

# **Botanical Survey Report Turner Parcel Project**

Prepared by  
Caitlyn Allchin  
8/31/21

For  
**Slack and Winzler Properties  
Eureka, CA**

**Signature:** 

**Date:** 8/31/21

---

## Setting

The 44.2-acre Turner Parcel (APN 304-071-018) is located in Section 15, Township 4 North, Range 1 West HB&M; Humboldt County, on the Fields Landing USGS 7.5' quadrangle. The project area is approximately 1.6 miles south of the town of Eureka, CA, off of Elk River Road. The parcel lies within the Elk River watershed. The biogeographic region can be described using a three-tiered hierarchy of province, region, and sub-region. This site lies within the California Floristic Province, Northwestern California region, and North Coast (NCo) sub-region. The property is presently zoned as Agricultural General (AG-B-5(5)-Q) under the Humboldt County General Plan. The elevation ranges from approximately 80 - 330 ft. Slopes on the property are moderate, and the aspect is primarily west-facing. The geology consists of older alluvium, lake, playa, and terrace deposits from marine and nonmarine (continental) sedimentary rocks. The parcel is a North Coast conifer forest dominated by coastal redwoods (*Sequoia sempervirens*) (S3.2 G3) with sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*), and Douglas-fir (*Pseudotsuga menziesii*).

## Methods

The botanical surveys for this project were conducted by Caitlyn Allchin on April 3, 2021, and July 11, 2021. Caitlyn holds a B.S. in Botany from Humboldt State University, where she is currently a biology graduate student. Caitlyn has taken relevant courses including plant taxonomy, lichens and bryophytes, ascomycetes and basidiomycetes, and principles of ecology, and conducted her senior directed study on the pollination biology of Western coltsfoot (*Petasites frigidus var. palmatus*) in Arcata, CA. She has 3 years of botany experience in Northern California.

The surveys were floristic in nature and seasonally appropriate, with an initial survey conducted during the spring to catch early blooming species and a follow-up during the summer for later-blooming species. For the 2021 field season, approximately 10.5 field hours were spent conducting field surveys, with a survey rate of 4 acres/hour. Surveys included systematic assessment of all potential habitats in the area based on maps, aerial photos, and visible environmental features such as canopy cover, slope, soil texture, aspect, hydrologic features, and associated vegetation. This survey protocol is based on the Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018). A list of potential rare plants found within the 9- quad area as listed in CDFW BIOS and CNPS Inventory of Rare and Endangered Plants is available in Attachment A. Attachment B provides details on potential state or federally listed plants and those on CNPS lists 1 – 2. Attachment C contains habitat photos. Attachment D lists all plants identified from botanical surveys. Attachment E contains a locator map, a CALVEG map, and a map of botanical survey routes taken along with locations of invasive species and Sensitive Natural Communities (SNC). Attachment F contains rare plant rank definitions. Attachment G contains a soil map of the project area.

## Results

The Turner Parcel contains no rare, threatened, or endangered species. The parcel is a North Coast conifer forest dominated by coastal redwoods (*Sequoia sempervirens*) (S3.2 G3) with sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*), and Douglas-fir (*Pseudotsuga menziesii*). Multiple *Rubus* Shrubland Alliance Coastal Bramble Sensitive Natural Communities (SNCs) exist throughout the parcel. The Coastal Bramble SNCs are predominantly composed of salmonberry (*Rubus spectabilis*), thimbleberry (*Rubus parviflorus*), and/or trailing blackberry (*Rubus ursinus*) (S3 G4). Natural communities with a rank of S3 or lower are considered Sensitive in the state of California.

Jubata grass (*Cortaderia jubata*, Cal-IPC *High* rating) was prevalent in openings within the understory, and Himalayan blackberry (*Rubus armeniacus*, Cal-IPC *High* rating) was found abundantly within mesic areas.

Skid roads established from previous timber harvests on the parcel have become propagated with non-native and invasive species including ox-eye daisy (*Leucanthemum vulgare*, Cal-IPC *Moderate* rating), jubata grass (*Cortaderia jubata*, Cal-IPC *High* rating) (Figures 3A & 3B), hairy cat's ear (*Hypochaeris radicata*, Cal-IPC *Moderate* rating), perennial rye grass (*Festuca perennis*, Cal-IPC *Moderate* rating), velvet grass (*Holcus lanatus*, Cal-IPC *Moderate* rating), sweet vernal grass (*Anthoxanthum odoratum*, Cal-IPC *Limited* rating), English plantain (*Plantago lanceolata*, Cal-IPC *Limited* rating), and orchard grass (*Dactylis glomerata*, Cal-IPC *Limited* rating).

The understory was predominantly western sword fern (*Polystichum munitum*), evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), and Himalayan blackberry (*Rubus armeniacus*).

Mesic areas on the property consisted of bigleaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), cascara sagrada (*Frangula purshiana*), wax myrtle (*Myrica californica*), red elderberry (*Sambucus racemosa*), salmonberry (*Rubus spectabilis*), thimbleberry (*Rubus parviflorus*), trailing blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus armeniacus*), coastal manroot (*Marah oregana*), and hedgenettle (*Stachys ajugoides*).

All potential rare plant habitats were surveyed, and false negative surveys are unlikely.

## Impacts

Harvesting and/or development within the forest will likely continue spreading invasive non-native species throughout the parcel. Shade tolerant species found within the forest will likely be impacted by the change in the canopy structure. Soils can be compacted from heavy equipment and machinery, and microorganismal communities may be altered from the reopening of skid roads and harvesting operations. Hydrology can be potentially altered from the removal of trees throughout the project area. Shade tolerant cryptogams, such as lichens, bryophytes, and fungi, will likely also be impacted by the removal of select trees or alteration of the canopy structure.

## Mitigations

Coastal Bramble SNCs should be avoided during harvest operations on the property. Trees should be felled away from the SNCs. No heavy equipment should be placed within the SNCs. No fuels or chemicals should be placed or utilized within the SNCs.

Jubata grass within the openings on the property and the bull thistle along the skid roads should be mitigated prior to any harvest or clearing activities. Tires of heavy machinery, trucks, and equipment should be washed before entering the property and after use on the property to minimize transport of invasive non-native species into and off of the property.

## References

Baldwin, B.G., D.H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California*, second edition. University of California Press, Berkeley.

[DOC] California Department of Conservation. 2019. [Interactive geological map of California]. Geologic Map of California. Retrieved from <https://maps.conservation.ca.gov/cgs/gmc/>

[CDFW] California Department of Fish and Wildlife, 2018. “Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities” State of California.

[CDFW] California Department of Fish and Wildlife. 2020. “Natural Communities List Arranged Alphabetically by Life Form,” Natural Communities. Sacramento, CA. Accessed August 2021. < <https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities#natural%20communities%20lists>>

California Department of Fish and Wildlife, Natural Diversity Database, BIOS. 2021. California Department of Fish and Wildlife, Biogeographic Data Branch, Sacramento, CA. Accessed April 2021.

Cal IPC (California Invasive Plant Council). 2021. *The Cal-IPC Inventory*. (Online edition). Berkeley, CA. <<https://www.cal-ipc.org>>.

California Native Plant Society, Rare Plant Program. 2021. *Inventory of Rare and Endangered Plants of California* (online edition, v9-01 0.0). Website <https://www.rareplants.cnps.org> [accessed July 2021].

DiTomaso, J.M., Kyser, G.B., Oneto, S.R., Wilson, R.G., Orloff, S.B., Anderson, L.W., Wright, S.D., Roncoroni, J.A., Miller, T.L., Prather, T.S. and Ransom, C., 2013. Weed control in natural areas in the western United States. *Weed Research and Information Center*, University of California, 544.

Humboldt County Weed Management Area. 2010. *Invasive Weeds of Humboldt County: A Guide for Concerned Citizens* (2nd Edition). Arcata, California.

Jepson Flora Project (eds.) 2021. Jepson eFlora, <http://ucjeps.berkeley.edu/eflora/> [accessed July 2021].

Kauffmann, M.E., V. T. Parker, and M. C. Vasey. 2015. *Field guide to manzanitas: California, North America, and Mexico*. Backcountry Press, Kneeland, CA, in association with California Native Plant Society, North Coast Chapter.

Malcom, B., Malcom, N. Shevock, J., and Norris, D. 2009. *California mosses*. Micro-Optics Press.

McCune, B., Geiser, L. 2009. *Macrolichens of the Pacific Northwest*. Corvallis, OR: Oregon State University Press.

Niehaus, T.F., 1976. *A field guide to Pacific States wildflowers: Washington, Oregon, California and adjacent areas*. Houghton Mifflin.

Pojar, J. and MacKinnon, A., 1994. *Plants of the Pacific Northwest coast*. Lone Pine, Vancouver, BC.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation Online*, 2nd edition. California Native Plant Society, Sacramento, CA. Accessed June 2021. <<http://vegetation.cnps.org/>>.

Sharnoff, S. 2014. *A field guide to California lichens*. Yale University Press.

Siegel, N. and Schwarz, C. 2016. *Mushrooms of the redwood coast*. Ten Speed Press.

Smith Jr, J.P., 2014. *Field guide to grasses of California* (Vol. 110). Univ of California Press.

Stuart, J.D. and Sawyer, J.O., 2001. *Trees and shrubs of California* (Vol. 62). Univ of California Press.

[USDA] United States Department of Agriculture, [NRCS] Natural Resources Conservation Service (2021). *Custom Soil Resource Report for Humboldt County, South Part, California*.

