



Memorandum

January 28, 2019

To: City of Arcata

Ref. No.: 11159130

From: Amy Livingston, GHD Botanist

Tel: 707-443-8326

cc: Josh Wolf (GHD Project Manager)

Subject: Final Special Status Plant Survey and ESHA Evaluation for the Old Arcata Road Improvement Project

1 Introduction

This Technical Memorandum reports results of the 2018 special status plant surveys and screening for Environmentally Sensitive Habitat Areas (ESHA) in the area of the Old Arcata Road Improvement Project in Humboldt County, CA (Figure 1, Attachment 1). The area covered by the surveys is presented in Figures 2:1-5, Attachment 1. The special status plant surveys and screening for Environmentally Sensitive Habitat Areas (ESHA) were performed by GHD botanist Amy Livingston on behalf of the City of Arcata. Special status plant surveys were performed on June 18 and July 31, 2018. Vegetation mapping to screen for Environmentally Sensitive Habitat Areas (ESHA) was performed by Amy Livingston on August 31, 2018 and on September 20, 2018 concurrent with fieldwork for the wetland delineation.

1.1 Purpose

The purpose of this evaluation was to conduct seasonally appropriate surveys for state, federal, and other sensitive listed plant species in the proposed project area as well to assess the potential for upland Environmentally Sensitive Habitat Areas (ESHA) to conform with the Coastal Act, and Humboldt County and the City of Arcata's Local Coastal Programs. The surveys were conducted within the Project Study Boundary (PSB), as shown on Figures 2:1-5. The special status plant surveys attempted to identify all vascular plants within the study area to the taxonomic level necessary to determine rarity and listing status, and to document the presence of special status plants within the project footprint, immediately adjacent to, and within temporary construction impact areas. The results of the wetland delineation and mapping of one and three parameter wetlands are presented in a separate wetland delineation report (GHD 2018). Projects affecting wetlands must conform to Section 30233 of the Coastal Act, while projects affecting ESHA must conform to Section 30240 of the Coastal Act. The results may be used for planning, design, and to avoid or mitigate impacts associated with project construction, and to guide future management decisions.

1.2 Location

The Project Study Boundary (PSB) for the Old Arcata Road Improvement Project includes Old Arcata Road and adjacent roadsides through the community of Bayside, between the intersections with Buttermilk Road and Jacoby Creek Road, as well as short sections of adjacent roads and roadsides (Figure 1). The PSB is primarily within the Coastal Zone, and primarily within jurisdiction of the City of Arcata, and within the appeal



zone of the California Coastal Commission. A section of the PSB (a portion of the intersection with Jacoby Creek Road) is located in Humboldt County primary jurisdiction, within the appeal zone of the Coastal Commission.

1.3 Project Summary

The Old Arcata Road Improvement Project is intended to provide roadway improvements to Old Arcata Road through the community of Bayside, between the Buttermilk Road Roundabout and Jacoby Creek Road. The project will improve safety for non-motorized and motorized users, increase the use of active modes of transportation, and rehabilitate the failed roadway pavement. The Project will have additional benefits including enhanced and heightened driver awareness of the community, and filling the gap for non-motorized travel between the Jacoby Creek School and Jacoby Creek Road.

2 Regulatory Setting

2.1 State Jurisdiction

2.1.1 State Listed Special Status Plant Species

Special status plant species under State jurisdiction include those listed as endangered, threatened, or as candidate species by the California Department of Fish and Wildlife (CDFW) under the California Endangered Species Act (CESA). Plant species on California Native Plant Society's (CNPS) California Rare Plant Ranking (CRPR) Lists 1A, 1B and 2 are considered eligible for state listing as Endangered or Threatened pursuant to the California Fish and Game Code and CDFW has oversight of these special status plant species as a trustee agency. As part of the CEQA process, such species should be considered as they meet the definition of Threatened or Endangered under Sections 2062 and 2067 of the California Fish and Game Code. CRPR List 3 and 4 plants do not have formal protection under CEQA. CDFW publishes and periodically updates lists of special status species which include, for the most part, the above categories. Additionally, there are 64 plant species designated as "rare" which is a special designation created before plants were rolled into CESA in the 1980s (CDFW 2018a). A project is required to have a "Scientific, Educational, or Management Permit" from CDFW for activities that would result in "take," possession, import, or export of state-listed plant species including research, seed banking, reintroduction efforts, habitat restoration, and other activities relating to any plant designated SE (State endangered), ST (State threatened), SR (State rare), or SC (State candidate for listing).

2.2 Federal Jurisdiction

2.2.1 Federal Listed Species

Special status plant species under Federal jurisdiction include those listed as endangered, threatened, or as candidate species by the Fish and Wildlife Service (USFWS) under the U.S. Endangered Species Act (ESA).



2.2.2 Critical Habitat

Critical Habitat is defined by the ESA as a specific geographic area containing features essential for the conservation of an endangered or threatened species. The ESA requires consultation with USFWS by federal lead agencies for activities they carry out, authorize, or fund. Under Section 7 of the ESA, critical habitat federally designated for a listed or proposed species that may be present in project Action Area should be evaluated.

