



Biological Resources Assessment

Phase II

Elk River Wildlife Trail Improvement Project

Prepared for:

City of Eureka

SEW Consulting Engineers & Geologists, Inc.

812 W. Wabash
Eureka, CA 95501-2138
707/441-8855

October 2007
006107.100

Reference: 006107.100

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QA/QC: FLC__

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Acronyms and Abbreviations

BIOS	Biogeographical Information and Observation System
BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
ERWTIP	Elk River Wildlife Trail Improvement Project
ESHA	Environmentally Sensitive Habitat Areas
FC	Federal Candidate
FE	Federally listed Endangered
FT	Federally listed Threatened
GPS	Global Positions System
MSL	Mean Sea Level
N/A	Not Applicable
NWI	National Wetland Inventory
OHW	Ordinary High Water Mark
PALCO	Pacific Lumber Company
RCAA	Redwood Community Action Agency
SE	State listed Endangered
SHN	SHN Consulting Engineers & Geologists, Inc.
SONCC	Southern Oregon Northern California Coast
sq. ft.	square foot
SSC	Species of Special Concern
ST	State listed Threatened
TBD	To Be Determined
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WWTP	Wastewater Treatment Plant

1.0 Project Introduction and Location

On April 13, June 19, July 20, August 2, and October 4, 2007, SHN Consulting Engineers & Geologists, Inc. (SHN) conducted fieldwork for Phase II of the Elk River Wildlife Trail Improvement Project (ERWTIP). The project site is located in the west ½ of Section 33, Township 5 North, Range 1 West Humboldt Base Meridian (Figure 1). Fieldwork for Phase I of the ERWTIP was completed in 2006 and is documented in the *Biological Assessment Elk River Wildlife Trail Improvement Project, Eureka, California* (SHN, 2007a) and the *Wetland Delineation for the Proposed Elk River Trail Improvement Project, Eureka, California* (SHN, 2007b). Phase II of the ERWTIP focused on the existing Elk River Wildlife Trail, which is located adjacent to the northern boundary of the Eureka Wastewater Treatment Plant (WWTP) and extends south to the railroad tracks and from the railroad tracks to Herrick Avenue Park and Ride (Figure 1). Phase II includes improvements to the existing Elk River Wildlife Trail (hereafter, trail or ERWT), whereas Phase I consists of expanding the trail north. Due to the similarity in habitat types between the Phase I and Phase II of the project and the extensive assessment and analysis that was performed for Phase I, the results of Phase I work (SHN, 2007a and 2007b) are used as background for this report. Please refer to Appendix A for detailed results of the Phase II wetland delineation.

2.0 Methods

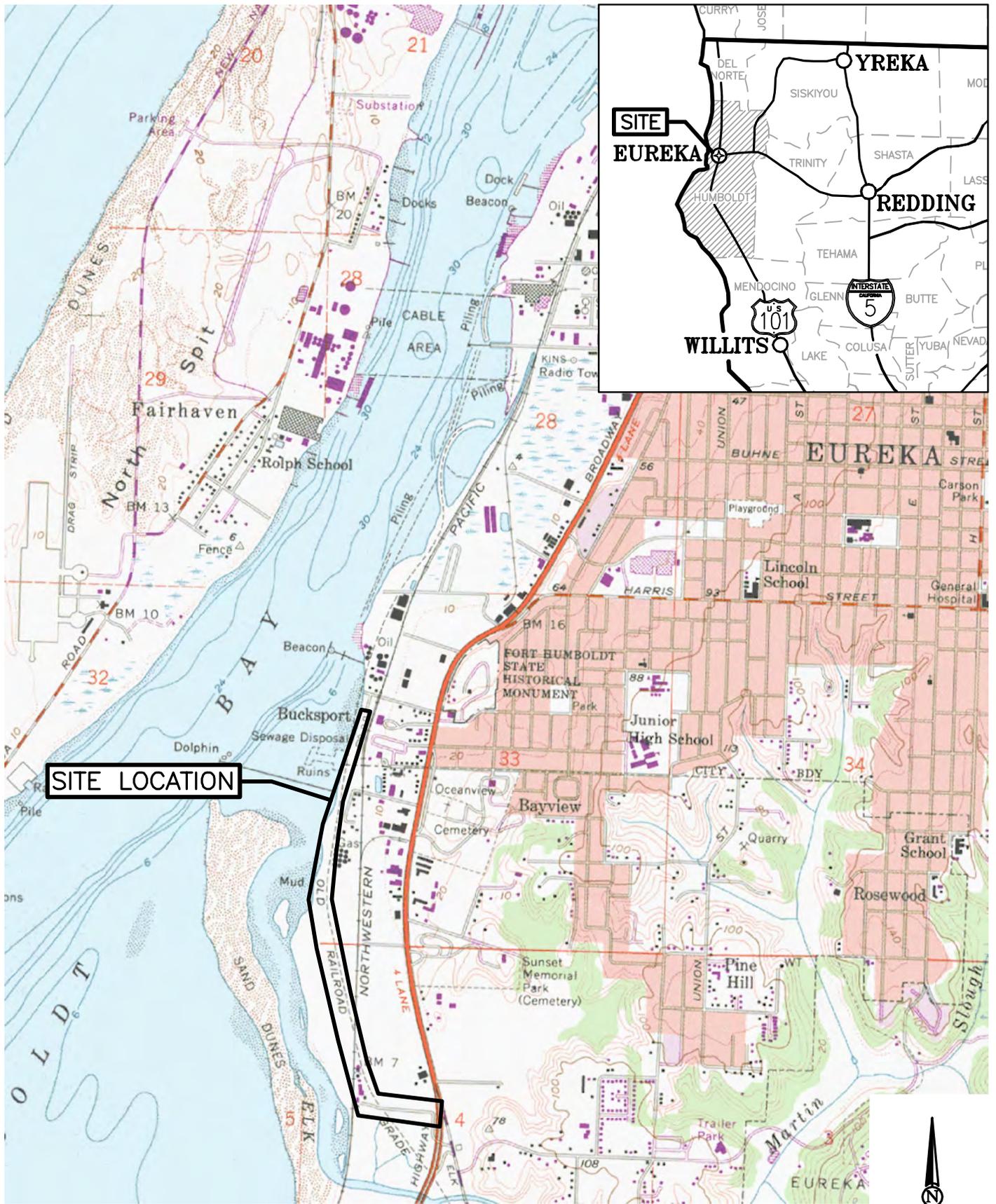
The existing trail was systematically surveyed from the northern parking lot, south to the Herrick Avenue Park and Ride. For organizational purposes, portions of the study area are referenced as the following segments: 1) the main trail, 2) footpath, 3) railroad to Pound Road parking lot, and 4) Pound Road parking lot east and south to the Herrick Avenue Park and Ride (Figure 2).

Each representative section, as identified above, was visually assessed and quantified. Important resource variables included the presence of wetlands, Environmentally Sensitive Habitat Areas (ESHA), special status plant species, important wildlife areas, and/or the degree to which vegetation would be affected to allow for trail improvements, including but not limited to widening. Refer to Appendix A for detailed results of the wetland delineation.

The area of potential effects were assessed along the main trail using a 14-foot PVC pipe (i.e., measuring rod) which represented the desired/hypothetical trail width with an additional six feet added to each end of the measuring rod to represent the actual or potential disturbance area (26-foot total width).

The footpath trail was assessed for a 4-foot trail width, with four feet added at each end of the shortened measuring rod to represent the potential or actual disturbance area (12 feet total width). The study areas were defined based on the recommendations included in the *Elk River Access Project Recommendations* (RCAA, 2002), SHN's knowledge of the trail area, and coordination with the City of Eureka. The measuring rod was not used for the portion of the study area from the Pound Road parking lot to the Herrick Avenue Park and Ride because a study area could not be defined due to existing site constraints, such as fencing; however, sensitive resources were evaluated and mapped in that portion of the project area.

Each trail segment was quantified by walking the representative trail with the measuring rod centered on, and perpendicular to the trail, with the exception of the portion from the Pound Road

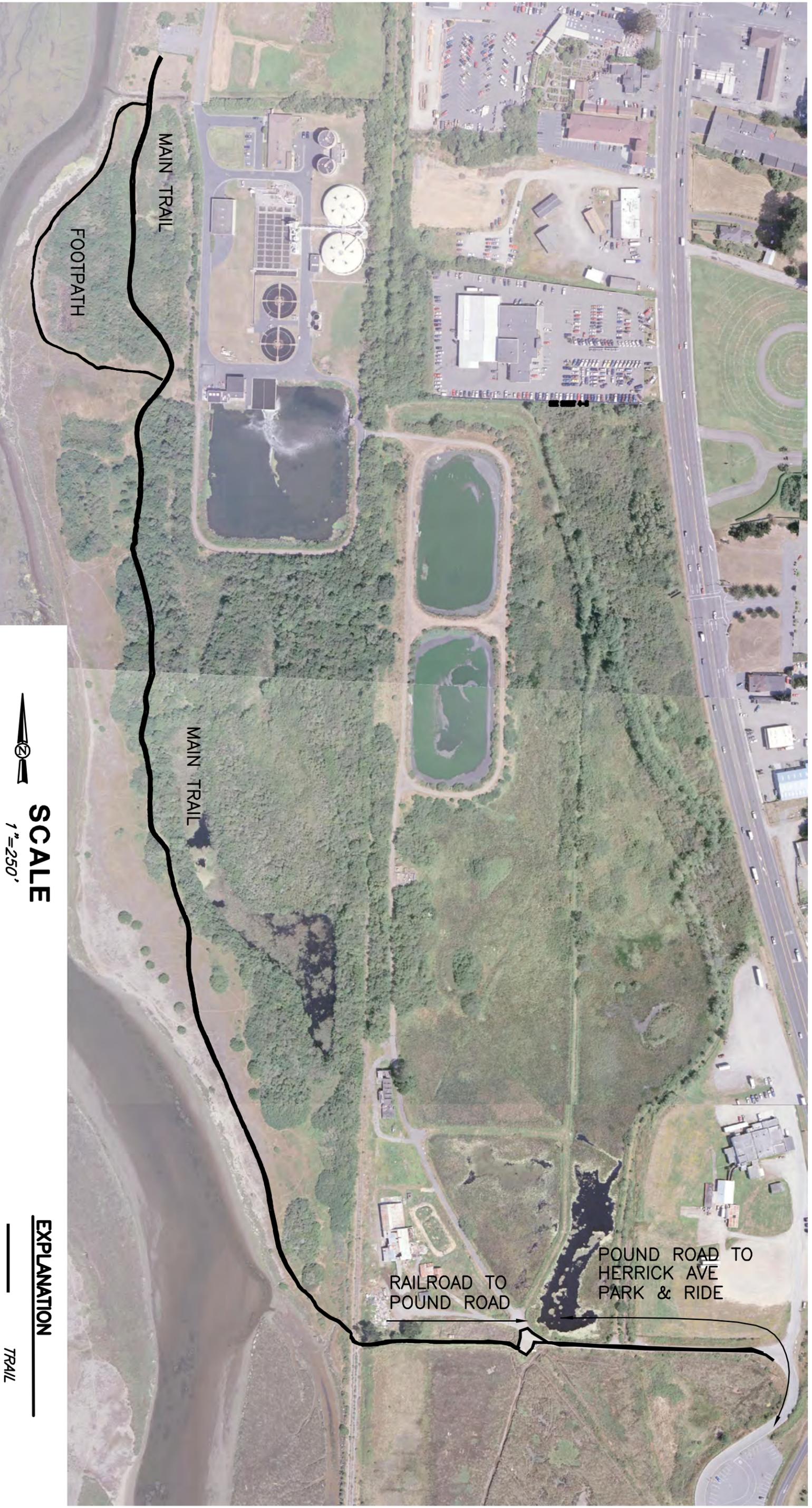


SOURCE: EUREKA
USGS 7.5 MINUTE
QUADRANGLE



I:\2006\006107-ELK RIVER\006107.100

	City of Eureka Elk River Trail Improvement Project Phase II Eureka, California	Site Location Map Biological Resources Assessment SHN 006107.100
	October 2007	006107.100-LOCATION




SCALE
 1"=250'

EXPLANATION
 TRAIL


 Consulting Engineers
 & Geologists, Inc.

City of Eureka
 Elk River Trail Improvement Project Phase II
 Eureka, California
 October 2007

Study Area
 Biological Resources Assessment
 SHN 006107.100
 006107.100-STUDY-AREA
 Figure 2

parking lot to the Herrick Avenue Park and Ride. Where the measuring rod (or additional 6-foot {main trail} or 4-foot {foot path}) intercepted one of the aforementioned important resource variables, each was noted, mapped, and quantified to the degree possible; for example, some limited trimming to clearing large diameter stems. To the extent possible (i.e., based on canopy closure), a Trimble GeoXT hand-held Global Positions System (GPS) was used to map and quantify the existing trail, the presence of wetlands, and ESHA. Collected GPS data was post processed and differentially corrected for sub-meter accuracy and overlaid on the City's 2002 aerial photograph.

3.0 Environmental Setting

3.1 Climate and Project Location

The environmental setting within the City of Eureka is predominately affected by the mild maritime climate, active tectonic processes that are manifested in the geomorphic landscape, and current and historical development. Influence from these factors is evident in the variety of habitat types found throughout the City, which include freshwater wetlands, salt marshes, deepwater channels, intertidal areas, and North Coast coniferous forest.

3.2 Study Area Habitats

Habitats within the project area consist of uplands and wetlands, with several corresponding vegetation communities in each. Upland communities include disturbed and dunemat. Wetland communities consist of Estuarine intertidal irregularly exposed wetland, Estuarine intertidal regularly exposed, Estuarine subtidal regularly inundated, Palustrine emergent wetland, an Palustrine scrub-shrub, and a combination of Palustrine emergent and scrub-shrub. The wetland community names are consistent with the National Wetland Inventory (NWI) classification system. Additional information regarding wetlands within the study area is provided in the Wetland Delineation (Appendix A). Appendix B presents a list of all plant species encountered at the site. Botanical nomenclature follows the *Jepson Manual Higher Plants of California* (Hickman, 1993). A list of wildlife species observed within and adjacent to the study area is included in Table 2 in Section 5.5.2 of this report.

The three major habitat types located in Phase II study area are Palustrine scrub-shrub, disturbed, dunemat. Salt marsh habitat is extensive along the western boundary of the study area. Refer to Appendix C for representative photos of habitats within and adjacent to the study area.

3.2.1 Upland Habitat

3.2.1.1 Disturbed

Disturbed habitat is scattered throughout the project area, with the majority located in the northern and southern portions of the study area from the railroad to Pound Road, and the Herrick Avenue Park and Ride. Disturbed habitat is not as extensive in Phase II compared to Phase I (SHN, 2007a) due to a lack of former parking areas, existing and former building pads, miscellaneous construction material and debris, and human encampments and associated debris. Soils within the disturbed areas are sandy (either native or imported fill) and have generally been heavily compacted and are mixed with unsorted rocks, rubble, and other debris. Dominant shrubs within

the disturbed areas include coyote bush (*Baccharis pilularis*), Himalayan berry (*Rubus discolor*), pampas grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), and Scotch broom (*Cytisus scoparius*) with scattered yellow bush lupine (*Lupinus arboreus*). Although pampas grass and fennel are herbaceous species, they function as dominant shrubs in the disturbed upland habitat because they do not die back and form dense thickets that provide a canopy over the majority of the other herbaceous species. The herbaceous layer is typically dominated by non-native ruderal species that include hairy cat's ear (*Hypochaeris radicata*), English plantain (*Plantago lanceolata*), sweet white clover (*Melilotus alba*), Queen Anne's lace (*Daucus carota*), wild radish (*Raphanus sativus*), sweet vernal grass (*Anthoxanthum odoratum*), common velvet grass (*Holcus lanatus*), rattlesnake grass (*Briza maxima*), Mediterranean barley (*Hordeum marinum*), mustards (*Brassica* spp.), and St. John's wort (*Hypericum perforatum*). Native species, including yarrow (*Achillea millefolium*) and red fescue (*Festuca rubra*), are scattered throughout the disturbed habitat.

3.2.1.2 Dunemat

Vegetation that is characterized as dunemat is located along the upper margins of Humboldt Bay, east of the estuarine habitat, in more uniformly sandy soils that lack significant disturbance found in the disturbed habitat (Figures 3 and 4). The dunemat community described herein is consistent with habitat described as dune community in other references. This community consists of a mix of native and non-native species in the northern 1/4 of the Phase II study area along the main trail, and then transitions to a more intact native species composition from the northern footpath south to the railroad tracks (Figures 3, 4, and 5). The highest quality dunemat vegetation is located along the southern half of the main trail, where the existing trail is widest (Figure 4). Dunemat vegetation in the northern half of the study area is dominated by sandmat (*Cardionema ramosissimum*), European beachgrass (*Ammophila arenaria*), European hairgrass (*Aira caryophyllea*), soft chess (*Bromus hordeaceus*), salt rush (*Juncus leseurii*), yarrow, sweet vernal grass, hairy cat's ear, wild radish, and sheep sorrel (*Rumex acetosella*), with lesser amounts of beach knotweed (*Polygonum paronychia*), beach bursage (*Ambrosia chamissonis*), and beach morning glory (*Calystegia soldanella*). The higher quality dunemat vegetation lacks a significant abundance of European beachgrass, European hairgrass, and sweet vernal grass. Instead, these species are largely replaced with native grasses including red fescue and large-flowered sand-dune bluegrass (*Poa macrantha*). Native dunemat species, including beach primrose (*Camissonia cheiranthifolia*), beach morning glory, yellow sand verbena (*Abronia latifolia*), beach knotweed, beach bursage, dune tansy (*Tanacetum camphoratum*), dune goldenrod (*Solidago spathulata*), and beach buckwheat (*Eriogonum latifolium*) with scattered sea thrift (*Armeria maritima* ssp. *californica*) and beach pea (*Lathyrus littoralis*) are more widespread in the southern section of the dunemat community and along a portion of the footpath.

The sensitive natural community northern foredune grassland (refer to Section 5.4 for additional description) intergrades with the dunemat community in scattered portions of the study area including a section of the footpath and along the southern section of the main trail. This sensitive natural community was dominated by American dunegrass (*Leymus mollis* ssp. *mollis*) prior to the introduction of European beachgrass (*Ammophila arenaria*) to the west coast and associated with native dunemat species. Scattered patches of American dunegrass are located west of the study area, outside the potential trail expansion impact area.



