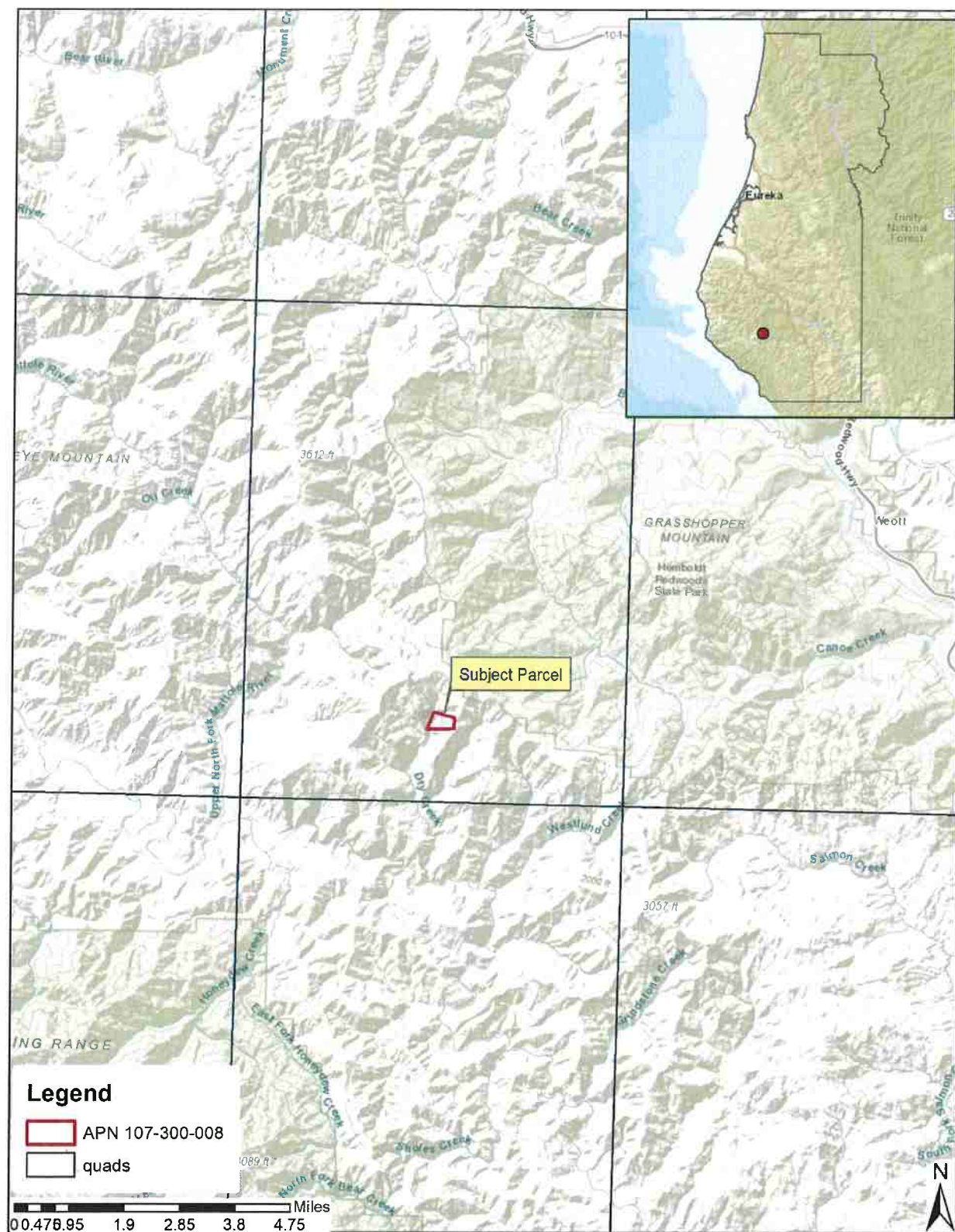


Figure 2. Project Location. Map created using ArcMap 10.6.





The property is situated in the Middle Mattole River Watershed which is located within the Cape Mendocino Watershed. The parcel is captured in the Cannabis Impacted HUC-12 Watersheds. The Streamside Management Area of Dry Creek intersects the parcel lying approximately 200 feet from the proposed project area. The NWI and Humboldt GIS layers show riparian wetlands following adjacent to the creek. The Humboldt GIS and NWI layers may not be fully accurate.

The project area is mapped as possessing moderate instability and high fire severity. The Garberville-Briceland fault zone lies less than 2,000 feet to the east and west of the parcel. There are various historic landslides mapped on and adjacent to the parcel (Figure 4). Potential liquefaction and other hazards are not mapped in or adjacent to the parcel on the Humboldt GIS database.



Figure 4. Streamside Management Areas (SMA), National Wetland Inventory (NWI) wetlands, and historic landslides mapped in and adjacent to the project site<sup>3</sup>.