## Attachment A: List of Potentially Occurring Sensitive Plant Species

Scientific Name	Common Name	CRPR	CESA	FESA	Flowering Period	Habitat in Project Area
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	1B.1	None	None	Jun-Oct	No
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	1B.2	None	None	(Apr)Jun-Oct	No
<i>Bryoria spiralis</i>	twisted horsehair lichen	1B.1	None	None	--	No
<b><i>Cardamine angulata</i></b>	<b>seaside bittercress</b>	<b>2B.2</b>	<b>None</b>	<b>None</b>	<b>(Jan)Mar-Jul</b>	<b>Potential</b>
<b><i>Carex arcta</i></b>	<b>northern clustered sedge</b>	<b>2B.2</b>	<b>None</b>	<b>None</b>	<b>Jun-Sep</b>	<b>Potential</b>
<i>Carex leptalea</i>	bristle-stalked sedge	2B.2	None	None	Mar-Jul	No
<i>Carex lyngbyei</i>	Lyngbye's sedge	2B.2	None	None	Apr-Aug	No
<i>Carex praticola</i>	northern meadow sedge	2B.2	None	None	May-Jul	No
<i>Castilleja ambigua</i> var. <i>humboldtiensis</i>	Humboldt Bay owl's-clover	1B.2	None	None	Apr-Aug	No
<i>Castilleja litoralis</i>	Oregon coast paintbrush	2B.2	None	None	Jun-Jul	No
<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Point Reyes bird's-beak	1B.2	None	None	Jun-Oct	No
<i>Clarkia amoena</i> ssp. <i>whitneyi</i>	Whitney's farewell-to-spring	1B.1	None	None	Jun-Aug	No
<i>Collinsia corymbosa</i>	round-headed Chinese-houses	1B.2	None	None	Apr-Jun	No
<b><i>Downingia willamettensis</i></b>	<b>Cascade downingia</b>	<b>2B.2</b>	<b>None</b>	<b>None</b>	<b>Jun-Jul(Sep)</b>	<b>Potential</b>
<i>Erysimum menziesii</i>	Menzies' wallflower	1B.1	CE	FE	Mar-Sep	No
<b><i>Erythronium revolutum</i></b>	<b>coast fawn lily</b>	<b>2B.2</b>	<b>None</b>	<b>None</b>	<b>Mar-Jul(Aug)</b>	<b>Potential</b>
<b><i>Fissidens pauperculus</i></b>	<b>minute pocket moss</b>	<b>1B.2</b>	<b>None</b>	<b>None</b>	<b>--</b>	<b>Potential</b>
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	1B.2	None	None	Apr-Aug	No
<i>Gilia millefoliata</i>	dark-eyed gilia	1B.2	None	None	Apr-Jul	No
<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	1B.2	None	None	Mar-Jun	No
<b><i>Hesperolinon adenophyllum</i></b>	<b>glandular western flax</b>	<b>1B.2</b>	<b>None</b>	<b>None</b>	<b>May-Aug</b>	<b>Potential</b>
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	1B.2	None	None	Jan-Nov	No
<i>Lathyrus japonicus</i>	seaside pea	2B.1	None	None	May-Aug	No
<b><i>Lathyrus palustris</i></b>	<b>marsh pea</b>	<b>2B.2</b>	<b>None</b>	<b>None</b>	<b>Mar-Aug</b>	<b>Potential</b>
<i>Layia carnosa</i>	beach layia	1B.1	CE	FE	Mar-Jul	No
<i>Lilium occidentale</i>	western lily	1B.1	CE	FE	Jun-Jul	No
<b><i>Monotropa uniflora</i></b>	<b>ghost-pipe</b>	<b>2B.2</b>	<b>None</b>	<b>None</b>	<b>Jun-Aug(Sep)</b>	<b>Potential</b>
<b><i>Montia howellii</i></b>	<b>Howell's montia</b>	<b>2B.2</b>	<b>None</b>	<b>None</b>	<b>(Jan-Feb)Mar-May</b>	<b>Potential</b>

<i>Oenothera wolfii</i>	Wolf's evening-primrose	1B.1	None	None	May-Oct	Potential
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	2B.2	None	None	(Jan-Apr)May-Jul(Aug)	Potential
<i>Polemonium carneum</i>	Oregon polemonium	2B.2	None	None	Apr-Sep	Potential
<i>Puccinellia pumila</i>	dwarf alkali grass	2B.2	None	None	July	No
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	1B.2	None	None	(Apr)May-Aug	Potential
<i>Sidalcea oregana</i> ssp. <i>eximia</i>	coast checkerbloom	1B.2	None	None	Jun-Aug	Potential
<i>Silene scouleri</i> ssp. <i>scouleri</i>	Scouler's catchfly	2B.2	None	None	(Mar-May)Jun-Aug(Sep)	No
<i>Spergularia canadensis</i> var. <i>occidentalis</i>	western sand-spurrey	2B.1	None	None	Jun-Aug	No
<i>Viola palustris</i>	alpine marsh violet	2B.2	None	None	Mar-Aug	No

## Attachment B: Potential Rare Plant Details

1. Pink sand-verbena (*Abronia umbellata* var. *breviflora*)  
Status: CNPS List 1B.1, Rare or Endangered in California and elsewhere; .1 Seriously endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G4G5T2: Apparently Secure, Secure, Imperiled.  
Family: Nyctaginaceae  
Flowering: June - October  
Habitat: Coastal dunes.  
Status within project area: No coastal dunes, no potential habitat exists.
2. Coastal marsh milk-vetch (*Astragalus pycnostachyus* var. *pycnostachyus*)  
Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G2T2: Imperiled.  
Family: Fabaceae  
Flowering: (April) June - October  
Habitat: Coastal dunes (mesic), coastal scrub, marshes, and swamps (coastal salt, streamside).  
Status within project area: No coastal areas, no potential habitat exists.
3. Twisted horsehair lichen (*Bryoria spiralifera*)  
Status: CNPS List 1B.1, Rare or Endangered in California and elsewhere; .1 Seriously endangered in California. No federal or state listing. State Rank S1S2: Critically Imperiled, Imperiled; Global Rank G3: Vulnerable.  
Family: Parmeliaceae  
Flowering: --  
Habitat: Usually on conifers; North Coast coniferous forest (immediate coast).  
Status within project area: No coastal habitat, no potential habitat exists.
4. Seaside bittercress (*Cardamine angulata*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S3: Vulnerable; Global Rank G4G5: Apparently Secure, Secure.  
Family: Brassicaceae  
Flowering: (January) March - July  
Habitat: Wet areas, streambanks; lower montane coniferous forest; North Coast coniferous forest.  
Status within project area: Potential habitat exists within forest areas.
5. Northern clustered sedge (*Carex arcta*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S1: Critically Imperiled; Global Rank G5: Secure.  
Family: Cyperaceae  
Flowering: June - September



Habitat: Bogs and fens, North Coast coniferous forest (mesic).  
Status within project area: Potential habitat exists in forest areas.

6. Bristle-stalked sedge (*Carex leptalea*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S1: Critically Imperiled; Global Rank G5: Secure.  
Family: Cyperaceae  
Flowering: March - July  
Habitat: Bogs and fens, meadows and seeps (mesic), marshes and swamps.  
Status within project area: No mesic meadows, seeps, bogs, fens, or marshes and swamps; no potential habitat exists.
7. Lyngbye's sedge (*Carex lyngbyei*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S3: Vulnerable; Global Rank G5: Secure.  
Family: Cyperaceae  
Flowering: April - August  
Habitat: Marshes and swamps (brackish or freshwater).  
Status within project area: No marshes or swamps; no potential habitat exists.
8. Northern meadow sedge (*Carex praticola*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G5: Secure.  
Family: Cyperaceae  
Flowering: May - July  
Habitat: Meadows and seeps (mesic).  
Status within project area: No meadows or seeps; no potential habitat exists.
9. Humboldt Bay owl's-clover (*Castilleja ambigua* var. *humboldtiensis*)  
Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G4T2: Apparently Secure/Imperiled.  
Family: Orobanchaceae  
Flowering: April - August  
Habitat: Marshes and swamps (coastal salt).  
Status within project area: No marshes or swamps; no potential habitat exists.
10. Oregon coast paintbrush (*Castilleja litoralis*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S3: Vulnerable; Global Rank G3: Vulnerable.  
Family: Orobanchaceae  
Flowering: June - July

Habitat: Sandy, coastal bluff scrub, coastal dunes, coastal scrub.  
Status within project area: No coastal areas; no potential habitat exists.

11. Point Reyes bird's-beak (*Chloropyron maritimum ssp. palustre*)  
Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G4?T2: Apparently Secure, Imperiled.  
Family: Orobanchaceae  
Flowering: June - October  
Habitat: marshes and swamps (coastal salt).  
Status within project area: No coastal areas; no potential habitat exists.
12. Whitney's farewell-to-spring (*Clarkia amoena ssp. whitneyi*)  
Status: CNPS List 1B.1, Rare or Endangered in California and elsewhere; .1 Seriously endangered in California. No state or federal listing. State Rank S1: Critically Imperiled; Global Rank G5T1: Secure, Critically Imperiled.  
Family: Onagraceae  
Flowering: June - August  
Habitat: Coastal bluff scrub, coastal scrub.  
Status within project area: No coastal habitat; no potential habitat exists.
13. Round-headed Chinese-houses (*Collinsia corymbosa*)  
Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S1: Critically Imperiled; Global Rank G1: Critically Imperiled.  
Family: Plantaginaceae  
Flowering: April – June  
Habitat: Coastal dunes.  
Status within project area: No coastal areas; no potential habitat exists.
14. Cascade downingia (*Downingia willamettensis*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G4: Apparently Secure.  
Family: Campanulaceae  
Flowering: June – July (September)  
Habitat: Cistmontane woodland (lake margins), valley and foothill grasslands (lake margins), vernal pools.  
Status within project area: Potential habitat exists within vernal pools.
15. Menzies' wallflower (*Erysimum menziesii*)  
Status: CNPS List 1B.1, Rare or Endangered in California and elsewhere; .1 Seriously endangered in California. State and federally listed as Endangered. State Rank S1: Critically Imperiled; Global Rank G1: Critically Imperiled.  
Family: Brassicaceae  
Flowering: March - September

Habitat: Coastal dunes.

Status within project area: No coastal areas; no potential habitat exists.

16. Coast fawn lily (*Erythronium revolutum*)

Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S3: Vulnerable; Global Rank G4G5: Apparently Secure/Secure.

Family: Liliaceae

Flowering: March – July (August)

Habitat: Mesic, streambanks, bogs and fens, broadleafed upland forest, North Coast coniferous forest.

Status within project area: Potential habitat exists in mesic areas of the forest.

17. Minute pocket moss (*Fissidens pauperculus*)

Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G3?: Vulnerable.

Family: Fissidentaceae

Flowering: --

Habitat: North Coast coniferous forest (damp coastal soil).

Status within project area: Potential habitat exists within forest area.

18. Pacific gilia (*Gilia capitata ssp. pacifica*)

Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G5T3: Secure, Vulnerable.

Family: Polemoniaceae

Flowering: April - August

Habitat: Coastal bluff scrub, chaparral (openings), coastal prairie, valley and foothill grassland.