EXPLANATION	
	VEGETATION REMOVAL
	WETLAND IMPACTS
	EXISTING TRAIL
	STUDY AREA
	WETLAND SAMPLE POINT

SCALE
1"=50'

DATE 10/2007 PROJ. NO. 006107	FIGURE 3	CITY OF EUREKA ELK RIVER WILDLIFE TRAIL IMPROVEMENT PROJECT PHASE II EUREKA, CALIFORNIA		DSGN					SW CONSULTING ENGINEERS & GEOLOGISTS, INC. 812 W. Wabash (707)441-8855 Eureka, CA 95501 FAX (707)441-8877	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
		DR DSL								
		CHK								
		APVD								
BIOLOGICAL RESOURCE ASSESSMENT				NO.	DATE	REVISION	BY			

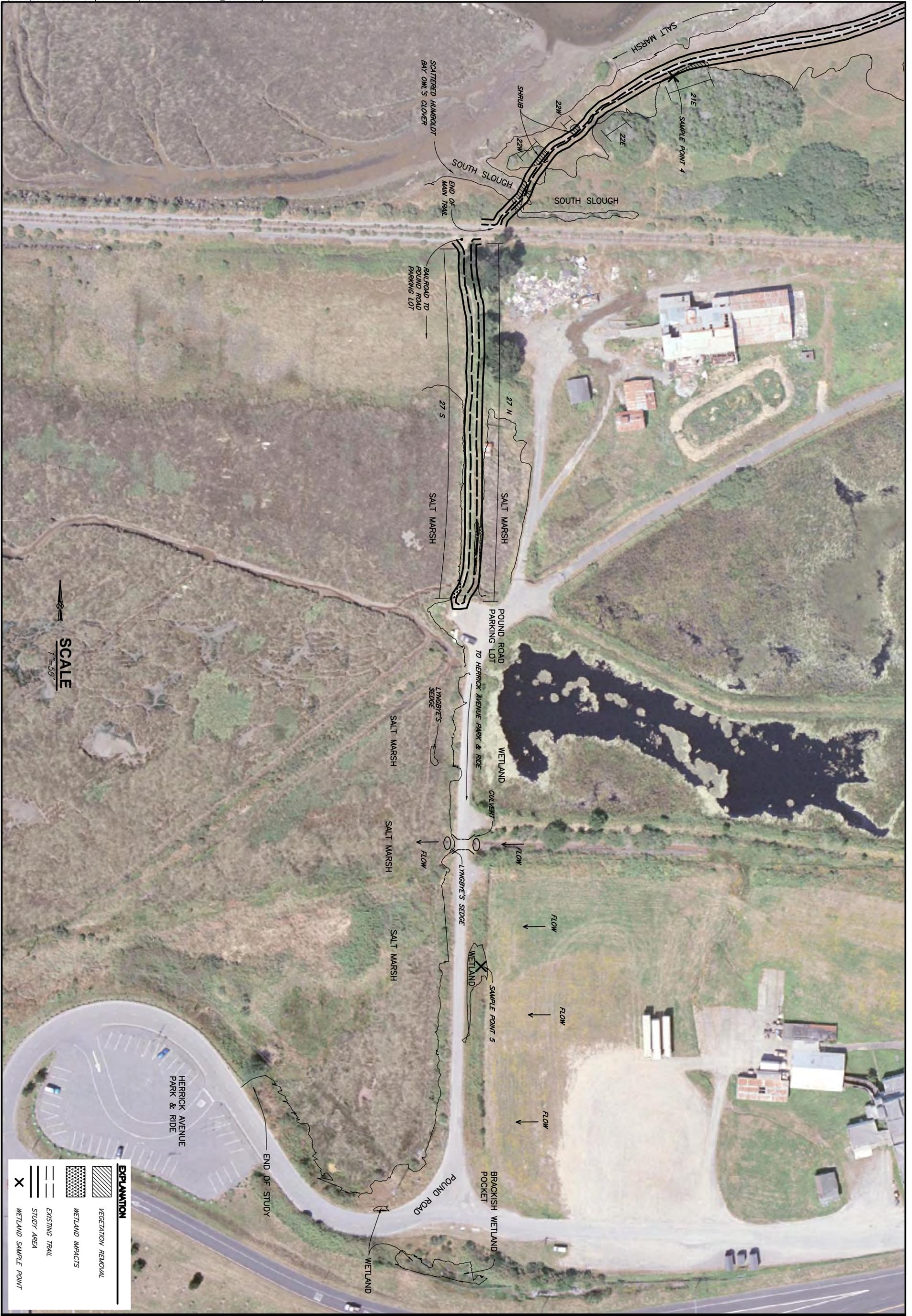


EXPLANATION

- VEGETATION REMOVAL
- WETLAND IMPACTS
- EXISTING TRAIL
- STUDY AREA
- WETLAND SAMPLE POINT

SCALE
1" = 50'

DATE 10/2007 PROJ. NO. 006107	FIGURE 4	CITY OF EUREKA ELK RIVER WILDLIFE TRAIL IMPROVEMENT PROJECT PHASE II EUREKA, CALIFORNIA					CONSULTING ENGINEERS & GEOLOGISTS, INC.		VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0" = 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
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EXPLANATION	
	VEGETATION REMOVAL
	WETLAND IMPACTS
	EXISTING TRAIL
	STUDY AREA
	WETLAND SAMPLE POINT

CITY OF EUREKA
 ELK RIVER WILDLIFE TRAIL IMPROVEMENT PROJECT
 PHASE II
 EUREKA, CALIFORNIA

BIOLOGICAL RESOURCE ASSESSMENT

DSGN				
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CHK				
APVD				
NO.	DATE	REVISION	BY	

SEI CONSULTING ENGINEERS & GEOLOGISTS, INC.
 812 W. Wabash (707)441-8855
 Eureka, CA 95501 FAX (707)441-8877

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

FIGURE 5
 DATE 10/2007
 PROJ. NO. 006107

3.2.2 Wetlands

3.2.2.1 Estuarine Wetland

Estuarine intertidal irregularly exposed wetland habitat occupies a narrow band west of the study area, below and above the Ordinary High Water Mark (OHWM) where there is frequent tidal inundation. This vegetation community is referred to as salt marsh. Estuarine habitat is located west of the study area from the north slough to the south slough and is interspersed along both sides of the study area from the railroad tracks south to the Herrick Avenue Park and Ride (Figures 3, 4, and 5). A significant amount of high quality salt marsh is located well above the OHWM and immediately adjacent to the footpath in the northern portion of the study area.

The estuarine habitat is comprised entirely of herbaceous vegetation that is interspersed with patches of intertidal mudflat scattered with brown and green algae. Pockets of this habitat have a fairly intact native species composition but the majority is dominated by substantial mono-stands of the non-native dense-flowered cordgrass (*Spartina densiflora*). Based on the salinity ranges throughout the intertidal emergent wetland, other dominant species include pickleweed (*Salicornia virginica*), saltgrass (*Distichlis spicata*), sandspurry (*Spergularia macrotheca*), seaside arrow grass (*Triglochin maritima*), dodder (*Cuscuta salina*), spearscale (*Atriplex triangularis*), and spear oracle (*A. patula*) with lesser amounts of salt rush, gumweed (*Grindelia stricta*), sea lavender (*Limonium californica*), fleshy jaumea (*Jaumea carnosa*), and tufted hairgrass. The species composition transitions to a combination of dunemat and salt marsh vegetation, particularly near the footpath (Figure 3). High quality salt marsh habitat is located adjacent to the footpath. Northern coastal salt marshes are a sensitive natural community, which is described in Section 5.4 of this report, and are suitable habitat for a number of special status plant species. Salt marsh habitat is scattered throughout the study area and includes both the north and south sloughs (Figures 3, 4, and 5).

3.2.2.2 Palustrine Emergent Wetland

Palustrine emergent wetland habitat is inundated either seasonally, periodically, semipermanently, or permanently by freshwater and is for the most part dominated with herbaceous hydrophytes. The most significant area of this wetland habitat is located in the northern portion of the study area, adjacent to the WWTP in the open water ponds located just east of the study area (Figure 3). These ponds are permanently inundated and are dominated by hydrophytes including cattail (*Typha latifolia*), American bulrush (*Scirpus americanus*), silverweed (*Potentilla anserina*), nut sedge (*Cyperus eragrostis*), brass buttons (*Cotula coronopifolia*), Chamissonis' hedge-nettle (*Stachys chamissonis*), small fruited bulrush (*Scirpus microcarpus*), Pacific water parsley (*Oenanthe sarmentosa*), and rushes (*Juncus effuses* and *J. balticus*). This permanently inundated wetland habitat is surrounded by Palustrine scrub-shrub.

Emergent wetlands that are seasonally inundated are scattered throughout the trail area, but are generally located beyond the boundaries of the Phase II study area.

3.2.2.3 Palustrine Scrub-Shrub Wetland

Freshwater wetland habitat that has a substantial shrub component is characterized as Palustrine scrub-shrub. This is the most widespread wetland habitat in the Phase II study area. The patchy to moderately closed overstory is dominated by willows (*Salix sitchensis*, *S. lucida*, and *S. lasiolepis*), California wax myrtle (*Myrica californica*), and cascara (*Rhamnus purshiana*), with scattered red alder (*Alnus rubra*). The dense understory consists of both shrub and herbaceous species including willows, Himalayan berry, Pacific bramble (*Rubus ursinus*), slough sedge (*Carex obnupta*), silverweed, common rush, bent-grass (*Agrostis viridus*), and creeping buttercup (*Ranunculus repens*) with lesser amounts of sword fern (*Polystichum munitum*) and lady fern (*Athyrium felix-femina*). Some portions of the scrub-shrub habitat have been impacted by human encampments and associated debris, but not to the extent that was reported in portions of the Phase I study area (SHN, 2007a). Soils in the scrub-shrub habitat exhibited dark chroma and significant redoximorphic features, including concentrations and depletions. Both primary (saturated in the upper 12 inches) and secondary hydrology indicators (oxidized rhizospheres) were observed during the dry season (Appendix A).

4.0 Special Status Species Analysis

Prior to conducting fieldwork, a California Natural Diversity Database (CNDDDB; CDFG, 2007a) Rare Find and Biogeographical Information and Observation System (BIOS; CDFG, 2007b) search was completed for the 7.5-minute U.S. Geological Survey (USGS) Eureka quadrangle and all adjacent quadrangles (Table 1). The databases were queried for historical and existing occurrences of state and federally listed Threatened, Endangered, and Candidate species; species proposed for listing; special status species; and species listed by the California Native Plant Society (CNPS; On-line 2007 inventory and Tibor, 2001).

Table 1 Sensitive Botanical and Wildlife Species Reported from the Eureka Area Elk River Wildlife Trail Improvement Project, Humboldt County, California				
Species Latin Name	Common Name	Listing Status ¹	Preferred Habitat ²	Habitat Present ³
Plant Species				
<i>Abronia umbellata</i> ssp. <i>breviflora</i>	pink sand-verbena	1B	Coastal dunes below 50 feet above Mean Sea Level (MSL); blooms June-October.	Yes
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	1B	Mesic coastal dunes, coastal salt marshes and swamps below 100 feet above MSL; blooms April-October.	Yes
<i>Carex arcta</i>	northern clustered sedge	2	Mesic sites in North Coast coniferous forests, and bogs and fens between approximately 195 and 4,600 feet above MSL; blooms June-August.	No

Table 1
Sensitive Botanical and Wildlife Species Reported from the Eureka Area
Elk River Wildlife Trail Improvement Project, Humboldt County, California

Species Latin Name	Common Name	Listing Status ¹	Preferred Habitat ²	Habitat Present ³
<i>Carex leptalea</i>	flaccid sedge	2	Bogs and fens, meadows and seeps, marshes and swamps from sea level to 2,300 feet above MSL; blooms May-August.	Yes
<i>Carex lyngbyei</i>	Lyngbye's sedge	2	Brackish or freshwater marshes and swamps below 35 feet above MSL; blooms May-August.	Yes
<i>Carex praticola</i>	meadow sedge	2	Mesic meadows and seeps in North Coast coniferous forests from sea level to 10,500 feet above MSL; blooms May-July.	Yes
<i>Castilleja affinis</i> ssp. <i>litoralis</i>	Oregon coast Indian paintbrush	2	Coastal bluff scrub, sandy coastal scrub, and dunes from 50-330 feet above MSL; blooms in June.	Yes
<i>Castilleja ambigua</i> ssp. <i>humboldtensis</i>	Humboldt Bay owl's clover	1B	Coastal salt marsh and swamps up to 10 feet above MSL; blooms April-August.	Yes
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Point Reyes bird's-beak	1B	Coastal salt marsh and swamps up to 30 feet above MSL; blooms June-October.	Yes
<i>Erysimum menziesii</i> ssp. <i>eurekaense</i>	Humboldt Bay wallflower	1B/FE/SE	Coastal dunes up to 30 feet above MSL; blooms March-April.	Yes
<i>Erythronium revolutum</i>	coast fawn lily	2	Bogs and fens, mesic areas in broadleaved forests and North Coast coniferous forest, and streambanks up to 3,500 feet above MSL; blooms March-June.	No
<i>Fissidens pauperculus</i>	minute pocket-moss	1B	Grows on damp soil along the coast in North Coast coniferous forest from 30-330 feet above MSL.	No
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	1B	Various including coastal bluff scrub and coastal prairie generally below 1,000 feet above MSL; blooms May-August.	Yes
<i>Gilia millefoliata</i>	dark-eyed gilia	1B	Coastal dunes up to 65 feet above MSL; blooms April-July.	Yes

Table 1
Sensitive Botanical and Wildlife Species Reported from the Eureka Area
Elk River Wildlife Trail Improvement Project, Humboldt County, California

Species Latin Name	Common Name	Listing Status¹	Preferred Habitat²	Habitat Present³
<i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	2	Coastal bluff scrub and coastal dunes up to 700 feet above MSL; blooms March-June.	Yes
<i>Lathyrus japonicus</i>	sand pea	2	Coastal dunes up to 100 feet above MSL; flowers May-August.	Yes
<i>Lathyrus palustris</i>	marsh pea	2	Bogs and fens, coastal prairie, coastal scrub, lower montane coniferous forest, marshes and swamps, North Coast coniferous forest/mesic up to 330 feet above MSL; blooms March-August.	Yes
<i>Layia carnosa</i>	beach layia	1B/FE/SE	Coastal dunes and coastal scrub up to 200 feet above MSL; blooms March-July.	Yes
<i>Lilium occidentale</i>	western lily	1B/FE/SE	Coastal bluff scrub, coastal prairies, openings in North Coast coniferous forests including edges of freshwater marshes and swamps up to 600 feet above MSL; blooms June-July.	Yes
<i>Lycopodium clavatum</i>	running pine	2	Typically on mesic substrate in redwood and mixed conifer forest including woody debris, old roads, and marshes and swamps from 200-2,600 feet above MSL. Identifiable year round; fertile July-August.	Yes
<i>Mitella caulescens</i>	leafy-stemmed mitrewort	4	Mesic sites in broadleaved upland forest, lower montane coniferous forest, North Coast coniferous forest, and meadows and seeps from 2,000-5,600 feet, above MSL; blooms May-July.	No
<i>Monotropa uniflora</i>	Indian pipe	2	North Coast coniferous forest and broadleaved upland forest from 30-650 feet above MSL; blooms June-July.	No

Table 1
Sensitive Botanical and Wildlife Species Reported from the Eureka Area
Elk River Wildlife Trail Improvement Project, Humboldt County, California

Species Latin Name	Common Name	Listing Status¹	Preferred Habitat²	Habitat Present³
<i>Montia howellii</i>	Howell's montia	2	Vernally wet, open sites in North Coast coniferous forests including meadows and seeps/often in disturbed areas (e.g. roadsides); blooms in March-May.	No
<i>Puccinellia pumila</i>	dwarf alkali grass	2	Coastal salt marshes and swamps up to 30 feet above MSL; blooms in July.	Yes
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	4	Broadleaved upland forest, coastal prairie, coastal scrub, North Coast coniferous forest/ often in disturbed areas (e.g., roadsides) up to 2,300 feet above MSL; blooms April-August.	No
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	1B	Openings in North Coast coniferous forest and coastal prairie from 50-2,300 feet above MSL; blooms May-June.	Yes
<i>Sidalcea oregana</i> ssp. <i>eximia</i>	coast checkerbloom	1B	Openings in lower montane and North Coast coniferous forests, meadows and seeps, and coastal prairie from 15-4,400 feet above MSL; blooms June-August.	Yes
<i>Spergularia canadensis</i> var. <i>occidentalis</i>	western sand spurrey	2	Coastal salt marshes and swamps up to 10 feet above MSL; blooms June-August.	Yes
<i>Usnea longissima</i>	long-beard lichen/ Methuselah's beard	N/A	North Coast coniferous forests. Host trees include Douglas fir, redwood, big-leaf maple, oak, and California bay trees. Identifiable year round.	No
<i>Viola palustris</i>	marsh violet	2	Mesic coastal scrub and coastal bogs and fens up to 500 feet above MSL; blooms March-August.	Yes

Table 1
Sensitive Botanical and Wildlife Species Reported from the Eureka Area
Elk River Wildlife Trail Improvement Project, Humboldt County, California

Species Latin Name	Common Name	Listing Status ¹	Preferred Habitat ²	Habitat Present ³
Wildlife Species				
<i>Accipiter cooperii</i>	Cooper's Hawk	SSC	Non-breeding habitat preference highly variable from closed forests to urban interface. Nesting locations tend to be dense mixed-forests but can also be urban.	Yes
<i>Accipiter striatus</i>	Sharp-Shinned Hawk	SSC	Non-breeding habitat preference highly variable from closed forests to urban interface. Nesting locations tend to be dense mixed-forests but can also be urban.	Yes
<i>Arborimus albipes</i>	white-footed vole	SSC	Mature coastal forests with dense alder and shrubs, from the Mad River in Humboldt County north.	No
<i>Arborimus pomo</i>	red tree vole	SSC	Mature and immature North Coast coniferous forest; build nests within the living portion of the canopy.	No
<i>Ardea alba</i>	Great Egret	N/A	Colonial nesting species; nests in trees near tideflats, marshes, irrigated pastures, and margins of lakes and rivers.	Yes
<i>Ardea herodias</i>	Great Blue Heron	N/A	Colonial nesting species; nests in trees near tideflats, marshes, irrigated pastures, and margins of lakes and rivers.	Yes
<i>Ascaphus truei</i>	western tailed frog	SSC	Sea level to near timberline in cold fast flowing perennial streams in forested areas.	No
<i>Charadrius alexandrinus nivosus</i>	Western Snowy Plover	FT	Sparsely vegetated beaches, along coastal strip, also inland; ground nester and gregarious in non-breeding season.	Yes

Table 1
Sensitive Botanical and Wildlife Species Reported from the Eureka Area
Elk River Wildlife Trail Improvement Project, Humboldt County, California

Species Latin Name	Common Name	Listing Status ¹	Preferred Habitat ²	Habitat Present ³
<i>Egretta thula</i>	Snowy Egret	N/A	Colonial nesting species; nests in trees near tideflats, marshes, irrigated pastures, and margins of lakes and rivers.	Yes
<i>Emys marmorata marmorata</i>	northwestern pond turtle	SSC	Aquatic habitat with some slow water component, basking sites are important, with suitable upland nesting sites within a few hundred meters of aquatic habitat.	Yes
<i>Eucyclogobius newberryi</i>	tidewater goby	FE/SSC	Brackish water habitats along the California coast from San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, where water is fairly still but not stagnant water with high oxygen levels.	Yes
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Federally delisted/SE	This species is generally found along ocean shores, lake margins, and rivers. Nests in large, old growth, or live trees with open branches, especially ponderosa pine, within 1 mile of water source. Species roosts communally in winter.	Yes
<i>Martes americana humboldtensis</i>	Humboldt marten	SSC	Mature North Coast coniferous forests.	No
<i>Martes pennanti pacifica</i>	Pacific fisher	FC/SSC	Coniferous forests with old-growth forest components.	No
<i>Myotis evotis</i>	long-eared myotis	N/A	All brushy, woodland, and forest habitats from sea level to approximately 9,000 feet.	No
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	N/A	Colonial nesting species; nests in trees near tideflats, marshes, irrigated pastures, and margins of lakes and rivers.	Yes

Table 1
Sensitive Botanical and Wildlife Species Reported from the Eureka Area
Elk River Wildlife Trail Improvement Project, Humboldt County, California

Species Latin Name	Common Name	Listing Status¹	Preferred Habitat²	Habitat Present³
<i>Oncorhynchus clarii clarki</i>	coast cutthroat trout	SSC	Spawns in small coastal tributary streams, and utilizes slow flowing backwater areas, low velocity pools, and side channels for rearing of young. Prefers good forest canopy cover, in-stream woody debris, from the Eel River north to the Oregon border.	Yes
<i>Oncorhynchus kisutch</i>	Southern Oregon Northern California Coast (SONCC) Coho salmon	FT/ST	Freshwater, nearshore and offshore environments throughout their lifecycles. Coho prefer low stream velocity, shallow water, and small gravel. Spawning and rearing habitat mainly in low gradient tributaries and side channels of river systems. Require beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water, and sufficient dissolved oxygen.	Yes
<i>Oncorhynchus mykiss irideus</i>	northern California steelhead	FT/SE	Coastal basins from Redwood Creek south to the Gualala River. Spawning and rearing habitat mainly in low-medium gradient tributaries, side channels, and mainstem of river systems.	Yes
<i>Pandion haliaetus</i>	Osprey	SSC	Primarily along rivers, lakes, bay, and seacoasts. Nests in dead snags, living trees, utility poles, etc. usually near or above water.	Yes
<i>Pelecanus occidentalis</i>	Brown Pelican	FE	Near-shore waters along coast; nests on islands in central and south America.	Yes

Table 1
Sensitive Botanical and Wildlife Species Reported from the Eureka Area
Elk River Wildlife Trail Improvement Project, Humboldt County, California

Species Latin Name	Common Name	Listing Status ¹	Preferred Habitat ²	Habitat Present ³
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	SSC	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Yes
<i>Plethodon elongates</i>	Del Norte salamander	SSC	Rock talus in coniferous forest and under woody debris from sea level to 4,000 feet.	No
<i>Rallus longirostris obsoletus</i>	California Clapper Rail	FE/SE	Exclusively found in tidal salt marshes; thought to be extirpated from Humboldt County.	Yes
<i>Rana aurora aurora</i>	northern red-legged frog	SSC	North Coast coniferous forest; breeds in ponds and slow moving backwater in creeks.	Yes
<i>Rana boylei</i>	foothills yellow-legged frog	SSC	Shallow, shaded perennial streams with some open canopy; breeds in stream margins.	No
<i>Rhyacotriton variegatus</i>	southern torrent salamander	SSC	North Coast coniferous forest at edges of turbulent, shaded, clear streams.	No

Natural Communities

Coastal terrace prairie

Northern coastal salt marsh

Northern foredune grassland

Sitka spruce forest

- CNPS list 1B includes plants that are rare, threatened, or endangered in California and elsewhere.
 CNPS List 2 includes plants that are rare, threatened, or endangered in California but more common elsewhere.
 CNPS List 4 includes plants of limited distribution and should be documented as they are watch list species
 FE: Federally listed Endangered, pursuant to the Endangered Species Act of 1973, as amended. This designation includes taxa that are in danger of extinction throughout all or a significant portion of their range.
 FT: Federally listed Threatened, pursuant to the Endangered Species Act of 1973, as amended. This designation refers to species that are not presently threatened with extinction but are likely to become endangered throughout all or a significant portion of their range in the foreseeable future if special protection and management efforts are not undertaken.
 FC: Federal Candidate. This designation includes taxa that require additional information to propose for listing pursuant to the Endangered Species Act of 1973, as amended.
 SE: State listed Endangered, pursuant to California Endangered Species Act (CESA). SE designation includes taxa that are in danger of extinction throughout all or a significant portion of their range
 ST: State listed Threatened, pursuant to California Endangered Species Act (CESA). ST designation includes taxa that are likely to become endangered throughout a significant portion of their range.