2.2.3 California Coastal Act and Local Coastal Programs

The California Coastal Commission (CCC) through the Coastal Act, and the City of Arcata and the County of Humboldt through their Local Coastal Programs are the jurisdictional agencies that exert authority in identifying and protecting ESHA for projects. Section 30107.5 of the Coastal Act defines ESHA as: *“Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.”*

3 Methods

3.1 Project Study Boundary / Action Area

Prior to conducting environmental fieldwork, the project scientist worked in coordination with the project manager and the applicant to develop the limits of the Project Study Boundary (PSB). The PSB is a terminology adopted from definitions and permit procedures promulgated by the U.S. Army Corps of Engineers (USACE). The PSB is designated on a project specific basis, and as feasible, to take into consideration potential alternate layouts of project, fill/cut slopes, temporary impact areas and/or adjacent areas if feasible, access, new or modified utilities and right of ways, and adjacent areas that may be feasibly included in the study. The PSB may be modified on a project-specific basis according to such issues as private property ownerships, access constraints, and areas excluded from project use. The PSB for the Old Arcata Road improvement Project is shown in Figures 2:1-5.

3.2 Pre-Survey Research

Prior to field surveys, a scoping list of CRPR plant species and habitats with recorded occurrences in the project vicinity was compiled by consulting the *California Natural Diversity Database* (CNDDDB) [CDFW 2018b], the CNPS *Inventory of Rare and Endangered Vascular Plants* (CNPS 2018), and the list of Federally listed plant species maintained by the U.S. Fish and Wildlife Service (USFWS 2018). The CNDDDB database was consulted for rare plant occurrences documented in the project vicinity.

The scoping list includes special-status plants that occur in habitat similar to the project area with documented occurrences on the Arcata South USGS quadrangle or adjacent quadrangles. CDFW and CNPS recommend the assessment area be a minimum of nine USGS quadrangles with the survey area located in the central quad. The scoping list also contains other taxa that may occur in the project area whose habitat is suitable if the project is within or near the known range of the species. The assessment



area was defined as the nine USGS 7.5' minute quadrangles centered around the Arcata South quadrangle (Tyee City, Arcata North, Blue Lake, Eureka, Korb, Cannibal Island, Fields Landing, and McWhinney Creek USGS 7.5' quadrangles). The queries yielded 55 sensitive species previously documented in the assessment area. Due to the highly altered condition of the potential habitat contained within the PSB none of the plant species were thought to have a high probability of occurring within the study area. (Table 1, Attachment 2). Within the assessment area, three sensitive plant communities are documented according to the CNDDDB (2018b).

Vegetation assessment or screening for ESHA occurring within the PSB began with research to determine what areas might be considered ESHA that may occur within the PSB. No comprehensive list of ESHA for the state, Humboldt County, or the City of Arcata exists. However, the CCC, County of Humboldt, and City of Arcata rely on the *Hierarchical list of Natural Communities* developed by the California Department of Fish and Wildlife (CDFW 2010) for guidance on what constitutes ESHA. The Hierarchical list of Natural Communities coincides with the classification system presented in *A Manual of California Vegetation Second Edition* (Sawyer et al. 2009) which defines vegetation communities based on a system of alliances. Natural communities are further broken down to association level for vegetation types affiliated with ecological sections in California. The Hierarchical list of Natural Communities also identifies Natural Communities as "high priority" based on global or state rarity rankings. CDFW tracks data on Natural Communities through the California Natural Diversity Database (CDFW 2018a). Thus, the initial analysis of whether ESHA might occur within the APE began with a review of CNDDDB for the Arcata South USGS 7.5' quadrangles and eight adjacent quadrangles, as well as a review of community descriptions of potential Natural Communities as defined in *A Manual of California Vegetation Second Edition* (Sawyer et al. 2009).

The vegetation groupings discussed in this report are Alliances based on dominant characteristic plants whose presence was constant within the observed groupings. *A Manual of California Vegetation Second Edition* defines alliance as "A classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species often of high cover, in the uppermost layer or the layers with the highest canopy cover" (Sawyer et al. 2009). The alliances described in *A Manual of California Vegetation* are the California expression of the National Vegetation Classification (CDFW 2017). The rankings for these communities are defined as follows according to the NatureServe's Heritage Program methodology defined for Natural Community Conservation Ranks and outlined in *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009).

- G3: 21-100 viable occurrences worldwide and/or more than 2,590-12,950 hectares;
- G4: Greater than 100 viable occurrences worldwide and/or greater than 12,950 hectares;
- G5: Demonstrably secure because of its worldwide abundance
- S3: 21-100 viable occurrences statewide and/or more than 2,590-12,950 hectares



3.3 Survey Procedures and Mapping Methods

Surveys to determine the presence of special status plant species (listed as rare, threatened, endangered, or candidate under the State or Federal Endangered Species Acts, CNPS, or species of local importance) were timed to coordinate with the blooming period for the majority of the species thought to possibly occur within the project area. After a review of the scoping list it was determined that two surveys, an early season survey and a late season survey, would be necessary to capture the blooming period for the majority of target species (species thought to have some potential to occur within the project area).