Status within project area: No potential habitat exists.

19. Dark-eyed gilia (*Gilia millefoliata*)

Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G2: Imperiled.

Family: Polemoniaceae

Flowering: April - July

Habitat: Coastal dunes.

Status within project area: No coastal habitat; no potential habitat exists.

20. Short-leaved evax (*Hesperevax sparsiflora var. brevifolia*)

Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G4T3: Apparently Secure/Vulnerable.

Family: Asteraceae

Flowering: March - June

Habitat: Coastal bluff scrub (sandy), coastal dunes, coastal prairie.

Status within project area: No coastal habitat; no potential habitat exists.

21. Glandular western flax (*Hesperolinon adenophyllum*)

Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2S3: Imperiled, Vulnerable; Global Rank G2G3: Imperiled, Vulnerable.

Family: Linaceae

Flowering: May - August

Habitat: Usually serpentinite, chaparral, cismontane woodland, valley and foothill grassland.

Status within project area: Potential habitat exists.

22. Perennial goldfields (*Lasthenia californica* ssp. *macrantha*)

Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G3T2: Vulnerable, Imperiled.

Family: Asteraceae

Flowering: January - November

Habitat: Coastal bluff scrub, coastal dunes, coastal scrub.

Status within project area: No coastal habitat; no potential habitat exists.

23. Seaside pea (*Lathyrus japonicus*)

Status: CNPS List 2B.1, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G5: Secure.

Family: Fabaceae

Flowering: May - August

Habitat: Coastal dunes.

Status within project area: No coastal habitat; no potential habitat exists.

24. Marsh pea (*Lathyrus palustris*)

Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G5: Secure.

Family: Fabaceae

Flowering: March - August

Habitat: Mesic, bogs and fens, coastal prairie, coastal scrub, lower montane coniferous forest, marshes and swamps, North Coast coniferous forest.

Status within project area: Potential habitat exists within mesic areas of the forest.

25. Beach layia (*Layia carnosa*)

Status: CNPS List 1B.1, Rare or Endangered in California and elsewhere; .1 Seriously endangered in California. State and federally listed as Endangered. State Rank S2: Imperiled; Global Rank G2: Imperiled.

Family: Asteraceae

Flowering: March - July

Habitat: Coastal dunes, coastal scrub (sandy).

Status within project area: No coastal habitat; no potential habitat exists.

26. Western lily (*Lilium occidentale*)

Status: CNPS List 1B.1, Rare or Endangered in California and elsewhere; .1 Seriously endangered in California. State and federally listed as Endangered. State Rank S1: Critically Imperiled; Global Rank G1: Critically Imperiled.

Family: Liliaceae

Flowering: June - July

Habitat: Bogs and fens, coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps (freshwater), North Coast coniferous forest (openings).

Status within project area: No forest openings; no potential habitat exists.

27. Ghost-pipe (*Monotropa uniflora*)

Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G5: Secure.

Family: Ericaceae

Flowering: June – August (September)

Habitat: Broadleaved upland forest, North Coast coniferous forest.

Status within project area: Potential habitat exists within forest areas.

28. Howell's montia (*Montia howellii*)

Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G3G4: Vulnerable, Apparently Secure.

Family: Montiaceae

Flowering: (January – February) March - May

Habitat: Vernal mesic, sometimes roadsides, meadows and seeps, North Coast coniferous forest, vernal pools.

Status within project area: Potential habitat exists within roadsides, vernal pools, vernal mesic areas, and forest areas.

29. Wolf's evening-primrose (*Oenothera wolffi*)

Status: CNPS List 1B.1, Rare or Endangered in California and elsewhere; .1 Seriously endangered in California. No state or federal listing. State Rank S1: Critically Imperiled; Global Rank G2: Imperiled.

Family: Onagraceae

Flowering: May - October

Habitat: Sandy, usually mesic; coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest.

Status within project area: Potential habitat exists.

30. Seacoast ragwort (*Packera bolanderi* var. *bolanderi*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2S3: Imperiled, Vulnerable; Global Rank G4T4: Apparently Secure.  
Family: Asteraceae  
Flowering: (January – April) May – July (August)  
Habitat: Sometimes roadsides, coastal scrub, North Coast coniferous forest.  
Status within project area: Potential habitat exists within forest areas.
31. Oregon polemonium (*Polemonium carneum*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G3G4: Vulnerable, Apparently Secure.  
Family: Polemoniaceae  
Flowering: April – September  
Habitat: Coastal prairie, coastal scrub, Lower montane coniferous forest.  
Status within project area: Potential habitat exists.
32. Dwarf alkali grass (*Puccinellia pumila*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank SH: All California sites are historical; Global Rank G4?: Apparently Secure.  
Family: Poaceae  
Flowering: July  
Habitat: Marshes and swamps (coastal salt).  
Status within project area: No coastal habitat, no marshes or swamps; no potential habitat exists.
33. Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*)  
Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2: Imperiled; Global Rank G5T2: Secure, Imperiled.  
Family: Malvaceae  
Flowering: (April) May - August  
Habitat: Often roadcuts, coastal bluff scrub, coastal prairie, North Coast coniferous forest.  
Status within project area: Potential habitat exists within forest areas.
34. Coast checkerbloom (*Sidalcea oregana* ssp. *eximia*)  
Status: CNPS List 1B.2, Rare or Endangered in California and elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S1: Critically Imperiled; Global Rank G5T1: Secure, Critically Imperiled.  
Family: Malvaceae  
Flowering: June - August  
Habitat: Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest.  
Status within project area: Potential habitat exists within forest areas.

35. Scouler's catchfly (*Silene scouleri* ssp. *scouleri*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S2S3: Imperiled, Vulnerable; Global Rank G5T4T5: Apparently Secure, Secure.  
Family: Caryophyllaceae  
Flowering: (March – May) June – August (September)  
Habitat: Coastal bluff scrub, coastal prairie, valley and foothill grasslands.  
Status within project area: No coastal habitat, no grasslands; no potential habitat exists.
36. Western sand-spurrey (*Spergularia canadensis* var. *occidentalis*)  
Status: CNPS List 2B.1, Rare or Endangered in California, common elsewhere; .1 Seriously endangered in California. No state or federal listing. State Rank S1: Critically Imperiled; Global Rank G5T4: Secure, Apparently Secure.  
Family: Caryophyllaceae  
Flowering: June - August  
Habitat: Marshes and swamps (coastal salt).  
Status within project area: No marshes or swamps; no potential habitat exists.
37. Alpine marsh violet (*Viola palustris*)  
Status: CNPS List 2B.2, Rare or Endangered in California, common elsewhere; .2 Fairly endangered in California. No state or federal listing. State Rank S1S2: Critically Imperiled, Imperiled; Global Rank G5: Secure.  
Family: Violaceae  
Flowering: March - August  
Habitat: Bogs and fens (coastal), coastal scrub (mesic).  
Status within project area: No coastal habitat; no potential habitat exists.

## Attachment C. Habitat Photos



Figures 1A & 1B. The property was a North Coast coniferous forest dominated by coastal redwoods (*Sequoia sempervirens*) (S3.2 G4) with Sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*), and Douglas-fir (*Pseudotsuga menziesii*) with a predominant understory of western sword fern (*Polystichum munitum*) (Figure 1A). Some mesic areas on the property were dominated by red alder (*Alnus rubra*) (S4 G5) (Figure 1B).





Figures 2A & 2B. Big leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), wax myrtle (*Myrica californica*), cascara sagrada (*Frangula purshiana*), and red elderberry (*Sambucus racemosa*), were found growing in riparian corridors and other mesic areas of the parcel.



Figures 3A & 3B. Coastal Bramble *Rubus* Shrubland Alliance SNC (S3 G4) (Figure 3A) appears in mesic areas throughout the property forming dense thickets of *Rubus* sp. intermixed with other riparian vegetation. Bull thistle (*Cirsium vulgare*, Cal-IPC *Moderate* rating) was beginning to propagate in multiple areas along the skid road running north-south on the western boundary of the parcel (Figure 3B).



Figures 4A & 4B. Open areas in the understory were becoming dominated by jubata grass (*Cortaderia jubata*, Cal-IPC *High* rating) (Figures 4A & 4B). Ox-eye daisy (*Leucanthemum vulgare*, Cal-IPC *Moderate* rating) was well-established along the skid roads throughout the southern area of the property (Figure 4B).

## Attachment D. Plant Species Observed

Form	Scientific Name	Common Name	Status	Family	Date
Trees	<i>Abies grandis</i>	Grand fir	native	Pinaceae	4/3/2021
	<i>Acer macrophyllum</i>	Bigleaf maple	native	Sapindaceae	4/3/2021
	<i>Alnus rubra</i>	Red alder	native	Betulaceae	4/3/2021
	<i>Cordyline australis</i>	Cabbage tree	invasive non-native	Laxmanniaceae	4/3/2021
	<i>Frangula purshiana</i>	Cascara sagrada	native	Rhamnaceae	4/3/2021
	<i>Ilex aquifolium</i>	Holly	invasive non-native	Aquifoliaceae	4/3/2021
	<i>Myrica californica</i>	California wax myrtle	native	Myricaceae	4/3/2021
	<i>Picea sitchensis</i>	Sitka spruce	native	Pinaceae	4/3/2021
	<i>Pseudotsuga menziesii</i>	Douglas fir	native	Pinaceae	4/3/2021
	<i>Sequoia sempervirens</i>	Coast redwood	native	Cupressaceae	4/3/2021
Shrubs	<i>Baccharis pilularis</i>	Coyote brush	native	Asteraceae	4/3/2021
	<i>Berberis nervosa</i>	Oregon grape	native	Berberidaceae	4/3/2021
	<i>Euonymus occidentalis</i>	Western burning bush	native	Celastraceae	7/11/2021
	<i>Frangula purshiana</i>	Cascara sagrada	native	Rhamnaceae	4/3/2021
	<i>Gaultheria shallon</i>	Salal	native	Ericaceae	4/3/2021
	<i>Hedera helix</i>	English ivy	invasive non-native	Araliaceae	4/3/2021
	<i>Holodiscus discolor</i>	Oceanspray	native	Rosaceae	4/3/2021
	<i>Hypericum calycinum</i>	Aaron's beard	non-native	Ericaceae	4/3/2021
	<i>Ilex aquifolium</i>	Holly	invasive non-native	Aquifoliaceae	4/3/2021
	<i>Lonicera hispidula</i>	Pink honeysuckle	native	Caprifoliaceae	4/3/2021
	<i>Lonicera involucrata</i>	twinberry	native	Caprifoliaceae	4/3/2021
	<i>Marah oregana</i>	Coast man-root	native	Cucurbitaceae	4/3/2021
	<i>Ribes divaricatum var. pubiflorum</i>	Spreading gooseberry	native	Grossulariaceae	7/11/2021
	<i>Ribes menziesii</i>	Gooseberry	native	Grossulariaceae	4/3/2021
	<i>Rosa rubiginosa</i>	Sweet brier	non-native	Rosaceae	4/3/2021
	<i>Rubus armeniacus</i>	Himalayan blackberry	invasive non-native	Rosaceae	4/3/2021
	<i>Rubus leucodermis</i>	White bark raspberry	native	Rosaceae	4/3/2021
	<i>Rubus parviflorus</i>	Thimbleberry	native	Rosaceae	4/3/2021
	<i>Rubus spectabilis</i>	Salmon berry	native	Rosaceae	4/3/2021
	<i>Rubus ursinus</i>	California blackberry	native	Rosaceae	4/3/2021
	<i>Sambucus racemosa</i>	Red elderberry	native	Adoxaceae	4/3/2021
<i>Vaccinium ovatum</i>	evergreen huckleberry	native	Ericaceae	4/3/2021	
<i>Vaccinium parvifolium</i>	red huckleberry	native	Ericaceae	4/3/2021	