Table 1
Sensitive Botanical and Wildlife Species Reported from the Eureka Area
Elk River Wildlife Trail Improvement Project, Humboldt County, California

Species Latin Name	Common Name	Listing Status ¹	Preferred Habitat ²	Habitat Present ³
DFG: California Department of Fish and Game SSC: Species of Special Concern are species that the DFG consider of conservation concern. These species must be considered pursuant to CEQA. N/A: Not Applicable; species is considered to be sensitive for other reasons such as colonial nesting or that the species is rare or uncommon. While no formal conservation status is afforded, the CNDDDB still tracks the presence of these species and they must be considered.				
2. Plant habitat descriptions are from CNDDDB (September 2007), Tibor (2001), and Hickman (1993). 3. Habitat that is defined as present is not restricted to the study area but also includes adjacent areas if they are identified as suitable for supporting the specified species.				

5.0 Species Descriptions and Habitat Suitability

5.1 Special Status Plant Species

Based on the 30 species reported by the CNDDDB (CDFG, 2007a), the range of habitats present at the project site, and the geographical range of the various special status species, a list of species that are considered potentially likely to occur in the study area was developed, as described below. Refer to Section 5.5.1 for the results of the focused botanical survey and a list of special status species that were detected in the study area. Focused botanical surveys were conducted on April 13, June 19, July 20, and August 2, 2007.

5.2 Plant Species Descriptions

Pink sand verbena (*Abronia umbellata* ssp. *breviflora*) is an annual herb in the Nyctaginaceae Family that may live up to two years (BLM, March 2005). Pink sand verbena occurs in coastal beach and dune habitat, from sea level to approximately 30 feet above Mean Sea Level (MSL) (Tibor, 2001). This species occurs in foredunes and interdunes with minimal vegetation cover; it is often the closest plant species to the water (CDFG, 2007a). This species blooms June through October (Tibor, 2001). Associate species include sea rocket, burweed, European beachgrass, beach silvertop, and yellow sand verbena (*Abronia latifolia*). Habitat within the project area for pink sand verbena includes the dunemat/northern foredune grassland. These areas are considered highly suitable to support an occurrence of this special status species.

Coastal marsh milk-vetch (*Astragalus pycnostachyus* var. *pycnostachyus*) is a perennial herb in the Fabaceae Family that blooms April through October. According to the CNDDDB, there has only been one coastal marsh milk-vetch occurrence reported from the Humboldt Bay area (occurrence number 23; CDFG, 2007a). Fieldwork that has been conducted at this historical site in the last few years did not result in the detection of any plants; therefore this special status species may be extirpated from Humboldt County. Coastal marsh milk-vetch occurs in mesic dunes and along streams or coastal salt marshes below 100 feet in elevation (Tibor, 2001). Suitable habitat within the Phase II study area for this special status species is scattered throughout salt marsh habitat including the north and south sloughs. Due to the significant presence of cordgrass in salt marsh habitat located within the study area, this habitat is only considered marginally suitable for

supporting an occurrence of coastal marsh milk-vetch. Suitable high quality salt marsh habitat surrounds the study area, particularly near the footpath. Those areas are considered more likely to support an occurrence of this special status species.

Flaccid sedge (*Carex leptalea*) and **meadow sedge** (*C. praticola*) are perennials in the Cyperaceae Family. Flaccid sedge blooms May through August; meadow sedge blooms May through July. Suitable habitat for flaccid sedge and meadow sedge includes bogs and fens, mesic meadows, and marshes and swamps typically within North Coast coniferous forest that are variable in elevation (Tibor, 2001). Suitable habitat within the project area includes the Palustrine emergent wetland, which is scattered throughout the study area. Although these species can occur at or near sea level, habitat within the project area is only considered marginally suitable due to the vicinity of Humboldt Bay and the lack of known occurrences immediately surrounding the Bay.

Lynngbye's sedge (*Carex lynngbyei*) is a perennial in the Cyperaceae Family that blooms May through August (Tibor, 2001). This species occurs in brackish freshwater marshes or swamps (CDFG, 2007a). Suitable habitat for Lynngbye's sedge is scattered throughout the project area. The majority of suitable salt marsh habitat is located in the southern portion of the study area, and includes both sides of the existing path from the railroad tracks south to the Herrick Avenue Park and Ride. The north and south sloughs are also considered moderate to high quality habitat for supporting an occurrence of Lynngbye's sedge.

Oregon coast Indian paintbrush (*Castilleja affinis* ssp. *litoralis*) is a perennial in the Scrophulariaceae Family. This species occurs in coastal bluff scrub, coastal dunes, and sandy substrate in coastal scrub that ranges from 50 to 330 feet above MSL (CDFG, 2007a). This special status species blooms in June (Tibor, 2001). Suitable habitat moderate quality habitat for Oregon coast Indian paintbrush is located in the dunemat/northern foredune grassland.

Humboldt Bay owl's clover (*Castilleja ambigua* ssp. *humboltiensis*) is a hemiparasitic annual herb in the Scrophulariaceae Family. This species occurs in salt marshes that range from sea level to approximately 10 feet above MSL around Humboldt Bay and Point Reyes in Marin County (Tibor, 2001). Humboldt Bay owl's clover blooms April through August (Tibor, 2001). Suitable moderate to high quality habitat for this special status species is scattered throughout the salt marsh habitat in the study area. Portions of the salt marsh habitat that have an intact native species composition and lack or have minor components of dense-flowered cordgrass are most suitable for Humboldt Bay owl's clover. This includes the high quality salt marsh that is located adjacent to the footpath and scattered sections throughout the study area including the north and south sloughs.

Point Reyes bird's-beak (*Cordylanthus maritimus* ssp. *palustris*) is an annual facultative hemiparasitic herb (Eicher, 1987) in the Scrophulariaceae Family. This species occurs in salt marsh habitat that ranges from sea level to 33 feet in elevation; this species blooms June through August (Tibor, 2001). Point Reyes bird's-beak was once rather common in suitable salt marsh habitat but the numbers of occurrences have been greatly reduced by development. Other threats include foot traffic, non-native plants, hydrological alterations, cattle grazing, and trampling (Tibor, 2001). Suitable moderate to high quality habitat for Point Reyes bird's-beak is scattered throughout the salt marsh habitat in the study area, which is identical to suitable habitat for Humboldt Bay owl's clover.

Humboldt Bay wallflower (*Erysimum menziesii* ssp. *eurekaense*) is a perennial herb in the Brassicaceae Family. This species is endemic to Humboldt Bay and is known from only six occurrences around the Bay (CDFG, 2007a). Humboldt Bay wallflower blooms March through April (Tibor, 2001). Suitable habitat for this state and federally listed species includes coastal dunes up to approximately 30 feet above MSL that are dominated by northern foredune vegetation (CNDDDB, 2007). Suitable habitat in the study area includes portions of the dunemat association/northern foredune grassland that have a fairly intact native species composition and lacks significant cover of European beachgrass.

Pacific gilia (*Gilia capitata* ssp. *pacifica*) is an annual herb in the Polemoniaceae Family. Suitable habitat for this special status species is various and includes coastal bluff scrub and coastal prairie (Tibor, 2001). Occurrences of this species have been reported on Pacific Lumber Company (PALCO) property within meadows and roadsides in Douglas fir dominated areas at elevations that range from 1,000 to 2,950 feet above MSL (CDFG, 2007a). Pacific gilia blooms May through August (Tibor, 2001). Suitable habitat within the project area is limited to the dunemat association. This habitat is considered moderately suitable for supporting an occurrence of Pacific gilia.

Dark-eyed gilia (*Gilia millefoliata*) is an annual herb in the Polemoniaceae Family that blooms April through July (Tibor, 2001). This species occurs in coastal dunes up to approximately 65 feet above MSL. Suitable moderate to high quality habitat within the study area includes the dunemat/northern foredune grassland.

Short-leaved evax (*Hesperis matronalis* var. *brevifolia*) is an annual herb in the Asteraceae Family. Suitable habitat for this species includes sandy substrate on coastal bluff scrub and coastal dunes from sea level to approximately 700 feet above MSL (CDFG, 2007a). This annual herb blooms March through June (Tibor, 2001). Suitable habitat within the study area includes the dunemat/northern foredune grassland. Areas within the dunemat association that have a substantial assemblage of native species are considered higher quality and more likely to support an occurrence if short-leaved evax.

Sand pea (*Lathyrus japonicus*) is a rhizomatous herb in the Fabaceae Family that blooms May through August (Tibor, 2001). This species occurs in coastal dune habitat, from sea level to approximately 100 feet above MSL (CDFG, 2007a). Based on known occurrences in the Crescent City area of California, sand pea is relatively tolerant of disturbance and competition from non-native species. The dunemat association throughout the study area is considered moderate to high quality habitat for sand pea.

Marsh pea (*Lathyrus palustris*) is a perennial herb in the Fabaceae Family that blooms March through August (Tibor, 2001). This species occurs in a variety of habitats that include bogs and fens, coastal prairie, coastal scrub, lower montane coniferous forest, marshes and swamps, and mesic locations in North Coast coniferous forest up to 330 feet above MSL (CDFG, 2007a). Suitable habitat within the project area includes the Palustrine emergent wetland and Palustrine scrub shrub. Portions of the study area that are considered most suitable for supporting an occurrence of marsh pea are wetland areas that lack a dense overstory.

Beach layia (*Layia carnosa*) is an annual herb in the Asteraceae that blooms March through July (Tibor, 2001). Suitable habitat for this state and federally listed species includes coastal dunes and coastal scrub up to 200 feet above MSL (CDFG, 2007a). Suitable habitat within the project area

includes the dunemat association. Habitat in the northern portion of the study area is only considered marginally suitable because there is a greater distribution of non-native species compared to the southern portion of the study area along the main trail.

Western lily (*Lilium occidentale*) is an herbaceous perennial in the Liliaceae that grows from a deep, rhizatomous bulb. This state and federally listed species occurs within 4 miles of the coast, generally on marine terraces below 300 feet above MSL (CDFG, 2007a). Western lily is known to occur from early successional fens and coastal scrub habitat in northwestern California to southwest Oregon (Kalt, 2006). Habitats with which this species is associated include coastal bluff scrub, coastal prairie, and openings in coastal coniferous forest (Sitka spruce dominated) including freshwater marshes and swamps (CDFG, 2007a). This species emerges in late March or early April and flowers in late June or July (Imper and Sawyer, 1992). The species grows in soils that are described as well drained or poorly drained, and have a significant layer of organic topsoil (Imper and Sawyer, 1992). The soil profile also includes an iron or clay confining layer, which serves to perch moisture late in the growing season (Imper, 2003). Suitable habitat within the project area for western lily is limited to the Palustrine emergent wetland and the perimeter of the Palustrine scrub shrub association. This habitat is only considered marginally suitable for supporting an occurrence of western lily due to a lack of appropriate soils.

Running pine (*Lycopodium clavatum*) is a trailing rhizomatous herb in the Lycopodiaceae Family. This spore bearing plant is fertile July through August but is identifiable year round (Tibor, 2001). Running pine occurs in a variety of habitats. Suitable habitat ranges from moist areas in redwood or mixed evergreen forests under moderately open to semi-closed canopy (generally on northern aspects or ridge tops), to drier, more exposed areas at the edge of (or within) old skid and haul roads (SHN, 2001). Suitable habitat also includes marshes and swamps from 200-2,600 feet above MSL (Tibor, 2001). Suitable habitat within the project area is limited to the Palustrine emergent wetland. This habitat is only considered marginally suitable because most running pine occurrences are located at higher elevations and further inland from the coast.

Dwarf alkali grass (*Puccinellia pumila*) is a perennial herb in the Poaceae Family that blooms in July. This species occurs in coastal salt marshes and swamps up to 30 feet above MSL (Tibor, 2001). This species is known from only two occurrences in California with only one historical occurrence reported from Humboldt County (CDFG, 2007a). Suitable moderate to high quality habitat for this is scattered throughout the salt marsh habitat, particularly in area that lack or only have a moderate cover of cordgrass.

Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*) is a perennial in the Malvaceae Family that blooms May to June (Tibor, 2001). This species occurs in openings in North Coast coniferous forest and broadleaved upland forest such as roadsides, grasslands, and meadows and in coastal prairie habitat up to 2,300 feet above MSL (CDFG, 2007a). Suitable moderate quality habitat within the study area includes the dunemat vegetation, particularly in areas where grasses are most dominant and there is some soil profile development. Suitable low quality habitat for Siskiyou checkerbloom also includes scattered locations throughout the disturbed habitat.

Coast checkerbloom (*Sidalcea oregana* ssp. *eximia*) is a perennial in the Malvaceae Family that blooms June to August (Tibor, 2001). This species occurs in openings in lower montane and North Coast coniferous forests and meadows and seeps up to 4,400 feet above MSL (CDFG, 2007a); this species is reported to occur in gravelly soils or native soils that are largely intact (CDFG, 2007a).

Both coast checkerbloom and Siskiyou checkerbloom closely resemble each other and their habitats and ranges overlap, which although not specified in the CNDDDB or by Tibor (2001), suitable habitat for coast checkerbloom is considered to include coastal bluff and coastal prairie habitats. Suitable habitat within the study area is consistent with the habitat described above for Siskiyou checkerbloom.

Western sand spurrey (*Spergularia canadensis* var. *occidentalis*) is a delicate annual in the Caryophyllaceae Family that blooms June through August (Tibor, 2001). This species is known in California only from three occurrences in the Humboldt Bay area (CDFG, 2007a). Those occurrences are located in salt marshes up to 10 feet above MSL (CDFG 2007a); western sand spurrey is more widespread in Oregon, Washington, and British Columbia (Tibor, 2001). Suitable moderate to high quality habitat is scattered throughout the salt marsh in the study area.

Marsh violet (*Viola palustris*) is perennial (rhizomatous) herb in the Violaceae Family that blooms March through August (Tibor, 2001). This species occurs in mesic coastal scrub and coastal bogs and fens up to 500 feet above MSL; marsh violet is known from only five occurrences in California, which includes Mendocino, Humboldt and Del Norte counties (CDFG, 2007a). Suitable moderate to high quality habitat for this species includes the Palustrine emergent wetland and Palustrine scrub shrub located throughout the study area; however the majority of suitable habitat for marsh violet is located beyond the boundaries of the study area.

5.3 Special Status Wildlife Species

Based on the 27 species reported by the CNDDDB (CDFG, 2007a) and BIOS (CDFG, 2007b), the range of habitats present at the project site, and the geographical range of the various special status species, a list of species considered potentially likely to occur in the study area was developed, as described below. Refer to Table 2 of this report for the results of wildlife species detected in and adjacent to the study area.

Cooper's Hawk (*Accipiter cooperii*) and **Sharp-shinned Hawk** (*A. striatus*) are in the Family Accipitridae and are primarily associated with dense forests but can be found in several habitat types including ecotones and urban environments. Passerines (songbirds) are the primary prey of Accipiters and are abundant throughout the project site. Nesting habitat is limited to willow thickets in the Palustrine scrub shrub habitat. However, this habitat lacks the structure typical of Accipiter nest sites. Human encampments during the breeding season decrease the probability of nesting use by either the Cooper's Hawk or Sharp-shinned Hawk throughout the study area.

Wading birds, including **Great Egret** (*Ardea alba*), **Cattle Egret** (*Bubulcus ibis*), **Great Blue Heron** (*A. herodias*), **Snowy Egret** (*Egretta thula*), **Black-crowned Night Heron** (*Nycticorax nycticorax*) are in the Family Ardeidae. Herons and egrets are primarily associated with shallow wetland and estuarine habitats where they prey upon fish and amphibians. Other important foraging habitat for herons and egrets includes fields and pastures, where they prey upon abundant small mammals. Wading birds congregate in large breeding colonies during the breeding season making them susceptible to failure if disturbed. While no nesting colonies currently exist within the study area, herons and egrets are common along the estuarine habitat of the Elk River Estuary.

Western Snowy Plover (*Charadrius alexandrinus nivosus*) are in the Family Charadriidae. The Western Snowy Plover is a small shorebird that typically forages on invertebrates above and below the mean high-water line of coastal beaches. The breeding range of the coastal population of the Western Snowy Plover is between southern Washington and Magdalena Bay, Baja Sur Mexico, and is associated with beach habitats, lagoons, salt evaporation ponds (USFWS, 2005d), and in Humboldt County, along gravel bars on the lower Eel River (Colwell et al., 2005). Western Snowy Plovers are facultatively polyandrous and polygynous, and produce 1-3 broods per season. Young are precocial and leave the nest 1-3 hours after hatching to independently forage. Western Snowy Plovers are gregarious and form roosting flocks in the winter.

The U.S. Fish and Wildlife Service (USFWS) listed the coastal population of the Western Snowy Plover as a threatened population segment in 1993 under the federal Endangered Species Act (USFWS, 1993; 58 FR 12864-12874). In 1999, the USFWS designated critical habitat; however, the designation was rescinded due to inadequacies in the economic evaluation component of the designation. Final designation of critical habitat for the Western Snowy Plover occurred in 2005 and included several beaches in Humboldt County and gravel bars on the lower Eel River near Fortuna. The Elk River Wildlife Trail Improvement project area was not included in the final 2005 critical habitat designation for the Western Snowy Plover (USFWS, 2005a).

Since the Western Snowy Plover population segment was listed as Threatened, there has been a concerted effort in Humboldt County by biologists, resource agencies, and university counterparts to survey for plovers primarily during the spring/summer breeding season as well as the late summer and fall non-breeding season. Surveys have primarily focused on Recovery Unit 2, which includes Del Norte, Humboldt, and Mendocino Counties. Based on the preponderance of surveys, the majority of Western Snowy Plovers occur in Humboldt County (USFWS, 2001; Colwell et al., 2005); and primary survey areas within Humboldt County include Little River State Beach and Clam Beach, the South Spit of Humboldt Bay and Eel River Wildlife Areas, and the Eel River gravel bars. Coupled with surveys, numerous recovery actions have occurred within Recovery Unit 2 designed to improve plover nesting success and post-fledging survival in order to recover populations to sustainable levels.