## Methods

The California Natural Diversity Database (CNDDB) RareFind and Spotted Owl Database, and California Native Plant Society (CNPS) databases were used to assess potential rare species. A habitat assessment was conducted by TransTerra Consulting Biologists Tami Camper and Margaux Karp on January 9, 2020. The assessment evaluated listed species and species of special concern (SOC). The study area was

<sup>3</sup> Humboldt County GIS layer. (Accessed via: <http://webgis.co.humboldt.ca.us/HCEGIS2.0/>)

scanned for wildlife sign including tracks, scat, tree habitat (cavities, nests scrapes or accumulated vegetation) as well as special habitat types and habitats associated with rare plant species. The observations were concentrated around the cultivation site, road and watercourse. The CNDDDB 9-Quad area was queried to generate occurrences of special-status animal species.

The assessment was conducted due to mandatory requirements for cannabis permitting, however the timing of the field visit did not coincide with ideal survey seasons based on phenology and life history cycles for all potential species. Full floristic surveys and/or protocol-level surveys were not conducted in the project area. Based on the timing of the survey, all plant species growing within the study area may not have been observed due to varying flowering phenologies and life forms, such as bulbs, biennials, and annuals. Other potentially dominant species within vegetation communities on site may be present during other times of the year. Therefore, the present study is not floristic in nature. Some of the plant species identified in this report are tentative due to the absence of morphological characters, resulting from immature reproductive structures or seasonal desiccation, which is required to make species-level determinations.

## Results and Discussion

### Vegetation

The project area is generally Broadleaved Upland-Mixed Evergreen Forest with clearings dominated by pasture grasses and forbs. The forested areas are dominated by *Pseudotsuga menziesii* (Douglas fir), *Arbutus menziesii* (Pacific madrone), *Notholithocarpus densiflorus* (Tanoak) and *Quercus chrysolepis* (Canyon live oak). The forested areas had a variable canopy and understory but were primarily open with variable shrub layer dominated by *Vaccinium ovatum* (evergreen huckleberry), *Ribes* sp. (gooseberry) and *Arctostaphylos* sp. (manzanita), *Ceanothus cuneatus* (Buckbrush), and *Rosa gymnocarpa* (Wood rose). Openings are a mixture of native and non-native grasses and forbs including *Geranium* sp. (Geranium), *Brassica rapa* (Field mustard), *Poa pratensis* (Kentucky blue grass), *Bromus* sp. (Brome grass), *Cynodon dactylon* (Bermuda grass), *Hordeum vulgare* (Cereal barley), *Polypogon australis* (Chilean beard grass). Mesic to seasonally wet areas on the site near road cuts and inside ditches were dominated by *Rubus ursinus* (California bramble), *Polystichum munitum* (Sword fern), *Stachys ajugoides* (Hedgenettle), *Galium* sp. (bedstraw), *Nemophila* sp. (nemophila), *Iris* sp. (Iris).

### Wetlands and SMA areas

As stated previously, there are watercourses in the area. A jurisdictional wetland delineation was not requested or conducted for this assessment. The regulatory background for wetlands in Humboldt County is presented below. All stream mapping relies on maps provided by Green Road Consulting.

### U.S. Army Corps of Engineers (USACE)

The USACE Regulatory Branch regulates activities that may discharge dredged or fill materials into “waters of the U.S.” under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. This permitting authority applies to all “waters of the U.S.” where the material (1) replaces any portion of a “waters of the U.S.” with dry land or (2) changes the bottom elevation of any portion of any “waters of the U.S.”. These fill materials include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in these waters. The selection of disposal sites for dredged or fill material is done in accordance with guidelines specified in



Section 404(b)(1) of the CWA, which were developed by the U.S. Environmental Protection Agency (USEPA).

### Regional Water Quality Control Board (RWQCB)

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The RWQCB's jurisdiction extends to all "waters of the State" and to all "waters of the U.S.," including wetlands (isolated and non-isolated).

Section 401 of the CWA provides the RWQCB with the authority to regulate, through a Water Quality Certification, any proposed, federally permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the USACE pursuant to Section 404 of the CWA. Section 401 requires the RWQCB to provide certification that there is reasonable assurance an activity with the potential for discharge into navigable waters will not violate water quality standards. Water Quality Certification must be based on findings that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives found in each of the nine RWQCBs' Basin Plans.

### California Department of Fish and Wildlife

The CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes pursuant to the California Fish and Game Code (§§1600–1616). Activities of state and local agencies, as well as public utilities that are project proponents, are regulated by the CDFW under Section 1602 of the California Fish and Game Code.

Because the CDFW includes streamside habitats under its jurisdiction that, under the federal definition, may not qualify as wetlands on a project site, its jurisdiction may be broader than that of the USACE. Riparian forests in California often lie outside the plain of ordinary high water regulated under Section 404 of the CWA, and often do not have all three parameters (wetland hydrology, hydrophytic vegetation, and hydric soils) sufficiently present to be regulated as a wetland.

