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January 19, 2007

Mr. John Kessler
California Energy Commission
1516 Ninth Street, MS-40
Sacramento, California 95814

DOCKET 06-AFC-7,
DATE JAN 19 2007
RECD. JAN 19 2007

**RE: TRANSMITTAL OF ELECTRONIC COPY OF DRAFT WETLAND
DELINEATION REPORT FOR THE HUMBOLDT BAY REPOWERING PROJECT,
HUMBOLDT COUNTY, CALIFORNIA**

Dear Mr. Kessler:

On behalf Pacific Gas and Electric (PG&E) enclosed is an electronic copy of the Draft Wetland Delineation Report for the proposed Humboldt Bay Repowering Project (HBRP) in Humboldt County, California. The hard copy report was submitted to your office on December 1, 2006. An additional hard copy was sent directly to Tom Luster in the California Coastal Commission San Francisco Office and John Dixon at the California Coastal Commission Eureka District Office for their review and possible subsequent verification.

Please call me if you have any questions or concerns at (916) 286-0385.

Sincerely,

Debra J. Crowe
Project Biologist

Enclosure

cc. G. Lamberg/PG&E
S. Strachan/Project Coordinator
D.Davy/CH2M HILL

Draft Report

**Delineation of Wetlands and
Waters of the U.S.
Humboldt Bay Repowering Project
Humboldt County, California**

Prepared for

Pacific Gas and Electric Company
245 Market Street
San Francisco, California



November 2006

Prepared by
CH2MHILL
2485 Natomas Park Drive, Suite 600
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Draft Report

**Delineation of Wetlands and
Waters of the U.S.
Humboldt Bay Repowering Project
Humboldt County, California**

Submitted to

Department of the Army

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U.S. Army Corps of Engineers
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and

California Coastal Commission

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November 2006

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1.0 Introduction

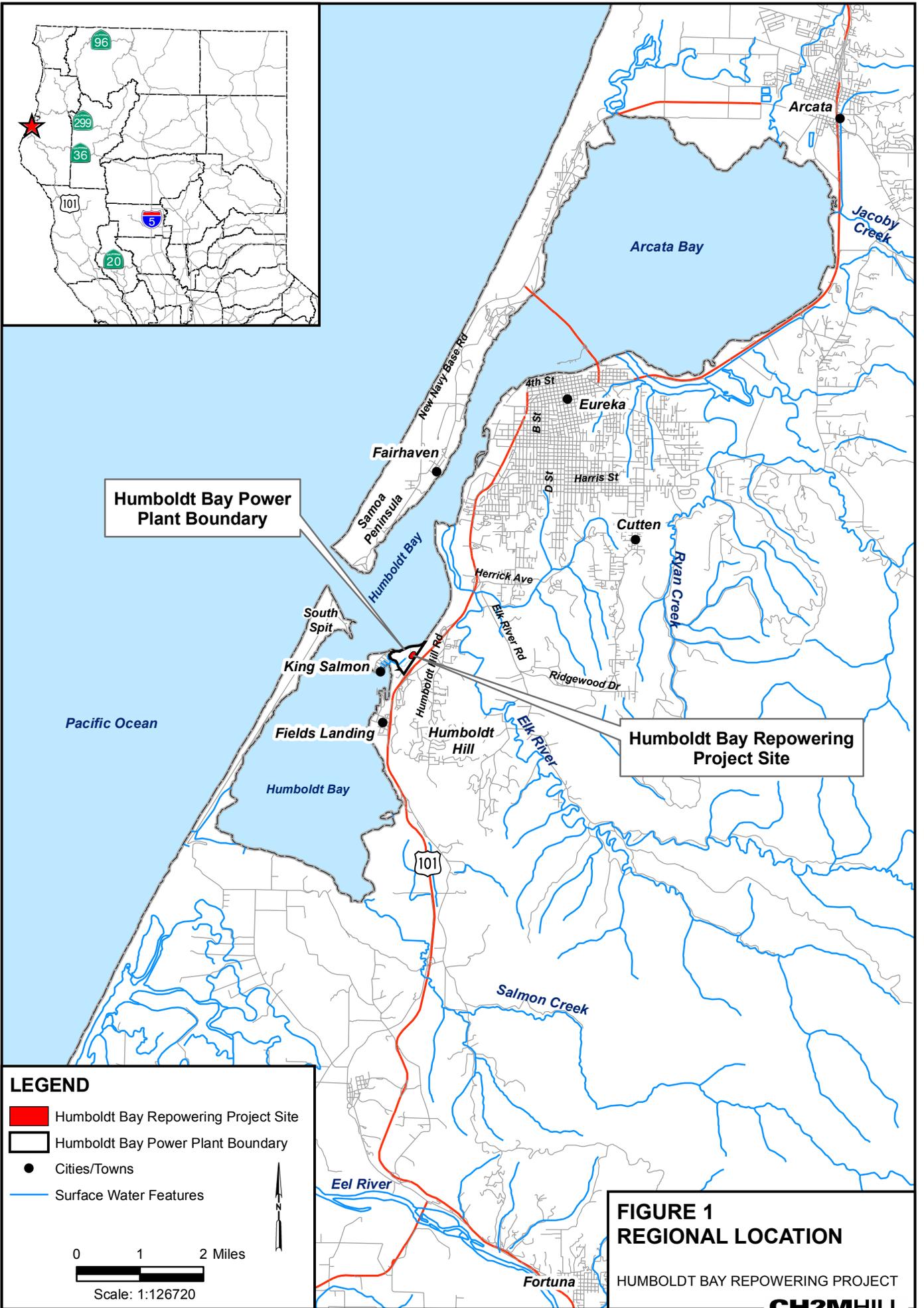
A delineation of waters of the United States (U.S.) (including wetlands) was conducted by CH2M HILL for Pacific Gas and Electric (PG&E) on a land parcel adjacent to Humboldt Bay near Eureka, California (Figure 1). PG&E owns 143 acres, which incorporates five existing power generation units including 2 natural gas-fired steam generating units; a currently inoperable nuclear plant (Unit 3) and 2 small turbines known as the Mobile Emergency Power Plants (MEPPs). These power generation units are collectively known as the Humboldt Bay Power Plant (HBPP) and have a maximum generating capacity of 135 MW.

PG&E is proposing to construct the Humboldt Bay Repowering Project (HBRP), a new natural gas-fired power plant south of the existing plants within the PG&E property boundary with a maximum generating capacity of 163 MW. An Application for Certification (AFC) was submitted to the California Energy Commission (CEC) that addresses the HBRP project impacts to biological resources. The CEC's power plant site certification process is functionally equivalent to an Environmental Impact Report (EIR). The AFC references a 70-acre portion of the property; however, 15 acres of that land holds the existing nuclear power facility (Unit 3) and is restricted from access and surveys. This wetland delineation report covers the 55-acre land area and is referred to as the survey area in this report.

The 143-acre property is in unincorporated Humboldt County, is entirely within the Coastal Zone, and is zoned Coastal-Dependent Industrial. The California Coastal Commission (CCC) retains jurisdiction over wetland habitats in the Coastal Zone, which include wetlands under the jurisdiction of the USACE, as well as areas that have one or more wetland parameters typically not regulated by USACE (CCC, 1994). CCC wetlands with boundaries extending beyond the USACE 3-parameter method were defined only on the presence of positive criteria for hydrophytic vegetation, as all other wetlands are included under the USACE definition. This report addresses potential wetland areas under both USACE and/or CCC jurisdiction.

1.1 Purpose of the Jurisdictional Delineation

The purpose of this jurisdictional wetland determination is to identify boundaries and acreages of waters of the U.S. (including wetlands) within the 55-acre survey area for verification by the USACE and CCC. The delineation presents areas that are potentially under the jurisdiction of the USACE and CCC and the verification(s) would determine the final jurisdictional areas. Once the total HBRP impacts to jurisdictional wetlands are determined, PG&E will also need to gain approval to use areas within PG&E's property adjacent to the HBRP site for compensatory habitat mitigation purposes required to compensate the unavoidable impacts to wetlands from construction of the HBRP.