## Herbaceous

<i>Achillea millefolium</i>	Yarrow	native	Asteraceae	4/3/2021
<i>Actaea rubra</i>	Baneberry	native	Ranunculaceae	7/11/2021
<i>Adiantum aleuticum</i>	Western maidenhair fern	native	Pteridaceae	4/3/2021
<i>Agrostis capillaris</i>	Colonial bentgrass	non-native	Poaceae	4/3/2021
<i>Anthoxanthum odoratum</i>	Sweet vernal grass	invasive non-native	Poaceae	7/11/2021
<i>Asarum caudatum</i>	Creeping wild ginger	native	Aristolochiaceae	4/3/2021
<i>Athyrium filix-femina</i>	lady fern	native	Athyriaceae	4/3/2021
<i>Barbarea vulgaris</i>	Yellow rocket	non-native	Brassicaceae	4/3/2021
<i>Bellis perennis</i>	English lawn daisy	non-native	Asteraceae	4/3/2021
<i>Blechnum spicant</i>	deer fern	native	Blechnaceae	4/3/2021
<i>Cardamine californica</i>	Bitter cress	native	Brassicaceae	4/3/2021
<i>Cardamine oligosperma</i>	Idaho bittercress	native	Brassicaceae	4/3/2021
<i>Carex gynodynamis</i>	Olney's hairy sedge	native	Cyperaceae	7/11/2021
<i>Carex hendersonii</i>	Henderson's sedge	native	Cyperaceae	7/11/2021
<i>Carex leptopoda</i>	Slender-footed sedge	native	Cyperaceae	7/11/2021
<i>Carex obnupta</i>	Slough sedge	native	Cyperaceae	4/3/2021
<i>Cirsium brevistylum</i>	Indian thistle	native	Asteraceae	7/11/2021
<i>Cirsium vulgare</i>	Bullthistle	invasive non-native	Asteraceae	4/3/2021
<i>Claytonia perfoliata</i>	Miner's lettuce	native	Montiaceae	4/3/2021
<i>Claytonia sibirica</i>	Candy flower	native	Montiaceae	4/3/2021
<i>Conium maculatum</i>	Poison hemlock	invasive non-native	Apiaceae	7/11/2021
<i>Cortaderia jubata</i>	Jubata grass	invasive non-native	Poaceae	4/3/2021
<i>Cynoglossum grande</i>	Houndstongue	native	Boraginaceae	4/3/2021
<i>Dactylis glomerata</i>	Orchardgrass	invasive non-native	Poaceae	7/11/2021
<i>Daucus carota</i>	Carrot	non-native	Apiaceae	4/3/2021
<i>Daucus pusillus</i>	Wild carrot	native	Apiaceae	4/3/2021
<i>Digitalis purpurea</i>	Foxglove	invasive non-native	Plantaginaceae	4/3/2021
<i>Dryopteris arguta</i>	Wood fern	native	Dryopteridaceae	7/11/2021
<i>Dryopteris expansa</i>	Spreading wood fern	native	Dryopteridaceae	4/3/2021
<i>Equisetum arvense</i>	common horsetail	native	Equisetaceae	4/3/2021
<i>Equisetum telmateia</i>	Giant horsetail	native	Equisetaceae	4/3/2021
<i>Erythranthe guttata</i>	common monkeyflower	native	Phrymaceae	7/11/2021
<i>Festuca perennis</i>	Italian rye grass	invasive non-native	Poaceae	7/11/2021
<i>Galium aparine</i>	Cleavers	native	Rubiaceae	4/3/2021
<i>Galium triflorum</i>	Sweet bedstraw	native	Rubiaceae	7/11/2021
<i>Geranium dissectum</i>	Wild geranium	invasive non-native	Geraniaceae	4/3/2021
<i>Goodyera oblongifolia</i>	Rattlesnake plantain	native	Orchidaceae	4/3/2021
<i>Heracleum maximum</i>	Common cowparsnip	native	Apiaceae	4/3/2021
<i>Holcus lanatus</i>	Common velvetgrass	invasive non-native	Poaceae	7/11/2021

<i>Hypochaeris radicata</i>	Hairy cats' ear	invasive non-native	Asteraceae	4/3/2021
<i>Iris douglasiana</i>	Douglas iris	native	Iridaceae	4/3/2021
<i>Iris purdyi</i>	Purdy's iris	native	Iridaceae	7/11/2021
<i>Juncus effusus</i>	Common bog rush	native	Juncaceae	4/3/2021
<i>Juncus patens</i>	Rush	native	Juncaceae	4/3/2021
<i>Leucanthemum vulgare</i>	Oxe eye daisy	invasive non-native	Asteraceae	4/3/2021
<i>Linum bienne</i>	Flax	non-native	Linaceae	7/11/2021
<i>Lotus corniculatus</i>	Bird's foot trefoil	non-native	Fabaceae	7/11/2021
<i>Luzula parviflora</i>	Small flowered wood rush	native	Juncaceae	4/3/2021
<i>Lysichiton americanus</i>	Yellow skunk cabbage	native	Araceae	7/11/2021
<i>Lysimachia arvensis</i>	Scarlet pimpernel	non-native	Myrsinaceae	7/11/2021
<i>Lysimachia latifolia</i>	Pacific starflower	native	Myrsinaceae	4/3/2021
<i>Maianthemum dilatatum</i>	Pacific may lily	native	Ruscaceae	4/3/2021
<i>Maianthemum racemosum</i>	Feathery false lily of the valley	native	Ruscaceae	7/11/2021
<i>Medicago polymorpha</i>	California burclover	invasive non-native	Fabaceae	7/11/2021
<i>Mentha pulegium</i>	Pennyroyal	invasive non-native	Lamiaceae	4/3/2021
<i>Myosotis discolor</i>	Forget me not	non-native	Boraginaceae	4/3/2021
<i>Osmorhiza berteroi</i>	Sweet cicely	native	Apiaceae	4/3/2021
<i>Oxalis oregana</i>	Redwood sorrel	native	Oxalidaceae	7/11/2021
<i>Petasites frigidus</i>	Arctic sweet coltsfoot	native	Asteraceae	4/3/2021
<i>Petasites frigidus var. palmatus</i>	Arctic sweet coltsfoot	native	Asteraceae	4/3/2021
<i>Plantago lanceolata</i>	Ribwort	invasive non-native	Plantaginaceae	4/3/2021
<i>Poa pratensis</i>	Kentucky blue grass	invasive non-native	Poaceae	7/11/2021
<i>Polypodium scolieri</i>	Leather fern	native	Polypodiaceae	4/3/2021
<i>Polystichum munitum</i>	Western sword fern	native	Dryopteridaceae	4/3/2021
<i>Prosartes smithii</i>	largeflower fairybells	native	Liliaceae	4/3/2021
<i>Prunella vulgaris</i>	Self-heal	native	Lamiaceae	4/3/2021
<i>Pteridium aquilinum</i>	Western brackenfern	native	Dennstaedtiaceae	4/3/2021
<i>Ranunculus repens</i>	Crowfoot, creeping buttercup	invasive non-native	Ranunculaceae	4/3/2021
<i>Rumex acetosella</i>	Sheep sorrel	invasive non-native	Polygonaceae	7/11/2021
<i>Rumex crispus</i>	Curly dock	invasive non-native	Polygonaceae	4/3/2021
<i>Sanicula crassicaulis</i>	Pacific sanicle	native	Apiaceae	4/3/2021
<i>Scrophularia californica</i>	California bee plant	native	Scrophulariaceae	4/3/2021
<i>Senecio minimus</i>	Coastal burnweed	non-native	Asteraceae	4/3/2021
<i>Solanum americanum</i>	White nightshade	native	Solanaceae	4/3/2021
<i>Stachys ajugoides</i>	hedgenettle	native	Lamiaceae	4/3/2021
<i>Stachys mexicana</i>	Mexican hedgenettle	native	Lamiaceae	4/3/2021
<i>Stellaria media</i>	Chickweed	non-native	Caryophyllaceae	4/3/2021
<i>Taraxacum officinale</i>	Red seeded dandelion	non-native	Asteraceae	4/3/2021