However, riparian forests are frequently included within CDFW regulatory jurisdiction under Section 1602 of the California Fish and Game Code.

The CDFW jurisdictional limits are not as clearly defined by regulation as those of the USACE. While they closely resemble the limits described by USACE regulations, they include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric and saturated soils conditions. In general, the CDFW extends jurisdiction from the top of a stream bank or to the outer limits of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place within or near a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish and other aquatic plant and/or wildlife species. It also includes watercourses that have a surface or subsurface flow that support or have supported riparian vegetation.

### Humboldt County-Streamside Management Area

"Streamside Management Areas" (SMAs) [Section 3432(5) of the Humboldt County 1984 General Plan] are defined in the Humboldt County General Plan (Page G-8) and include a natural resource area along

both sides of streams containing the channel and adjacent land. Updates to the SMA guidance for cannabis activities are defined in the Environmental Impact Assessment Biological Resources Section<sup>4</sup>.

Project applicants proposing development activities within a SMA or wetland areas are required to include a site-specific biological report prepared consistent with these regulations. The written report prepared by a qualified biologist is subsequently referred to CDFW for review and comment. If required, after agency review of the preliminary habitat assessment, protocol level surveys will be completed per recommendations by the Final Environmental Impact Report (FEIR) amendments to the Humboldt County Code Regulating Commercial Cannabis Activities<sup>5</sup>.

### Additional Laws and Policies

In addition to the above-mentioned policies, numerous other policies exist to protect wetlands, waters and biological resources including the California Environmental Quality Act (CEQA), California Endangered Species Act (CESA) and the Z'berg-Nejedly Forest Practice Act.

### 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.<sup>6</sup>

Northern Spotted Owl was recorded in the CDFW database within 5 miles (Figure 6). Some habitat was present on-site for nesting spotted owls due to stand age and structure. The HUM0881 activity center was established in 1998 by SPC and is located approximately 2.25 miles to the northwest of the parcel. Both positive and negative observations were recorded in the database ranging from 1997 to 2006 within the five-mile buffer of the parcel location. The activity centers of HUM0915, HUM0904, HUM0017, HUM0707, HUM0530, HUM0706, HUM0018, HUM1089, and HUM0594 are located within the five-mile buffer of the parcel. Critical habitat for NSO is located about 1.50 miles to the north of the parcel.

---

<sup>4</sup> <https://humboldt.gov/DocumentCenter/View/58840/Section-311-Biological-Resources-Revised-DEIRPDF>

<sup>5</sup> Final Environmental Impact Report: Amendments to the Humboldt County Code Regulating Commercial Cannabis Activities. January 2018. Prepared by Ascent Environmental. Accessed via <https://humboldt.gov/DocumentCenter/View/62689/Humboldt-County-Cannabis-Program-Final-EIR60mb-PDF>. Accessed [January 2019]

<sup>6</sup> Northern Spotted Owls in California. California Department of Fish and Wildlife (Accessed via <https://www.wildlife.ca.gov/Conservation/Birds/Northern-Spotted-Owl>)

## CNDDDB and other Database Results

The CDFW CNDDDB, BIOS, Rarefind and CNPS databases were scoped before and after field site visit to determine habitat potential and known occurrences of rare or listed species of concern in or around the project area. Known reference populations near the site were visited to confirm phenology. The following species were observed in the database within 3 miles of the project site.

*Gilia capitata ssp. pacifica* (Pacific gilia) has a CNPS ranking of 1B.2, meaning they are rare throughout their range. It occupies coastal bluff scrub, chaparral, coastal prairie, valley and foothill grassland usually between 5-1345 m.

*Piperia candida* (white-flowered rein orchid) has a CNPS ranking of 1B.2, meaning they are rare throughout their range. This species is found in north coast coniferous forest, lower montane coniferous forest, and broadleafed upland forest. It inhabits forest duff, mossy banks, rock outcrops, and muskeg, while sometimes on serpentine, around 20-1615 m.

*Accipiter cooperii* (Cooper's hawk) occupy dense strands of live oak, riparian deciduous, or other forest habitats near water at ranges from sea level to above 2700m. They often hunt in broken woodland and habitat edges. Nesting and foraging often occurs near open water or riparian vegetation.

*Calamagrostis foliosa* (leafy reed grass) is listed as a rare species in California and is considered a watchlist species being CNPS rated as 4.2. It occupies coastal bluff scrub and northern coastal coniferous forests. *Calamagrostis foliosa* is found on rocky cliffs as well as ocean-facing bluffs at around 0-1220 m.

*Aquila Chrysaetos* (golden eagle) are found throughout North America but are more common in western North America. They inhabit a variety of habitats including forests, canyons, shrub lands, grasslands, and oak woodlands. The golden eagle breeds from late January through August and produces 1-3 eggs. Nests are constructed on platforms on steep cliffs or in large trees. The main prey species for the golden eagle are rabbits, hares and rodents, but are not exclusive to these.