Humboldt Bay Power Plant Boundary

Humboldt Bay Repowering Project Site

LEGEND

- Humboldt Bay Repowering Project Site
- Humboldt Bay Power Plant Boundary
- Cities/Towns
- Surface Water Features

0 1 2 Miles

Scale: 1:126720

**FIGURE 1
REGIONAL LOCATION**

HUMBOLDT BAY REPOWERING PROJECT

CH2MHILL

2.0 Project Description

The HBRP project site will be a natural gas-fired power plant that will replace the two existing natural gas-fired power plants (Units 1 and 2) and also the two MEPPs on the PG&E property. Construction of HBRP will result in the permanent loss of approximately 5.4-acres of grassland, landscaping, and seasonal wetland habitat. Additional land areas encompassing 7.2 acres are proposed for temporary construction laydown and worker parking (Figure 2). Figure 2 also show potential wetland mitigation restoration areas on the PG&E property that would compensate for temporary and permanent loss of wetland habitats on the site. All linear facilities (gas pipeline, water pipeline, electric transmission line) related to HBRP are located within the PG&E property. A total of 12.6 acres of land will be affected by construction and operation of HBRP (Figure 2).

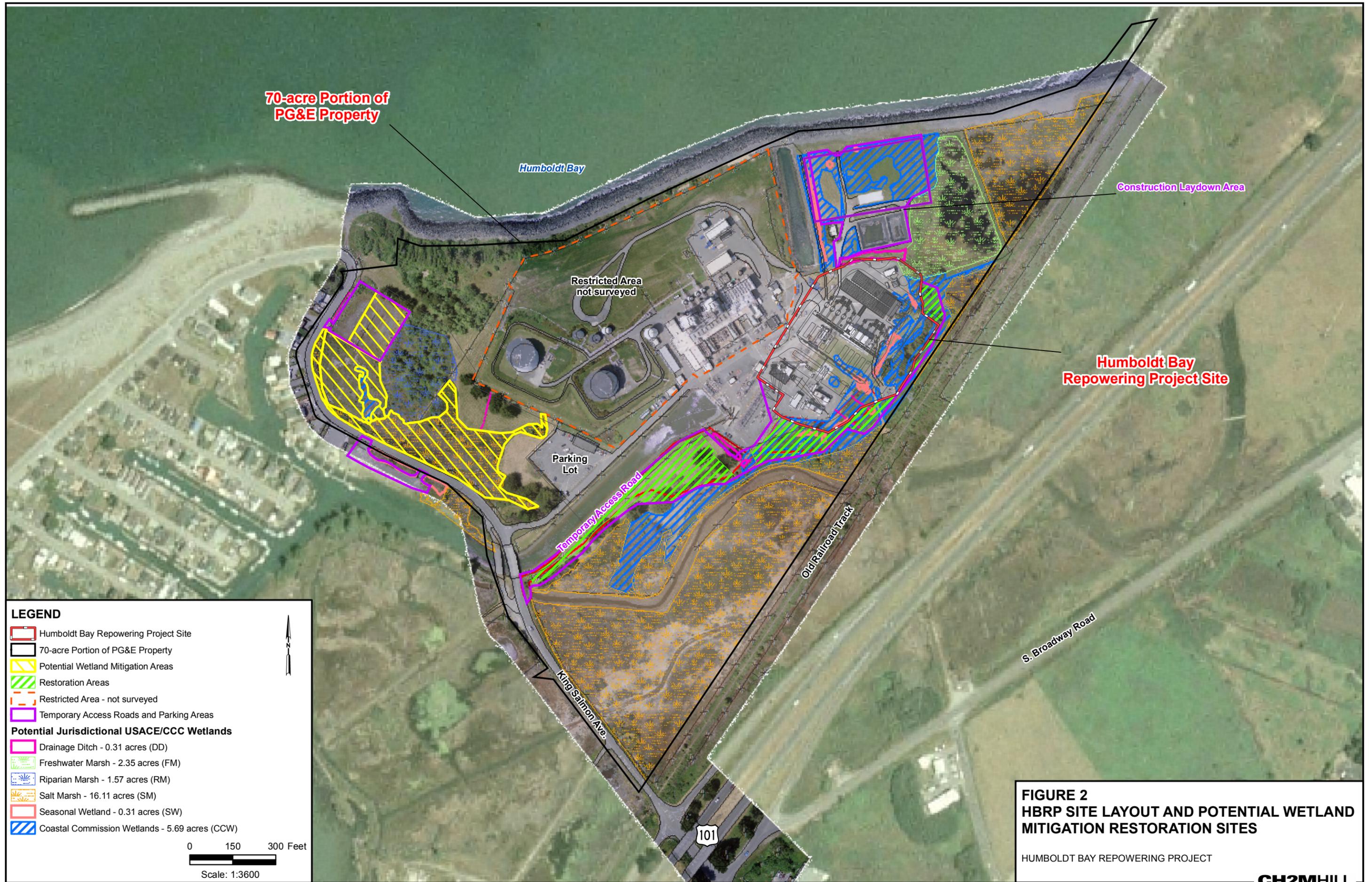


FIGURE 2
HBRP SITE LAYOUT AND POTENTIAL WETLAND
MITIGATION RESTORATION SITES
 HUMBOLDT BAY REPOWERING PROJECT
CH2MHILL

3.0 Environmental Setting

The PG&E property that includes the proposed HBRP site is situated along the eastern shore of Humboldt Bay on Buhne Point. Buhne Point is directly across from the opening between the South Spit and Samoa Peninsula that separates the Pacific Ocean from Humboldt Bay. The property is bordered on the north by the Humboldt Bay shoreline, and on the south and east by the decommissioned Northwestern Railroad tracks, Highway 101, and agricultural grazing lands. The community of King Salmon, established in the late 1940s, is immediately adjacent to the western boundary of the PG&E property. Access to the property is from King Salmon Avenue. The site is located in the southwestern portion of Section 8, Township 4 north, and Range 1 West of the USGS 7.5-minute Fields Landing topographic quadrangle (Figure 1).

The climate in the Eureka area is maritime, with a mean annual temperature of 53 °F (with extremes ranging from 21 to 87 °F), mean annual yearly precipitation of 38 inches, and partial or full cloud cover two-thirds of the year on average (Western Regional Climate Center, 2006). The predominant wind directions are from the north, and the average wind speed is 7 miles per hour (Western Regional Climate Center, 2006).

3.1 General Vegetation and Wildlife Habitat

The entire 70-acre site is highly disturbed and altered by the existing power plant facilities or disturbance from its construction (including fill to level the site) in the 1950s. Nearly half of the proposed HBRP construction area is under asphalt or concrete and existing facilities. The remainder of the project area is vegetated with ruderal plant species or landscaping, and is managed with irrigation and mowing for fire protection.

Sweet vernal grass (*Anthoxanthum odoratum*) provides much of the dominant cover throughout the undeveloped area. Italian ryegrass (*Lolium perenne*), bird's foot trefoil (*Lotus corniculatus*), and bristly ox tongue (*Picris echioides*), along with low growing annuals such as bur clover (*Medicago polymorpha*), annual bluegrass (*Poa annua*), cut-leaf geranium (*Geranium dissectum*) are also present. Lawn grasses dotted with English daisy (*Bellis perennis*) are found in landscaped areas adjacent to buildings inside the fenced grounds.

East of the fenced grounds between the power plant entrance road along the intake canal and Buhne Slough are ornamental plantings of gum trees (*Eucalyptus* sp.), Monterey cypress and Monterey pine (*Pinus radiata*), and irrigated hedgerows of *Rhododendron* underlain with sweet vernal grass.

Below the main power plant, the old parking lot along King Salmon Avenue at the west base of Buhne Point is unmanaged and overgrown with weedy annuals such as rat-tail fescue (*Vulpia myuros*), big quaking grass (*Briza maxima*), silver hair grass (*Aira caryophyllea*), and perennial orchard grass (*Dactylis glomerata*). Pampas grass (*Cortaderia selloana*), false-garlic (*Nothoscordum inodorum*) ornamental iris, fennel (*Foeniculum vulgare*), and Himalayan blackberry (*Rubus discolor*) are among the escaped or naturalized species found in this area.

A row of Monterey cypress (*Cupressus macrocarpa*) appear in historical photos of the area as plantings along the abandoned Buhne Drive.

3.1.1 Wildlife Usage in Wetland and Adjacent Upland Habitats

Numerous avian, aquatic, and terrestrial wildlife species were observed utilizing the different wetland habitats and upland habitats during the wetland delineation for the HBRP. There are a number of habitats surrounding the existing Humboldt Bay Power Plant (HBPP) which consist of; Dredged Channel, Salt Marsh, Freshwater Marsh, Grassland, Drainage Ditches, and Riparian/Landscaped. The following summarizes what species were observed utilizing the differing habitats.

Dredged Channel

The dredged channel which is currently used for the existing power plant cooling system is rip-rapped along the edges and routinely dredged. During the wetland delineation double-crested cormorants (*Phalacrocorax auritus*), black-crowned night herons (*Nycticorax nycticorax*), mallards (*Anas platyrhynchos*) and belted kingfishers (*Ceryle alcyon*) were observed foraging, swimming, and loafing within this feature.