The surveys were floristic in nature following *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* by the California Natural Resource Agency (CDFW 2018c) and *General Rare Plant Survey Guidelines by the Endangered Species Recovery Program* (USFWS 2002). An intuitively controlled survey was conducted that sampled and identified potential habitat(s). Plants were identified to the lowest taxonomic level (genus or species) necessary for rare plant identification. Nomenclature follows *The Jepson Manual* (Baldwin et al 2012). Surveys were conducted by walking the site looking for the presence of target species and habitats identified on the scoping list, as well as presence of any other incidental sensitive-listed plant species. In total, approximately six field person hours were spent surveying the PSB specifically for special status plants over both the early season and late season survey dates.

Assessment of potential ESHA within the PSB was conducted by using the resources outlined above including identification of Sensitive community alliances as defined by the *Hierarchical list of Natural Communities* (CDFW 2018d) and by *A Manual of California Vegetation Second Edition* (Sawyer et al. 2009). Mapping of individual trees during the assessment of potential ESHA was completed with a GeoPro 6H global positioning system (GPS) receiver connected to a Motion F5v Tablet running ArcPad geographic information system (GIS) software.

4 Results

On June 18 and July 31, 2018 the PSB was surveyed in an effort to identify if federal, state and/or CNPS listed plant species are present. No special status species were observed during the protocol level surveys in 2018. Vegetation mapping to screen for Environmentally Sensitive Habitat Areas (ESHA) occurred on August 31, 2018 and September 20, 2018. Within the assessment area, three sensitive plant communities are documented according to the CNDDB, upland Douglas-fir forest, northern coastal salt marsh, and northern foredune grassland (CNDDB 2018b). None of these communities were observed within the PSB. Palustrine emergent persistent wetlands, palustrine broad-leaved deciduous scrub-shrub wetlands, and 1-parameter wetlands occur within the PSB. The 1-parameter wetlands meet the Coastal Commission requirements based on dominance of wetland (FAC or wetter) vegetation, in this case willows (*Salix* spp.). All wetlands occurring within the PSB and are addressed in a separate wetland delineation report (GHD 2018).

No sensitive vegetation alliances were identified within the PSB based on CDFW's Hierarchical List of Natural Communities (CDFW 2018d). Some individual redwood trees (*Sequoia sempervirens*) occur within the PSB. On the northern end of the PSB near the Buttermilk Road roundabout, there are a few young



redwood trees that appear to have been planted. North of Jacoby Creek School, between a fence line and the sidewalk, there are two mature redwood trees and a small (<5 ft. tall) sapling located between the two larger trees. The *Sequoia sempervirens* Forest Alliance has a Global listing of G3 and State Ranking of S3 (CDFW 2018d), None of the redwood trees within the PSB are connected to a forest and therefore they do not constitute a Forest Alliance. Redwood trees are not considered special-status plant species as individuals and are not considered ESHA. Figures showing the location of the redwood trees are provided in Figures 2:1-5.

5 Conclusion

The purpose of this survey was to identify and map special status plants within the project study boundary. No Special status plant species were observed within the PSB. No Critical Habitat for plants occurs within the project study boundary. Although individual redwood trees occur within the PSB, these individual trees do not constitute a forest community and are not considered Environmentally Sensitive Habitat Areas.

6 References

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- CDFW 2018a. *State and Federally Listed Endangered, Threatened, and Rare Plants of California*. State of California, The Resources Agency, Department of Fish and Wildlife (CDFW), Biogeographic Data Branch. Accessed: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline>. Accessed June 1, 2018.
- CDFW 2018b. California Natural Diversity Database (CNDDDB). USGS 7.5 Minute Quadrangles: Arcata South, Tyee City, Arcata North, Blue Lake, Eureka, Korb, Cannibal Island, Fields Landing, and McWhinney Creek. California Department of Fish and Wildlife (CDFW). Sacramento, California. Accessed June 1, 2018.
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- CNPS 2018. Inventory of Rare and Endangered Plants (online edition, v8-01a). California Native Plant Society (CNPS). Sacramento, CA. Accessed: June 1, 2018.
- GHD 2018. Draft Wetland Delineation Report for the Old Arcata Road Proposed Project, City of Arcata, Arcata, California, USA.
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evans. 2009. *A Manual of California Vegetation, Second Edition*. California Native Plant Society. Sacramento, CA.



USFWS 2002. General Rare Plant Survey Guidelines by the Endangered Species Recovery Program.

USFWS, 2018. *U.S. Fish and Wildlife Service IPaC Resources List*. Arcata Field Station, U. S. Fish and Wildlife Service (USFWS). Accessed: June 1, 2018.