*Arborimus pomo* (Sonoma tree vole) 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.

The project area contains habitat for various rare or listed species. (See site photos for general habitat types) A complete list of occurrences of rare and species of concern are listed below in Table 1 and Table 2.

## Potential Direct and Indirect Impacts

Determining the extent of environmental impacts post factum including magnitude, duration and extent is challenging. The potential direct, indirect, and cumulative effects of the development of cultivation activities already in place have not been thoroughly analyzed. This impact assessment is based upon proposed activity associated with cannabis cultivation that is already existing.

Tree clearing is not currently proposed, nor is additional grading or expansion of existing facilities. The site was well maintained, and solid waste or other hazardous materials were not observed. Direct impacts from continual noise, traffic and human activity would continue at ambient levels.



Agency personnel from CDFW and USFWS can further analyze the potential impacts and provide technical assistance for any listed species if additional activities are proposed that may result in take of a listed species including Northern Spotted Owl.<sup>7</sup> If required, pre-construction reconnaissance surveys should follow the guidelines set forth in the Humboldt County Cannabis Program EIR, CDFW Survey and Monitoring Protocols and Guidelines<sup>8</sup>, USFWS Endangered Species Program<sup>9</sup> and CNPS Botanical Survey Guidelines.<sup>10</sup>

## Invasive Species

Per the Board of Supervisors, County of Humboldt, Ordinance 2599 regarding Commercial Cannabis Cultivation “55.4.12.16 Invasive Species Control It is the responsibility of a certificate or permit holder to work to eradicate invasive species. As part of any application, the existence of invasive species on the project parcel need to be identified, including the type(s) of invasive plant species, where they are located, and a plan to control their spread. All invasive plant species shall be removed from the cultivation site and associated infrastructure using measures appropriate to the species. Removal shall be confirmed during subsequent annual inspection. Corrective action may be required if invasive species are found to have returned.”

The California Invasive Plant Council (Cal-IPC) is the most current and comprehensive database of invasive plants in California and will be used to define and list the plants considered “invasive” in the project area. Plants are rated as Watch, Limited, Moderate and High.<sup>11</sup>

- 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

---

<sup>7</sup> Transmittal of Guidance: Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelet in Northwestern California: (Accessed via <https://www.fws.gov/arcata/es/birds/nso/documents/MAMUNSO%20Harassment%20Guidance%20NW%20CA%202006Jul31.pdf>)

<sup>8</sup> California Department of Fish and Wildlife Survey and Monitoring Protocols and Guidelines (Accessed via <https://www.wildlife.ca.gov/conservation/survey-protocols>)

<sup>9</sup> USFWS Arcata Fish and Wildlife Office Endangered Species Program (Accessed via <https://www.fws.gov/arcata/es/default.htm>)

<sup>10</sup> California Native Plant Society (CNPS) Botanical Survey Guidelines (Accessed via [https://cnps.org/wp-content/uploads/2018/03/cnps\\_survey\\_guidelines.pdf](https://cnps.org/wp-content/uploads/2018/03/cnps_survey_guidelines.pdf))

<sup>11</sup> California Invasive Plant Council Inventory (Accessed via <https://www.cal-ipc.org/plants/inventory/>)

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.

- Alert – An Alert is listed on species with High or Moderate impacts that have limited distribution in California but may have the potential to spread much further.
- Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.

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.

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. Motorized and non-motorized transportation devices (including ATVs and bicycles) transport seeds of invasive plants.

Invasive species identified on-site are subject to mitigation measures and subsequent annual inspections to ensure compliance.

## 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 road cuts would likely modify existing groundwater, and surface water patterns and could impact water quality and/or hydrophytic species.

### To prevent the introduction and spread of invasive species:

- Minimize disturbance when possible, and restore damage caused by unavoidable disturbances.
- Cover, mulch, seed or plant disturbed areas to prevent establishment of unwanted plants. Establishing native seed cover is preferred. Monitor the site and control unwanted plants that may appear.
- Reclaim/restore recently altered areas. Heavily disturbed areas are especially prone to invasion. Immediate reclamation of these areas by planting non-invasive plant species is essential. Establishing native species in restoration activities will help create a desired vegetation cover.
- Make sure any equipment was not used previously in heavily infested areas and is clean of mud, seeds and other propagules.
- Plants that are native to a site should be selected for use in landscaping, whenever feasible. Use reputable nurseries and seed sources. Ask vendors if they are aware of restricted species.

Check for “hitch-hikers” in nursery stock, packing materials, and associated locations. Use only certified seed, where feasible.