Cryptogams	<i>Tellima grandiflora</i>	Fringe cups	native	Saxifragaceae	4/3/2021
	<i>Trifolium repens</i>	White clover	non-native	Fabaceae	4/3/2021
	<i>Trillium ovatum</i>	Western wakerobin	native	Melanthiaceae	4/3/2021
	<i>Urtica dioica</i>	Stinging nettle	native	Urticaceae	4/3/2021
	<i>Vancouveria hexandra</i>	Northern vancouveria	native	Berberidaceae	4/3/2021
	<i>Vicia gigantea</i>	Giant vetch	native	Fabaceae	4/3/2021
	<i>Viola adunca</i>	Western dog violet	native	Violaceae	4/3/2021
	<i>Viola glabella</i>	Stream violet	native	Violaceae	4/3/2021
	<i>Viola sempervirens</i>	Redwood violet	native	Violaceae	4/3/2021
	<i>Amanita sp.</i>	Amanita	native	Amanitaceae	4/3/2021
	<i>Atrichum sp.</i>	Atrichum	native	Polytrichaceae	4/3/2021
	<i>Aulacomnium androgynum</i>	drumsticks	native	Aulacomniaceae	4/3/2021
	<i>Buckiella draytonii</i>	Buckiella	native	Hypnaceae	4/3/2021
	<i>Campylopus introflexus</i>	heath star-moss	native	Leucobryaceae	4/3/2021
	<i>Ceriporus leptocephalus</i>	blackfoot polypore	native	Polyporaceae	4/3/2021
	<i>Chrysothrix xanthina</i>	gold dust lichen	native	Chrysothricaceae	4/3/2021
	<i>Cladonia macilenta.</i>	lipstick powderhorn	native	Cladoniaceae	7/11/2021
	<i>Clavulina coralloides</i>	Crested coral	native	Clavulinaceae	4/3/2021
	<i>Fissidens bryoides</i>	lesser pocket moss	native	Fissidentaceae	4/3/2021
	<i>Fomitopsis pinicola</i>	red-banded polypore	native	Fomitopsidaceae	7/11/2021
	<i>Frullania eboracensis</i>	scaleworts	native	Frullaniaceae	4/3/2021
	<i>Helminthosphaeria clavariarum</i>	Helminthosphaeria	native	Helminthosphaeriaceae	4/3/2021
	<i>Hygrocybe sp.</i>	wax cap	native	Hygrophoraceae	4/3/2021
	<i>Hypnum cupressiforme</i>	cypress-leaved plait-moss	native	Hypnaceae	7/11/2021
	<i>Hypogymnia enteromorpha</i>	budding tube lichen	native	Parmeliaceae	4/3/2021
	<i>Kindbergia oregana</i>	Oregon beaked moss	native	Brachytheciaceae	4/3/2021
	<i>Lepra amara</i>	bitter wart lichen	native	Pertusariaceae	4/3/2021
<i>Lepraria pacifica</i>	Pacific dust lichen	native	Stereocaulaceae	4/3/2021	
<i>Leptonia sp.</i>	Leptonia	native	Entolomataceae	7/11/2021	
<i>Leucolepis acanthoneura</i>	Menzies' tree moss	native	Mniaceae	4/3/2021	
<i>Lichenomphalia umbellifera</i>	Lichen agaric	native	Hygrophoraceae	4/3/2021	
<i>Mycena pura</i>	lilac bonnet	native	Mycenaceae	4/3/2021	
<i>Neckera sp.</i>	Neckera	native	Neckeraceae	7/11/2021	
<i>Niebla cephalota</i>	powdery sea-fog lichen	native	Ramalinaceae	4/3/2021	
<i>Parmelia sulcata</i>	hammered shield lichen	native	Parmeliaceae	4/3/2021	
<i>Parmotrema sp.</i>	ruffle lichen	native	Parmeliaceae	7/11/2021	
<i>Peltigera membranaceae</i>	membranous pelt lichen	native	Peltigeraceae	4/3/2021	
<i>Plagiomnium insigne</i>	badge moss	native	Mniaceae	4/3/2021	

## Cryptogams

<i>Plagiothecium undulatum</i>	waved silk-moss	native	Hypnaceae	4/3/2021
<i>Pluteus sp.</i>	deer mushrooms	native	Pluteaceae	4/3/2021
<i>Porella navicularis</i>	tree ruffle liverwort	native	Porellaceae	7/11/2021
<i>Porotrichum bigelovii</i>	Porotrichum	native	Neckeraceae	4/3/2021
<i>Pseudisothecium stoloniferum</i>	Cat's tail moss	native	Lembophyllaceae	4/3/2021
<i>Rhizomnium glabrescens</i>	fan moss	native	Mniaceae	7/11/2021
<i>Russula sp.</i>	brittle gills	native	Russulaceae	4/3/2021
<i>Stereum hirsutum</i>	Hairy curtain crust	native	Stereaceae	4/3/2021
<i>Tetraphis pellucida</i>	Tetraphis moss	native	Tetraphidaceae	4/3/2021
<i>Trametes versicolor</i>	turkey tail	native	Polyporaceae	4/3/2021
<i>Tuckermanopsis orbata</i>	variable wrinkle-lichen	native	Parmeliaceae	4/3/2021
<i>Usnea sp.</i>	beard lichen	native	Parmeliaceae	4/3/2021



# Attachment E. Maps of the Turner Parcel

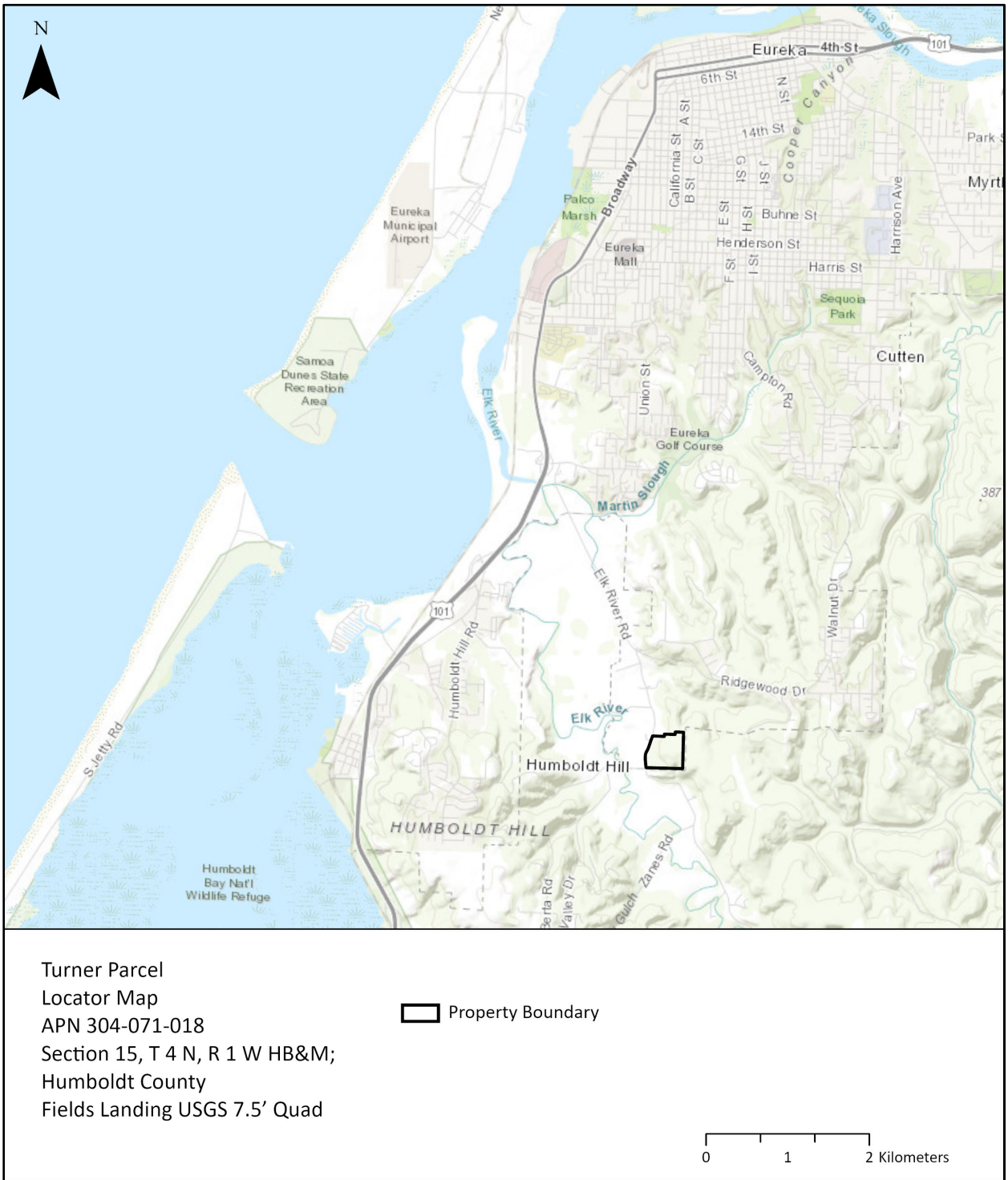


Figure 5. Locator map of the Turner Parcel.