Attachments

1. Figures

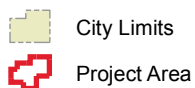
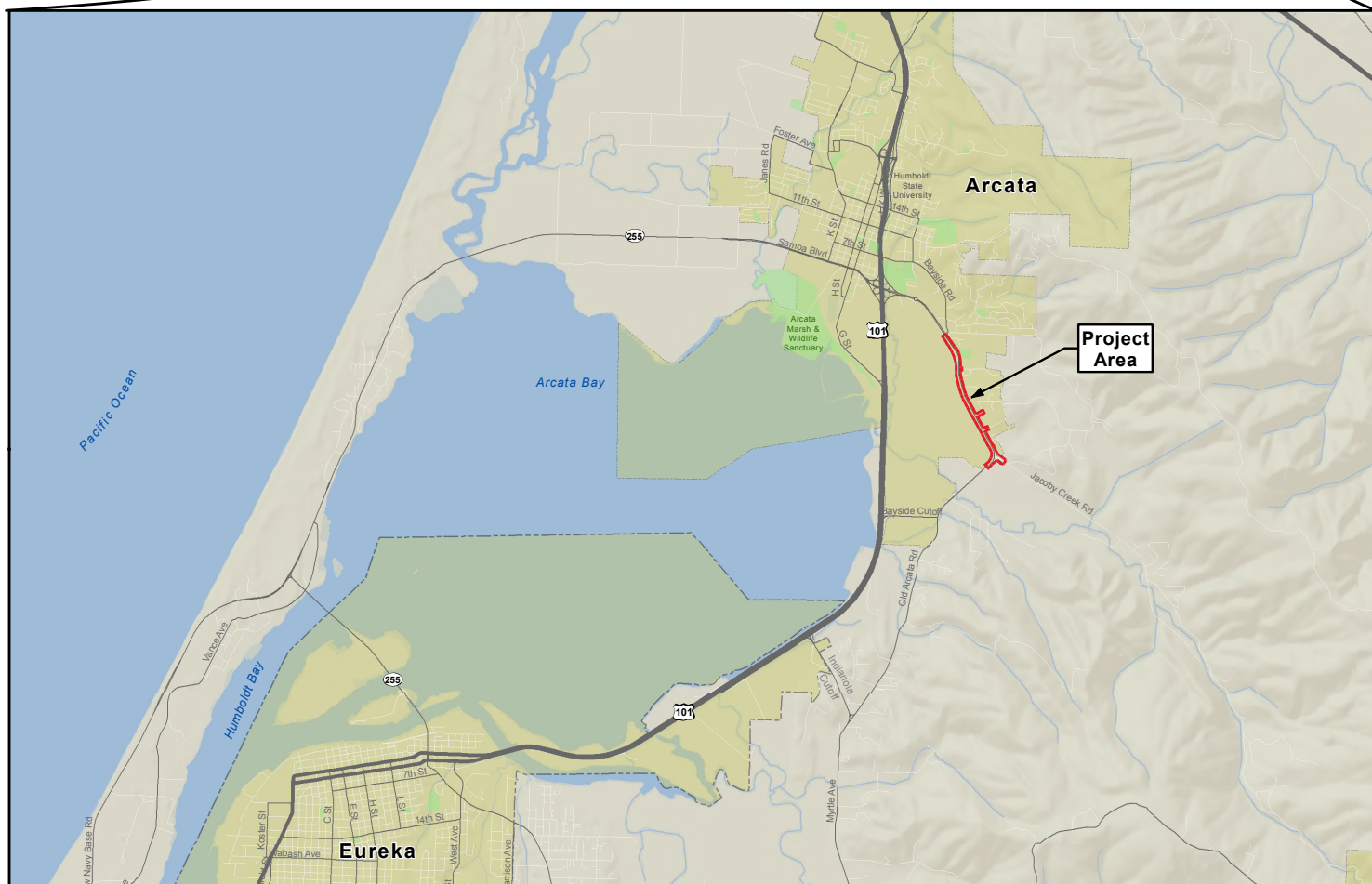
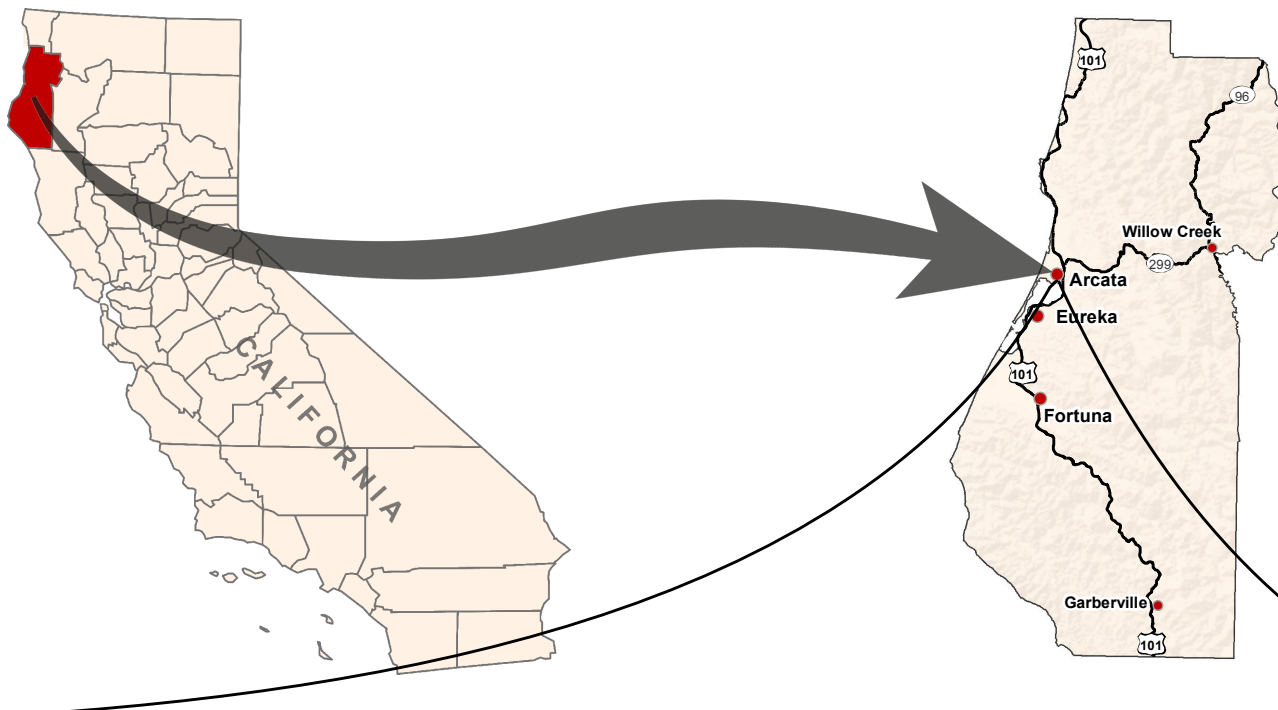
Figure 1: Regional and Location Map