- Use fertilizers wisely. The most commonly used supplemental nutrients in agriculture or landscaping include limiting factors in plant growth, principally nitrogen and phosphorous. High nitrogen levels offer a supreme growth factor for all plants, granting an advantage to invasive plants. Many invasive species have adapted to use plentiful nutrients for explosive growth; therefore, excessive fertilizer application enhances the growth of invasive species. Using soil tests to prescribe proper levels of fertilizer is important. The use of native plants will cut down or eliminate the need for fertilizers, as many native plants can grow well without them.
- Protect native plant communities. A key to controlling invasive plants is to protect native plant communities. Where native plant communities have been displaced, invasive plants thrive, especially on bare soil and disturbed ground. Where native communities are still present, non-invasive plants can move into the empty niche created by the removal of invasive species. Protecting native plant communities from disturbance, deer browse, and other threats will strengthen their ability to resist invasion.
- Develop education and training. Land managers must be trained in invasive species identification, inventory and control methods.
- Inspect annually for invasive species. Effective scouting will allow managers to identify invasive species before populations increase exponentially and reach levels difficult to control. Identifying and controlling organisms before populations reproduce will result in greater program success.
- Carefully consider location when disposing of mechanically removed invasive plant species. Reproductive parts of many invasive plants can withstand seasonal cycles, including drying and freezing, therefore composting invasive species residue is not recommended. Seeds and roots/rhizomes, especially, should be destroyed or carefully collected and discarded with trash to prevent reestablishment.
- Prioritize the management of existing on-site invasive species to prevent spread. Travel on roadways and trails is a major conduit for invasive species movement, thus control measures should target high traffic areas, as well as areas where new small populations have just been found. For individual projects, invasive species in areas that are frequently revisited should be treated prior to project initiation and monitored throughout project completion.
- Examine common practices to determine how alterations may reduce the risk of invasive species introduction. To accomplish this task, the U.S. Fish and Wildlife Service employs a method known as Hazard Analysis Critical Control Point (HACCP).<sup>12</sup> planning. This procedure for preventing introduction does not require each land manager to have detailed knowledge of invasive species present at a site.
- Review contracts for opportunities to strengthen prevention measures. Added language to existing contracts with internal and external groups may include equipment cleaning

---

<sup>12</sup> Hazard Analysis and Critical Control Point: Planning to Prevent the Spread of Invasive Species (Accessed via <https://nctc.fws.gov/courses/HACCP/haccp.html>)



requirements, avoiding the use of equipment that has been recently used in infested areas, liability for new invasive species introductions, disturbed habitat remediation guidelines and other appropriate preventive activities.

- Know original sources of transferred and used materials. Require knowledge of the original source and previous sites of transferred topsoil, fill, firewood or other materials brought into a site. Roadside shoulder material, removed during road shoulder maintenance, can be loaded with invasive plant seeds. If the source of this material supported invasive plants, the contaminated material should not be used in an uninfected area. Other soil or fill material should be used only with a good plan for weed control following placement. A visit to the site of the material's origin may be necessary to evaluate whether its use is appropriate.

If additional grading, vegetation removal or tree removal is proposed, pre-construction surveys for rare plant or wildlife species is recommended.

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](mailto:tami@trans-terra.com) or (707) 845-7483. 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)