In addition to the aforementioned primary survey locations, “fringe” areas have been surveyed where historical observations exist and suitable habitat remains. This serves to either confirm the presence or absence of plovers, or to detect occupancy as populations shift or habitat changes or more importantly, as populations recover.

The following information represents a summary of surveys completed by a consortium of local biologists (provided by R. LeValley, Mad River Biologists, 2006); as well as historical occurrences reported by the CNDDDB. According to the CNDDDB (CDFG, 2007a), one museum egg set was collected in 1920 from the Elk River Spit, and one pair of plovers was observed in May 1977 on the Elk River Spit (Page and Stenzel, 1981), as well as a single bird three days later. Furthermore, a single plover was observed in October 1979. Three surveys were completed in 1993 and no plovers were observed; a single survey was conducted in 1999 and 2000 and no plovers were observed. From 2001 to present, surveys have been completed that have included multiple visits per year, especially in 2002 when surveys were completed twice a month from January through September (excluding February), resulting in five individual Western Snowy Plover detections. In summary, three surveys were completed in the 1970s, none in the 1980s, four in the 1990s, and 47 surveys

since 2000, culminating in nine Western Snowy Plover detections on the Elk River Spit. Despite survey efforts, nesting on the Elk River Spit by Western Snowy Plovers has not been documented since the 1920 museum egg collection.

A portion of the Phase I study area, within the Truesdale beach and park section of the study area, was identified as containing suitable Western Snowy Plover beach foraging habitat (SHN, 2007a). No habitat within the Phase II study area is identified as containing suitable breeding or foraging habitat for Western Snowy Plover; however, suitable foraging habitat is located adjacent to the study area, along the east side of the Elk River Estuary. This area includes sandy beach habitat with sparse vegetation cover that abuts Estuarine intertidal emergent wetland habitat located at or near OHWM. Vegetation within this Estuarine intertidal habitat is comprised entirely of herbaceous species with scattered patches of bare ground and brown and green algae (mudflats).

On the west side of the Elk River Estuary, open sand habitat most suitable for Western Snowy Plover use starts around the former fuel line trestle and proceeds to the northern extent of the Elk River Spit. Although beach habitat in this portion of the spit can be fairly wide and seemingly suitable for foraging, nesting is unlikely simply because this is a substantial loafing area (resting and preening) for other shorebird species, waterfowl, gulls, pelicans, wading birds (egrets and herons), and cormorants. Several hundred to a few thousand birds routinely use the northern extent of the spit.

The outer portion of the Elk River Spit from Stinky Beach north contains the most suitable Western Snowy Plover habitat within the vicinity of the study area. As described above, the preponderance of plover detections have occurred on the outer Elk River Spit beach; however, nesting remains to be detected.

The Elk River Estuary and Spit is an important resource for resident and migratory avian species. While surveys have yet to demonstrate Western Snowy Plover nesting activities, plover presence has been detected nine times since 2000. The Humboldt Bay side of the Elk River Spit remains the most suitable Western Snowy Plover habitat in proximity to the study area. Due to the distance of the Elk River Spit from potential impact areas, it is unlikely that the project as proposed will have any impact on Western Snowy Plover presence, use, or nesting potential on the Elk River Spit.

The Bald Eagle (*Haliaeetus leucocephalus*) is a member of the Family Accipitridae. Bald Eagles are found throughout North America; this species was federally delisted in 2007; however, the Bald Eagle remains state listed. Bald Eagles are opportunistic foragers with variable diets based of prey availability. Bald Eagles build large stick nests that are often reused from year to year by the same pair. Breeding habitat is associated with aquatic habitats (coastal areas, rivers, lakes, and reservoirs) with forested shorelines or cliffs in North America (USFWS, 2005c). Foraging habitat is located adjacent to the study area within the Elk River Estuary; however, Bald Eagles will not be affected by the project as proposed.

Ospreys (*Pandion haliaetus*) are in the Family Accipitridae. Ospreys are commonly observed hunting for fish over Humboldt Bay and along the Humboldt County coastline. The Elk River watershed is an important nesting area (Hunter et al., 2005) as prominent snags suitable for nesting are abundant and river corridors appear to be a preferred landscape attribute for Osprey

occupancy. Ospreys were observed throughout Elk River area during 2006 and 2007 field surveys, particularly hunting for fish in the Elk River Estuary. The project as proposed will not affect the Elk River Estuary; therefore, no impacts to Osprey are anticipated.

Brown Pelican (*Pelecanus occidentalis*) are in the Family Pelecanidae. The Brown Pelican has a large range extending from North America to South America. Brown Pelican diet consists mostly of fish, especially menhaden, mullet, sardines, pinfish and anchovies in U.S. waters (USFWS, 2005b). Brown Pelicans nest on small islands and are colonial; clutch size is typically 3. Stick nests are built on either low vegetation or the ground. Habitat for the Brown Pelican is mostly along the coast and pelicans are rarely seen inland or far out at sea. Brown Pelicans winter along the west coast of the United States including Humboldt Bay and nest in Central and South America. Suitable habitat for Brown Pelican is located adjacent to the study area, but not actually within potential impact areas. The northern end of the Elk River Spit is an important loafing and preening area and pelicans were commonly observed during field visits, in both 2006 and 2007. The Elk River Estuary and Humboldt Bay are important feeding areas for the Brown Pelican. The current project as proposed will not affect the Brown Pelican.

Double-crested Cormorants (*Phalacrocorax auritus*) are in the Family Phalacrocoracidae. Double-crested cormorants are piscivorous and common along rocky coasts, beaches, and inland lakes and rivers. Double-crested cormorants were commonly observed sunning and preening on the northern extent of the Elk River Spit in 2006 and 2007. The project as proposed will not affect the Double-crested Cormorant.

The **California Clapper Rail** (*Rallus longirostris obsoletus*) is in the family Rallidae and was once present in Humboldt County; however, habitat loss and alteration from both human activities and invasion by non-native plant species has largely contributed to the extirpation of this species in Humboldt County (Hunter et al., 2005). One specimen was collected in 1917, and the last unverified reports of California Clapper Rails in Humboldt Bay occurred in the 1930s (Hunter et al., 2005). The California Clapper Rail is almost entirely associated with the remaining salt marsh habitat of the San Francisco Bay. The project as proposed will not affect the California Clapper Rail.

Northwestern Pond Turtle (*Emys marmorata marmorata*) are in the Family Emydidae and use similar habitat types as the northern red-legged frog. Western pond turtles are also commonly found in lotic (flowing) habitats. The freshwater ponds surrounding the WWTP, east of the study area, are suitable habitat for western pond turtles assuming that salinity is not limiting. Suitable habitat will be avoided therefore the proposed project is not expected to result in an impact to northwestern pond turtles.

Tidewater Goby (*Eucyclogobius newberryi*) are in the Family Gobiidae and are endemic to brackish lagoons and estuaries of coastal California from the Smith River in Del Norte County to Agua Hedionna Lagoon in San Diego County (Swift et al., 1989). A recent survey by Chamberlain (2006) investigated the environmental variables important to tidewater goby in California lagoons and estuaries in historical locations, as well as documented the current distribution of the species. Surveys were conducted in Humboldt Bay; however, none were conducted in the Elk River Estuary, suggesting that tidewater goby may not be present within the Elk River Estuary or in adjacent wetland habitat. The project as proposed will not affect the Elk River Estuary or wetlands with tidal influence; therefore, no impacts to the tidewater goby are anticipated with implementation of the proposed project.

Coastal cutthroat trout (*Oncorhynchus clarii clarki*) are in the Family Salmonidae and are found in coastal streams from the Eel River to Seward in southeastern Alaska. Populations in the lower Eel River drainage (including tributaries) represent the southern extent of the species range. The project as proposed will not affect the Elk River Estuary; therefore, no impacts to coastal cutthroat trout are anticipated.

Southern Oregon Northern California Coast (SONCC) Coho Salmon (*Oncorhynchus kisutch*) and **northern California steelhead** (*Oncorhynchus mykiss irideus*) are in the Family Salmonidae. The Elk River is an important watershed for both species. However, the project as proposed will not affect the Elk River Estuary; therefore, no impacts to the Coho salmon or steelhead are anticipated

Northern red-legged frogs (*Rana aurora aurora*) are in the Family Ranidae and are associated with lentic (standing to low flow) conditions for breeding sites. Adults and other age classes are known to disperse great distances (more than 300 meters) and are associated with mesic forests and riparian areas (Pearl, 2005). Due to the mobility of northern red-legged frog, and greater thermal tolerances, northern red-legged frogs are relatively common within the coastal fog belt of Humboldt County. The freshwater ponds surrounding the WWTP, east of the study area, have suitable breeding habitat for the northern red-legged frog assuming that salinity is not a limiting factor. Northern red-legged frogs were not observed during any of the 2006 or 2007 field surveys, however, Pacific tree frogs (*Hyla regilla*) are present, and are often found in similar breeding and non-breeding habitat as northern red-legged frog. Northern red-legged frogs typically breed earliest along the coast in January, February, and March, compared to inland. Focused surveys in suitable breeding habitat adjacent to the Phase II study area were not conducted because the proposed project avoids those areas. However, suitable non-breeding habitat is located throughout the study area.

5.4 CNDDDB Natural Communities

Natural communities are habitats that are generally defined by vegetation type and geographical location and are increasingly restricted in abundance and distribution. CNDDDB natural communities are habitat for numerous special status plant and animal species. The natural communities that are included in the CNDDDB are based on the state and global ranking status, which provides an estimate of the number of acres that remains of a particular community and threat level designation. Recognition of natural communities is an ecosystem-based approach to maintaining biodiversity in California.

Coastal Terrace Prairie. Coastal terrace prairie is a native grassland community found on sandy, marine terraces within the zone of fog intrusion. This habitat is dominated by fairly tall (greater than 3 feet) sod and tussock-forming perennial grasses. Herbaceous annual species are typically scattered amongst the grasses. Much of California's coastal prairie habitat has been destroyed by agricultural conversion and development. The remaining areas are also threatened by the invasion of non-native species such as annual fescues (*Vulpia* sp.), nonnative bromes (*Bromus* sp.), and oats (*Avena* sp.). The state rarity status for coastal terrace prairie is very threatened (S2.1) with 2,000-10,000 acres remaining in the state. A form of coastal prairie community that intergrades with dunemat vegetation is located in the study area.

Northern Coastal Salt Marshes. Northern coastal salt marshes develop along the intertidal shores of bays, lagoons, and estuaries. The historic distribution of northern coastal salt marsh in Humboldt County and throughout California has been greatly reduced by agricultural conversion, diking, and coastal development. Native species commonly associated with northern coastal salt marsh include spearscale, tufted hairgrass, saltgrass, gumweed, salt rush, pickleweed, and silverweed. A number of sensitive plant species are found within this habitat type (refer to Table 1). The state rarity status for northern coastal salt marsh is threatened (state rank S3.2) with 10,000 to 50,000 acres remaining in the state. This natural community is located within and adjacent to the Phase II study area.

Northern Foredune Grassland. Northern foredune grassland habitat is located in active coastal dune areas where plants are subject to desiccating, salt-bearing winds. Perennial grasses that are up to 2.5 feet tall dominate this habitat. Coverage varies from dense to scattered. Dominant grass species in northern foredune habitat are almost always European dunegrass and American dunegrass. Succulent, perennial herbs and stunted shrubs approximately 10 inches tall are often interspersed amongst the grasses. Associate species typically include yellow sand verbena, silver burweed, and sea rocket in areas most exposed to the wind and beach morning glory, and beach primrose in more sheltered sites (Holland, 1986). The state rarity status for northern foredune grassland is very threatened (state rank S1.1) with less than 2,000 acres remaining in the state. The only northern foredune grassland reported by the CNDDDB is from Humboldt County, at Lanphere Dunes (CDFG, 2007a). A form of northern foredune grassland association that intergrades with dunemat vegetation is located in the study area.

Sitka Spruce Forest. Sitka spruce grows in mild wet coastal climates and occurs in a narrow band along the Pacific coast from Northern California to Alaska. Sitka spruce forest is usually found growing on steep seaward upland slopes or topographically flat areas, but can also occur in wetlands, such as stream and river backwaters, bottoms, and floodplains. Species commonly associated with upland Sitka spruce forests include redwood (*Sequoia sempervirens*), western hemlock (*Tsuga heterophylla*), hazelnut (*Corylus cornuta*), cascara (*Rhamnus purshiana*), salmonberry (*Rubus spectabilis*), Douglas's iris (*Iris douglasiana*), false lily-of-the-valley (*Maianthemum dilatatum*), and sword fern. The state rarity status for Sitka spruce forest is very threatened (state rank S1.1) with less than 2,000 acres remaining in the state. The CNDDDB reports four occurrences of Sitka spruce forest, all of which are located in Humboldt County (CDFG, 2007a).

Palustrine forested wetlands that are dominated with Sitka spruce have a different assemblage of species. The overstory typically consists of Sitka spruce, Oregon crabapple (*Malus fusca*), red alder, with a subcanopy of cascara, willows, twinberry (*Lonicera involucrate*), and wax myrtle (*Myrica californica*). Dominant shrubs include salmonberry, thimbleberry (*Rubus parviflorus*), and elderberry (*Sambucus racemosa*). Common herbaceous species are sword fern, false lily-of-the-valley, milk maids (*Cardamine californica*), Douglas iris, and grass species including Pacific reed grass (*Calamagrostis nutkaensis*).

No Sitka spruce forests are located within or adjacent to the study area.

5.5 Survey Results

5.5.1 Special Status Plant Species

Three special status plant species were detected within or immediately adjacent to the Phase II study area. These species include Point Reyes bird's-beak, Humboldt Bay owl's clover, and Lyngbye's sedge.

Point Reyes bird's-beak and Humboldt Bay owl's clover are located in salt marsh habitat adjacent to the footpath (Figure 3). Both species are scattered throughout the high quality salt marsh habitat and include more than 100 individuals of each species. No individuals were found within the study area/potential impact zone of the footpath. However, there is a network of trails in the salt marsh habitat that are regularly used by pedestrians, although these trails are not the footpath that is designated for use. Use of these unofficial trails results in trampling of the Humboldt Bay owl's clover and Point Reyes bird's-beak. Humboldt Bay owl's clover is also located outside of the study area along the southern bank of the south slough in salt marsh habitat (Figure 5). The proposed project is not expected to impact this occurrence because it is located outside of the trail improvement impact zone.

Lyngbye's sedge is located in the salt marsh habitat just south of the study area segment that runs from the railroad to the Herrick Avenue Park and Ride. One occurrence consists of approximately 5 plants and is located in the study area, a few feet from the edge of pavement along Pound Road (Figure 5). The other occurrence is located further south of Pound Road and consists of approximately 50 individuals (Figure 5).

5.5.2 Special Status Wildlife Species

A number of common avian species were observed in the Phase II study area during 2007. The species list is virtually identical to the list included in SHN (2007a); however, a few additional bird species have been added to Table 2. Forty-one avian species and two mammal species were observed during the field visits conducted on June 19, July 20, and August 2, 2007 (Table 2). Three of the 27 special status species known to occur within the vicinity of the study area were observed including the Osprey, Brown Pelican, and Double-crested Cormorant.

Species	Area Where Bird was Observed
Bewick's wren	Phase II study area
Swainson's thrush	Phase II study area
Chestnut backed chickadee	Phase II study area
Red-winged blackbird	Phase II study area
Northern rough winged swallow	Phase II study area
Violet Green Swallow	Phase II study area
Cliff swallow	Phase II study area
Barn Swallow	Phase II study area
American Goldfinch	Phase II study area
Lesser Goldfinch	Phase II study area
House Sparrow	Phase II study area

Song Sparrow	Phase II study area
Fox Sparrow	Phase II study area
White-crowned Sparrow	Phase II study area
Osprey	Over Bay/Estuary/Spit
Red-shouldered Hawk	Adjacent to Phase II study area
American Kestrel	Adjacent to Phase II study area
Forester's Tern	Estuary/Spit
Double-crested Cormorant	Estuary/Spit
Brown Pelican	Over Bay/Estuary/Spit
Great Egret	Over Bay /Estuary/Spit
Great Blue Heron	Over Bay /Estuary/Spit
European Starling	Phase II study area
Black-crowned Night Heron	Over Bay /Estuary/Spit
Cedar Waxwing	Phase II study area
Marbled Godwit	Estuary/Spit
Western Sandpiper	Estuary/Spit
Western Gull	Estuary/Spit
Herring Gull	Estuary/Spit
Black Phoebe	Phase II study area
Bushtit	Phase II study area
Marsh Wren	Phase II study area
California Towhee	Phase II study area
Western Meadowlark	Phase II study area
American Robin	Phase II study area
Purple Finch	Phase II study area
Ruby-crowned Kinglet	Phase II study area
Bufflehead	Estuary/Spit
Widgeon	Estuary/Spit
Mallard	Estuary/Spit
Northern Harrier	Adjacent to study area
Raccoon	Phase II study area
Gray Fox	Phase II study area

The Phase II study area provides abundant habitat for wildlife. Habitat to the west of the study area offers ample opportunities for viewing shorebirds and special status avian species such as Osprey, Double-crested Cormorant, and Brown Pelican. Although wildlife habitat is abundant in and adjacent to the study area, no rookeries, nests of special status species, or other features that are indicative of special status wildlife species were encountered within or immediately adjacent to the Phase II study area. The proposed project is not expected to result in an impact to special status wildlife species.

5.5.3 Vegetation/Wetland Impacts

Starting at the northern access parking lot and ending at the Herrick Avenue Park and Ride, trail segments were quantified for the aforementioned important resource variables. The absence of the east or west side of the trail in Table 3 means that resources will not be impacted in that area

therefore they were excluded from Table 3 (refer to Figures 3-5). Areas that were excluded are typically dominated by upland herbaceous species such as mustards, wild radish, Queen Ann's lace, and a variety of upland grass species.