Figure 2: ESHA Evaluation

2. Tables

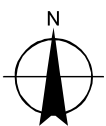
Table 1: Special status plant species with potential to occur in the PSB

Table 2: Species list of plants observed within the PSB



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City of Arcata
Old Arcata Road Improvements

Job Number 11159130
Revision A
Date 22 Aug 2018

Vicinity and
Project Location Map

Figure 1



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Legend

-  Project Study Boundary
-  Individual Redwood Trees (non ESHA)

Paper Size ANSI B

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Map Projection: Lambert Conformal Conic
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City of Arcata
Old Arcata Road Improvements

**Special Status Plant Survey
and Environmentally Sensitive
Habitat Screening**

Project No. 11159130
Revision No. A
Date 10/8/2018


FIGURE 2- 1


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Legend

 Project Study Boundary

 Individual Redwood Trees (non ESHA)

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet





City of Arcata
Old Arcata Road Improvements

**Special Status Plant Survey
and Environmentally Sensitive
Habitat Screening**

Project No. 11159130
Revision No. A
Date 10/8/2018

FIGURE 2-2

Data source: . Created by: gtdavidson

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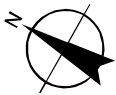


Legend

- Project Study Boundary
- Individual Redwood Trees (non ESHA)

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City of Arcata
Old Arcata Road Improvements

**Special Status Plant Survey
and Environmentally Sensitive
Habitat Screening**

Project No. 11159130
Revision No. A
Date 10/8/2018

FIGURE 2- 3
Data source: . Created by: gtdavidson



Legend

- Project Study Boundary
- Individual Redwood Trees (non ESHA)

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

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City of Arcata Old Arcata Road Improvements	Project No. 11159130
	Revision No. A
	Date 10/8/2018
Special Status Plant Survey and Environmentally Sensitive Habitat Screening	
FIGURE 2- 4	

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Legend

-  Project Study Boundary
-  Individual Redwood Trees (non ESHA)

<p>Paper Size ANSI B</p> <p>0 25 50 75 100</p> <p>Feet</p> <p>Map Projection: Lambert Conformal Conic Horizontal Datum: North American 1983 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet</p> <p>G:\11111159130 Arcata Old Arcata Road Improvements\08-GIS\Maps\Deliverables\11159130_02_ESHA_RevA.mxd Print date: 08 Oct 2018 - 08:39</p>			<p>City of Arcata Old Arcata Road Improvements</p> <p>Special Status Plant Survey and Environmentally Sensitive Habitat Screening</p>	<p>Project No. 11159130 Revision No. A Date 10/8/2018</p>	<p>FIGURE 2- 5</p> <p><small>Data source: . Created by: gldavidson</small></p>
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Memorandum