Salt Marsh/Fresh Water Marsh

The salt marsh habitat which is located northeast, east, southeast, and south of the proposed project site held quite a diverse amount of wildlife species consisting of: great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), cattle egret (*Bubulcus ibis*), black-crowned night heron, Canada goose (*Branta Canadensis*), mallard, gadwall (*Anas strepera*), American widgeon (*Anas americana*), northern harrier (*Circus cyaneus*), red-tail hawk (*Bufo jamaicensis*), killdeer (*Charadrius vociferus*), black oystercatcher (*Haematopus bachmani*), willet (*Catoptrophorus semipalmatus*), whimbrel (*Numenius phaeopus*), western sandpiper (*Calidris mauri*), common snipe (*Gallinago gallinago*), black phoebe (*Sayornis nigricans*), red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), Say's phoebe (*Sayornis saya*), tree swallow (*Tachycineta bicolor*), barn swallow (*Hirundo rustica*), bushtit (*Psaltiriparus minimus*), marsh wren (*Cistothorus palustris*), raccoon (*Procyon lotor*), mule deer (*Odocoileus hemionus*), Virginia opossum (*Didelphis virginiana*), pacific tree frog (*Hyla regilla*), and northern alligator lizard (*Gerrhonotus caeruleus*). It can be assumed that several of the species mentioned above utilize these marsh habitats for nesting and raising of young, specifically, adult mallards with young were observed in the fresh and salt marsh habitats. In addition, numerous marsh wrens were observed displaying territorial aggression which is indicative of nesting behavior.

Drainage Ditches

There are several drainage ditches within the project area which varied in from densely vegetated to grass lined features. Within the densely vegetated drainage ditches northern red-legged frogs (*Rana aurora aurora*) and Pacific tree frogs were observed, with Pacific tree frogs observed throughout the differing habitats. It can also be assumed that these areas would be utilized by avian species for foraging, hiding, and nesting.

Riparian/Landscaped/Grassland

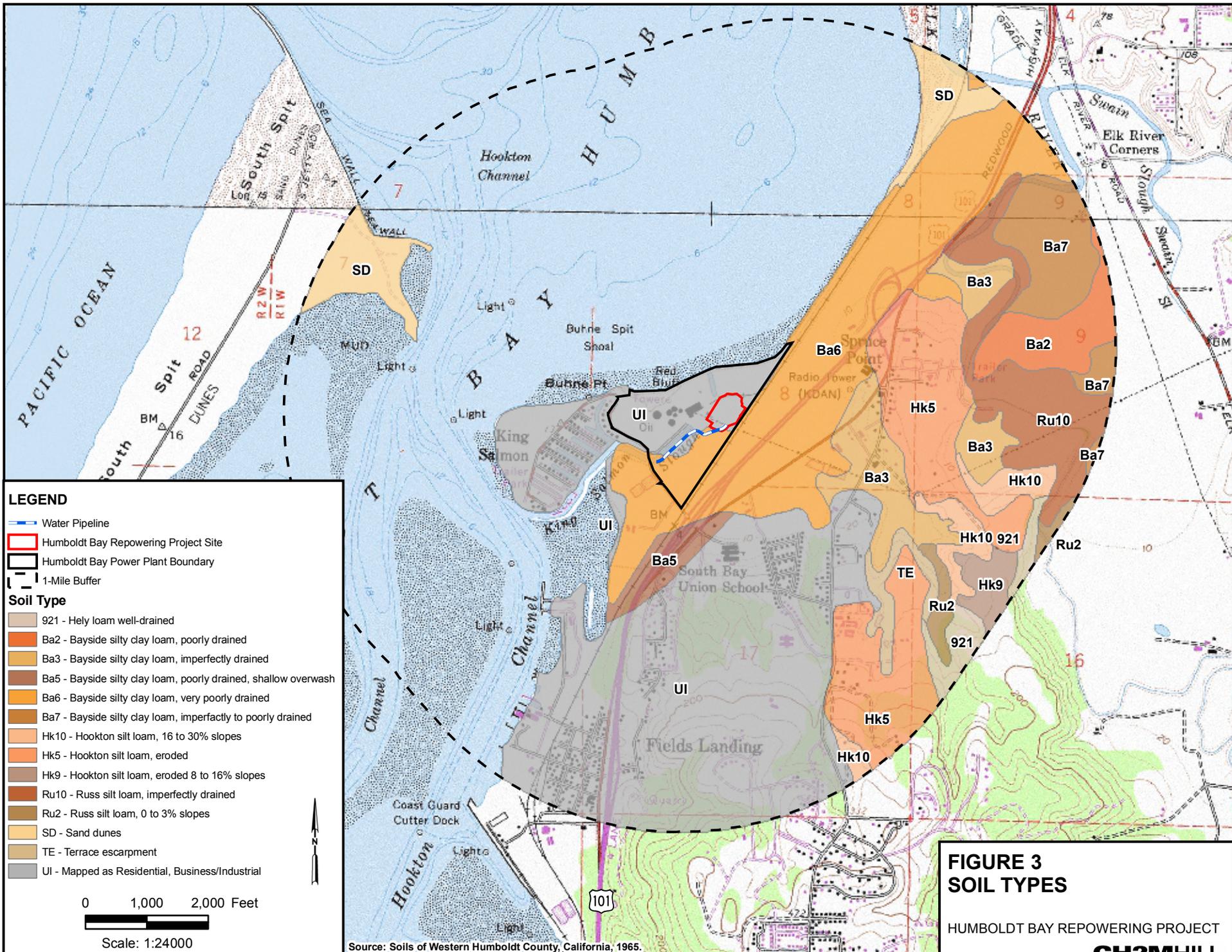
There is a dense riparian area located southwest of the proposed project site and numerous landscaped features throughout the proposed project area which held common riparian species such as; Anna's hummingbird (*Calypte anna*), downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), tree swallow, barn swallow, scrub jay (*Aphelocoma coerulescens*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), bushtit (*Psaltriparus minimus*), American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), European starling (*Sturnus vulgaris*), savannah sparrow (*Passerculus sandwichensis*), fox sparrow (*Passerella iliaca*), song sparrow (*Melospiza melodia*), white-crowned sparrow (*Zonotrichia leucophrys*), brown-headed cowbird (*Molothrus ater*), Northern oriole (*Icterus galbula*), house finch (*Carpodacus mexicanus*), American goldfinch (*Carduelis tristis*), and house sparrow (*Passer domesticus*). Like the marsh areas it can be assumed that the dense riparian and landscaped areas can host many opportunities for nesting bird species as well as forage and denning habitats for mule deer, raccoons, voles, and opossums.

3.2 Soils

There is no published modern soil survey for Humboldt County or the PG&E property. Soil surveys completed in 1965 address agricultural lands adjacent to the property and designate the entire PG&E lands as "residential, business, and industrial areas" (McLaughlin and Harradine, 1965). Figure 3 shows this mapping and the adjacent soil polygons that are used for reference in interpreting the soils data. Large-scale geologic mapping of the area indicates the entire site to be Quaternary non-marine terrace deposits (Mines and Geology, 1962).

Based on field observations and interpretation of the historical imagery, it is clear that substantial reworking of the land surface has left none of the natural soils intact. Mixed fill material including asphalt, chunks of remnant marsh soils, concrete bits, brick, clods of residual soft yellow sandstones, and potentially imported landscape topsoil were commonly observed in all of the test pits. Due to these factors, soil colors may not be reliable indicators of hydric soils due to their mixed genesis. Positive indicators for hydric soils are based on 1) Sulfidic material; 2) evidence for aquic or peraquic moisture regime, or 3) reducing soil conditions. An aquic moisture regime is one that has the soils saturated either by ground water or by water of the capillary fringe that is reduced (free of oxygen) through the action of respiration by roots and/or soil microbes (USDA, 1988). Field observations of soil saturation and evidence for surface ponding were relied upon for most of our interpretation of hydric soils.

For reference, the locally occurring marsh soil mapped as Bayside series is classified as an Aeric Fluvaquent. It is a very deep, poorly drained soil formed in alluvium derived from mixed sources (National Cooperative Soil Survey, Official Soil Description).