Table 3
Vegetation and Wetland Impacts
Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California

Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
Main Trail					
North Slough	No Impact	0.0	No additional area for trail without filling the slough	TBD ¹	Salt marsh
1	No Impact	0.0	Trimming/ Clearing	275	Scrub-shrub
2	No Impact	0.0	Trimming	129.6	Scrub-shrub
3	No Impact	0.0	Large Stem Clearing	137.6	Scrub-shrub
4	Trimming	86.3	Trimming/ Clearing	757.9	Scrub-shrub
5	No Impact	0.0	Trimming	168.3	Scrub-shrub
6 East	Trimming	78.0	Trimming/ Clearing	479.9	Scrub-shrub
6 West	No impact	0.0	Trimming/ Clearing	265.1	Scrub-shrub
7 East	Trimming	109.9	Trimming/ Clearing	611.7	Scrub-shrub
7 West	Trimming	259.7	Trimming/ Clearing	563.5	Scrub-shrub
8 East	Trimming	139.6	Trimming/ Clearing	1009.7	Scrub-shrub
8 West	No Impact	0.00	Trimming/ Clearing	99.1	Scrub-shrub
9	Trimming	105.3	Trimming/ Clearing	390.3	Scrub-shrub
10	No Impact	0.0	Trimming/ Clearing	30.3	Scrub-shrub
11	No Impact	0.0	No Impact	0.0	N/A ²
12 East	Trimming	142.7	Trimming/ Clearing	1114.3	Scrub-shrub
12 West	Trimming	44.8	Trimming/ Clearing	518.3	Scrub-shrub
13 East	Trimming	49.6	Trimming/ Clearing	587.6	Scrub-shrub
13 West	Trimming	92.6	Wetland	360.5	Emergent wetland
14 East	No Impact	0.00	Trimming/ Large Stem Clearing	784.6	Scrub-shrub

**Table 3
Vegetation and Wetland Impacts
Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California**

Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
14 West	Trimming	963.0	Trimming/ Large Stem Clearing	752.4	Scrub-shrub
15 East	No Impact	0.00	Trimming/ Clearing/ Wetland	2343.7	Scrub-shrub
15 West	Trimming/ Wetlands	2684.3	Trimming/ Clearing/ Wetland	2327.2	Scrub-shrub
16 East	No Impact	0.00	Trimming/ Large Stem Clearing/ Wetland	630.6	Scrub-shrub
16 West	Trimming/ Wetlands	653.2	Trimming/ Large Stem Clearing/ Wetland	602.7	Scrub-shrub
17 East	Trimming/ Wetlands	15.5	Trimming/ Clearing/ Wetland	206.6	Scrub-shrub
18 East	Trimming/ Clearing/ Wetlands	33.1	Trimming/ Clearing/ Wetland	264.4	Scrub-shrub
18 West	No Impact	0.00	Trimming/ Clearing/ Wetland	424.4	Scrub-shrub
19 East	No Impact	0.00	Trimming/ Clearing/ Wetland	14.6	Scrub-shrub
19 West	No Impact	0.00	Trimming/ Clearing/ Wetland	76.9	Scrub-shrub
20 East	No Impact	0.00	Trimming/ Clearing	119.5	Scrub-shrub
20 West	No Impact	0.00	Trimming/ Clearing	75.8	Scrub-shrub
21 East	No Impact	0.00	Trimming/ Clearing	186.8	Scrub-shrub
22 East	No Impact	0.00	No Impact	0.00	Scrub-shrub
22 West	No Impact	0.00	Trimming/ Clearing	199.2	Scrub-shrub
South Slough	Salt marsh	58.5	Salt marsh	258.8	Salt marsh
Foot Path					
23	No Impact	0.00	Salt Marsh	169.3	Salt marsh
24	No Impact	0.00	Trimming	758.0	Scrub-shrub

**Table 3
Vegetation and Wetland Impacts
Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California**

Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
25 A	Dunemat/Northern Foredune Grassland	493.65	Dunemat/Northern Foredune Grassland	1619.8	Sensitive Dunemat/Northern Foredune Grassland Habitat
25 B	Dunemat/Northern Foredune Grassland	493.65	Dunemat/Northern Foredune Grassland	1653.4	Sensitive Dunemat/Northern Foredune Grassland Habitat
26 A	Emergent wetland	36.4	Wetland	227.6	Emergent wetland
26 B	Emergent wetland	36.4	Wetland	239.8	Emergent wetland
Railroad to Herrick Avenue Park and Ride					
27 North	No Impact	0.00	Salt marsh	324.4	Salt marsh
27 South	No Impact	0.00	Salt marsh	100.3	Salt marsh

1. TBD: To Be Determined (once trail design is finalized).
2. N/A: Not Applicable

5.5.4 Main Trail

The most significant amount of vegetation trimming or clearing within the study area will occur along the main trail (Figures 3 and 4). Due to the difficulty of differentiating vegetation clearing impacts from wetland impacts in the portions of the study area where both impacts occur along the same trail segment, the following numbers correspond to segments with vegetation clearing only (Table 3). Approximately 2,072 sq. ft. of vegetation will be trimmed or cleared along the existing trail and approximately 9257 sq. ft. of vegetation will be trimmed or cleared within the impact zone of the main trail. Therefore, a total of approximately 11,328 sq. ft. (0.26 acres) of vegetation will be impacted along the main trail by trimming and/or clearing.

Approximately 3,386 sq. ft (0.08 acre) of freshwater wetlands will be impacted within the existing footprint of the main trail and approximately 7,252 sq. ft. (0.17 acre) of wetlands are located within the impact zone. The total freshwater wetland impact for the main trail segment portion of the study area is approximately 10,638 sq. ft. (0.24 acres; Figures 3 and 4).

The existing trail over the south slough is very narrow therefore trail improvements will result in impacts to salt marsh wetlands (Figure 5). Approximately 59 sq. ft. of salt marsh is located along the existing path and approximately 259 sq. ft. of salt marsh is located in the impact zone. Therefore, a total of approximately 317 sq. ft. of salt marsh will be impacted within the south slough.

5.5.5 Footpath

Trail improvements proposed along the footpath will result in some impacts to wetlands and the sensitive dunemat/northern foredune grassland habitat (Table 3).

Approximately 169 sq. ft. of salt marsh along the western side of the north slough will be impacted to expand the width of the footpath (Figure 3).

Impacts will occur to the sensitive dunemat/northern foredune grassland habitat both within the existing footpath and potential impact zone (Figure 3). Approximately 987 sq. ft. of dunemat/northern foredune habitat will be impacted along the existing footpath; an additional 3,373 sq. ft. of this sensitive habitat will be impacted due to trail widening. Therefore, a total of approximately 4,260 sq. ft. (0.1 acre) of dunemat/northern foredune grassland will be impacted along the footpath.

The proposed trail improvements along the footpath will impact approximately 73 sq. ft. of wetlands within the existing footpath and approximately 467 sq. ft. of wetlands within the impact zone (Figure 3). Therefore, a total of approximately 540 sq. ft. of freshwater emergent wetlands will be impacted along the footpath for the proposed trail improvement project.

A small section of willows, approximately 758 sq. ft., will be impacted along section 24 of the footpath (Figure 3).

5.5.6 Railroad to Pound Road Parking Lot

Proposed trail improvements from the railroad to Pound Road parking lot does not appear to require any woody vegetation trimming or removal but is likely to result in impacts to salt marsh located down slope from the existing trail, within the impact zone. Proposed trail improvements along segment 27 north and 27 south may impact approximately 425 sq. ft. of salt marsh (Figure 5).

5.5.7 Pound Road Parking Lot to Herrick Avenue Park and Ride

Freshwater and salt marsh wetlands are located throughout this portion of the study area or immediately adjacent to it. A significant area of salt marsh habitat is located to the south of Pound Road. This area is frequently inundated by brackish/estuarine water from a network of tidal channels south of Pound Road. The majority of the salt marsh is located outside the study area (Figure 5) but a small portion could be impacted if the new trail segment from the Pound Road Parking lot to the Herrick Avenue Park and Ride is located along the southern shoulder of Pound Road. The amount of impact will have to be determined once the final trail alignment is determined. Vegetation clearing within this portion of the study area appears to be limited to the west side of Pound Road, just north of the Herrick Avenue Park and Ride, if the new trail segment is constructed there.

Two brackish wetland pockets are located along the western and eastern sides of Pound Road (Figure 5). If the new trail segment is located along the southern/western side of Pound Road, the smaller of the two wetland pockets will be impacted. Final wetland impacts for this section of the study area will need to be determined once the final trail layout is designed.

5.5.8 Total Wetland Impacts

Based on the above, approximately 11,178 sq. ft. (0.26 acres) of freshwater wetland will be impacted and approximately 911 sq. ft. of salt marsh will be impacted by the proposed trail improvement project. The combined total wetland impacts in the study area are approximately 12,089 sq. ft. (0.28 acres).

6.0 Recommendations

6.1 Special Status Plant and Wildlife Species

There are currently high quality wildlife viewing opportunities throughout the ERWT. The proposed project provides numerous opportunities to promote bird watching within and adjacent to the study area and increase awareness of the importance of the ERWT for wildlife. Opportunities include, but are not limited to, bird watching stations and informational wildlife signs along the footpath and the main trail.

The ERWTIP is expected to result in an increase of use in this area so it is imperative that educational information be placed throughout trail area that directs people to keep themselves and their pets on designated trails to prevent impacts to the surrounding pristine habitat and abundant wildlife use. Additionally, the City should continue to detour/remove human encampments that degrade the habitat and wildlife use in the area.

Aside from increasing educational signs about wildlife use and protection within the area, limiting human encampments, and installing signage that directs users and their pets to stay on designated trail paths, the only other wildlife recommendation for the Phase II study area is in regards to northern red-legged frogs. Measures should be taken during trail construction improvements, particularly within the portions of the study area identified as wetlands, that if any northern red-legged frogs are encountered they be relocated to similar habitat in the vicinity to avoid impacts to this species.

During construction operations on the footpath, Best Management Practices (BMPs) should be utilized to avoid indirect impacts to the Point Reyes bird's-beak and Humboldt Bay owl's clover that are located in the salt marsh adjacent to the designated trail. BMPs include, but are not limited to, erosion control and construction exclusion fencing to define and restrict the construction footprint which will, in turn, reduce the potential for direct or indirect impacts from occurring to the special status species located adjacent to that portion of the study area.

To the extent possible, the Lyngbye's sedge that is located adjacent to the edge of pavement along Pound Road should be avoided. If that occurrence cannot be avoided, if this location is the least environmentally damaging for the placement of the new trail segment, then the occurrence should be transplanted to suitable habitat within the project area that is outside of potential impacts. The City should coordinate with California Department of Fish and Game regarding appropriate transplanting procedures, if the occurrence needs to be relocated.

6.2 Wetland/ESHA Recommendations

Wetlands should be avoided to the extent possible; however, portions of the main trail and footpath cannot be improved as proposed without resulting in impacts. SHN recommends coordinating with resource/jurisdictional agencies to verify wetland boundaries and to determine wetland mitigation ratios and suitable areas for conducting wetland restoration within the ERWT area for mitigating wetland impacts to a less than significant level.

Improvements to the footpath will result in impacts to the dunemat/northern foredune habitat, sections which consist of a fairly intact native species composition. Improving similar habitat that is degraded due to a predominance of exotic species may offset impacts to the dunemat/northern foredune habitat. Non-native species eradication in conjunction with a long-term management plan for the ERWT area that seeks to limit human encampments and exotic species establishment/spread within the area, is highly encouraged.

In areas where the existing trail is as wide as the proposed improvement width, or close to it, the existing trail width should be used rather than implementing improvements if those improvements would result in a wetland impact, such as in the area of the north slough. The existing trail appears to be wide enough to accommodate a multi-use trail without impacting the north slough.

The existing trail over the south slough is very narrow and needs significant improvement to meet trail improvement standards. In order to limit impacts, SHN recommends installing a bridge constructed out of transparent materials that limits shading and impacts to the wetland resources within that area.

Based on sensitive natural resources that have been identified and mapped from the Pound Road Parking Lot to Herrick Avenue Park and Ride (Figure 5), placement of the trail along the south side and corresponding west side of Pound Road to the Park and Ride will avoid most impacts with the possible exception of Lyngbye's sedge and salt marsh habitat. Extensive salt marsh habitat is located south of Pound Road, but there appears to be an ample amount of upland habitat, which does not contain special status species that would accommodate the new trail segment along the south and west sides of Pound Road up to the Herrick Avenue Park and Ride. There are a number of mitigation opportunities in the area immediately adjacent to this area if the new trail segment does result in wetland impact. Those opportunities include, but are not limited to, eradication of exotic plant species and restoring degraded salt marsh habitat.

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Appendix A

Wetland Delineation



Reference: 006107.100

October 31, 2007

Mr. Gary Bird
City of Eureka
531 K Street
Eureka, CA 95501-1146

Subject: Wetland Delineation for Phase II of the Elk River Trail Improvement Project, Eureka, California

Dear Mr. Bird:

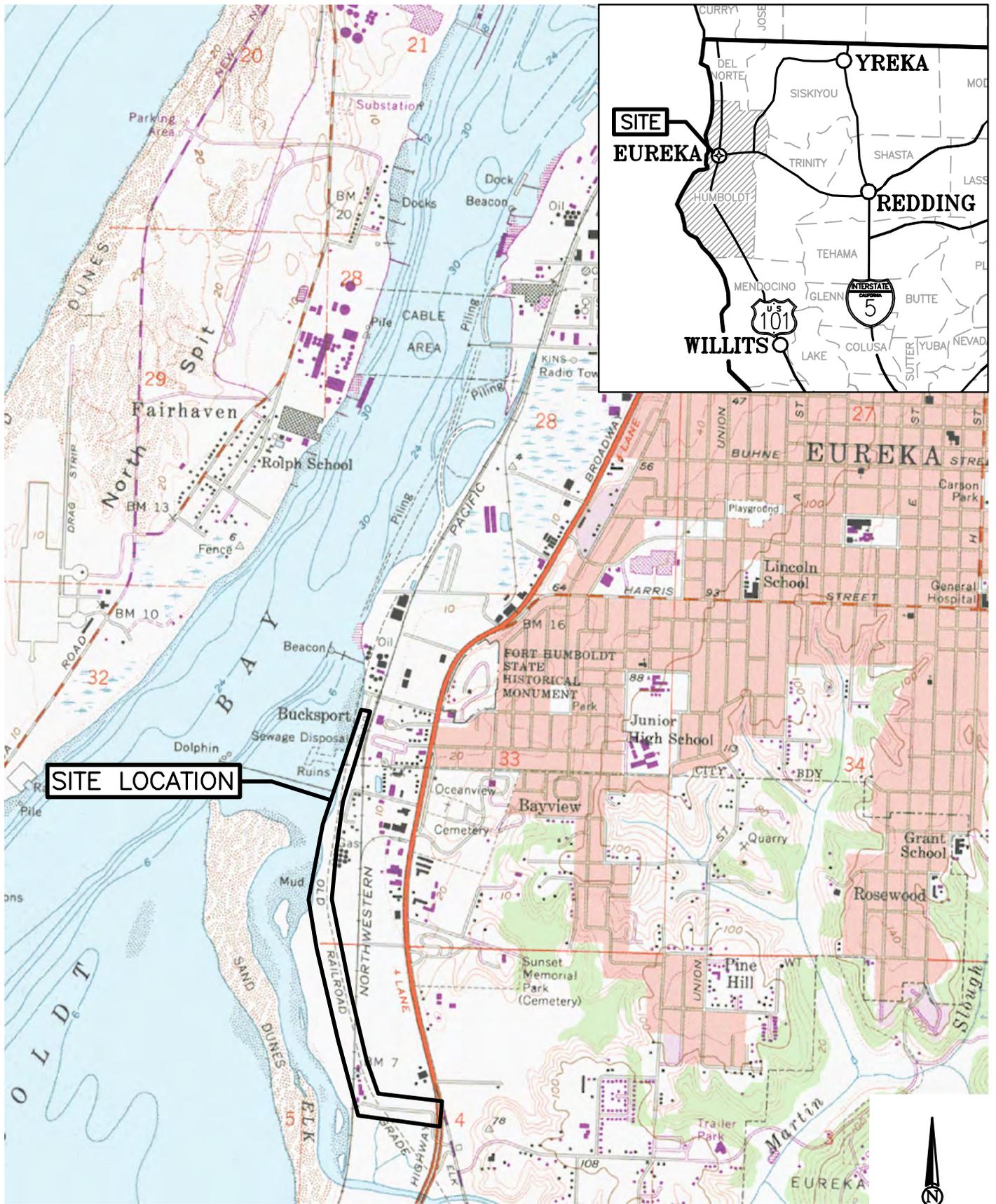
On June 19, July 20, August 2, and October 4, 2007, SHN Consulting Engineers & Geologists, Inc. (SHN) conducted site reconnaissance to complete a wetland delineation within the city limits of Eureka, California (west ½ of Section 33, Township 5 North, Range 1 West Humboldt Base Meridian; Figure 1). The study area includes the existing Elk River Wildlife Trail (ERWT), the terminus of which is located adjacent to the Eureka wastewater treatment plant extending south to the Herrick Avenue Park and Ride (Figure 1). The study area is located adjacent to the Elk River Estuary and includes the main trail segment of the ERWT south to the railroad tracks, a footpath located off the northern section of the main trail, the trail segment from the railroad to Pound Road, and both sides of Pound Road south to the Herrick Avenue Park and Ride (Figure 2). A 2002 aerial photograph obtained from the City of Eureka (City) was used as the base map for fieldwork and reporting.

1.0 Introduction

This wetland delineation was conducted in accordance with the U.S. Army Corps of Engineers (ACOE) 1987 *ACOE Wetland Delineation Manual* (Environmental Laboratories, 1987), *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone* (California Coastal Commission, 1994), and the City of Eureka General Plan Policy Document (City of Eureka, 1999).

Under Section 404 of the Clean Water Act, waters of the United States (including associated wetlands) are placed under federal jurisdiction of the ACOE. Furthermore, within California's coastal zone, the Coastal Act as administered by the California Coastal Commission (CCC) and local lead agencies affords wetlands additional protection and regulation. As stated in the 1987 *ACOE Wetland Delineation Manual* (Environmental Laboratories, 1987) and discussed further in the California Coastal Commission's *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone* (California Coastal Commission, 1994), specific criteria are used to identify wetlands or determine wetland status, including: hydrophytic vegetation, hydric soils, and wetland hydrology.

The objective of this wetland delineation was to identify and delineate all wetlands within the study area using the specific criteria, as stated above. The following definitions are from ACOE (Environmental Laboratories, 1987) unless specified otherwise. Hydrophytic vegetation is dominated by plant species known to be adapted to wetland sites, as specified in the regional index



SOURCE: EUREKA
USGS 7.5 MINUTE
QUADRANGLE



I:\2006\006107-ELK RIVER\006107.100

	City of Eureka Elk River Trail Improvement Project Phase II Eureka, California		Site Location Map Wetland Delineation SHN 006107.100	
	October 2007	006107.100-LOCATION	Figure 1	

(Region 0) (Reed, 1988). Hydric soils have characteristics that developed in a reducing atmosphere, which exists when periods of prolonged soil saturation result in anaerobic conditions within the upper 12 inches of the soil profile. Hydric soils support the growth and regeneration of hydrophytic vegetation. Wetland hydrology is the sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation. Wetland hydrology is demonstrated through direct or indirect evidence of flooding, ponding, or saturation for a significant portion of the growing season (Environmental Laboratories, 1987; California Coastal Commission, 1994). Wetlands identified in this report had the presence of all three indicators. Refer to Section 4.3.2 of this report for other regulated/sensitive habitats that were delineated.

2.0 Environmental Setting

The study area is located on primarily undeveloped land in the southwest portion of Eureka. For organizational purposes, portions of the study area are referenced as: 1) the main trail segment 2) footpath, 3) railroad to Pound Road Parking Lot, and 4) Pound Road Parking Lot south to the Herrick Avenue Park and Ride (Figure 2). Assessor's Parcel Numbers (APNs) that correspond with the four sections of the study area are as follows:

- Main trail segment: APNs 019-331-02, 019-331-09, 019-271-04, and 302-171-01
- Footpath: APN 019-331-08
- Railroad to Pound Road Parking Lot: APNs 302-171-23, 302-181-02, 302-181-31
- Pound Road Parking Lot south to the Herrick Avenue Park and Ride: APNs 302-181-31, 302-171-37

Habitats within the project area consist of uplands and wetlands, with several corresponding vegetation communities in each. Upland communities include disturbed and dunemat. Wetland communities consist of a variety of Estuarine intertidal and subtidal wetlands and Palustrine scrub-shrub and Palustrine emergent wetlands. The wetland community names are consistent with National Wetland Inventory (NWI) classification system (see section 3.2).

Eureka has a wet maritime climate. The average annual precipitation is 38.10 inches and the average annual air temperature is 53.2 degrees Fahrenheit (NOWData-NOAA online weather data, 2007).

3.0 Survey Methodology

The existing ERWT (hereafter, main trail) was systematically surveyed from the northern parking lot, south to the Herrick Avenue Park and Ride. The main trail was delineated into segments based on natural breaks in the vegetation communities or canopy cover. Each representative section, which included the four sections identified above, was visually assessed and quantified. Important resource variables included the presence of wetlands, Environmentally Sensitive Habitat Areas (ESHA), special status plant species, important wildlife areas, or the degree to which vegetation would be affected to allow for trail improvements, including but not limited to widening. This




SCALE
 1" = 250'

EXPLANATION
 **TRAIL**

 Consulting Engineers & Geologists, Inc.	City of Eureka Elk River Trail Improvement Project Phase II Eureka, California	Study Area Wetland Delineation SHN 006107.100
	October 2007	006107.100-STUDY-AREA

report only includes the findings of the wetland delineation and impacts to ESHA. Refer to SHN's *Biological Assessment for Phase II of the Elk River Wildlife Trail Improvement Project* (2007) for results of the other investigations.

The area of potential effects was assessed along the main trail segment using a 14-foot PVC pipe (i.e., measuring rod) which represented the desired/hypothetical trail width with an additional six feet added to each end of the measuring rod to represent the actual or potential disturbance area (26-foot total width).