Table 1 Special status plant species with potential to occur in the PSB

Taxa	Common Name	Listing Status	Typical Habitat	
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	1B.1	Coastal dunes	No Potential.
<i>Angelica lucida</i>	sea-watch	4.2	Coastal bluff scrub, coastal dunes, coastal scrub, marshes and swamps (coastal salt)	No Potential.
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	1B.2	Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt, streamsidess)	No Potential.
<i>Astragalus rattanii</i> var. <i>rattanii</i>	Rattan's milk-vetch	4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest	No Potential.
<i>Astragalus umbraticus</i>	Bald Mountain milk-vetch	2B.3	Cismontane woodland Lower montane coniferous forest	No Potential.
<i>Bryoria pseudocapillaris</i>	false gray horsehair lichen	3.2	Coastal dunes (SLO Co.), North Coast coniferous forest (immediate coast)	No Potential.
<i>Bryoria spiralifera</i>	twisted horsehair lichen	1B.1	North Coast coniferous forest (immediate coast)	No Potential.
<i>Cardamine angulata</i>	seaside bittercress	2B.1	Lower montane & North coast (NC) coniferous forest Wetland	No Potential.
<i>Carex arcta</i>	northern clustered sedge	2B.2	Bogs and fens, North Coast coniferous forest (mesic)	Low Potential.
<i>Carex leptalea</i>	bristle-stalked sedge	2B.2	Bog, fen, freshwater marsh, Wetland, swamp, Meadow & seep	Low Potential.
<i>Carex lyngbyei</i>	Lyngbye's sedge	2B.2	Marshes and swamps (brackish or freshwater)	Low Potential.



Taxa	Common Name	Listing Status	Typical Habitat	
<i>Carex praticola</i>	northern meadow sedge	2B.2	Meadow & seep Wetland	No Potential.
<i>Castilleja ambigua</i> var. <i>humboldtiensis</i>	Humboldt Bay owl's-clover	1B.2	Marsh & swamp Salt marsh Wetland	No Potential.
<i>Castilleja littoralis</i>	Oregon coast paintbrush	2B.2	Coastal bluff scrub Coastal dunes Coastal scrub	No Potential.
<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Point Reyes bird's-beak	2B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub	No Potential.
<i>Chrysosplenium glechomifolium</i>	Pacific golden saxifrage	4.3	Streambanks, sometimes seeps, sometimes roadsides. NC coniferous forest. Riparian forest	Low Potential.
<i>Collinsia corymbosa</i>	round-headed Chinese-houses	1B.2	Coastal dunes	No Potential.
<i>Coptis laciniata</i>	Oregon goldthread	4.2	Meadow & seep North coast coniferous forest Wetland	No Potential.
<i>Epilobium oreganum</i>	Oregon fireweed	1B.2	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	No Potential.
<i>Epilobium septentrionale</i>	Humboldt County fuchsia	4.3	Broadleaved upland forest, North Coast coniferous forest	No Potential.
<i>Erysimum menziesii</i>	Menzies wallflower	FE, SE, 1B.1	Coastal dunes	No Potential.
<i>Erythronium oregonum</i>	giant fawn lily	2B.2	Cismontane woodland, Meadows and seeps	No Potential.
<i>Erythronium revolutum</i>	coast fawn lily	2B.2	Bog & fen broadleaved upland forest North Coast coniferous Wetland	No Potential.



Taxa	Common Name	Listing Status	Typical Habitat	
<i>Fissidens pauperculus</i>	minute pocket moss	1B.2	North Coast coniferous forest (damp coastal soil)	No Potential.
<i>Gilia capitata ssp. pacifica</i>	Pacific gilia	1B.2	Coastal bluff scrub, Chaparral (openings), Coastal prairie, Valley and foothill grassland	No Potential.
<i>Gilia millefoliata</i>	dark-eyed gilia	1B.2	Coastal dunes	No Potential.
<i>Glehnia littoralis ssp. leiocarpa</i>	American glehnia	4.2	Coastal dunes	No Potential.
<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie	No Potential.
<i>Iliamna latibracteata</i>	California globe mallow	1B.2	Chaparral Lower montane coniferous forest North coast coniferous forest Riparian scrub	No Potential.
<i>Lasthenia californica ssp. macrantha</i>	perennial goldfields	1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub	No Potential.
<i>Lathyrus japonicus</i>	seaside pea	2B.1	Coastal dunes	No Potential.
<i>Lathyrus palustris</i>	marsh pea	2B.2	Bog, fen, marsh, swamp coastal prairie & scrub lower montane & NC coniferous forest	Low Potential.
<i>Layia carnosa</i>	beach layia	FE, SE, 1B.1	Coastal dunes coastal scrub	No Potential.
<i>Lilium occidentale</i>	Western lily	FE, SE, 1B.1	Bogs and fens, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps (freshwater), North Coast coniferous forest (openings)	No Potential.