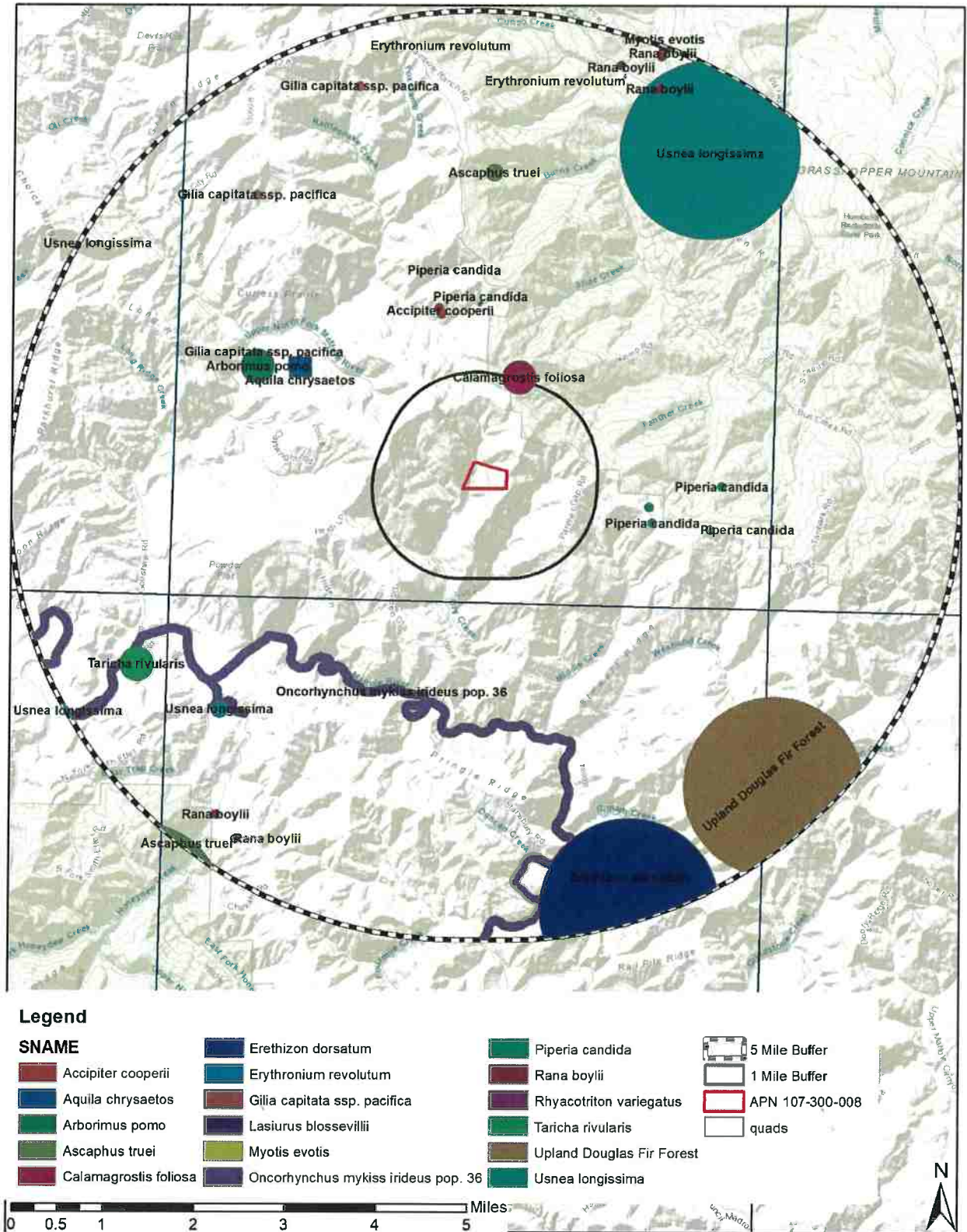


Figure 5. CNDDDB search results of observed rare plant and sensitive animal occurrences within five miles of property.