The footpath trail was assessed for a 4-foot trail width, with four feet added at each end of the shortened measuring rod to represent the potential or actual disturbance area (12 feet total width). The study areas were defined based on the recommendations included in the *Elk River Access Project Recommendations* (RCAA, 2002), SHN's knowledge of the trail area, and coordination with the City of Eureka. The measuring rod was not used for the portion of the study area from the Pound Road parking lot to the Herrick Park and Ride because a study area could not be defined due to existing site constraints, such as fencing; however, sensitive resources were evaluated and mapped in that portion of the project area.

Each trail segment was quantified by walking the representative trail with the measuring rod centered on, and perpendicular to the trail, with the exception of the portion from the Pound Road parking lot to the Herrick Avenue Park and Ride. Where the measuring rod (or additional 6-foot {main trail} or 4-foot {foot path}) intercepted one of the aforementioned important resource variables, each was noted, mapped, and quantified to the degree possible, with some limited trimming to clearing large diameter stems. To the extent possible (i.e., based on canopy closure), a Trimble GeoXT hand-held Global Positions System (GPS) was used to map and quantify the existing trail, the presence of wetlands, and ESHA. Collected GPS data was post processed and differentially corrected for sub-meter accuracy and overlaid on the City's 2002 aerial photo.

3.1 Soils

Elevations within the study area range from sea level to approximately 15 feet above Mean Sea Level (MSL). Soil types for the study area are described in the *Soils of Western Humboldt County California* (McLaughlin and Harradine, 1966) as Sand Dune (SD), Bayside silty clay loam (Ba6), and may include portions of Residential, business, and industrial uses (UI). According to McLaughlin and Harradine (1966), Bayside silty clay loam is formed in very low-lying areas, is very poorly drained and is often affected by salts, and the surface horizon frequently puddles. Stabilized sand dunes consist of sands, which are not presently moving with the wind, and consist of an upland species composition. Soils characterized as residential, business, and industrial uses are originated from a variety of soils types but their origin composition has been altered due to development.

3.2 National Wetland Inventory

The U.S. Fish and Wildlife Service is the federal agency responsible for tracking wetland trends as well as maintaining a reliable inventory through its National Wetland Inventory (NWI; USDI,

1987). The NWI can be queried for specific locations throughout the United States to aid federal, state, and local agencies in making informed decisions concerning wetlands. The study area has both freshwater and estuarine wetland habitat types (Figure 3):

3.2.1 Freshwater Wetlands

According to the NWI¹ (USDI, 1987), portions of the study area and areas immediately adjacent to it contain a mix of freshwater wetland types:

- PEM/SS1C: Palustrine Emergent, Scrub-Shrub, Broadleaved deciduous, and Seasonally Flooded. This wetland type is a combination of two common freshwater wetlands in the Eureka area, Palustrine emergent seasonally flooded wetland that is dominated by herbaceous species and Palustrine scrub-shrub seasonally flooded wetland that is dominated by broadleaved deciduous trees and shrubs.
- PEM1/UBHx: Palustrine, emergent, persistent, unconsolidated bottom, permanently flooded, excavated. This permanently inundated wetland includes the wastewater treatment ponds. Vegetation consists of subemergent hydrophytes such as cattails (*Typha latifolia*), common tule (*Scirpus acutus* var. *occidentalis*), and pondweeds (*Potamogeton* spp.).
- PSS/EM1A: Palustrine scrub-shrub, emergent, persistent, temporarily flooded. This freshwater type contains a mix of broadleaved trees and shrubs and herbaceous hydrophytes, portions of the habitat may be periodically inundated.
- PEM1CD: Palustrine, emergent, persistent, seasonally flooded, well drained. This habitat is dominated by herbaceous hydrophytes and is inundated during the wet season but dry during summer months.

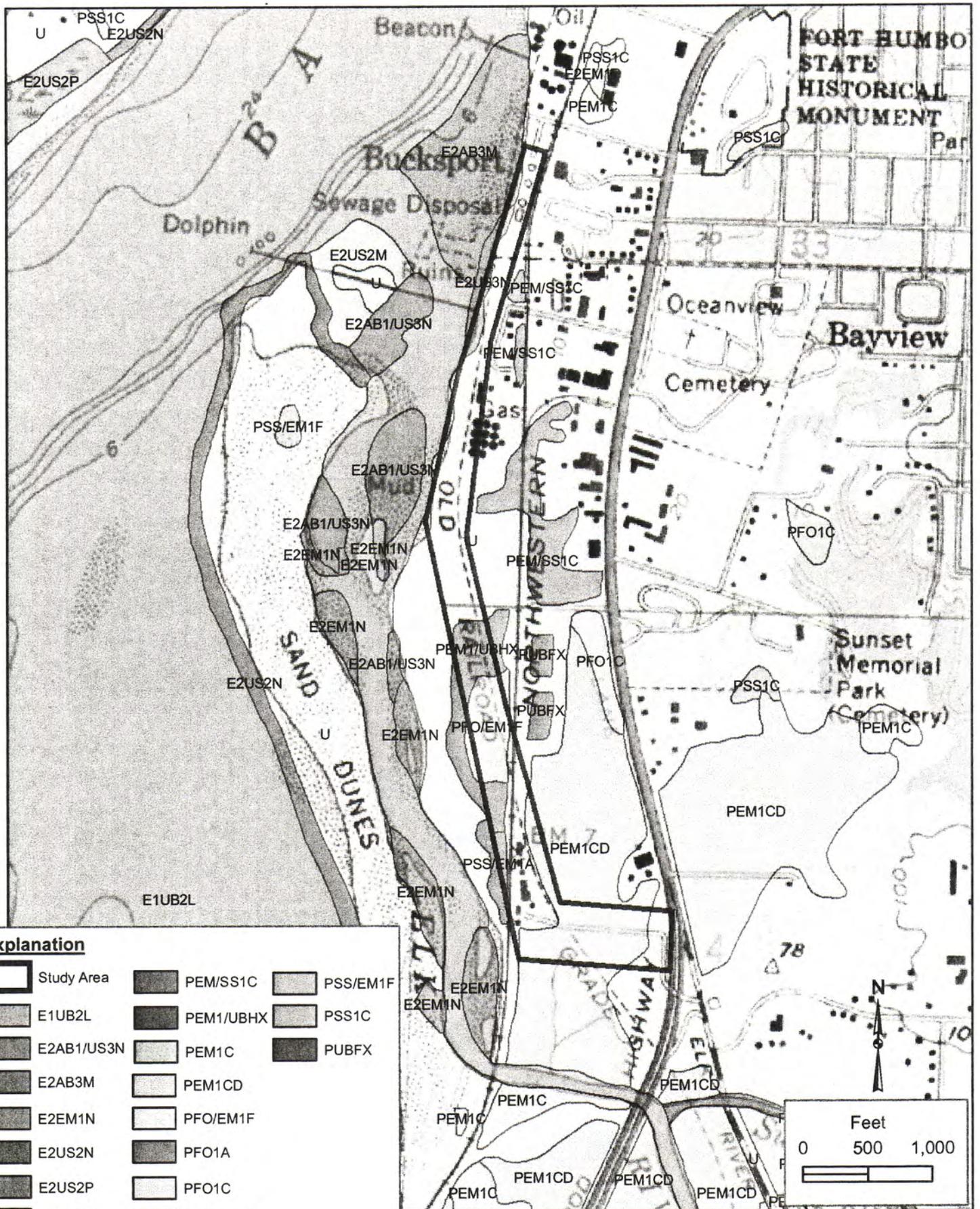
Habitat along the main trail segment primarily consists of Palustrine scrub-shrub with smaller sections of upland habitat and emergent wetlands. Emergent wetlands that are seasonally inundated are scattered throughout the Elk River trail area, but are generally located beyond the boundaries of the Phase II study area.

3.2.2 Estuarine Wetlands

The NWI (USDI, 1987) identifies several wetland class and sub-class types within the estuary and mouth of Elk River. The following four types apply to the study area and areas immediately adjacent to it:

- E2AB3M: Estuarine, intertidal, aquatic bed, rooted vascular, and irregularly exposed. The NWI identifies the tidally influenced wetlands in the northern portion of the study area as this type (Figure 3). This estuarine wetland is typical of salt marshes that are located near the Ordinary High Water Mark (OHWM) and are dominated with saline tolerant herbaceous hydrophytes and are regularly inundated.

¹ NWI maps are an excellent reference point for the presence or absence of wetlands; however, the resolution of the NWI tends to be on a macro scale, and can underestimate the full extent of a given wetland or miss wetlands that are dominated by herbaceous vegetation.



Explanation

	Study Area		PEM/SS1C		PSS/EM1F
	E1UB2L		PEM1/UBHX		PSS1C
	E2AB1/US3N		PEM1C		PUBFX
	E2AB3M		PEM1CD		
	E2EM1N		PFO/EM1F		
	E2US2N		PFO1A		
	E2US2P		PFO1C		
	E2US3N		PSS/EM1A		

Note: All locations are approximate

- E2US3N: Estuarine, Intertidal, Unconsolidated Shore, Mud, and Regularly Exposed (Figure 3). The NWI identifies the tidally influenced wetlands in the southern portion of the study area as this type. This estuarine wetland is often referred to as mudflat, is regularly tidally inundated, and may be vegetated with brown and green algae.
- E1UB2L: Estuarine, subtidal, unconsolidated bottom, sand, subtidal (Figure 3). This estuarine wetland represents Humboldt Bay.
- E2EM1N: Estuarine, intertidal, emergent, persistent, regularly flooded (Figure 3). This estuarine wetland is located below the OHWM, is usually only exposed during very low tides, and may be vegetated with eelgrass.

Estuarine intertidal irregularly exposed wetland habitat occupies a narrow band west of the study area, below and above the OHWM where there is frequent tidal inundation. This vegetation community is referred to as salt marsh. Estuarine habitat is located west of the study area from the north slough to the south slough and is interspersed along both sides of the study area from the railroad tracks south to the Herrick Avenue Park and Ride (Figures 4, 5, and 6). A significant amount of high quality salt marsh is located well above the OHWM and immediately adjacent to the footpath in the northern portion of the study area. The estuarine habitat is comprised entirely of herbaceous vegetation that is interspersed with patches of intertidal mudflat scattered with brown and green algae.

For detailed descriptions of vegetation communities, refer to SHN (2007).

4.0 Wetland Delineation

4.1 Methodology

Prior to conducting fieldwork, the SHN wetland delineation team reviewed existing information to assist with the determination of wetland boundaries within the study area. This review included *Soils of Western Humboldt County California* (McLaughlin and Harradine, 1966); NWI maps (USDI, 1987); U.S. Geological Survey (USGS) topographic quadrangle maps (Eureka); and aerial photographs.

Eight sample points were characterized in the study area for the aforementioned botanical, hydrological, and soil parameters, in accordance with the 1987 *ACOE Wetland Delineation Manual* (Environmental Laboratories, 1987; Figures 4, 5, and 6). Point locations were selected:

1. to achieve appropriate coverage and characterization of wetland and upland habitats;
2. to determine the approximate boundary line between wetlands and uplands by determining the extent of one or more key wetland criteria (hydrology, hydric soils, and hydrophytic vegetation); and
3. to document potential changes in the vegetative community.



EXPLANATION	
	VEGETATION REMOVAL
	WETLAND IMPACTS
	EXISTING TRAIL
	STUDY AREA
	WETLAND SAMPLE POINT

SCALE
1"=50'

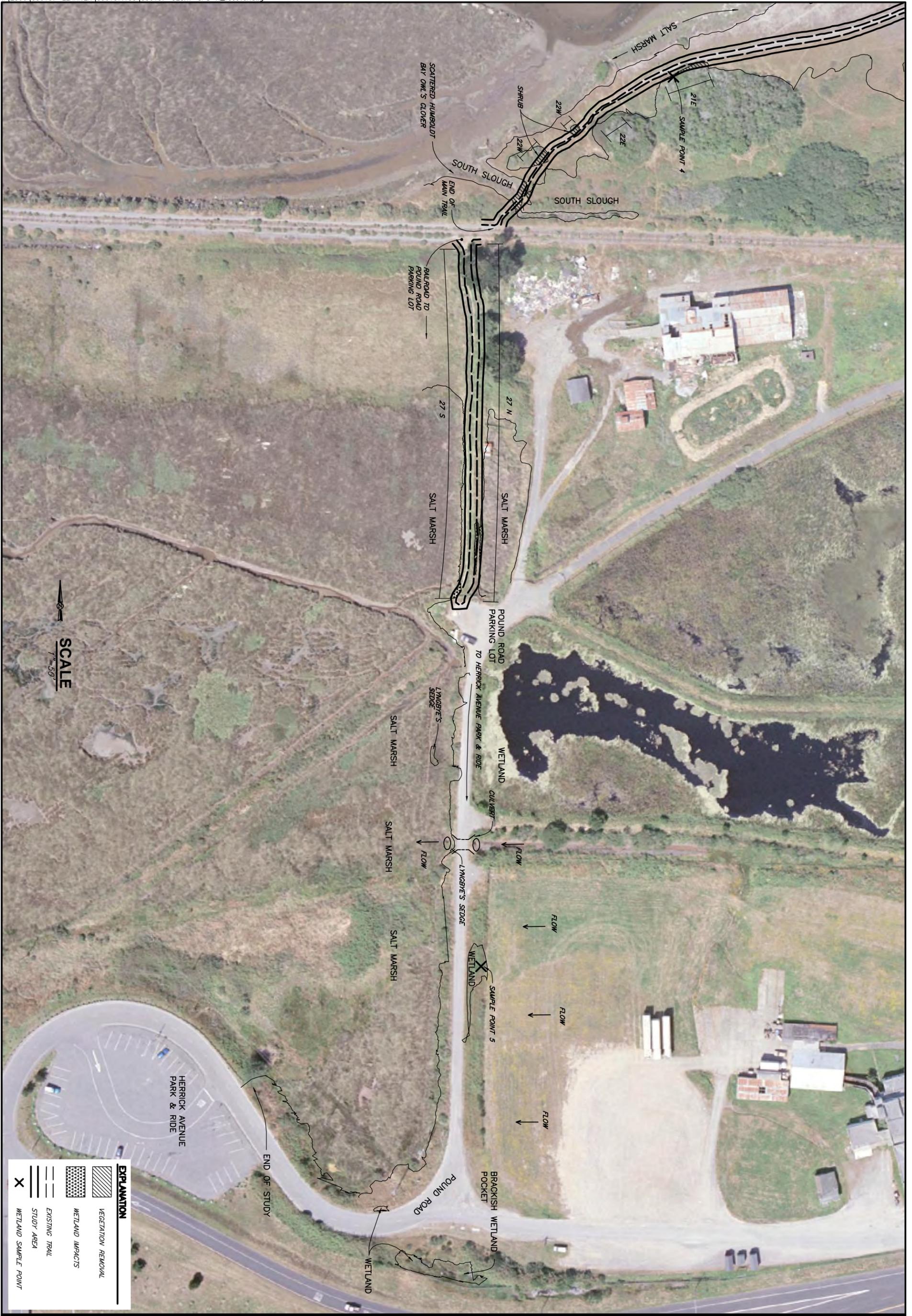
FIGURE 4 DATE 10/2007 PROJ. NO. 006107	CITY OF EUREKA ELK RIVER WILDLIFE TRAIL IMPROVEMENT PROJECT PHASE II EUREKA, CALIFORNIA		DSGN DR DSL CHK APVD	NO.	DATE	REVISION	BY	CONSULTING ENGINEERS & GEOLOGISTS, INC. 812 W. Wabash (707)441-8855 Eureka, CA 95501 FAX (707)441-8877	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"
	WETLAND DELINEATION								IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



EXPLANATION	
	VEGETATION REMOVAL
	WETLAND IMPACTS
	EXISTING TRAIL
	STUDY AREA
	WETLAND SAMPLE POINT

SCALE
1" = 50'

FIGURE 5	CITY OF EUREKA ELK RIVER WILDLIFE TRAIL IMPROVEMENT PROJECT PHASE II EUREKA, CALIFORNIA	DR	DSL	NO.	DATE	REVISION	BY	CONSULTING ENGINEERS & GEOLOGISTS, INC. 812 W. Wabash (707)441-8855 Eureka, CA 95501 FAX (707)441-8877	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
		CHK							
DATE 10/2007	WETLAND DELINEATION	APVD							
PROJ. NO. 006107									



EXPLANATION	
	VEGETATION REMOVAL
	WETLAND IMPACTS
	EXISTING TRAIL
	STUDY AREA
	WETLAND SAMPLE POINT

CITY OF EUREKA
 ELK RIVER WILDLIFE TRAIL IMPROVEMENT PROJECT
 PHASE II
 EUREKA, CALIFORNIA

WETLAND DELINEATION

FIGURE 6

DATE 10/2007
 PROJ. NO. 006107

DSGN				
DR	DSL			
CHK				
APVD				
NO.	DATE	REVISION	BY	

SEI CONSULTING ENGINEERS & GEOLOGISTS, INC.
 812 W. Wabash (707)441-8855
 Eureka, CA 95501 FAX (707)441-8877

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

All sample points were dug to a depth of 16 inches. Due to the nature of the proposed trail improvement project, sample points were selected based on areas proposed for impact. A limited number of sample points were characterized in the Phase II study area due to the linear nature of the project. Additionally, the eight points characterize the various vegetation types in the area, which allows for extrapolation to other similar vegetation types and elevations within the study area. Soil profile depths were measured from the surface to each horizon, and the thickness of each horizon was also measured; the Munsell Soil Color Chart (Kollmorgen, 1990) was referenced to determine the matrix and mottle colors (if present). Soils were closely inspected for hydric soil indicators as well as primary and secondary hydrology indicators. Each pit was located by Global Positioning System (GPS), flagged with a pine stake, and refilled at the conclusion of data collection.

At each sample point, the vegetation stratum was inspected and identified to the lowest taxonomic level (species) possible at the time of the field visit. Relative percent cover of each plant species was visually estimated within the sample point and within each stratum. The 50/20 method² was applied to each stratum to determine the dominant plant species and to satisfy the hydrophytic vegetation criteria. The herbaceous stratum was inspected at a 5-foot radius centered on the sample point; shrub and tree strata were inspected similarly at a 30-foot radius. The wetland indicator status of plant species for this investigation was based on the regional index (Reed, 1988); botanical nomenclature follows *The Jepson Manual, Higher Plants of California* (Hickman, 1993).

Seven of the eight sample points that were characterized had normal wetland conditions, as defined by ACOE (Environmental Laboratories, 1987). However, sample point 5 was characterized as atypical due to the presence of non-native soils. The ACOE defines an atypical situation as one in which effects from human activities or natural events that have resulted in altering positive wetland hydrology, soil, or vegetation indicators (Environmental Laboratories, 1987).

4.2 Results

For each sample point, an ACOE Routine Wetland Determination Data Form was completed. Copies of all data forms are included in Attachment 1. Impacts for each trail segment are included in Table 1 and summarized below.

² The 50/20 rule: for each stratum of the plant community, dominant species are the most abundant species that immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species comprising 20 percent or more of the total dominance for that stratum (Environmental Laboratory, 1987).