Taxa	Common Name	Listing Status	Typical Habitat	
<i>Lilium kelloggii</i>	Kellogg's lily	4.3	Lower montane coniferous forest, North Coast coniferous forest	No Potential.
<i>Listera cordata</i>	heart-leaved twayblade	4.2	Bogs and fens lower montane & NC coniferous forest	Low Potential.
<i>Lycopodium clavatum</i>	running-pine	4.1	Lower montane & NC coniferous forest marsh & swamp	No Potential.
<i>Mitellastrum caulescens</i>	leafy-stemmed mitrewort	4.2	Broadleaved upland forest lower montane & NC coniferous forest meadow & seep	Low Potential.
<i>Monotropa uniflora</i>	ghost-pipe	2B.2	Broadleaved upland forest NC coniferous forest	No Potential.
<i>Montia howellii</i>	Howell's montia	2B.2	Meadow, seep, wetland & vernal pool NC coniferous	No Potential.
<i>Noccaea fendleri</i> ssp. <i>californica</i>	Kneeland Prairie pennycress	FE, 1B.1	Coastal prairie (serpentine)	No Potential.
<i>Oenothera wolfii</i>	Wolf's evening-primrose	1B.1	Coastal bluff scrub coastal dunes coastal prairie	No Potential.
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	2B.2	Coastal scrub, North Coast coniferous forest	No Potential.
<i>Piperia candida</i>	white-flowered rein orchid	1B.2	Broadleaved upland forest Lower montane coniferous forest North coast coniferous forest Ultramafic	No Potential.
<i>Pityopus californicus</i>	California pinefoot	4.2	Mesic. Broadleaved upland forest. Lower montane/Upper montane / NC coniferous forest	No Potential.
<i>Pleuropogon refractus</i>	nodding semaphore grass	4.2	Mesic. Lower montane & NC coniferous forest. Meadows and seeps. Riparian	Low Potential.
<i>Ribes laxiflorum</i>	trailing black currant	4.3	Sometimes roadside. NC coniferous forest	No Potential.



Taxa	Common Name	Listing Status	Typical Habitat	
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	4.2	Broadleaved upland forest coastal prairie & scrub NC coniferous & riparian forest	No Potetial.
<i>Sidalcea malviflora ssp. patula</i>	Siskiyou checkerbloom	1B.2	Coastal bluff scrub Coastal prairie North coast coniferous forest	No Potential.
<i>Sidalcea oregana ssp. eximia</i>	coast checkerbloom	1B.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest	No Potential.
<i>Spergularia canadensis var. occidentalis</i>	western sand-spurrey	2B.1	Marshes and swamps (coastal salt)	No Potential.
<i>Tiarella trifoliata var. trifoliata</i>	trifoliolate laceflower	3.2	Lower montane coniferous forest, North Coast coniferous forest	No Potential.
<i>Trichodon cylindricus</i>	cylindrical trichodon	2B.2	Broadleaved upland forest upper montane coniferous forest	No Potential.
<i>Usnea longissima</i>	long-beard lichen	4.2	Broadleaved upland forest north coast coniferous forest old growth redwood	No Potential.
<i>Viola palustris</i>	alpine marsh violet	2B.2	Bogs and fens (coastal), Coastal scrub (mesic)	Low Potential.
Terrestrial Communities				
Upland Douglas-Fir Forest		None	North coast coniferous forest	Not Present.
Northern Coastal Salt Marsh		None	Marsh & swamp wetland	Not Present.
Northern Foredune Grassland		None	Coastal dunes	Not Present.
Source: CNDDDB and CNPS accessed 6/1/18. Assessment area consists of USGS 7.5 minute quadrangles: Tyee City, Arcata North, Blue Lake, Eureka, Arcata South, Korbelt, Fields Landing, McWhinney Creek, Cannibal Island				
Note: small font size in table above denotes List 3 or 4 plant species which are provided herein for informational purposes				



Taxa	Common Name	Listing Status	Typical Habitat
FEDERAL--U.S. Fish and Wildlife Service (USFWS)			
FE - Federal Endangered			
FT - Federal Threatened			
FC - Federal Candidate for listing			
FSC - United States Fish and Wildlife Service Federal Species of Special Concern			
STATE--California Department of Fish and Wildlife (CDFW)			
SE - State Endangered			
ST - State Threatened			
SR – State Rare			
CSC - CDFW Species of Special Concern			
SLC - Species of Local Concern			
CFP - California Fully Protected Species			
California Native Plant Society Rare Plant Ranks (CRPR)			
1A- Presumed Extirpated in California and either Rare or extinct elsewhere			
1B - Rare, Threatened, or Endangered in California and elsewhere			
2 - Rare, Threatened or Endangered in California, but more common elsewhere			
2A- Plants Presumed Extirpated in California, but more common elsewhere			
2B- Plants Rare, Threatened, or Endangered in California, but more common elsewhere			
3 - Review List (more information needed)			
4 - Watch List (limited distribution in California)			
Threat Ranks:			
_0.1 Seriously threatened in California			
_0.2 Moderately threatened in California			
_0.3 Not very threatened in California			
POTENTIAL TO OCCUR			
No Potential	Habitat on and adjacent to the site is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime)		
Low Potential	Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.		
Moderate Potential	Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.		
High Potential	All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.		