3.3 Site Hydrology

The 55-acre survey area is found in two sections. The larger of the proposed work areas within the existing HBPP fenced facility grounds is found along the north and east facing slopes of Buhne Point, a natural landscape promontory. Surface drainage patterns within this area are both internally controlled by a storm drain system constructed as part of the existing facility and surface runoff over created topography. Drainage ditches constructed in the made-land carry storm water discharges and surface runoff from the HBPP site. A few small ponded depressions are internally drained. The remaining work area is on historic fill material that contains primarily annual grassland (including facultative wetland vegetation species) with landscape berms and constructed drainages.

The western portion of the site drains north into an excavated detention basin on PG&E property but out of the HBRP project area. The eastern portion of the site drains easterly into Buhne Slough. Buhne Slough originally drained into Humboldt Bay but was diverted into diked marshes south and east of the property after construction of the PG&E intake canal.

The two parking lot portions of the project area are drained by surface runoff into roadside ditches along King Salmon Avenue and an excavated drain hidden within dense riparian vegetation off-site to the east. There are no natural organized drainages within the temporary parking lot areas.

The surface elevations within the HBRP project area are at least 6 feet above mean sea level and outside of the influence of the subsurface tidal influence. Observations were made of standing water elevations in Buhne Slough and the intake and discharge canals during high tide to assess its potential hydrologic continuity to the mapped wetlands. There are no seeps or springs associated with these landforms. Local rainfall and runoff appear to be the source of wetland hydrology on the site.

Tidally effected wetlands adjacent to the work areas, but within PG&E's parcel, are present. Surface runoff during the rainy season from the watershed of Buhne Slough may also have a substantial influence on ground water hydrology in the vicinity of the project.

3.4 Field Conditions

The detailed field surveys were conducted at the end of the typical October-April rainy season. Approximately 4.5 inches of rain fell in the Eureka area during the first part of April. Almost half of that (2 inches) of precipitation was recorded in the two weeks prior to field observations (Daily Precipitation Website). Cool and overcast weather preceded our field visit to the site.

4.0 Wetland Delineation Methods

Wetland delineation surveys of the PG&E property and HBRP project area were conducted in the spring of 2006. Detailed observations and data collection for wetlands potentially regulated by the U.S. Army Corps of Engineers (USACE) and the California Coastal Commission (CCC) were made April 27-28, and June 22, 2006 by Richard Crowe and Virginia Dains. Mapping of one-parameter wetlands of concern to the California Coastal Commission was completed on July 20 and 21, 2006. The delineation was completed in accordance with USACE 1987 manual (USACE, 1987). The data collected using USACE methods include wetland vegetation, soils, and hydrology that the CCC also requires for wetlands assessments described in the CCC's guidance document titled "Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone." A site visit with the CCC biologist, John Dixon, was conducted July 10, 2006, to review the site for potential jurisdictional CCC wetlands.

A list of plant species observed on the property and their status as wetland indicator species gained from the National List of Plant Species that Occur in Wetlands: California (Region 0) (Reed, 1988) is provided in Table 1. Wetland vegetation species are classified into a spectrum of categories that indicate the probability of the species being found in wetlands, ranging from seldom (FACU) to almost always (OBL). These categories from Reed (1988) are listed in Table 1.

Data sheets that document the criteria for inclusion as "wetland" or "upland" were recorded at representative locations and are provided in Appendix A. A list of plant species observed on the property and their status as wetland indicator species gained from the National List of Plant Species that Occur in Wetlands: California (Region 0) (Reed 1988) is provided in Appendix B.

Field observations were supplemented with information on soils from the Soils of Western Humboldt County California (McLaughlin and Harradine, 1965), and previously completed delineations in the vicinity of the project (LSA, 2002). False color aerial photography at a scale of 200 feet to 1 inch dated June 2004 (Aerial Photo USA) was used for field navigation and habitat assessment during the initial siting and mapping phases. A true color aerial photograph dated April 2006 was used in follow-up surveys of adjacent habitats and for base maps depicting wetland findings. Historical photography (undated) and topographic mapping (1952) of the area surrounding Buhne Point prior to construction of the existing PG&E power plants were reviewed to estimate the extent of natural salt marsh habitats.

During the course of the mapping, both criteria for inclusion of wetlands under the USACE three-parameter method and the CCC one-parameter method for identifying wetlands were used.

TABLE 1
Wetland Vegetation Categories

Code	Wetland Type	Comment
OBL	Obligate Wetland	Occurs almost always (estimated probability 99%) under natural conditions in wetlands.
FACW	Facultative Wetland	Usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
FACU	Facultative Upland	Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).
UPL	Obligate Upland	Occurs in wetlands in another region, but occurs almost always (estimated probability 99%) under natural conditions in non-wetlands in the regions specified. If a species does not occur in wetlands in any region, it is not on the National List.

Plants may also be given one of the following modifiers to this classification:

- “*” = a tentative assignment into the category
- NA = no agreement
- NI = no indicator status based on limited information
- “?” = a tentative assignment based on literature and not direct observation
- “+” = assigned to the category but trending towards a wetter category
- “-” = assigned to the category but trending towards a drier category

Wetland polygons and delineation data points were recorded with a geographical positioning system (GPS) (Trimble GeoXT). The corrected GPS data were fitted to a 2006 true-color aerial photograph. The wetland delineation map depicting the location and extent of mapped wetlands, acreages of wetland types, and delineation data points is presented on Figure 4 at a scale of one inch equals 300 feet (Note: enlarged maps of Figure 4, at a scale of one inch equals 100 feet, are also provided for the USACE, CCC, and CEC for their reviews, other copies of this report will only contain the 11 by 17 inch map provided on Figure 4). In addition, Table 2 summarizes the potential jurisdictional wetland habitats within the 55-acre survey area and Table 3 identifies each potential wetland polygon, its respective area (in acres), and a brief description of each.



55-acre Study Area & Project Boundary

Humboldt Bay Repowering Project Site

LEGEND

- Humboldt Bay Repowering Project Site
- 55-acre Study Area and Project Boundary
- Restricted Area - not surveyed
- Temporary Access Roads and Parking Areas and Laydown

Potential Jurisdictional USACE/CCC Wetlands

- Drainage Ditch - 0.31 acres (DD)
- Freshwater Marsh - 2.35 acres (FM)
- Riparian Marsh - 1.57 acres (RM)
- Salt Marsh - 16.11 acres (SM)
- Seasonal Wetland - 0.31 acres (SW)
- Coastal Commission Wetlands - 5.69 acres (CCW)
- ▲ Army Corps Engineer Data Points
- ⊕ California Coastal Commission Data Points
- Transects

0 150 300 Feet
Scale: 1:3600

**FIGURE 4
WETLAND DELINEATION**
HUMBOLDT BAY REPOWERING PROJECT

5.0 Results

5.1 Potential Jurisdictional Wetlands and Waters of the United States

Field investigations identified six habitat types that meet the criteria for federal jurisdiction according to Section 404 of the Clean Water Act. These include open waters of the Bay and tide channels, mudflats, salt marsh, freshwater marsh, and man-made seasonal wetlands and drainages that flow from the existing HBPP site and along roadsides. In addition, areas identified as wetlands under the jurisdiction of the CCC were delineated on the PG&E property.

Of these waters and wetland types, impacts from construction of HBRP would only occur in man-made seasonal wetlands and drainages, a small portion of freshwater marsh, and CCC wetland habitat. Table 2 presents a summary of the total acreage for each of these habitat types within the 55-acre survey area. Additional waters of the U.S. and wetlands are found on PG&E's 143-acre property (not mapped in this report) in areas adjacent to the proposed HBRP site that include creeks, salt marsh, emergent freshwater marsh, open waters of the Bay, mudflats (with some eelgrass habitat), and riparian habitats.

TABLE 2

Summary Of Potential Jurisdictional Waters of the U.S. and Wetlands Within the 55-acre Portion of PG&E Property

Wetland Type	Number of Features	Total Size (Acres)
CCC Wetland Vegetation Areas	11	5.69
Seasonal Wetland	14	0.31
Drainage Ditch	8	0.31
Emergent Marsh (Fresh, Salt, Riparian)	8	20.03
Open Water Channel	2	4.27
Total	43	30.61

Descriptions of the wetland habitats surveyed and the data used to determine the jurisdictional status are discussed in the following subsections. Figure 4 depicts the location of these potential waters of the U. S., delineation data points, and quadrat sampling transects. Table 3 provides a key to individual wetlands and their extent.

The boundaries of waters adjacent to the HBRP site (within the 55-acre area) were mapped for future reference and protection from off-site and indirect impacts during construction. These areas are being proposed for off-site (off the HBRP portion of the site) wetlands creation or enhancement projects to mitigate direct on-site losses from HBRP.