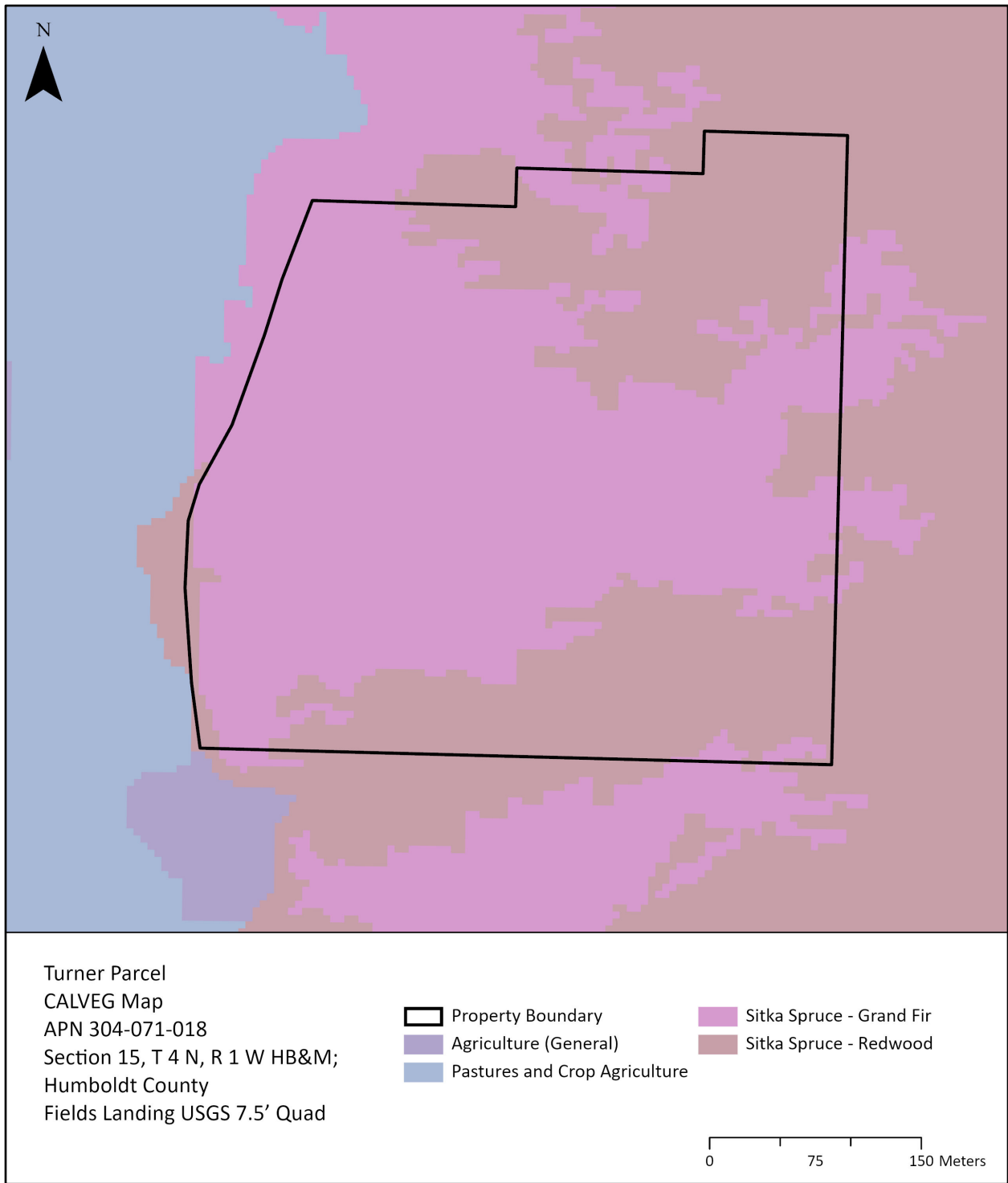


Figure 6. CALVEG map of the Turner Parcel.

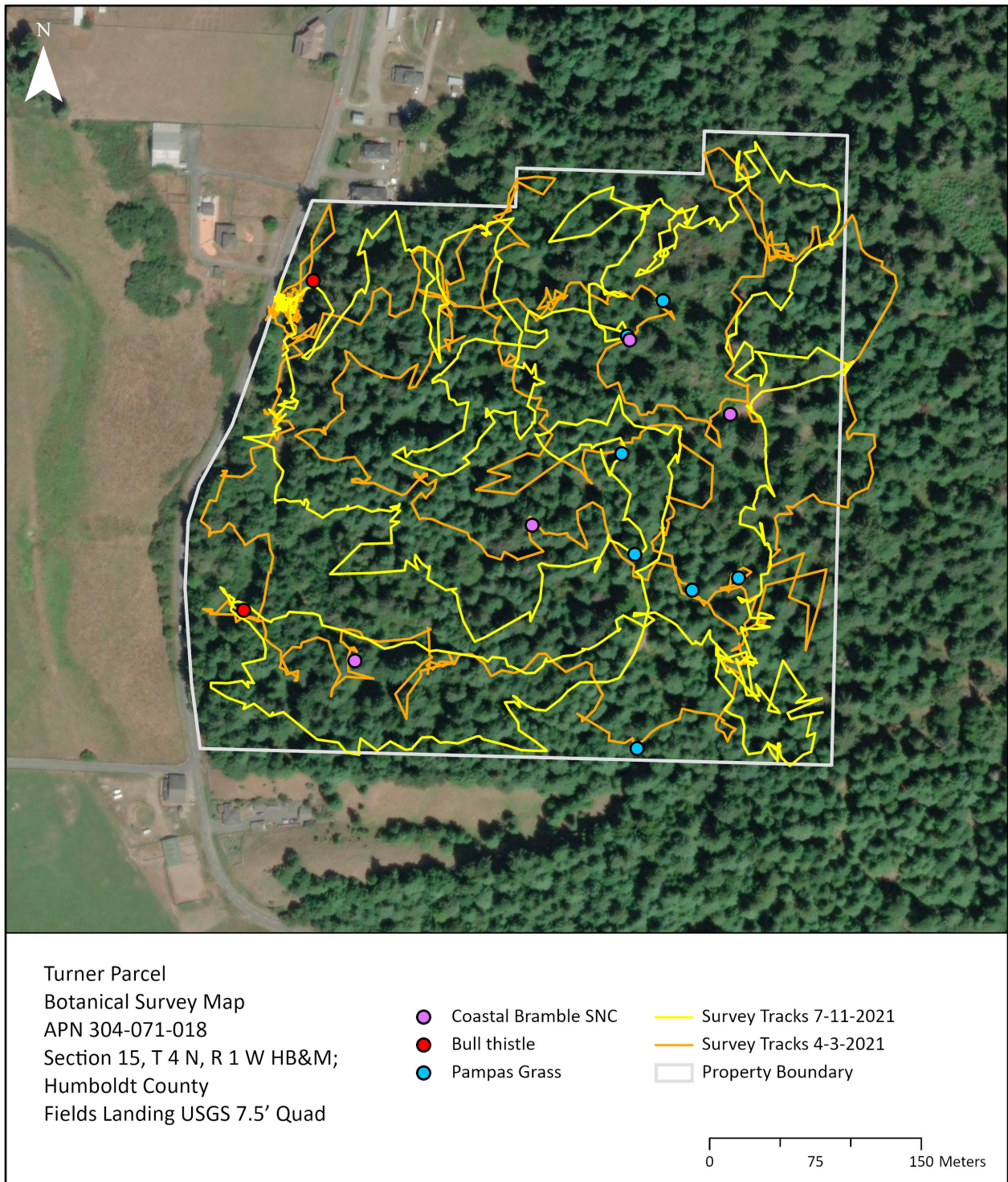


Figure 7. Botanical survey routes taken, locations of Sensitive Natural Communities, and locations of invasive species on the Turner Parcel.

# Attachment F: Rank Definitions

## CONSERVATION STATUS DEFINITIONS

### Fed List\*

This field indicates the plant's legal status under the Federal Endangered Species Act (ESA).

- FE** **Federally Endangered:** The classification provided to a plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range.
- FT** **Federally Threatened:** The classification provided to a plant which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range.
- PE** **Proposed Endangered:** The classification provided to a plant that is proposed for federal listing as Endangered in the Federal Register under Section 4 of the Endangered Species Act.
- PT** **Proposed Threatened:** The classification provided to a plant that is proposed for federal listing as Threatened in the Federal Register under Section 4 of the Endangered Species Act.
- FC** **Federal Candidate:** The classification provided to a plant that has been studied by the United States Fish and Wildlife Service, and the Service has concluded that it should be proposed for addition to the list of Federally Endangered and Threatened species.
- None** The plant has no federal listing status under ESA.
- FD** **Federally Delisted:** The plant was previously listed as Endangered or Threatened, but is no longer on the list of Federally Endangered and Threatened species.

### State List\*

This field indicates the plant's legal status under the California Endangered Species Act (CESA).

- CE** **State Listed as Endangered:** The classification provided to a native species or subspecies in serious danger of becoming extinct throughout all or a significant portion of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.
- CT** **State Listed as Threatened:** The classification provided to a native species or subspecies that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.
- CR** **State Listed as Rare:** The classification provided to a native plant species, subspecies, or variety when, although not presently threatened with extinction, it occurs in such small numbers throughout its range that it may become endangered if its present environment worsens. This designation stems from the Native Plant Protection Act of 1977.
- CC** **Candidate for State Listing:** The classification provided to a native species or subspecies that the Fish and Game Commission has formally noticed as being under review by the Department of Fish and Wildlife for addition to the list of endangered or threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to the list of endangered or threatened species.
- None** The plant has no state listing status under CESA.
- CD** **State Delisted:** The plant was previously listed as Endangered, Threatened or Rare but is no longer listed by the State of California.

### Global Rank\*

The Global Rank (G-rank) is an indication of the overall condition and imperilment of an element throughout its global range. It is a letter+number score that reflects a combination of Rarity, Threat and Trend factors, with weighting being heavier on the rarity factors. The Global Ranks are assigned by NatureServe in coordination with the state program(s) where the element occurs.

- GX** **Presumed Extinct** — Not located despite intensive searches and virtually no likelihood of rediscovery.
- GH** **Possibly Extinct** — Known from only historical occurrences but still some hope of rediscovery. There is evidence that the species may be extinct or the ecosystem may be eliminated throughout its range, but not enough to state this with certainty. Examples of such evidence include 1) that a species has not been documented in approximately 20–40 years despite some searching or some evidence of significant habitat loss or degradation; 2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is extinct or eliminated throughout its range.
- G1** **Critically Imperiled** — At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
- G2** **Imperiled** — At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
- G3** **Vulnerable** — At moderate risk of extinction or elimination due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
- G4** **Apparently Secure** — Uncommon but not rare; some cause for long-term concern due to declines or other factors.

- G5** **Secure** — Common; widespread and abundant.
- GNR** **Unranked** — Global rank not yet assessed.
- GU** **Unrankable** — Currently unrankable due to a lack of information or due to substantially conflicting information about status or trends.
- G#G#** **Range Rank** — A numeric range rank (e.g., G2G3) is used to indicate the range of uncertainty about the exact status of a taxon or community.
- G#T#** **Infraspecific Taxon** — The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' Global Rank. Rules for assigning T-ranks follow the same principles as those for Global Ranks. However, a T-rank cannot imply the subspecies or variety is more abundant than the species. In such cases, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety.
- ?** **Qualifier: Inexact Numeric Rank** — A question mark represents a rank qualifier, denoting an inexact or uncertain numeric rank.
- Q** **Qualifier: Questionable Taxonomy** — The distinctiveness of this entity as a taxon or community at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank.
- C** **Qualifier: Captive or Cultivated Only** — The taxon or community at present is presumed or possibly extinct or eliminated in the wild across its entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside its native range, or as a reintroduced population or ecosystem restoration, not yet established.

#### State Rank\*

The State Rank (S-rank) is an indication of the condition and imperilment of an element throughout its range within the state. As with the G-rank, it is a letter+number score that reflects a combination of Rarity, Threat and Trend factors, weighted more heavily on rarity. The State Ranks are assigned by the CNDDDB biologists using standard natural heritage methodology.