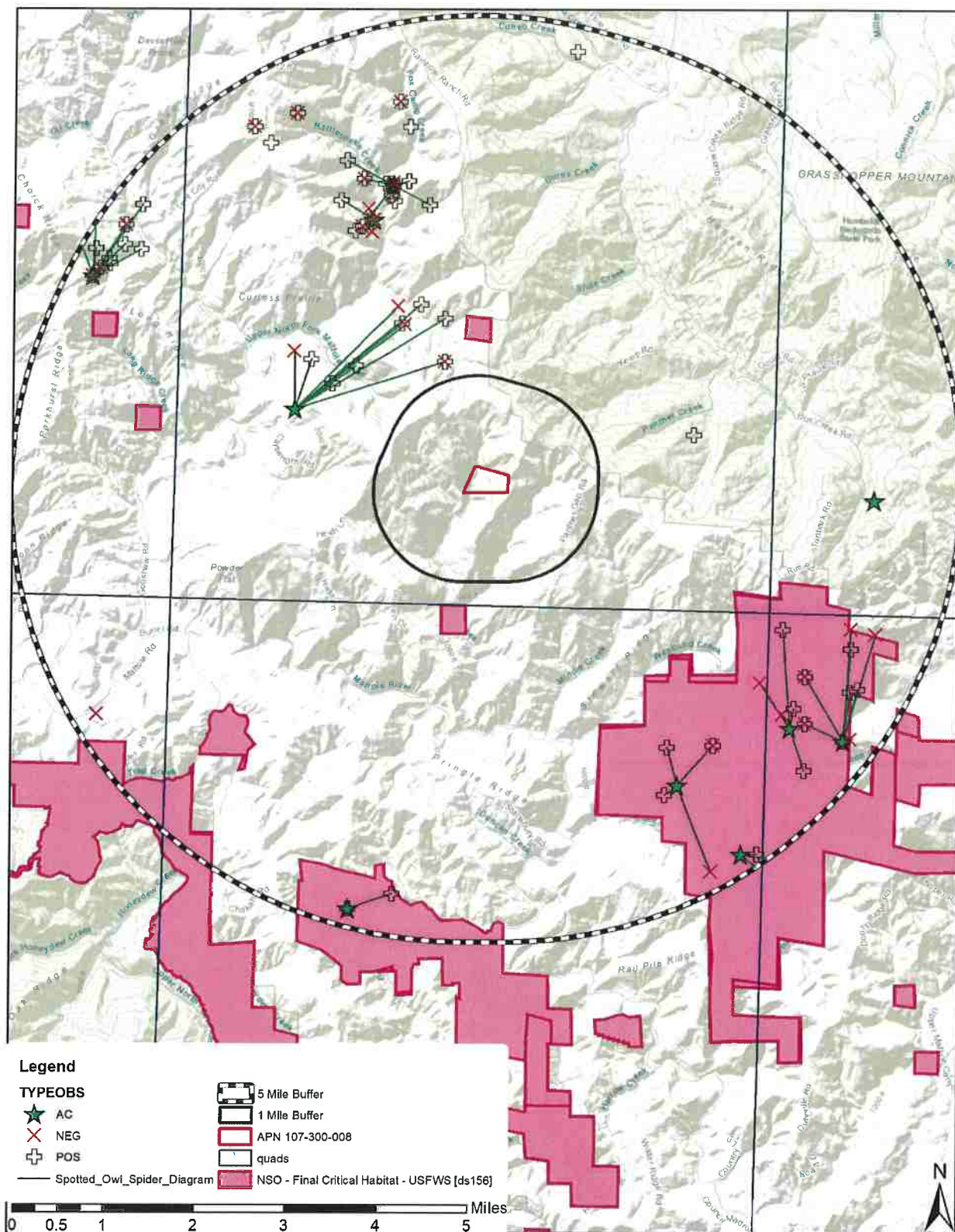


Figure 6. Northern Spotted Owls database entries within 5 miles of property.



Table 1. CNDDDB nine-quad database results for the Bull Creek 7.5' quadrangle (plants listed in CNDDDB results; C=Candidate Species, E=Endangered, T=Threatened, D=Delisted, N=None).

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat
<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.
<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.
<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.
<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.
<i>Arborimus pomio</i>	Sonoma tree vole	N	N	North coast fog belt from Oregon border to Sonoma County. In Douglas-fir, redwood & montane hardwood-conifer forests.	Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of grand fir, hemlock or spruce.
<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.
<i>Bombus caliginosus</i>	obscure bumble bee	N	N	Coastal areas from Santa Barbara county to north to Washington state.	Food plant genera include Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.
<i>Bombus occidentalis</i>	western bumble bee	N	C E	Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.	
<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.
<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.
<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.
<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.
<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.

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat
<i>Falco peregrinus anatum</i>	American peregrine falcon	D	D	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape or a depression or ledge in an open site.
<i>Helminthoglypta arrosa monticola</i>	mountain shouderband	N	N	Known only from the King Range in Humboldt County.	Found in talus slopes.
<i>Lasiurus blossevillei</i>	western red bat	N	N	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests.	Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.
<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.
<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.
<i>Myotis volans</i>	long-legged myotis	N	N	Most common in woodland and forest habitats above 4000 ft. Trees are important day roosts; caves and mines are night roosts.	Nursery colonies usually under bark or in hollow trees, but occasionally in crevices or buildings.
<i>Myotis yumanensis</i>	Yuma myotis	N	N	Optimal habitats are open forests and woodlands with sources of water over which to feed.	Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.
<i>Oncorhynchus mykiss</i> irideus 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.	
<i>Oncorhynchus mykiss</i> irideus pop. 36	summer-run steelhead trout	N	C E	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.
<i>Oncorhynchus tshawytscha</i> pop. 17	chinook salmon - California coastal ESU	T	N	Federal listing refers to wild spawned, coastal, spring & fall runs between Redwood Cr., Humboldt Co & Russian River, Sonoma Co	
<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.
<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.
<i>Rana aurora</i>	northern red-legged frog	N	N	Humid forests, woodlands, grasslands, and streambeds 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.
<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.

Scientific Name	Common Name	FESA	CESA	General Habitat	Microhabitat
<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.
<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.
<i>Taricha rivularis</i>	red-bellied newt	N	N	Coastal drainages from Humboldt County south to Sonoma County, inland to Lake County. Isolated population of uncertain origin in Santa Clara County.	Lives in terrestrial habitats, juveniles generally underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean, rocky substrate.
<i>Taxidea taxus</i>	American badger	N	N	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.
Upland Douglas Fir Forest	Upland Douglas Fir Forest	N	N		



Table 2. CNPS nine-quad database results for the Bull Creek 7.5' quadrangle.