TABLE 3				
Key to Wetland Delineation Map ID, Associated Data Points or Transects, Potential Jurisdictions, and Descriptions of Wetland Areas.				
Map ID	Data Points	Area	Potential Jurisdiction	Description
Seasonal Wetlands				
SW1		0.104	USACE/CCC	Roadside ponded area south of King Salmon Road in Temporary Remote Parking, hydrology is local runoff from parking and road with colonial bentgrass (<i>Agrostis capillaris</i>), and tufted hairgrass (<i>Deschampsia cespitosa</i>)
SW2		0.059	USACE/CCC	Continuation of SW1, not culverted between the two.
SW3	3,3A	0.002	USACE/CCC	Seasonal wetland in a shallow depression dominated by water foxtail (<i>Alopecurus geniculatus</i>) with algal matting. Surrounding vegetation consists of white clover (<i>Trifolium repens</i>), common California aster (<i>Aster chilensis</i>) and sweet vernal grass (<i>Anthoxanthum odoratum</i>). Area was mowed between April 27 and June 22.
SW4	4,4A	0.006	USACE/CCC	Seasonal wetland in a shallow depression dominated by spikerush (<i>Eleocharis macrostachya</i>) and bird's foot trefoil (<i>Lotus corniculatus</i>). Wetland hydrology is met only by drainage patterns. Area was mowed between April 27 and June 22 .
SW5		0.043	USACE/CCC	Drainage ditch, no outlet, along outlet canal. Dominated by water foxtail, spikerush, algal matting and floating, ponded at lower end. Uplands surrounding dominated by sweet vernal grass. Area was mowed between April 27 and June 22 .
SW6	7,7A	0.032	USACE/CCC	Drainage swale within landscaped lawn area behind buildings, pennyroyal (<i>Mentha pulegium</i>), <i>Ranunculus orthorhynchus bloomeri</i> , <i>Cyperus eragrostis</i> , <i>Deschampsia cespitosa</i> , saturated to surface, anaerobic smell, algal matting. Uplands support English daisy (<i>Bellis perennis</i>), bristly ox tongue (<i>Picris echioides</i>) and birds foot trefoil (<i>Lotus corniculatus</i>). Uplands not saturated April 27, sloping, drained. Area was mowed between April 27 and June 22 . Lawn irrigation system in place.
SW7		0.004	USACE/CCC	Small ponded depression between buildings and fence, Isolated, Pennyroyal (<i>Mentha pulegium</i>), water foxtail (<i>Alopecurus geniculatus</i>), tire tracks, algal mat, water stained leaves of eucalyptus and Monterey pine.
SW8		0.016	USACE/CCC	Shallow drainage swale within landscaped area adjacent to fence and abandoned Buhne Road, Pennyroyal, water foxtail, continues on other side of fence (SW14)
SW9	13,13d	0.002	USACE/CCC	Seasonal swale, part of discontinuous complex of depressions linked by higher ground. Water foxtail, annual tule (<i>Scirpus cernuus</i>), algal matting, water stained leaves, saturation at the surface in lowest portion. Sweet vernal grass, common california aster, birds foot trefoil, rough cat's ear

TABLE 3				
Key to Wetland Delineation Map ID, Associated Data Points or Transects, Potential Jurisdictions, and Descriptions of Wetland Areas.				
Map ID	Data Points	Area	Potential Jurisdiction	Description
				(<i>Hypochaeris radicata</i>), and rip-gut brome (<i>Bromus diandrus</i>) are dominants in the uplands surrounding. Irrigation of adjacent landscaping (faucets and irrigation lines installed) may augment to natural seasonal runoff.
SW10		0.008	USACE/CCC	Seasonal swale, ponded as in SW9
SW11		0.008	USACE/CCC	Seasonal swale, ponded as in SW9
SW12		0.007	USACE/CCC	Seasonal swale, ponded as in SW9
SW13		0.005	USACE/CCC	Ponded depression at end of drainage ditch DD8
SW14		0.012	USACE/CCC	Diffuse drainage swale with spikerush (<i>Eleocharis macrostachya</i>) continuation of swale mapped opposite fence (SW8)
Total		0.308		
Constructed Drainage Ditches				
DD1		0.124	USACE/CCC	Drainage ditch, approximately 4 feet deep, square dug channel steep-sided and flat bottomed, standing water, banks lined with coyote bush (<i>Baccharis pilularis</i>), California blackberry (<i>Rubus ursinus</i>), soft rush (<i>Juncus effusus</i>), pampas grass (<i>Cortaderia selloana</i>). Standing water of ditch supports Pacific oenanthe (<i>Oenanthe sarmentosa</i>), cattail (<i>Typha latifolia</i>), brass buttons (<i>Cotula coronopifolia</i>). Northern red-legged frog (<i>Rana aurora aurora</i>) sighting.
DD2		0.049	USACE/CCC	Drainage ditch, steep sided and flat bottom, supports Pacific oenanthe (<i>Oenanthe sarmentosa</i>), giant horsetail (<i>Equisetum telmateia</i>), California blackberry (<i>Rubus ursinus</i>) on ditch banks, ditch culverted between DD2 and DD3
DD3		0.006		Continuation of drainage ditch DD2, double honeysuckle (<i>Lonicera conjugialis</i>) on banks, drains to Buhne Slough
DD4		0.038	USACE/CCC	Roadside drain along King Salmon Road with cattail (<i>Typha latifolia</i>)
DD5		0.021	USACE/CCC	Small drainage channel in landscape carrying local runoff south from Restricted Area to Salt Marsh SM5
DD6		0.034	USACE/CCC	Drainage ditch in landscaping east of existing facility, averaging 2 feet wide, tall flatsedge (<i>Cyperus eragrostis</i>) fringing channel
DD7		0.020	USACE/CCC	Drainage ditch in landscaping east of existing facility approximately 2 feet wide, 1 foot deep
DD8		0.014	USACE/CCC	Drainage ditch in landscaping east of existing facility approximately 2 feet wide, 1 foot deep
Total		0.306		
Salt Marsh				

TABLE 3				
Key to Wetland Delineation Map ID, Associated Data Points or Transects, Potential Jurisdictions, and Descriptions of Wetland Areas.				
Map ID	Data Points	Area	Potential Jurisdiction	Description
SM1		0.299	USACE/CCC	Open to King Salmon Slough, supports special status plants, high marsh vegetation
SM2		1.812	USACE/CCC	East of the Intake Canal, levee break recently repaired, diked and drained salt marsh, disturbed, slough vegetation includes pickleweed (<i>Salicornia virginica</i>), fat hen (<i>Atriplex triangularis</i>), salt grass (<i>Distichlis spicata</i>) Hydrology influenced by runoff in Buhne Slough, and potentially some groundwater fluctuations from tidal action
SM3		8.915	USACE/CCC	Extension of SM2
SM4		0.362	USACE/CCC	Extension of SM2 and SM3
SM5		2.255	USACE/CCC	North of King Salmon Road, pickleweed, thickspike cordgrass, and high marsh community of tufted hairgrass (<i>Deschampsia cespitosa</i>) grading into riparian, hydrology influenced by ground water fluctuation through tidal action, and local runoff. Not directly connected to King Salmon Slough. Northern red-legged frog sighting here.
SM6		2.471	USACE/CCC	Diked and drained salt marsh, not affected by recent levee restoration, groundwater fluctuations influenced by tidal action, dense thatch of salt grass, transitional to pickleweed, low diversity.
Total		16.114		
Fresh/Brackish Marsh				
FM1		2.345	USACE/CCC	Ponded area with cattail (<i>Typha latifolia</i>), ditch grass (<i>Ruppia maritima</i>), grading in Himalayan blackberry (<i>Rubus discolor</i>), and riparian thickets.
Riparian Marsh				
RM1		1.573	USACE/CCC	Willow (<i>Salix sitchensis</i>) and red alder (<i>Alnus rubra</i>) with Sitka spruce (<i>Picea sitchensis</i>), with dense shrub and perennial understory. Ponded depression in center, Receives local drainage, groundwater may fluctuate with tidal action.
One-Parameter Wetlands (Hydrophytic Vegetation)				
CCW1	CC1a CC1b	0.585	CCC	Located in south half of the temporary laydown area. Includes SW4 and SW5. This area is dominated by <i>Lotus corniculatus</i> and <i>Lolium perenne</i> , both rated FAC. Transect 3 defines an included upland island represented by <i>Hypochoeris radicata</i> .
CCW2	Transect 2 CC2a, CC2b, CC3a, CC3b, 1, and 2	1.147	CCC	Located in the north half of the temporary laydown area. Dominant plants are <i>Picris echioides</i> and <i>Aster chilensis</i> , both rated FAC. CCW2 surrounds an area of higher ground that does not support hydrophytic vegetation described by boundary data sheets CC3a and CC3b. Transect 1 is in the adjacent upland area is dominated by sweet vernal grass and rough cat's tongue. CCW-2 surrounds SW-3.
CCW3		0.091	CCC	This is a continuation of CCW-1 and CCW-2 in an isolated area defined by a road, drainage ditch DD-1 and settling basins. It contains an upland island in the form of an embankment.