Table 1 Vegetation and Wetland Impacts Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California					
Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
Main Trail					
North Slough	No Impact	0.0	No additional area for trail without filling the slough	TBD ¹	Salt Marsh
1	No Impact	0.0	Trimming/ Clearing	275	Scrub-shrub
2	No Impact	0.0	Trimming	129.6	Scrub-shrub
3	No Impact	0.0	Large Stem Clearing	137.6	Scrub-shrub
4	Trimming	86.3	Trimming/ Clearing	757.9	Scrub-shrub
5	No Impact	0.0	Trimming	168.3	Scrub-shrub
6 East	Trimming	78.0	Trimming/ Clearing	479.9	Scrub-shrub
6 West	No impact	0.0	Trimming/ Clearing	265.1	Scrub-shrub
7 East	Trimming	109.9	Trimming/ Clearing	611.7	Scrub-shrub
7 West	Trimming	259.7	Trimming/ Clearing	563.5	Scrub-shrub
8 East	Trimming	139.6	Trimming/ Clearing	1009.7	Scrub-shrub
8 West	No Impact	0.00	Trimming/ Clearing	99.1	Scrub-shrub
9	Trimming	105.3	Trimming/ Clearing	390.3	Scrub-shrub
10	No Impact	0.0	Trimming/ Clearing	30.3	Scrub-shrub
11	No Impact	0.0	No Impact	0.0	N/A ²
12 East	Trimming	142.7	Trimming/ Clearing	1114.3	Scrub-shrub
12 West	Trimming	44.8	Trimming/ Clearing	518.3	Scrub-shrub
13 East	Trimming	49.6	Trimming/ Clearing	587.6	Scrub-shrub
13 West	Trimming	92.6	Wetland	360.5	Emergent wetland
14 East	No Impact	0.00	Trimming/ Large Stem Clearing	784.6	Scrub-shrub

Table 1					
Vegetation and Wetland Impacts					
Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California					
Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
14 West	Trimming	963.0	Trimming/ Large Stem Clearing	752.4	Scrub-shrub
15 East	No Impact	0.00	Trimming/ Clearing/ Wetland	2343.7	Scrub-shrub
15 West	Trimming/ Wetlands	2684.3	Trimming/ Clearing/ Wetland	2327.2	Scrub-shrub
16 East	No Impact	0.00	Trimming/ Large Stem Clearing/ Wetland	630.6	Scrub-shrub
16 West	Trimming/ Wetlands	653.2	Trimming/ Large Stem Clearing/ Wetland	602.7	Scrub-shrub
17 East	Trimming/ Wetlands	15.5	Trimming/ Clearing/ Wetland	206.6	Scrub-shrub
18 East	Trimming/ Clearing/ Wetlands	33.1	Trimming/ Clearing/ Wetland	264.4	Scrub-shrub
18 West	No Impact	0.00	Trimming/ Clearing/ Wetland	424.4	Scrub-shrub
19 East	No Impact	0.00	Trimming/ Clearing/ Wetland	14.6	Scrub-shrub
19 West	No Impact	0.00	Trimming/ Clearing/ Wetland	76.9	Scrub-shrub
20 East	No Impact	0.00	Trimming/ Clearing	119.5	Scrub-shrub
20 West	No Impact	0.00	Trimming/ Clearing	75.8	Scrub-shrub
21 East	No Impact	0.00	Trimming/ Clearing	186.8	Scrub-shrub
22 East	No Impact	0.00	No Impact	0.00	Scrub-shrub
22 West	No Impact	0.00	Trimming/ Clearing	199.2	Scrub-shrub
South Slough	Salt marsh	58.5	Salt marsh	258.8	Salt marsh

Table 1 Vegetation and Wetland Impacts Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California					
Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
Foot Path					
23	No Impact	0.00	Salt marsh	169.3	Salt marsh
24	No Impact	0.00	Trimming	758.0	Scrub-shrub
25 A	Dunemat/Northern Foredune Grassland	493.65	Dunemat/Northern Foredune Grassland	1619.8	Sensitive Dunemat/Northern Foredune Grassland Habitat
25 B	Dunemat/Northern Foredune Grassland	493.65	Dunemat/Northern Foredune Grassland	1653.4	Sensitive Dunemat/Northern Foredune Grassland Habitat
26 A	Emergent wetland	36.4	Wetland	227.6	Emergent wetland
26 B	Emergent wetland	36.4	Wetland	239.8	Emergent wetland
Railroad to Herrick Avenue Park and Ride					
Trail Segment	Existing Trail	Impact Length 14 Foot	Additional 6 foot Width	Impact Length 6 Foot	Habitat Type to be Affected per Trail Segment
27 North	No Impact	0.00	Salt marsh	324.4	Salt marsh
27 South	No Impact	0.00	Salt marsh	100.3	Salt marsh
1. TBD: To Be Determined (once trail design is finalized). 2. N/A: Not Applicable					

Although portions of the study area tend to dry out due to the lack of an impermeable confining layer, hydrologic factors, such as a high and fluctuating water table and high precipitation exert an overriding influence on the plant species that occur in the wetland portions (Environmental Laboratories, 1987), as well as the morphology and structure of the soils present in the study area. The majority of the study area included some species considered to be hydrophytic. However, in Humboldt County, many species listed as facultative wetland indicators occur frequently in transitional or upland habitats, and are poor indicators of wetland status in the absence of the other corroborating soils and hydrological factors. Overall, the combination of hydrophytic vegetation, hydric soils, and saturation or ponding was used in this delineation to define wetlands.

Refer to SHN (2007) for recommendations to reduce potential impacts.

4.2.1 The Main Trail

Eight sample points were inspected to characterize wetland conditions along the main trail (sample points 1-8; Attachment 1; Figures 4, 5, and 6). Sample points 1-3 had a predominance of hydrophytes, and included a mix of scrub-shrub and herbaceous species. These sample points were inspected

during the dry season; therefore, primary wetland hydrology was only encountered at sample point 3. Secondary indicators were observed in sample points 1 and 2. Soils are low in chroma (10YR2/1 and 10YR 4/2) and sample points 2 and 3 have mottles.

Sample point 4 has a mix of upland and wetland species, but had a predominance of upland species. No hydrology indicators were detected. The soil is low in chroma (10YR 4/2) but lacked redoximorphic features.

Approximately 3,386 sq. ft (0.08 acre) of freshwater wetlands will be impacted within the existing footprint of the main trail and approximately 7,252 sq. ft. (0.17 acre) of wetlands are located within the impact zone (Figures 4 and 5). The total freshwater wetland impact for the main trail segment portion of the study area is approximately 10,638 sq. ft. (0.24 acres).

The existing trail over the south slough is very narrow, therefore trail improvements will result in impacts to salt marsh wetlands (Figure 6). Approximately 59 sq. ft. of salt marsh is located along the existing path and approximately 259 sq. ft. of salt marsh is located in the impact zone. Therefore, a total of approximately 317 sq. ft. of salt marsh will be impacted within the south slough.

The most significant amount of vegetation trimming or clearing within the study area will occur along the main trail (Figures 4, 5, and 6). Due to the difficulty of differentiating vegetation clearing impacts from wetland impacts in the portions of the study area where both impacts occur along the same trail segment, the following numbers correspond to segments with vegetation clearing only (Table 1). Approximately 2,072 sq. ft. of vegetation will be trimmed or cleared along the existing trail and approximately 9257 sq. ft. of vegetation will be trimmed or cleared within the impact zone of the main trail. Therefore, a total of approximately 11,328 sq. ft. (0.26 acres) of vegetation will be impacted along the main trail by trimming and/or clearing.

4.2.2 Footpath

Approximately 169 sq. ft. of salt marsh along the western side of the north slough will be impacted to expand the width of the footpath (Figure 4).

Two wetland sample points, 7 and 8, were characterized along the footpath (Figure 4). Sample point 7 consists of upland species, including the upland sand dune sedge (*Carex pansa*). Soils are low in chroma in the upper horizon (10YR 2/2) but lighter in the lower horizon (10YR 4/3). No redoximorphic features or hydrology indicators were detected in the soil profile for sample point 7. Sample point 8 is dominated by hydrophytes including slough sedge and Pacific bramble. Soils are low in chroma (10YR 2/2), have abundant mottles, and were saturated in the upper 12 inches.

The proposed trail improvements along the footpath will impact approximately 73 sq. ft. of wetlands within the existing footpath and approximately 467 sq. ft. of wetlands within the impact zone (Figure 4). Therefore, a total of approximately 540 sq. ft. of freshwater emergent wetlands will be impacted along the footpath for the proposed trail improvement project.

A small section of willows, approximately 758 sq. ft., will be impacted along section 24 of the footpath (Figure 4).

4.2.3 Railroad to Pound Road Parking Lot

Wetland sample point(s) were not characterized in this portion of the study area because the wetland/upland boundary is readily apparent. The existing trail is located on a fill prism and there is obvious salt marsh habitat downslope from the trail, along both the north and south sides of the path (Figure 6). Proposed trail improvements along segment 27 north and 27 south will impact approximately 425 sq. ft. of salt marsh (Figure 6). Trail improvements in this portion of the study area do not require vegetation trimming and/or clearing.

4.2.4 Pound Road Parking Lot to Herrick Avenue Park and Ride

One wetland sample point was characterized in this portion of the study area (sample point 5), which is located along the north side of Pound Road (Figure 6). Vegetation is dominated by herbaceous emergent hydrophytes and secondary hydrology indicators were noted. Soils consist of one profile and appear to be non-native road fill based on the presence of rocks, rubble, bark, and charcoal (atypical situation). Soils in sample point 5 are not low in chroma (10YR3/4) but due to the abundance of mottles throughout the profile (7.5YR 4/6), soils at this location are considered hydric.

A significant area of salt marsh habitat is located to the south of Pound Road. This area is frequently inundated by brackish/estuarine water from a network of tidal channels in that area. The majority of the salt marsh is located outside the study area (Figure 6) but a small portion could be impacted if the new trail segment from the Pound Road Parking lot to the Herrick Avenue Park and Ride is located along the southern shoulder of Pound Road. The amount of impact will have to be determined once the final trail alignment is determined. Vegetation clearing within this portion of the study area appears to be limited to the west side of Pound Road, just north of the Herrick Avenue Park and Ride, if the new trail segment is constructed there.

Two brackish wetland pockets are located along the western and eastern sides of Pound Road (Figure 6). If the new trail segment is located along the southern/western side of Pound Road, the smaller of the two wetland pockets will be impacted. Final wetland impacts for this section of the study area will need to be determined once the final trail layout is designed.

4.3 Total Wetland Impacts

Based on the above, approximately 11,178 sq. ft. (0.26 acres) of freshwater wetland will be impacted and approximately 911 sq. ft. of salt marsh will be impacted by the proposed trail improvement project. The combined total wetland impacts in the study area are approximately 12,089 sq. ft. (0.28 acres).

4.3.1 Estuarine Habitat

Estuarine/salt marsh habitat located adjacent to the study area was not characterized with sample points because it either clearly resides outside potential impact zones or indicators are readily apparent due to the presence of wetland hydrology. Because the limits of that habitat can easily be delineated, a significant amount of salt marsh habitat is shown on Figures 4-6.

4.3.2 Sensitive Areas

Wetlands within the Coastal Zone are under the regulation of a number of agencies including ACOE, CCC, California Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (USFWS), and local lead agencies. The definition of a wetland varies among the agencies ranging from a stricter mandate regarding the quality of water resources to a broader mandate concerning the protection of sensitive habitats (DFG, 2007). ACOE regulates wetlands pursuant to Section 404 of the Clean Water Act and requires the presence of all three wetland criteria to meet the ACOE definition of jurisdictional wetlands. CCC and DFG have broader mandates including the protection of coastal resources, biological resources (biodiversity), and ecological functions. Therefore the presence of all three wetland criteria is not required to identify these environmentally sensitive areas (CCC, 1994; DFG, 2007).

For the purpose of this study, areas that provide important habitat for wildlife, contribute to the functional values of adjacent wetlands, and/or provide habitat for special status species are considered ESHA and have been identified throughout the study area. Areas identified as ESHA are not meant to meet a strict regulatory definition of any resource agency but instead have been delineated based on SHN's scientific understanding of the important values of these areas and our best professional judgment. Habitat that has been delineated as ESHA is consistent with Section 6.A.6 of the City of Eureka General Plan Policy Document (City of Eureka, 1999).

ESHA that will be impacted by the proposed project includes the dunemat/northern foredune grassland habitat along a portion of the footpath (Figure 4). This habitat is located in other portions of the study area, such as in the southern portion of the main trail, but the existing trail is wide enough so trail improvements are not expected to result in impacts there. Approximately 987 sq. ft. of dunemat/northern foredune habitat will be impacted along the existing footpath; an additional 3,373 sq. ft. of this sensitive habitat will be impacted due to trail widening. Therefore, a total of approximately 4,260 sq. ft. (0.1 acre) of dunemat/northern foredune grassland will be impacted along the footpath.

Other ESHA has been identified in the project area and includes the willow thickets and substantial areas of shrubs that provide habitat for wildlife (Figures 4, 5, and 6). The amount of vegetation that will be impacted was quantified because it may be subject state and local regulations. The total amount of vegetation, not including wetland and dunemat/northern foredune grassland habitat that will be impacted in the study area is approximately 12,086 sq. ft. (0.28 acres).

Gary Bird

Wetland Delineation for Phase II of the Elk River Trail Improvement Project, Eureka, California

October 31, 2007

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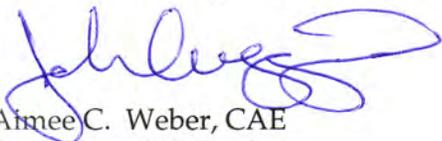
5.0 Limitations

The conclusions in this wetland delineation reflect the best professional judgment of the SHN wetland delineation team and should not be considered final until verified by the ACOE and CCC, as well as reviewed by the DFG, and/or other local agencies with interest in wetland regulation/conservation. Property boundaries and wetland/upland mapping are approximate. Once the final trail layout is designed, particularly from the Pound Road Parking Lot to Herrick Avenue Park and Ride, wetland impact areas may increase. Furthermore, the conclusions in this report represent a "snapshot in time" and it is possible that not all herbaceous species were present at the time of the fieldwork. In addition, the delineation was not completed at the height of the wet season.

Please feel free to call us anytime at 707-441-8855 regarding the results of this report or the project.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

for 

Aimee C. Weber, CAE
Botanist and Ecologist

ACW:lms

Attachment 1. Wetland Delineation Data Forms

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Attachment 1

Wetland Delineation Data Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>ETRW Phase II</u> Applicant/Owner: <u>AJF</u> Investigator: <u>ACW & MWH</u> <u>* sample point on west side of trail</u> <u>at end of zone A</u>	Date: <u>7-20-07</u> County: <u>Humboldt</u> State: <u>CA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: <u>herbaceous</u> Transect ID: <u>1</u> Plot ID: <u>7-20-07</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Ranunculus repens</u>	<u>H</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Potentilla anserina</u>	<u>H</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Lolium corniculatus</u>	<u>↓</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Holcus lanatus</u>	<u>↓</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Rubus ursinus</u>	<u>↓</u>	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

"Percent of Dominant Species that are OBL, FACW or FAC" 5/5 = 100%
 (excluding FAC-).

Remarks:

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test <u>Results</u></p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	

Remarks:

no standing water but lower horizon is moister than top - peak of wet season would probably be inundated to surface

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup) _____	Drainage Class _____ Field Observations _____ Confirm Mapped Type? Yes No
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Profile Descriptions: Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc
0-7"	A	10YR 7/2	—	—	sandy loam
7-16"	B	10YR 7/1	—	—	silty sand

Hydric Soil Indicators:

<input type="checkbox"/> Histsol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input checked="" type="checkbox"/> Aquic Moisture Regime <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <i>potential</i> <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
--	--

Remarks: *More organics in bottom layer - charcoal in profile*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	(Circle)		
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No		Is this Sampling Point Within a Wetland?	<input checked="" type="radio"/> Yes
Hydric Soils Present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No			<input type="radio"/> No

Remarks: *ACOE wetland*

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>ERWT PHASE I</u> Applicant/Owner: <u>CSE</u> Investigator: <u>ADW & MHH</u>	Date: <u>7-20-07</u> County: <u>Humboldt</u> State: <u>CA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: <u>herbaceous</u> Transect ID: _____ Plot ID: <u>2 7-20-07</u>

on westside of main trail

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carex obnupta</u>	<u>H</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Lubus ursinus</u>	<u>H</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>bonicera marmorata</u>	<u>S</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Aster chilensis</u>	<u>H</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Thamnos parshina</u>	<u>S</u>	<u>NI</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

"Percent of Dominant Species that are OBL, FACW or FAC" 4/4 = 100%
 (excluding FAC-).

Remarks:

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <u>sat. in upper 16"</u> <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands
<p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p>Secondary Indicators (2 or more required):</p> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)

Remarks:

Bottom profile moist - would be saturated throughout majority of wet season and/or standing water

GPS

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup) _____	Drainage Class _____ Field Observations _____ Confirm Mapped Type? Yes No
---	---

Profile Descriptions:		Matrix Color	Mottle Colors	Mottle Abundance/	Texture, Concretions,
Depth	Horizon	(Munsell Moist)	(Munsell Moist)	Size/Contrast	Structure, etc
0-10" <u>11</u>	<u>A</u>	<u>10YR 4/2</u>	<u>10YR 4/6</u>	<u>see below</u>	<u>sand</u>
10-16" <u>11</u>	<u>B</u>	<u>10YR 5/2</u>	<u>10YR 4/6</u>		<u>sand</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: profile may change color when exposed to air/anaerobic in bottom
- mottles indistinct & widespread

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	(Circle)	Is this Sampling Point Within a Wetland?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	(Circle)
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No					
Hydric Soils Present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No					

Remarks: Hydrology is inferred at this sample point, but based on dry season sampling, clearly meets all 3 indicators

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>ERWT Phase II</u> Applicant/Owner: <u>CAE</u> Investigator: <u>ACW & MHH</u>	Date: <u>7-20-07</u> County: <u>Humboldt</u> State: <u>CA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: <u>Scrub-shrub</u> Transect ID: _____ Plot ID: <u>3 - West side of main trail</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carex obnupta</u>	<u>H</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Rubus ursinus</u>	<u>↓</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>Banunculus repens</u>	<u>↓</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Salix lasioides</u>	<u>S</u>	<u>FACW</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

"Percent of Dominant Species that are OBL, FACW or FAC" (excluding FAC-). 100%

Remarks:

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input checked="" type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input checked="" type="checkbox"/> Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>—</u> (in.)</p> <p>Depth to Free Water in Pit: <u>—</u> (in.)</p> <p>Depth to Saturated Soil: <u>to surface</u> (in.)</p>	

Remarks:

this pit would be inundated to surface during wet season

695

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup) _____	Drainage Class _____ Field Observations _____ Confirm Mapped Type? Yes No
---	---

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-11"	O				organic
1-3"	A	10YR 4/1			sandy loam
3-16"	B	10YR 4/2	10YR 4/6 & 10YR 4/1		sand

Hydric Soil Indicators:

<input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
---	---

Remarks: lots of depletions & concentrations mottles (10YR 4/6)
10YR 4/1

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	(Circle)	
Wetland Hydrology Present?	Yes	No		
Hydric Soils Present?	Yes	No		
				Is this Sampling Point Within a Wetland? Yes (Circle) No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>ERWT Phase II</u> Applicant/Owner: <u>City of Eureka</u> Investigator: <u>ACW & MVH</u>	Date: <u>7-20-07</u> County: <u>Humboldt</u> State: <u>CA.</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: <u>scrub-shrub</u> Transect ID: _____ Plot ID: <u>4</u>

sample point located on east side of main trail - Southern section

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Salix hookeriana</u>	<u>S</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>S. lasiolepis</u>	<u>S</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>Anthoxanthum odor</u>	<u>H</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Rubus ursinus</u>	<u>I</u>	<u>FACW</u>	12. _____	_____	_____
5. <u>Plantago lanceolata</u>	<u>I</u>	<u>FAC-</u>	13. _____	_____	_____
6. <u>Cynodon dactylon</u>	_____	<u>UPL</u>	14. _____	_____	_____
7. <u>Brija maxima</u>	_____	<u>UPL</u>	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

"Percent of Dominant Species that are OBL, FACW or FAC" 3/7 = 43%
 (excluding FAC-).

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: no hydrology

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup) _____	Drainage Class _____ Field Observations _____ Confirm Mapped Type? Yes No
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Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-1"	O				organic
1-10"	A	10YR 4/2	✓	—	sand

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks
 no organic streaking

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Circle)	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Circle)	
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (Circle)	only low chroma
	Is this Sampling Point Within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Circle)

Remarks
 no wetland indicators except for the presence of Salix - but they are deep rooted

Approved by HQUSACE 3/92

Qualifies as ESHA

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>ERWI Phase II</u> Applicant/Owner: <u>CSI</u> Investigator: <u>Milt & ACW</u>	Date: <u>8-2-07</u> County: <u>Humboldt</u> State: <u>CA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the area a potential Problem Area? <input checked="" type="radio"/> Yes <input type="radio"/> No (If needed, explain on reverse.) <u>north side of pond road</u>	Community ID: <u>herbaceous</u> Transect ID: _____ Plot ID: <u>5</u> <u>LOOK AT OTHER sheets</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Potentilla anserina</u>	<u>H</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Juncus anatus</u>	_____	<u>FAC</u>	10. _____	_____	_____
3. <u>Juncus effusus</u>	_____	<u>OBL</u>	11. _____	_____	_____
4. <u>Arrostis exarata</u>	<u>↓</u>	<u>FACW</u>	12. _____	_____	_____
5. <u>Rumex crispus</u>	_____	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

"Percent of Dominant Species that are OBL, FACW or FAC" 5/5 = 100%
 (excluding FAC-).