Scientific Name	Common Name	Lifeform	CRPR	Habitat
<i>Astragalus agnicidus</i>	Humboldt County milk-vetch	perennial herb	1B.1	Broadleaved upland forest, North Coast coniferous forest
<i>Calamagrostis foliosa</i>	leafy reed grass	perennial herb	4.2	Coastal bluff scrub, North Coast coniferous forest
<i>Carex arcta</i>	northern clustered sedge	perennial herb	2B.2	Bogs and fens, North Coast coniferous forest (mesic)
<i>Castilleja ambigua</i> var. <i>ambigua</i>	johnny-nip	annual herb (hemiparasitic)	4.2	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools margins
<i>Epilobium septentrionale</i>	Humboldt County fuchsia	perennial herb	4.3	Broadleaved upland forest, North Coast coniferous forest
<i>Erythronium oregonum</i>	giant fawn lily	perennial bulbiferous herb	2B.2	Cismontane woodland, Meadows and seeps
<i>Erythronium revolutum</i>	coast fawn lily	perennial bulbiferous herb	2B.2	Bogs and fens, Broadleaved upland forest, North Coast coniferous forest
<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
<i>Hesperis matronalis</i> var. <i>sparsiflora</i>	short-leaved evax	annual herb	1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie
<i>Lathyrus glandulosus</i>	sticky pea	perennial rhizomatous herb	4.3	Cismontane woodland
<i>Lilium kelloggii</i>	Kellogg's lily	perennial bulbiferous herb	4.3	Lower montane coniferous forest, North Coast coniferous forest
<i>Lilium rubescens</i>	redwood lily	perennial bulbiferous herb	4.2	Broadleaved upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest
<i>Listera cordata</i>	heart-leaved twayblade	perennial herb	4.2	Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest
<i>Lycopodium clavatum</i>	running-pine	perennial rhizomatous herb	4.1	Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic)
<i>Mitella caulescens</i>	leafy-stemmed mitrewort	perennial rhizomatous herb	4.2	Broadleaved upland forest, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest
<i>Montia howellii</i>	Howell's montia	annual herb	2B.2	Meadows and seeps, North Coast coniferous forest, Vernal pools
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	perennial rhizomatous herb	2B.2	Coastal scrub, North Coast coniferous forest
<i>Piperia candida</i>	white-flowered rein orchid	perennial herb	1B.2	Broadleaved upland forest, Lower montane coniferous forest, North Coast coniferous forest
<i>Pityopus californicus</i>	California pinefoot	perennial herb (achlorophyllous)	4.2	Broadleaved upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest
<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

<i>Polemonium carneum</i>	Oregon polemonium	perennial herb	2B.2	Coastal prairie, Coastal scrub, Lower montane coniferous forest
<i>Ribes roezlii</i> var. <i>amictum</i>	hoary gooseberry	perennial deciduous shrub	4.3	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	perennial herb	4.2	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	perennial rhizomatous herb	1B.2	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest
<i>Tiarella trifoliata</i> var. <i>trifoliata</i>	trifoliolate laceflower	perennial rhizomatous herb	3.2	Lower montane coniferous forest, North Coast coniferous forest
<i>Usnea longissima</i>	Methuselah's beard lichen	fruticose lichen (epiphytic)	4.2	Broadleafed upland forest, North Coast coniferous forest

## Site Photographs

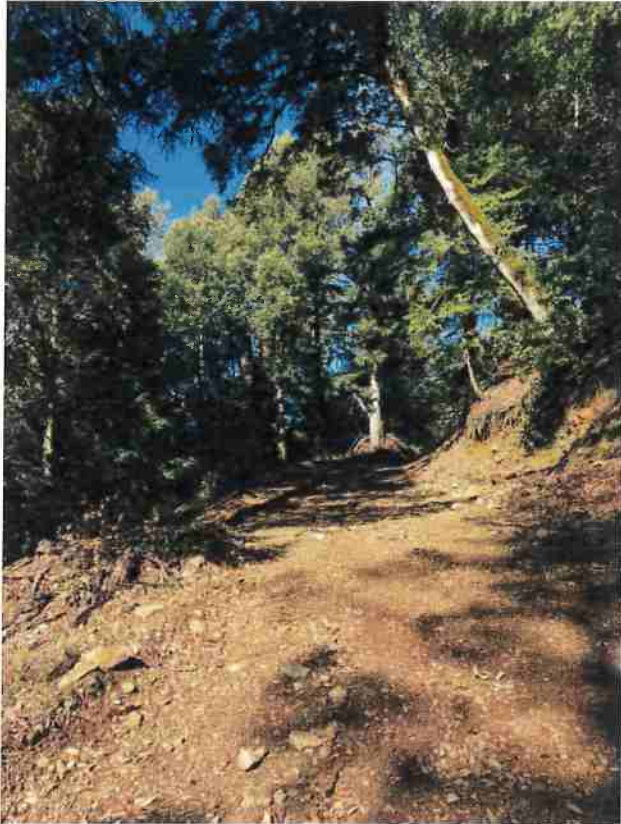


Proposed cultivation area and structure.



Road leading to proposed cultivation area.





Road to proposed cultivation area with steep grading.

## 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 18 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, Campbell Timberland Management 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**  
*Staff Biologist*



**Adrian Macedo**  
*Staff Biologist*

Adrian obtained a Bachelors of Science degree in Wildlife and a minor in Botany from Humboldt State University in 2017. He is currently finishing up a Masters of Science in Biological Sciences at Humboldt State. He has worked with the California Department of Fish and Wildlife for the past 5 years, specializing in fish, amphibian, and reptile research and restoration in the high mountain lakes of the Trinity Alps and Marble Mountain wilderness. His extensive resume includes his current phylogenetic work on Coastal Tailed Frog (*Ascaphus truei*), Mountain Lion (*Puma concolor*) tracking, bat mist-netting, electrofishing/dive counts, research specimen preparation, PIT tagging of amphibians, invasive species removal, native plant cultivation and landscaping, and much more. In addition, he has worked on six publications in various journals and three conference presentations.

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**  
*Staff Botanist*