Map ID	Data Points	Area	Potential Jurisdiction	Description
CCW4		0.985	CCC	This patch of hydrophytic vegetation is a continuation of CCW-9 north of the abandoned Buhne Road. It contains an upland island around the rootzones of planted Monterey pine trees.
CCW5	CC4a, CC4b	0.044	CCC	CCW-5 is located behind temporary buildings and along the perimeter fence in the north area of the parcel. It is adjacent to freshwater marsh FM-1 and surrounds SW-7. Dominant plants in this patch of hydrophytic vegetation include <i>Mentha pulegium</i> and <i>Holcus lanatus</i> .
CCW6	CC5a, CC5b	0.165	CCC	This is an area of managed "lawn" area consisting mostly of <i>Trifolium repens</i> . CCW6-surrounds SW-6.
CCW7	CC6a, CC6b	0.094	CCC	Dominant hydrophytic vegetation is <i>Lolium perenne</i> and <i>Alopecurus geniculatus</i> , both rated FAC. This is the upper boundary of a shallow swale mapped as SW-8. <i>Transect 4</i> crosses perpendicular to the swale and defines the uplands surrounding CCW7
CCW8	CC7a, CC7b	0.020	CCC	This polygon is a small depression supporting <i>Lolium perenne</i> and <i>Lotus corniculatus</i> at the upper edge and a patch of <i>Mentha pulegium</i> in the bottom of the basin. Transect 4 (representing surrounding uplands) begins just outside of this polygon.
CCW9	Transect 6	1.322	CCC	Located east of the perimeter fence in an area slated for a temporary access road. Site consists of landscaped swales and mounds with ornamental plantings of <i>Rhododendron</i> . Vegetation is dominated by <i>Lotus corniculatus</i> and <i>Lolium perenne</i> , both rated FAC. CCW9 surrounds SW-9, SW-10, SW-11, SW-12, SW-13, SW-14, DD-3, DD-6, DD-7, and DD-8. Transect 5 defines the southern half of the temporary access road as upland vegetation dominated by <i>Anthoxanthum odoratum</i> FACU and <i>Lolium perenne</i> FAC.
CCW10	Transect 7	0.128	CCC	This patch of hydrophytic vegetation dominated by <i>Spartina densiflora</i> , <i>Deschampsia cespitosa</i> , and <i>Juncus leysuerrii</i> is established in the disturbed fill south of the Temporary Remote Parking. Surface water may be perched over hard-packed fill. Surface elevations are significantly higher than local groundwater influenced wetlands. Transect 8 defines upland boundary defined by <i>Anthoxanthum odoratum</i> .
CCW11		1.109	CCC	This area is located between Transect 5 along the temporary access road route and the diked and drained salt marsh SM2. It consists of a combination of upland and wetland shrubs primarily <i>Rubus discolor</i> and <i>Rubus ursinus</i> , along with <i>Baccharis pilularis</i> .
Total		5.69		

5.2 Boundary Determinations

5.2.1 Seasonal Wetlands

Seasonal wetlands mapped on the property were first identified by a dominance of hydrophytic vegetation and then examined for evidence of ponding or saturation of soils. Fourteen seasonal wetlands encompassing a total of 0.31 acres are found within the 55-acre HBRP delineation area.

Many Facultative (FAC) wetland plant species are present in the uplands found around the project site. These include abundant species like ryegrass (*Lolium*, FAC*), bristly ox tongue (*Picris echioides*), common California aster (*Aster chilensis*), velvet grass (*Holcus lanatus*), bird's foot trefoil (*Lotus corniculatus*), yellow parentucellia (*Parentucellia viscosa*), Himalayan blackberry (*Rubus discolor*), and common sheep sorrel (*Rumex acetosella*). These plants grow equally commonly in wetlands and uplands, and were common through the project site making them poor indicators of wetland habitat. Many of these species are shallow rooted and tolerant of soil compaction and/or other maintenance activities such as mowing or disking.

Potential USACE jurisdictional wetlands were typically mapped where FAC plants were found with other species more commonly associated with wetlands. These included wetland Obligates such as pennyroyal (*Mentha pulegium*), common spikerush (*Eleocharis macrostachya*), or water foxtail (*Alopecurus geniculatus*). Often upland boundaries were realized where FAC rated species were in association with sweet vernal grass, hawkbit (*Leontodon taraxicoides*), or tall fescue (*Festuca arundinacea*).

Both the soils and hydrologic criteria are met, as indicated by the presence of ponding, saturation within the profile, or evidence for reducing conditions. The mixed fill soils on occasion took on reduced colors and mottling of seasonal saturation, though these were not used solely as evidence for hydric conditions. Sulfidic odor was also observed within saturated wetlands. Other evidence for ponding earlier in the growing season included algal matting, water stained leaves, high-relief ruts or prints, and the clear presence of a basin or drainage pattern (though some of these were quite shallow).

Delineation data sheets included in Appendix A detail the observations on which these boundaries were drawn.

5.2.2 Constructed Drainages

Drainage ditches cut into fill are found in the northern and eastern flanks of the property as well as along King Salmon Avenue. These are sharply incised up to 4 feet in depth with square cut banks and clear boundaries to surrounding uplands. The ditches are vegetated with wetland plant species such as emergent pacific oenanthe (*Oenanthe sarmentosa*) or fringed in Himalayan blackberry (*Rubus discolor*) and coyote brush (*Baccharis pilularis*). These "waters" are man-made and may be cleared of vegetation and sediment to maintain drainage by PG&E or Humboldt County road crews. Eight drainages encompassing a total of 0.31 acres are found within the 55-acre HBRP delineation survey area.

5.2.3 One-Parameter Wetlands

Additional mapping of one-parameter wetlands of concern to the California Coastal Commission was conducted during July 2006. At this time much of the disturbed grassland had been mowed. Determinations of plant species dominance were still possible using seed heads and other plant parts. For grasses, key characteristics for the dominant species were noted from adjacent unmowed sections of the property. Differences in ligule length, plant rooting habit, and hairiness could be used to determine species identity even when flowering heads had been removed.

Since the boundaries of hydrophytic vegetation are diffuse and not well-defined by topography, several series of eight 1-meter square quadrats were equally spaced along transects placed in patches of uniform vegetation. The absolute cover of each plant species found within the quadrats was visually estimated and recorded. Total cover for each species individually and for all species combined was calculated for each transect (see data sheets in Appendix A). A Dominance Threshold was used to determine the dominant species in each area. The Dominance Threshold was equal to $\frac{1}{2}$ of the total cover for the transect. Each species recorded was ranked in descending order by total cover. The cover values for the first, second, third, and etc. species were added until the dominance threshold or $\frac{1}{2}$ the total cover was obtained. The indicator status of those species used to accumulate 50% of the total cover were used to assess whether hydrophytic vegetation was present in the polygon.

Once a determination of hydrophytic vegetation was made, plots taken inside and outside of the boundary were taken to further describe the delineation.

Most of the one-parameter wetlands on the HBRP project site and surrounding areas are dominated by bird's foot trefoil (*Lotus corniculatus*) and English ryegrass (*Lolium perenne*), both of which are rated Facultative. The uplands are marked by a greater percentage of cover of rough cat's ear (*Hypochoeris radicata*), a Facultative-Upland species. All of this vegetation is highly disturbed and greatly influenced by maintenance mowing. Subsurface discontinuities in the fill material do not parallel surface topography and factors such as fine-over-coarse capillary membranes may hold even sloped soils at field capacity and promote facultative plant growth.

A total of approximately 5.69 acres of CCC wetland vegetation areas is found on the 55-acre portion of PG&E property. Note that where seasonal wetlands and drainages fall within the larger CCC wetland boundary areas, those acreages were subtracted from the total CCC area so as not to double count the acreage of seasonal wetlands and drainages (as shown on Figure 4 and Tables 2 and 3).