- SX** **Presumed Extirpated** — Species is believed to be extirpated from the state. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
- SH** **Possibly Extirpated (Historical)** — Species occurred historically in the state, and there is some possibility that it may be rediscovered. All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists.
- S1** **Critically Imperiled** — Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
- S2** **Imperiled** — Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state.
- S3** **Vulnerable** — Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4** **Apparently Secure** — Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5** **Secure** — Common, widespread, and abundant in the state.
- SNR** **Unranked** — State conservation status not yet assessed.
- SU** **Unrankable** — Currently unrankable due to a lack of information or due to substantially conflicting information about status or trends.
- S#S#** **Range Rank** — A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community.
- ?** **Qualifier: Inexact or Uncertain** — A question mark represents a rank qualifier, denoting an inexact or uncertain numeric rank.

**Note:** References to older ranks may contain a decimal "threat" rank of .1, .2, or .3, where .1 indicates very threatened status, .2 indicates moderate threat, and .3 indicates few or no current known threats.

#### CA Rare Plant Rank (CRPR)

California Rare Plant Ranks (CRPRs) are a ranking system developed by the California Native Plant Society (CNPS) to define and categorize rarity in the California flora. All plants that are assigned to a California Rare Plant Rank category are tracked by the CNDDDB; however, element occurrence (EO) information is only maintained for CRPR 1 and 2 plants, and some CRPR 3 plants. Most CRPR 3 and 4 plants that have EO information in this Inventory and the CNDDDB were previously assigned to CRPR 1 or 2; their EO data reflect their prior rank and have generally not been updated since the date of their change to CRPR 3 or 4.

Major changes to California Rare Plant Ranks (e.g., additions, changes, and deletions) undergo the CNPS Rare Plant Status Review process. This is a joint effort by CNPS, the CNDDDB, Regional Plant Status Review Groups, the Status Review Forum, and botanical experts throughout the world. Once consensus is reached, then additions, changes, or deletions in California Rare Plant Ranks are made to this Inventory and the CNDDDB. For a flow chart of the status review process, see Rare Plant Data in California: The Cooperative Relationship between the California Natural Diversity Database and the California Native Plant Society.

- 1A Presumed Extirpated or Extinct** — Plants presumed extirpated in California and either rare or extinct elsewhere. These plants have not been seen or collected in the wild in California for many years. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.

All of the plants constituting California Rare Plant Rank 1A meet the definitions of the California Endangered Species Act of the California Department of Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, any impacts to individual plants or their habitat must be analyzed during preparation of environmental documents relating to the California Environmental Quality Act (CEQA), or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

- 1B Rare or Endangered** — **Plants rare, threatened, or endangered in California and elsewhere.** These plants are rare throughout their entire range with the majority also being endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of taxa in the CNPS Inventory, with more than 1,000 plants assigned to this category of rarity.

All of the plants constituting California Rare Plant Rank 1B meet the definitions of the California Endangered Species Act of the California Department of Fish and Game Code, and are eligible for state listing. Impacts to these species or their habitat must be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

- 2A Extirpated in California** — **Plants presumed extirpated in California but common elsewhere.** These plants are presumed extirpated because they have not been observed or documented in California for many years. This list only includes plants that are presumed extirpated in California, but are common elsewhere in their range outside of the state.

All of the plants constituting California Rare Plant Rank 2A meet the definitions of the California Endangered Species Act of the California Department of Fish and Game Code, and are eligible for state listing. Should these species be rediscovered, any impacts proposed to individuals or their habitat must be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

- 2B Rare or Endangered in California** — **Plants rare, threatened, or endangered in California but common elsewhere.** Except for being common beyond the boundaries of California, 2B plants would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Federal Endangered Species Act. With California Rare Plant Rank 2B, we recognize the importance of protecting the geographic range of widespread species. In this way we protect the diversity of our own state's flora and help maintain evolutionary processes and genetic diversity within species.

All of the plants constituting California Rare Plant Rank 2B meet the definitions of the California Endangered Species Act of the California Department of Fish and Game Code, and are eligible for state listing. Impacts to these species or their habitat must be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

- 3 Needs Review** — **Plants about which more information is needed.** These plants are united by one common theme—we lack the necessary information to assign them to one of the other ranks or to reject them. Nearly all of the plants constituting California Rare Plant Rank 3 are taxonomically problematic, yet if taxonomically valid would demonstrably qualify for rank 1B or 2B. For each California Rare Plant Rank 3 plant we have provided the known information and indicated in the "Notes" section of the Inventory record where assistance is needed. Data regarding distribution, endangerment, ecology, and taxonomic validity are welcomed and can be submitted by emailing the Rare Plant Program at [rareplants@cnps.org](mailto:rareplants@cnps.org).

Many of the plants constituting California Rare Plant Rank 3 meet the definitions of the California Endangered Species Act of the California Department of Fish and Game Code, and are eligible for state listing. Impacts to these species or their habitat should be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they may meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

- 4 Uncommon in California** — **Plants of limited distribution, a watch list.** These plants are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly. Should the degree of endangerment or rarity of a California Rare Plant Rank 4 plant change, we will transfer it to a more appropriate rank. Some of the plants constituting California Rare Plant Rank 4 meet the definitions of the California Endangered Species Act of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and we strongly recommend that California Rare Plant Rank 4 plants be evaluated for significant impacts

during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, based on CEQA Guidelines §15125 (c) and/or §15380. This may be particularly appropriate for:

The type locality of a California Rare Plant Rank 4 taxon;  
Occurrences at the periphery of a species' range;  
Areas where the taxon is especially uncommon;  
Areas where the taxon has sustained heavy losses (declining);  
Occurrences exhibiting unusual morphology or occurring on unusual substrates;  
Species maintained on BLM, USFWS, or USFS sensitive species lists; and  
Taxa associated with a habitat that is declining in California at a significant rate.  
To assist in evaluating CRPR 4 taxa for CEQA consideration, see the technical memorandum on Considerations for Including CRPR 4 Plant Taxa in CEQA Biological Resource Impact Analysis prepared by the Rare Plant Program Committee.

### **Threat Rank**

California Rare Plant Ranks at each level also include a threat rank (e.g., CRPR 4.3) and are assigned as follows:

- 0.1 Seriously threatened in California** — Over 80% of occurrences threatened / high degree and immediacy of threat.
- 0.2 Moderately threatened in California** — 20-80% of occurrences threatened / moderate degree and immediacy of threat.
- 0.3 Not very threatened in California** — Less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known.

### **Notes:**

Threat ranks do not are provided for general research purposes only and do not indicate differences in conservation assessment. For example, a CRPR 1B.3 plant has the same conservation status as a CRPR 1B.1 plant, and it is mandatory that both be fully considered during preparation of environmental documents relating to CEQA.

The threat ranking criteria described above represent only the starting point for the assessment of threat level. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are also considered in assigning threat ranks.

In many cases, the threat rank has not been reassessed since the date the taxon was first added to this Inventory or underwent its last Status Review. For these taxa, the assigned threat ranking may not accurately reflect the current level of threat.

### **Considered but Rejected**

A category of Considered but Rejected (CBR) exists for plants that either previously had a CRPR, or that were considered for addition to this Inventory but were rejected for one or more reasons. Any plant that is deleted from a CRPR category in this Inventory is not fully removed and is instead changed to the CBR category. Rejected plants are searchable by selecting the "Considered But Rejected" button in the California Rare Plant Rank section of simple and advanced search. A brief description of the reason why the plant was rejected is included for each CBR entry.

# Attachment G: Soil Map of the Turner Parcel

Custom Soil Resource Report  
Soil Map





### MAP LEGEND

**Area of Interest (AOI)**  
 Area of Interest (AOI)

**Soils**  
 Soil Map Unit Polygons  
 Soil Map Unit Lines  
 Soil Map Unit Points

**Special Point Features**  
 Blowout  
 Borrow Pit  
 Clay Spot  
 Closed Depression  
 Gravel Pit  
 Gravelly Spot  
 Landfill  
 Lava Flow  
 Marsh or swamp  
 Mine or Quarry  
 Miscellaneous Water  
 Perennial Water  
 Rock Outcrop  
 Saline Spot  
 Sandy Spot  
 Severely Eroded Spot  
 Sinkhole  
 Slide or Slip  
 Sodic Spot

Spoil Area  
 Stony Spot  
 Very Stony Spot  
 Wet Spot  
 Other  
 Special Line Features

**Water Features**  
 Streams and Canals

**Transportation**  
 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

**Background**  
 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt County, South Part, California  
 Survey Area Data: Version 9, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 8, 2019—Jun 21, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
397	Salmoncreek-Tepona-Rootcreek complex, 2 to 15 percent slopes	7.5	17.0%
398	Salmoncreek-Tepona-Rootcreek complex, 15 to 30 percent slopes	26.1	59.2%
399	Salmoncreek-Tepona-Rootcreek complex, 30 to 50 percent slopes	10.5	23.8%
<b>Totals for Area of Interest</b>		<b>44.1</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Humboldt County, Central Part, California

## Humboldt County, Central Part, California

### 397—Salmoncreek-Tepona-Rootcreek complex, 2 to 15 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2ljdm

*Elevation:* 50 to 1,070 feet

*Mean annual precipitation:* 41 to 50 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 275 to 330 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Salmoncreek and similar soils:*35 percent

*Tepona and similar soils:*25 percent

*Rootcreek and similar soils:*25 percent

*Minor components:*15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Salmoncreek

##### Setting

*Landform:*Interfluves

*Landform position (two-dimensional):*Shoulder, backslope, summit

*Landform position (three-dimensional):*Upper third of mountainflank

*Down-slope shape:*Convex

*Across-slope shape:*Convex, linear

*Parent material:*Residuum weathered from siltstone

##### Typical profile

*A - 0 to 7 inches:* silt loam

*Bt1 - 7 to 20 inches:* silty clay loam

*Bt2 - 20 to 30 inches:* silty clay loam

*Bt3 - 30 to 39 inches:* silty clay loam

*C1 - 39 to 57 inches:* silt loam

*C2 - 57 to 65 inches:* silty clay loam

##### Properties and qualities

*Slope:*2 to 15 percent

*Depth to restrictive feature:*More than 80 inches

*Drainage class:*Poorly drained

*Capacity of the most limiting layer to transmit water (Ksat):*Moderately high to high (0.20 to 2.00 in/hr)

*Depth to water table:*About 4 to 10 inches

*Frequency of flooding:*None

*Frequency of ponding:*None

*Maximum salinity:*Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* High (about 11.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3w