Remarks:

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands
<p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p>Secondary Indicators (2 or more required):</p> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <u>PHAS</u> <input type="checkbox"/> Other (Explain in Remarks)

Remarks: Soil would inundated or saturated to surfaces throughout

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup) _____	Drainage Class _____ Field Observations _____ Confirm Mapped Type? Yes No
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Profile Descriptions:		Matrix Color	Mottle Colors	Mottle Abundance/	Texture, Concretions,
Depth	Horizon	(Munsell Moist)	(Munsell Moist)	Size/Contrast	Structure, etc.
0-16	A	10YR 3/4	7.5YR 4/6 (concentrations)	Abundant prominent	Sandy loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks
 * soil non-native (charcoal, bark, rocks)
 looks like road fill - a lot of out of place
 - concentrations more abundant than depletions

Although soil is not low chroma, evidence of pedomorphologic features in the non-native soil indicates hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes	No	(Circle)	
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes	No		
Hydric Soils Present?	<input checked="" type="radio"/> Yes	No		
			Is this Sampling Point Within a Wetland?	<input checked="" type="radio"/> Yes (Circle) No

Remarks
 pit located on north side of Pond Road
 Due to disturbed soils, this sample point

is atypical.

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: <u>ERWT Phas II</u>	Date: <u>10/4/07</u>
Applicant/Owner: <u>City of Eureka</u>	County: _____
Investigator: <u>A. Weber PK Litzky</u>	State: _____
Do Normal Circumstances exist on the site? Is the site significantly disturbed (Atypical Situation)? Is the area a potential Problem Area? (If needed, explain on reverse.)	<input checked="" type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Yes <input type="radio"/> No
	Community ID: <u>scrub-shrub</u> Transect ID: _____ Plot ID: <u>west side to main trail</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Rubus ursinus</u>	<u>H</u>	<u>FACW*</u>	9. _____	_____	_____
2. <u>Carex obnupta</u>	<u>H</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Banarculus ripens</u>	<u>H</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Holcus lanatus</u>	<u>H</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Mirica californica</u>	<u>S</u>	<u>FAC+</u>	13. _____	_____	_____
6. <u>Salix lasiolepis</u>	<u>T</u>	<u>FACW</u>	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: <u>to surface</u> (in.)	Remarks: <u>Pit would likely be inundated throughout wet season</u>

SOILS

Map Unit Name (Series and Phase): _____ Drainage Class: _____
 Taxonomy (Subgroup): _____ Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1 1/2"	O	—	—	—	organic
1 1/2-7"	A	10YR 2/2	—	—	loam
7-16"	B	10YR 4/3	*	—	sand

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: * mottles present - significant but indistinct and minute so couldn't get colors

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Remarks:		

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Elk River Wildlife Trail Phase II</u> Applicant/Owner: <u>Not Available</u> Investigator: <u>ACW</u>	Date: <u>10-4-07</u> County: <u>Humboldt</u> State: <u>PA</u>						
Do Normal Circumstances exist on the site? Is the site significantly disturbed (Atypical Situation)? Is the area a potential Problem Area? (If needed, explain on reverse.)	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><input checked="" type="radio"/> Yes</td> <td style="text-align: center;"><input type="radio"/> No</td> </tr> <tr> <td style="text-align: center;"><input type="radio"/> Yes</td> <td style="text-align: center;"><input checked="" type="radio"/> No</td> </tr> <tr> <td style="text-align: center;"><input type="radio"/> Yes</td> <td style="text-align: center;"><input checked="" type="radio"/> No</td> </tr> </table>	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Yes	<input checked="" type="radio"/> No
<input checked="" type="radio"/> Yes	<input type="radio"/> No						
<input type="radio"/> Yes	<input checked="" type="radio"/> No						
<input type="radio"/> Yes	<input checked="" type="radio"/> No						
Community ID: <u>herbaceous</u> Transect ID: _____ Plot ID: <u>7</u>							

footpath

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carex pensa</u>		<u>FACW</u>	9. _____		
2. <u>Anthoxanthum odoratum</u>		<u>FACW</u>	10. _____		
3. <u>Polypogon lanatus</u>		<u>FAC</u>	11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 1/3 = 33%

Remarks: _____

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p>___ Stream, Lake, or Tide Gauge</p> <p>___ Aerial Photographs</p> <p>___ Other</p> <p>___ No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p>___ Inundated</p> <p>___ Saturated in Upper 12 Inches</p> <p>___ Water Marks</p> <p>___ Drift Lines</p> <p>___ Sediment Deposits</p> <p>___ Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p>___ Oxidized Root Channels in Upper 12 Inches</p> <p>___ Water-Stained Leaves</p> <p>___ Local Soil Survey Data</p> <p>___ FAC-Neutral Test</p> <p>___ Other (Explain in Remarks)</p>
Remarks: <u>no hydrology</u>	

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>EDWT Phase II</u> Applicant/Owner: <u>C. S. Fureka</u> Investigator: <u>ACW</u>	Date: <u>10-4-07</u> County: <u>Humboldt</u> State: <u>CA</u>						
Do Normal Circumstances exist on the site? Is the site significantly disturbed (Atypical Situation)? Is the area a potential Problem Area? (If needed, explain on reverse.)	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><input checked="" type="radio"/> Yes</td> <td style="text-align: center;"><input type="radio"/> No</td> </tr> <tr> <td style="text-align: center;"><input type="radio"/> Yes</td> <td style="text-align: center;"><input checked="" type="radio"/> No</td> </tr> <tr> <td style="text-align: center;"><input type="radio"/> Yes</td> <td style="text-align: center;"><input checked="" type="radio"/> No</td> </tr> </table>	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Yes	<input checked="" type="radio"/> No
<input checked="" type="radio"/> Yes	<input type="radio"/> No						
<input type="radio"/> Yes	<input checked="" type="radio"/> No						
<input type="radio"/> Yes	<input checked="" type="radio"/> No						
Community ID: <u>herbaceous</u> Transect ID: _____ Plot ID: <u>8</u>							

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carex obnupta</u>	<u>H</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Rubus ursinus</u>	<u>↓</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>Holcus latius</u>	<u>↓</u>	<u>FAC</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 3/3 = 100%

Remarks: _____

HYDROLOGY

<p>Recorded Date (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u>to surface</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <p>Secondary Indicators (2 or more required):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<p>Remarks: <u>this sample point probably fills with free water during peak of wet season</u></p>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1	O	—	—	—	sand
1-6"	A	10YR 7/2	—	—	↓
6-16"	B	10YR 4/3	*	—	↓
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks: lots of mottles but due to the source sand and small mottle size, color can't be discerned					

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle) Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	(Circle) Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: this sample point represents a small section of emergent wetland located at the eastern end of the footpath	

Appendix C

Photographs



Photo 1.
Dunemat/northern
dune grassland habitat
adjacent to the southern
portion of the main trail
segment. Photo taken by
SHN on 6-9-07,
orientation is north.



Photo 2.
Dunemat/northern
dune grassland habitat
located within the
impact zone of the
footpath. Photo taken
by SHN on 4-13-07,
orientation is southwest.



Photo 3. Humboldt Bay owl's clover and Point Reye's bird's beak located adjacent and along the network of undesigant trails located near the footpath. Note the plants are located immediately adjacent to walking surface and in a few locations on the walking surface. Photo taken by SHN on 4-13-07, orientation is south.



Photo 4. Palustrine scrub-shrub habitat that will be impacted by trail improvements along the main trail segment. This was taken near sections 16 and 17 on 4-13-07, orientation is south.



Photo 5. Disturbed habitat in the foreground and Palustrine scrub-shrub in the background. Portions of the main trail that are this wide will not result in impacts to wetlands or ESHA. Photo taken by SHN on 6-09-07, orientation is southeast.



Photo 6. Path from the railroad to Pound Road parking lot. Upland habitat is located immediately adjacent to the trail. Note salt marsh in background, indicated by arrow. Photo taken by SHN on 6-9-07, orientation is east.

Species List
Elk River Wildlife Trail Improvement Project Phase II 2007 Surveys, Eureka, California

Scientific Name	Common Name	Presence (1=tree, 2=shrub, 3=herb)
<i>Alnus rubra</i>	red alder	1
<i>Eucalyptus globulus</i>	blue gum	1
<i>Ilex aquifolium</i>	English holly	1
<i>Malus fusca</i>	Oregon crab apple	1
<i>Pinus attenuata</i>	knobcone pine	1
<i>Pinus contorta</i> ssp. <i>contorta</i>	beach pine	1
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir	1
<i>Rhamnus purshiana</i>	casacara	1
<i>Salix hookeriana</i>	Hooker's willow	1
<i>Salix lasiolepis</i>	arroyo willow	1
<i>Salix sitchensis</i>	Sitka willow	1
<i>Sequoia sempervirens</i>	coast redwood	1
<i>Baccharis pilularis</i>	coyote brush	2
<i>Cytisus scoparius</i>	Scotch broom	2
<i>Gaultheria shallon</i>	salal	2
<i>Genista monspessulana</i>	French broom	2
<i>Lonicera involucrata</i> var. <i>ledebourii</i>	black twinberry	2
<i>Lupinus arboreus</i>	yellow bush lupine	2
<i>Myrica californica</i>	wax myrtle	2
<i>Ribes sanguineum</i> var. <i>glutinosum</i>	pink-flowering currant	2
<i>Rosa nutkana</i>	Nootka rose	2
<i>Rubus discolor</i>	Himalaya berry	2
<i>Rubus parviflorus</i>	thimbleberry	2
<i>Rubus spectabilis</i>	salmonberry	2
<i>Sambucus racemosa</i>	red elderberry	2
<i>Vaccinium ovatum</i>	evergreen huckleberry	2
<i>Abronia latifolia</i>	yellow sand-verbena	3
<i>Achillea millefolium</i>	common yarrow	3
<i>Agrostis exarata</i>	western bent-grass	3
<i>Agrostis</i> sp.	bent grass	3
<i>Agrostis stolonifera</i>	creeping bent-grass	3
<i>Agrostis viridis</i>	bentgrass	3
<i>Aira caryophylla</i>	silver European hairgrass	3
<i>Ambrosia chamissonis</i>	silver burweed	3
<i>Ammophila arenaria</i>	European beachgrass	3
<i>Anagallis arvensis</i>	scarlet pimpernel	3
<i>Anaphalis margaritacea</i>	pearly everlasting	3
<i>Anthoxanthum odoratum</i>	sweet vernal grass	3
<i>Armeria maritima</i> ssp. <i>californica</i>	sea-pink	3

Species List
Elk River Wildlife Trail Improvement Project Phase II 2007 Surveys, Eureka, California

Scientific Name	Common Name	Presence (1=tree, 2=shrub, 3=herb)
<i>Artemisia pycnocephala</i>	artemisia	3
<i>Aster chilensis</i>	common California aster	3
<i>Athyrium filix-femina</i>	lady fern	3
<i>Atriplex leucophylla</i>	beach saltbush	3
<i>Atriplex patula</i>	spear oracle	3
<i>Atriplex triangularis</i>	spearscale	3
<i>Bellis perennis</i>	English daisy	3
<i>Blechnum spicant</i>	deer fern	3
<i>Brassica nigra</i>	black mustard	3
<i>Briza maxima</i>	large quaking or rattlesnake grass	3
<i>Briza minor</i>	small quaking or rattlesnake grass	3
<i>Bromus</i> spp.	brome grasses	3
<i>Cakile maritima</i>	sea rocket	3
<i>Calystegia soldanella</i>	beach morning-glory	3
<i>Camissonia cheiranthifolia</i>	beach primrose	3
<i>Cardamine oligosperma</i>	western bittercress	3
<i>Cardionema ramosissimum</i>	sandmat	3
<i>Carex deweyana</i> ssp. <i>leptopoda</i>	short-scaled sedge	3
<i>Carex lyngbyei</i>	Lyngbye's sedge	3
<i>Carex obnupta</i>	slough sedge	3
<i>Carex pansa</i>	sand dune sedge	3
<i>Carex</i> sp.	sedge	3
<i>Castilleja ambigua</i> ssp. <i>humboltiensis</i>	Humboldt Bay owl's clover	3
<i>Chamomilla suaveolens</i>	pineapple weed	3
<i>Cichorium intybus</i>	chicory	3
<i>Cirsium arvense</i>	Canada thistle	3
<i>Cirsium vulgare</i>	bull thistle	3
<i>Claytonia sibirica</i>	Siberian candyflower	3
<i>Conium maculatum</i>	poison hemlock	3
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Point Reyes bird's-beak	3
<i>Cortaderia jubata</i>	pampas grass	3
<i>Crococsmia</i> sp.	crococsmia	3
<i>Cuscuta salina</i>	Dodder	3
<i>Cynosurus echinatus</i>	hedgehog dogtail grass	3
<i>Cyperus eragrostis</i>	nut-grass or tall flat-sedge	3
<i>Dactylis glomerata</i>	orchard grass	3
<i>Daucus carota</i>	wild carrot or Queen Anne's lace	3
<i>Deschampsia cespitosa</i> ssp. <i>cespitosa</i>	tufted hair-grass	3

Species List
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Scientific Name	Common Name	Presence (1=tree, 2=shrub, 3=herb)
<i>Digitalis purpurea</i>	foxglove	3
<i>Distichlis spicata</i>	saltgrass	3
<i>Eleocharis</i> sp.	spike-rush	3
<i>Epilobium ciliatum</i>	northern willow herb	3
<i>Equisetum arvense</i>	common horsetail	3
<i>Equisetum hyemale</i> ssp. <i>affine</i>	common scouring rush	3
<i>Erechtites minima</i>	toothed coast fireweed	3
<i>Eriogonum latifolium</i>	beach buckwheat	3
<i>Eschscholzia californica</i>	California poppy	3
<i>Festuca arundinacea</i>	tall fescue	3
<i>Festuca rubra</i>	red fescue	3
<i>Foeniculum vulgare</i>	fennel	3
<i>Fragaria vesca</i>	wood strawberry	3
<i>Fuschia</i> sp.	ornamental fuschia	3
<i>Galium</i> sp.	bedstraw	3
<i>Geranium dissectum</i>	cut-leaved geranium	3
<i>Geranium molle</i>	dovefoot geranium	3
<i>Geranium</i> sp.	geranium	3
<i>Gnaphalium</i> sp.	cudweed	3
<i>Grindelia stricta</i>	gunweed	3
<i>Hedera helix</i>	English ivy	3
<i>Heracleum lanatum</i>	cow parsnip	3
<i>Holcus lanatus</i>	common velvet grass	3
<i>Hordeum marinum</i>	Mediterranean barley	3
<i>Hypericum perforatum</i>	Klamath weed or common St. John's-wort	3
<i>Hypochaeris radicata</i>	hairy cat's-ear	3
<i>Iris douglasiana</i>	Douglas iris	3
<i>Jaumea carnosa</i>	fleshy jaumea	3
<i>Juncus balticus</i>	Baltic rush	3
<i>Juncus bolanderi</i>	Bolander's rush	3
<i>Juncus bufonius</i>	common toad rush	3
<i>Juncus effusus</i>	common rush	3
<i>Juncus ensifolius</i>	dagger-leaf rush	3
<i>Juncus leseurii</i>	salt grass	3
<i>Juncus patens</i>	spreading rush	3
<i>Lathyrus latifolius</i>	everlasting pea	3
<i>Lathyrus littoralis</i>	beach pea	3
<i>Lathyrus</i> sp.	pea	3
<i>Lemna</i> sp.	duckweed	3

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<i>Lessingia filaginifolia</i>	beach aster	3
<i>Leucanthemum vulgare</i>	ox-eye daisy	3
<i>Leymus mollis</i>	American dunegrass	3
<i>Linum bienne</i>	western blue flax	3
<i>Lolium perenne</i>	perennial ryegrass	3
<i>Lolum multiflorum</i>	Italian ryegrass	3
<i>Lonicera hispidula</i> var. <i>vacillans</i>	hairy honeysuckle	3
<i>Lotus corniculatus</i>	birdfoot trefoil	3
<i>Lotus micranthus</i>	rose-flowered lotus	3
<i>Lupinus bicolor</i>	miniature lupine	3
<i>Lysichiton americanum</i>	skunk cabbage	3
<i>Madia sativa</i>	tarweed	3
<i>Melilotus officinalis</i>	yellow sweet clover	3
<i>Mentha pulegium</i>	pennyroyal	3
<i>Montia parvifolia</i>	streambank spring beauty	3
<i>Navarretia squarrosa</i>	skunkweed	3
<i>Oenanthe sarmentosa</i>	Pacific water-parsley	3
<i>Parentucellia viscosa</i>	yellow parentucellia	3
<i>Petasites frigidis</i> var. <i>palmatus</i>	western coltsfoot	3
<i>Phalaris arundinacea</i>	reed canary grass	3
<i>Plantago lanceolata</i>	English plantain	3
<i>Plantago major</i>	common plantain	3
<i>Poa macrantha</i>	sand dune bluegrass	3
<i>Polygonum arenastrum</i>	beach knotweed	3
<i>Polypogon monspeliensis</i>	rabbitfoot grass or annual beard grass	3
<i>Polystichum munitum</i>	sword fern	3
<i>Potentilla anserina</i>	silverweed	3
<i>Prunella vulgaris</i>	self-heal	3
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	western bracken fern	3
<i>Ranunculus occidentalis</i>	western buttercup	3
<i>Ranunculus repens</i>	creeping buttercup	3
<i>Raphanus sativus</i>	wild radish	3
<i>Rorippa nasturtium-aquaticum</i>	water cress	3
<i>Rubus ursinus</i>	Pacific bramble or California blackberry	3
<i>Rumex acetosella</i>	sheep sorrel	3
<i>Rumex crispus</i>	curly dock	3
<i>Rumex salicifolius</i>	willow dock	3
<i>Salicornia virginica</i>	pickleweed	3
<i>Scirpus americanus</i>	three-square bulrush	3

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<i>Scirpus cernuus</i>	low club-rush	3
<i>Scirpus microcarpus</i>	small-flowered bulrush	3
<i>Scrophularia californica</i>	coast figwort	3
<i>Senecio vulgaris</i>	common butterweed	3
<i>Silene</i> sp.	catchfly	3
<i>Solidago spathulata</i>	dune goldenrod	3
<i>Sonchus asper</i> ssp. <i>asper</i>	prickly sow thistle	3
<i>Spartina densiflora</i>	cordgrass	3
<i>Spergularia macrotheca</i>	sandspurry	3
<i>Stachys ajugoides</i>	hedge nettle	3
<i>Stachys chamissonis</i>	Chamisso's hedge nettle	3
<i>Tanacetum camphoratum</i>	dune tansy	3
<i>Trifolium pratense</i>	red clover	3
<i>Trifolium repens</i>	white clover	3
<i>Trifolium wormskioldii</i>	springbank clover	3
<i>Triglochin maritima</i>	seaside arrow-grass	3
<i>Triphysaria eriantha</i> ssp. <i>eriantha</i>	butter-and-eggs	3
<i>Typha latifolia</i>	broadleaf cattail	3
<i>Urtica dioica</i> ssp. <i>holosericea</i>	stinging nettle	3
<i>Verbascum thapsis</i>	woolly mullein	3
<i>Veronica americana</i>	American brooklime	3
<i>Vicia americana</i> var. <i>americana</i>	American vetch	3
<i>Vicia hirsuta</i>	hairy vetch	3
<i>Vinca major</i>	greater periwinkle	3

Wetland Mitigation Area Map