5.2.4 Northern Coastal Salt Marsh

Northern coastal salt marsh is found within the lower floodplain of Buhne Slough. Buhne Slough was diverted from its natural outlet in Humboldt Bay when the King Salmon boat entrance channel was constructed. A tide gate in the channel's levee drains water from Buhne Slough through a culvert under King Salmon Avenue to the boat channel. The salt marshes at the mouth of Buhne Slough may have been drained prior to construction of the King Salmon resort community in the 1940s and 1950s (Graves, 1995).

The vegetation in the drained marsh most likely consisted of tufted hairgrass, and perennial pasture grasses such as velvet grass (*Holcus lanatus*), and tall fescue (*Festuca arundinacea*). Grasslands would have been interspersed with low areas supporting seasonal ponding dominated by species such as brass buttons (*Cotula coronopifolia*) and spikerush (*Eleocharis macrostachya*). Coyote brush scrub had formed on higher interfluves. This vegetation was inundated when a levee broke during the winter of 2003-2004 and reinstated tidal action to the area (Willis, 2006). During July 2006, a temporary patch to the levee system was placed on a property east of PG&E and has once again isolated the majority of Buhne Slough marshes from the tide.

During the two years since reinstatement of tidal flooding, the diked salt marsh of Buhne Slough on PG&E property has been recolonized by a sparse population of pickleweed (*Salicornia virginica*) and spearscale (*Atriplex triangularis*). Other salt marsh species are present in lesser abundance. Patches of coyote brush scrub that was killed by inundation remain on the site. The recolonization of the area by marsh species will stop if levee repairs become permanent. Though the salt marshes north of King Salmon Avenue are not directly inundated by tidal action, seepage of groundwater during high tide is likely to affect local hydrology. This was especially noted in marshes west of the intake channel.

Tidally inundated salt marsh vegetation is present on PG&E property south of King Salmon Avenue, on the north bank of the King Salmon channel, and in the area between the channel south of King Salmon Avenue and the diked marshes. This area also has mudbank habitat. These two small patches of salt marsh differ from each other in species composition reflecting individual examples of diverse high marsh and pickleweed-cordgrass marsh. The lower elevation marsh (SM-6) in the far northeastern corner of the PG&E property is transitional to salt marsh and has a dense stand of pickleweed and saltgrass bordered by Himalayan blackberry bramble (*Rubus discolor*) and upland grassland dominated by sweet vernal grass.

A total of approximately 16.1 acres of Northern Salt Marsh including diked wetlands is found on the 55-acre portion of PG&E property. No Northern Salt Marsh habitat will be affected in the HBRP project area.

5.2.5 Fresh or Brackish Water Marsh

Other wetlands in the upper Buhne Slough watershed are fed by seasonal or perennial rainfall runoff and/or the presence of high ground water tables. Cattail marshes (*Typha latifolia*) ringed with black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) and arroyo willow (*Salix lasiolepis*) are found at the mouths of small streams entering the basin east of the highway. Other freshwater wetland species common to the area include Pacific oenanthe (*Oenanthe sarmentosa*), straight-beaked buttercup (*Ranunculus orthorhynchus*), and giant horsetail (*Equisetum telmateia* ssp. *braunii*).

On the PG&E property, two fresh or brackish water marshes are found in the northeastern and western portion of the site (Figure 4). These two marsh habitats differ in dominant plant species, but both have high cover in alkali bulrush (*Scirpus maritimus*). The upper marsh (FM-1) is fringed with cattail, brass buttons (*Cotula coronopifolia*), pickleweed and saltgrass. The open water supports a dense population of ditch-grass (*Ruppia maritima*). Ditch-grass Wetland [*Ruppia* spp.] is tracked by CNDDDB (2003). The riparian marsh (RM1) contains willow (*Salix*

sitchensis) and red alder (*Alnus rubra*) with Sitka spruce (*Piceaitchensis*), and a dense shrub and perennial understory. A ponded depression in the center receives local drainage, and groundwater may fluctuate with tidal action.

A total of approximately 3.9 acres of fresh and brackish marsh are present on the 55-acre portion of PG&E property. A 0.054-acre portion of the freshwater marsh (FM-1) will be permanently lost under the HBRP footprint where the security access road around the emergency fire water tanks and boundary fence will be located. No other fresh or brackish marsh habitat is found in the HBRP project impact areas.

5.3 Jurisdictional Considerations

USACE jurisdiction may be limited to those man-made wetlands constructed in historic salt marsh fill. Based on an analysis of historical photographs and topographic mapping, the western portion of the HBRP site was uplands prior to PG&E's purchase of the property and construction activities. The lands north of Buhne Point formed a low table elevated 15 feet above Humboldt Bay. The land was farmed and supported a dwelling, corrals and outbuildings prior to its current use. Several seasonal wetlands are mapped in this area are man-made in uplands. A terrace break dropped historic surface elevations down to 7 to 8 feet in elevation and required construction of a dike along the bay in order to farm the land. The historic nature of the land and vegetation at this terrace level is unknown, but it is outside of the current project boundary.

Wetlands mapped in the eastern boundary of the project area are likely to have been constructed on marshland fill. This interpretation is from topographic mapping and black and white historical photography, along with some soil coring. Original elevations in this portion of the site adjacent to Buhne Slough were approximately 5 to 6 feet above sea level. Ground water fluctuations with tidal and seasonal flooding from winter rains are likely to have been responsible for the development of wetlands in this area. The parking lots off the north of Buhne Point were part of the original Buhne Drive and appear to be little altered. Drainages in this area appear to have been constructed prior to the historical mapping we have reviewed. The exact nature and boundary of the historic wetlands was not determined as a part of this project.

CCC jurisdiction is likely to include the potential wetlands areas addressed for the USACE as well as additional areas that support Facultative wetland vegetation that receive abundant rainfall, and in some areas, additional runoff from the Humboldt Bay Power Plant developed area.

6.0 Conclusions

Wetland habitats were delineated using the USACE wetland delineation manual on a 55-acre portion of PG&E's 143-acre property in Humboldt County. Most, if not all of the property was historically disturbed during construction of the King Salmon community and Humboldt Bay Power Plant in the 1950s and 1960s. Potential CCC wetland areas (encompassing 5.69 acres) dominate the HBRP impact areas. Seasonal wetlands and drainages (encompassing 0.62 acre) are interspersed within the CCC wetland areas. A Section 404 of the Clean Water Act permit to fill wetlands or affect waters of the U.S. would be obtained prior to construction of HBRP. In addition, a mitigation plan to compensate for loss of wetland habitat would be submitted and approved by USACE, CCC, and California Energy Commission (CEC).

7.0 References

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APPENDIX A

Wetland Data Sheets

Routine Wetland Delineation Data Form

Applicant: PG&E	Project: Humboldt Power Plant	Observer: Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 1	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Juncus balticus	herb	>20	OBL	Anthoxanthum odoratum	herb	>20	FACU

% of dominant species that are OBL, FACW, and/or FAC: 50%

Other Indicators:

Hydrophytic vegetation present? no

Basis? Not > 50% FAC, FACW, OBL

Soil

Map Unit: UI- urban/industrial		Subgroup: Misc. Land Type	
Field Observations: mixed fill with gravels and cobbles,			
Depth	Texture	Color (Matrix/mottle)	Notes
10 in	clay	7.5YR5/6 (strong brown)	The gray peds likely fill derived from Bayview soil
mixed	Sandy clay loam	10YR5/1 (gray)	
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 type="checkbox"/> Gleyed or low-chroma colors <input type="checkbox"/> Concretions			
<input type="checkbox"/> High o.c. in surface layer in sandy soils <input type="checkbox"/> Organic streaking in sandy soils <input type="checkbox"/>			
<input type="checkbox"/> Listed on local hydric soils list <input type="checkbox"/> Listed on national hydric soils list			
Hydric Soils Present? No		Basis? No hydromorphic characteristics	

Hydrology

Inundated? No	Depth of standing water: 0	Note: No standing water or seepage in soil pit after 1 hour. This site is on a slope above a marsh/pond.
Saturated? No	Depth to saturated soil: > 18 inches	
Other primary indicators: <input type="checkbox"/> Water marks <input type="checkbox"/> Drift lines <input type="checkbox"/> Sediment deposits		
<input type="checkbox"/> Drainage patterns in wetlands		
Secondary indicators: <input type="checkbox"/> Oxidized rhizospheres in upper 12" <input type="checkbox"/> Water-stained leaves		
<input type="checkbox"/> Local soil survey data <input type="checkbox"/> FAC_Neutral test		
Wetland Hydrology present? No	Basis: No evidence for ponding or saturation to the surface.	