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* Yes

**Description of Rootcreek****Setting**

*Landform:*Mountains

*Landform position (two-dimensional):*Backslope

*Landform position (three-dimensional):*Mountainflank

*Down-slope shape:*Concave

*Across-slope shape:*Linear

*Parent material:*Colluvium derived from siltstone and/or residuum weathered from siltstone

**Typical profile**

*A - 0 to 7 inches:* silt loam

*ABt - 7 to 22 inches:* silt loam

*Bt1 - 22 to 30 inches:* silt loam

*Bt2 - 30 to 39 inches:* silt loam

*Bt3 - 39 to 49 inches:* silt loam

*Btg - 49 to 63 inches:* clay loam

**Properties and qualities**

*Slope:*2 to 15 percent

*Depth to restrictive feature:*More than 80 inches

*Drainage class:*Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat):*Moderately high to high (0.20 to 2.00 in/hr)

*Depth to water table:*About 20 to 39 inches

*Frequency of flooding:*None

*Frequency of ponding:*None

*Maximum salinity:*Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* High (about 11.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

**Description of Tepona****Setting**

*Landform:*Terraces, hillslopes

*Landform position (two-dimensional):*Backslope

*Landform position (three-dimensional):*Side slope

*Down-slope shape:*Linear, convex

*Across-slope shape:*Linear

*Parent material:*Marine deposits derived from sedimentary rock

**Typical profile**

*A - 0 to 8 inches:* very fine sandy loam  
*Bw1 - 8 to 20 inches:* fine sandy loam  
*Bw2 - 20 to 26 inches:* fine sandy loam  
*Bw3 - 26 to 49 inches:* fine sandy loam  
*C - 49 to 69 inches:* fine sandy loam

**Properties and qualities**

*Slope:* 2 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 20 to 39 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* High (about 9.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* No

**Minor Components****Scoutcamp**

*Percent of map unit:* 5 percent  
*Landform:* Benches  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Mountainflank  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**Urban land, residential**

*Percent of map unit:* 5 percent  
*Landform:* Marine terraces  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**Cannonball**

*Percent of map unit:* 5 percent  
*Landform:* Marine terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Nose slope, tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## **398—Salmoncreek-Tepona-Rootcreek complex, 15 to 30 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2ljds

*Elevation:* 80 to 1,070 feet

*Mean annual precipitation:* 41 to 51 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 275 to 330 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Salmoncreek and similar soils:*35 percent

*Tepona and similar soils:*30 percent

*Rootcreek and similar soils:*25 percent

*Minor components:*10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Salmoncreek**

#### **Setting**

*Landform:*Hillslopes

*Landform position (two-dimensional):*Backslope, summit

*Landform position (three-dimensional):*Side slope

*Down-slope shape:*Linear

*Across-slope shape:*Convex, linear

*Parent material:*Colluvium derived from siltstone and/or residuum weathered from siltstone

#### **Typical profile**

*A - 0 to 7 inches:* silt loam

*Bt1 - 7 to 20 inches:* silty clay loam

*Bt2 - 20 to 30 inches:* silty clay loam

*Bt3 - 30 to 43 inches:* silty clay loam

*Bt4 - 43 to 59 inches:* loam

*Btg1 - 59 to 79 inches:* silt loam

#### **Properties and qualities**

*Slope:*15 to 30 percent

*Depth to restrictive feature:*More than 80 inches

*Drainage class:*Poorly drained

*Capacity of the most limiting layer to transmit water (Ksat):*Moderately high to high (0.20 to 2.00 in/hr)

*Depth to water table:*About 4 to 10 inches

*Frequency of flooding:*None

*Frequency of ponding:*None

*Maximum salinity:*Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* High (about 10.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* Yes

## **Description of Tepona**

### **Setting**

*Landform:* Marine terraces

*Landform position (three-dimensional):* Riser

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Marine deposits derived from sedimentary rock

### **Typical profile**

*A1 - 0 to 6 inches:* fine sandy loam

*A2 - 6 to 12 inches:* fine sandy loam

*Bw1 - 12 to 24 inches:* fine sandy loam

*Bw2 - 24 to 39 inches:* fine sandy loam

*C1 - 39 to 51 inches:* sandy loam

*C2 - 51 to 60 inches:* sandy loam

### **Properties and qualities**

*Slope:* 15 to 30 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)

*Depth to water table:* About 20 to 39 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* High (about 9.6 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

## **Description of Rootcreek**

### **Setting**

*Landform:* Mountain slopes

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Upper third of mountain flank

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Parent material:* Colluvium derived from siltstone and/or residuum weathered from siltstone

### **Typical profile**

*Oi - 0 to 2 inches:* slightly decomposed plant material

*A - 2 to 8 inches:* silt loam

*Bt1 - 8 to 22 inches:* silty clay loam

*Bt2 - 22 to 34 inches:* silty clay loam

*Bt3 - 34 to 43 inches:* silty clay loam

*Bt4 - 43 to 68 inches:* silty clay loam



**Properties and qualities**

*Slope:*15 to 30 percent

*Depth to restrictive feature:*More than 80 inches

*Drainage class:*Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat):*Moderately high to high (0.20 to 2.00 in/hr)

*Depth to water table:*About 20 to 39 inches

*Frequency of flooding:*None

*Frequency of ponding:*None

*Maximum salinity:*Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Very high (about 12.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B/D

*Hydric soil rating:* No

**Minor Components****Scoutcamp**

*Percent of map unit:*5 percent

*Landform:*Ridges

*Landform position (two-dimensional):*Backslope

*Landform position (three-dimensional):*Mountaintop

*Down-slope shape:*Linear

*Across-slope shape:*Linear

*Hydric soil rating:* No

**Cannonball**

*Percent of map unit:*5 percent

*Landform:*Marine terraces

*Landform position (two-dimensional):*Backslope

*Landform position (three-dimensional):*Nose slope, tread

*Down-slope shape:*Linear

*Across-slope shape:*Convex

*Hydric soil rating:* No

**399—Salmoncreek-Tepona-Rootcreek complex, 30 to 50 percent slopes****Map Unit Setting**

*National map unit symbol:* 2ljdt

*Elevation:* 80 to 1,070 feet

*Mean annual precipitation:* 41 to 50 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 275 to 330 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Salmoncreek and similar soils:*32 percent

*Tepona and similar soils:*30 percent

*Rootcreek and similar soils:*28 percent

*Minor components:*10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Salmoncreek**

#### **Setting**

*Landform:*Hillslopes

*Landform position (two-dimensional):*Backslope, summit

*Landform position (three-dimensional):*Side slope

*Down-slope shape:*Linear

*Across-slope shape:*Convex, linear

*Parent material:*Colluvium derived from siltstone and/or residuum weathered from siltstone

#### **Typical profile**

*A - 0 to 7 inches:* silt loam

*Bt1 - 7 to 20 inches:* silty clay loam

*Bt2 - 20 to 31 inches:* silty clay loam

*Bt3 - 31 to 43 inches:* silty clay loam

*Btg1 - 43 to 59 inches:* silty clay loam

*Btg2 - 59 to 79 inches:* silt loam

#### **Properties and qualities**

*Slope:*30 to 50 percent

*Depth to restrictive feature:*More than 80 inches

*Drainage class:*Poorly drained

*Capacity of the most limiting layer to transmit water (Ksat):*Moderately high to high (0.20 to 2.00 in/hr)

*Depth to water table:*About 4 to 10 inches

*Frequency of flooding:*None

*Frequency of ponding:*None

*Maximum salinity:*Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* High (about 10.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* Yes

### **Description of Tepona**

#### **Setting**

*Landform:*Terraces

*Landform position (two-dimensional):*Backslope

*Landform position (three-dimensional):*Tread

*Down-slope shape:*Convex

*Across-slope shape:*Convex

*Parent material:*Marine deposits derived from mixed

#### **Typical profile**

*A - 0 to 7 inches:* fine sandy loam

*ABt - 7 to 20 inches:* fine sandy loam

*Bw1 - 20 to 33 inches:* fine sandy loam

*Bw2 - 33 to 49 inches:* fine sandy loam

*Bw3 - 49 to 59 inches:* fine sandy loam

C - 59 to 71 inches: fine sandy loam

**Properties and qualities**

*Slope*:30 to 50 percent

*Depth to restrictive feature*:More than 80 inches

*Drainage class*:Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat)*:High (2.00 to 6.00 in/hr)

*Depth to water table*:About 20 to 39 inches

*Frequency of flooding*:None

*Frequency of ponding*:None

*Maximum salinity*:Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches*: Moderate (about 8.4 inches)

**Interpretive groups**

*Land capability classification (irrigated)*: None specified

*Land capability classification (nonirrigated)*: 6e

*Hydrologic Soil Group*: A/D

*Hydric soil rating*: No

**Description of Rootcreek**

**Setting**

*Landform*:Mountain slopes

*Landform position (two-dimensional)*:Backslope

*Landform position (three-dimensional)*:Mountainflank, center third of mountainflank

*Down-slope shape*:Linear

*Across-slope shape*:Linear, concave, convex

*Parent material*:Colluvium derived from siltstone and/or residuum weathered from siltstone

**Typical profile**

A - 0 to 7 inches: silt loam

Bt1 - 7 to 12 inches: silt loam

Bt2 - 12 to 20 inches: silty clay loam

Bt3 - 20 to 33 inches: silt loam

Bt4 - 33 to 59 inches: silt loam

Bt5 - 59 to 65 inches: silt loam

**Properties and qualities**

*Slope*:30 to 50 percent

*Depth to restrictive feature*:More than 80 inches

*Drainage class*:Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat)*:Moderately high to high (0.20 to 2.00 in/hr)

*Depth to water table*:About 20 to 39 inches

*Frequency of flooding*:None

*Frequency of ponding*:None

*Maximum salinity*:Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches*: High (about 10.9 inches)

**Interpretive groups**

*Land capability classification (irrigated)*: None specified

*Land capability classification (nonirrigated)*: 6e

*Hydrologic Soil Group*: C

*Hydric soil rating*: No

## **Minor Components**

### **Scoutcamp**

*Percent of map unit:* 5 percent

*Landform:* Mountain slopes

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Mountainflank

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### **Cannonball**

*Percent of map unit:* 5 percent

*Landform:* Erosion remnants

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

## References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>
- United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)
- United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.  
[http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)