Memorandum

Table 2 Species list of plants observed within the PSB by GHD

Scientific Name	Common Name
<i>Agrostis stolonifera</i>	creeping bent
<i>Alnus rubra</i>	red alder
<i>Anthoxanthum odoratum</i>	sweet vernal grass
<i>Arctotheca sp.</i>	cape weed
<i>Arrhenatherum elatius</i>	tall oatgrass
<i>Athyrium filix-femina</i>	common ladyfern
<i>Avena sp.</i>	oats
<i>Baccharis pilularis</i>	coyote brush
<i>Bellis perennis</i>	English daisy
<i>Brassica nigra</i>	black mustard
<i>Briza minor</i>	annual quacking grass
<i>Bromus carinatus</i>	California brome
<i>Bromus hordeaceus</i>	soft chess brome
<i>Buddleja sp.</i>	butterfly bush
<i>Carex obnupta</i>	slough sedge
<i>Carpobrotus edulis</i>	iceplant
<i>Cerastium glomeratum</i>	mouse-eared chickweed
<i>Conium maculatum</i>	poison hemlock
<i>Corylus cornuta var. californica</i>	California hazelnut
<i>Cotoneaster sp.</i>	contoneaster
<i>Cyperus eragrostis</i>	tall nutsedge
<i>Dactylis glomerata</i>	orchard grass
<i>Daucus carota</i>	queen ann's lace
<i>Dipsacus fullonum</i>	wild teasel
<i>Epilobium ciliatum</i>	
<i>Equisetum arvense</i>	common horsetail
<i>Equisetum telmateia subsp. braunii</i>	giant horsetail
<i>Eschscholzia californica</i>	California poppy
<i>Festuca arundinacea</i>	tall fescue
<i>Festuca perennis</i>	meadow fescue
<i>Foeniculum vulgare</i>	fennel
<i>Frangula purshiana subsp. purshiana</i>	cascara
<i>Galium aparine</i>	goose grass
<i>Geranium dissectum</i>	
<i>Geranium molle</i>	cranesbill
<i>Glyceria x occidentalis</i>	western manna grass



Scientific Name	Common Name
<i>Hedera helix</i>	English ivy
<i>Helminthotheca echioides</i>	bristly ox-tongue
<i>Holcus lanatus</i>	velvet grass
<i>Hordeum marinum subsp. gussoneanum</i>	
<i>Hypochaeris radicata</i>	rough cats-ear
<i>Juncus effusus</i>	common rush
<i>Juncus hesperius</i>	coast or bog rush
<i>Juncus patens</i>	spreading rush
<i>Lapsana communis</i>	common nipplewort
<i>Lathyrus vestitus</i>	common pacific pea
<i>Leucanthemum vulgare</i>	ox-eye daisy
<i>Linum bienne</i>	
<i>Lonicera involucrata</i>	twinberry
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Lychnis coronaria</i>	rose campion
<i>Lysimachia arvensis</i>	scarlet pimpernel
<i>Lythrum hyssopifolia</i>	hyssop loosestrife
<i>Malus sp.</i>	
<i>Matricaria discoidea</i>	pineapple weed
<i>Medicago polymorpha</i>	California burclover
<i>Mentha pulegium</i>	pennyroyal
<i>Nasturtium officinale</i>	water cress
<i>Oenanthe sarmentosa</i>	
<i>Parentucellia viscosa</i>	yellow glandweed
<i>Phleum pratense</i>	common timothy
<i>Pinus contorta subsp. contorta</i>	shore pine
<i>Pinus radiata</i>	Monterey pine
<i>Plantago lanceolata</i>	English plantain
<i>Plantago major</i>	common plantain
<i>Poa annua</i>	annual blue grass
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass
<i>Polystichum munitum</i>	western sword fern
<i>Prunella vulgare</i>	selfheal
<i>Ranunculus repens</i>	creeping buttercup
<i>Raphanus sativus</i>	radish
<i>Rosa sp.</i>	
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus ursinus</i>	California blackberry



Scientific Name	Common Name
<i>Rumex acetosella</i>	common sheep sorrel
<i>Rumex crispus</i>	curly dock
<i>Salix lasiandra</i> var. <i>lasiandra</i>	Pacific willow
<i>Salix hookeriana</i>	coastal willow
<i>Salix</i> sp.	willow
<i>Scirpus microcarpus</i>	bulrush
<i>Senecio minimus</i>	coastal burnweed
<i>Sequoia sempervirens</i>	redwood
<i>Sonchus</i> sp.	sow thistle
<i>Spiraea douglasii</i>	Douglas spirea
<i>Stachys ajugoides</i>	hedge-nettle
<i>Stachys chamissonis</i>	
<i>Symphyotrichum chilensis</i>	Pacific aster
<i>Tragopogon dubius</i>	goat's beard
<i>Trifolium dubium</i>	little hop clover
<i>Trifolium fragiferum</i>	strawberry clover
<i>Typha</i> sp.	cattail
<i>Veronica</i> sp.	
<i>Vicia sativa</i> subsp. <i>nigra</i>	
<i>Vicia tetrasperma</i>	four seeded vetch
<i>Vicia villosa</i> ssp. <i>varia</i>	smooth vetch
<i>Vinca major</i>	greater periwinkle

Source: Old Arcata Road botanical survey dates – June 18, 2018 and July 31, 2018 (GHD botanist Amy Livingston)