Wetland Determination

Is this data point in a Corps wetland? No Reason?: No criteria are met	Is this data point in a DFG/CCC wetland? No Reason: No criteria are met.
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Routine Wetland Delineation Data Form

Applicant: PG&E	Project: Humboldt Power Plant	Observer: Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 2	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Rumex acetosella	herb	>20	FAC-	Aster chilensis	herb	>20	FAC
Plantago lanceolata	herb	>20	FAC-				

% of dominant species that are OBL, FACW, and/or FAC: 33%

Other Indicators:

Hydrophytic vegetation present? NO

Basis? Not >50% FAC, FACW, OBL

Soil

Map Unit: UI- urban/industrial			Subgroup: Misc. Land Type		
Field Observations: mixed fill with gravels and bits of asphalt					
Depth	Texture	Color (Matrix/mottle)		Notes: peds are mixed, not stratified in horizonation	
7 1/2	clay	7.5YR4/2 (dark brown)			
in mixed	Sandy clay loam	7.5YR5/6 (strong brown)			
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 type="checkbox"/> Gleyed or low-chroma colors <input type="checkbox"/> Concretions					
<input type="checkbox"/> High o.c. in surface layer in sandy soils <input type="checkbox"/> Organic streaking in sandy soils <input type="checkbox"/>					
<input type="checkbox"/> Listed on local hydric soils list <input type="checkbox"/> Listed on national hydric soils list					
Hydric Soils Present? No			Basis? No hydromorphic characteristics		

Hydrology

Inundated? No	Depth of standing water: 0	Note:
Saturated? No	Depth to saturated soil: > 18 inches	
Other primary indicators: <input type="checkbox"/> Water marks <input type="checkbox"/> Drift lines <input type="checkbox"/> Sediment deposits <input type="checkbox"/> Drainage patterns in wetlands		
Secondary indicators: <input type="checkbox"/> Oxidized rhizospheres in upper 12" <input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Local soil survey data <input type="checkbox"/> FAC_Neutral test		
Wetland Hydrology present? No	Basis: No evidence for ponding or saturation to the surface.	

Wetland Determination

Is this data point in a Corps wetland? No Reason?: no criteria are met.	Is this data point in a CCC wetland? No Reason: No criteria are met.
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Routine Wetland Delineation Data Form

Applicant: PG&E	Project: Humboldt Power Plant	Observer: Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point:3	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Alopecurus geniculatus	herb	>66	OBL				

% of dominant species that are OBL, FACW, and/or FAC: 100%

Other Indicators:

Hydrophytic vegetation present? yes

Basis? >50% FAC, FACW, OBL

Soil

Map Unit: UI- urban/industrial		Subgroup: Misc. Land Type	
Field Observations: mixed fill with gravels			
Dept h	Texture	Color (Matrix/mottle)	Notes
10 in	Sandy loam	10YR5/1 (gray)/ 10YR4/4 mot	7.5YR5/6 (strong brown) clay loam inclusions
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 o.c. in surface layer in sandy soils <input type="checkbox"/> Organic streaking in sandy soils <input type="checkbox"/>			
<input type="checkbox"/> Listed on local hydric soils list <input type="checkbox"/> Listed on national hydric soils list			
Hydric Soils Present? YES		Basis? Hydromorphic characteristics of mottled low chroma soil color may suggest seasonal saturation of the fill	

Hydrology

Inundated? No	Depth of standing water: 0	Note: Algal matting present around the stems of grasses
Saturated? YES	Depth to saturated soil: > 10 inches	
Other primary indicators: <input type="checkbox"/> Water marks <input type="checkbox"/> Drift lines <input type="checkbox"/> Sediment deposits		
<input checked="" type="checkbox"/> Drainage patterns in wetlands		
Secondary indicators: <input type="checkbox"/> Oxidized rhizospheres in upper 12" <input type="checkbox"/> Water-stained leaves		
<input type="checkbox"/> Local soil survey data <input type="checkbox"/> FAC_Neutral test		
Wetland Hydrology present? YES	Basis: Evidence for ponding and saturation to the surface.	

Wetland Determination

Is this data point in a Corps wetland? YES Reason?: All three criteria are met.	Is this data point in a CCC wetland? YES Reason: All three criteria are met.
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Routine Wetland Delineation Data Form

Applicant:	Project:	Observer:
PG&E	Humboldt Power Plant	Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 3A	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Trifolium repens	herb	>20	FAC	Anthoxanthum odoratum	herb	>20	FACU
Aster chilensis	herb	>20	FAC				

% of dominant species that are OBL, FACW, and/or FAC: 66%

Hydrophytic vegetation present? yes

Basis? >50% FAC, FACW, OBL

Soil

Map Unit: UI- urban/industrial		Subgroup: Misc. Land Type	
Field Observations: mixed fill with gravels and cobbles,			
Depth	Texture	Color (Matrix/mottle)	Notes:
10 in mixed	Sandy loam	10YR5/1 (gray)/ 10YR4/4 mot	
Hydric soil Indicators: __ Histosol __ Histic epipedon __ Sulfidic Odor __ Aquic moisture regime			
__ Reducing conditions X Gleyed or low-chroma colors __ Concretions			
__ High o.c. in surface layer in sandy soils __ Organic streaking in sandy soils __			
__ Listed on local hydric soils list __ Listed on national hydric soils list			
Hydric Soils Present? YES		Basis? Hydromorphic characteristics of low chroma and mottles may result from seasonal saturation	

Hydrology

Inundated? No	Depth of standing water: 0	Note: this site is on a slanting basin rim, earthworms (not found in saturated soils) were found in the pit
Saturated? No	Depth to saturated soil: > 18 inches	
Other primary indicators: __ Water marks __ Drift lines __ Sediment deposits		
__ Drainage patterns in wetlands		
Secondary indicators: __ Oxidized rhizospheres in upper 12" __ Water-stained leaves		
__ Local soil survey data __ FAC_Neutral test		
Wetland Hydrology present? No	Basis: No evidence for ponding or saturation to the surface.	

Wetland Determination

Is this data point in a Corps wetland? No Reason?: Only the soil and vegetation criteria are met.	Is this data point in a CCC wetland? yes Reason: two parameters are met (vegetation and possibly soils)
--	--

Routine Wetland Delineation Data Form

Applicant:	Project:	Observer:
PG&E	Humboldt Power Plant	Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 4	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Eleocharis (macrostachya?)	herb	>20	FACW-OBL	Lotus corniculatus	herb	>20	FAC

% of dominant species that are OBL, FACW, and/or FAC: 100%
 Other Indicators:
 Hydrophytic vegetation present? YES
 Basis? >50% FAC, FACW, OBL

Soil

Map Unit: UI- urban/industrial		Subgroup: Misc. Land Type	
Field Observations: mixed fill			
Depth	Texture	Color (Matrix/mottle)	Notes: this is gray horizon is overlain by a clay loam with mixed matrix colors
10 in mixed	Sandy clay loam	10YR5/1(gray)	
Hydric soil Indicators: __ Histosol __ Histic epipedon __ Sulfidic Odor __ Aquic moisture regime __ Reducing conditions X Gleyed or low-chroma colors __ Concretions __ High o.c. in surface layer in sandy soils __ Organic streaking in sandy soils __ __ Listed on local hydric soils list __ Listed on national hydric soils list			
Hydric Soils Present? YES		Basis? Hydromorphic characteristics of low chroma may result from saturation to near the surface	

Hydrology

Inundated? No	Depth of standing water: 0	Note: this site is in a shallow depression
Saturated? No	Depth to saturated soil: > 18 inches	
Other primary indicators: __ Water marks __ Drift lines __ Sediment deposits _X_ Drainage patterns in wetlands		
Secondary indicators: __ Oxidized rhizospheres in upper 12" __ Water-stained leaves __ Local soil survey data __ FAC_Neutral test		
Wetland Hydrology present? YES	Basis: Evidence for ponding or saturation to the surface.	

Wetland Determination

Is this data point in a Corps wetland? YES Reason?: All criteria are met	Is this data point in a CCC wetland? YES Reason: All criteria are met.
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Routine Wetland Delineation Data Form

Applicant:	Project:	Observer:
PG&E	Humboldt Power Plant	Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 4A	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Hypochaeris radicata	herb	>20	UPL	Anthoxanthum odoratum	herb	>20	FACU
Poa annua	herb	>20	FACW-				

% of dominant species that are OBL, FACW, and/or FAC: 33%

Other Indicators:

Hydrophytic vegetation present? **NO** Basis? **<50% FAC, FACW, OBL**

Soil

Map Unit: UI- urban/industrial	Subgroup: Misc. Land Type		
Field Observations: mixed fill with gravels			
Depth	Texture	Color (Matrix/mottle)	Notes: Mixed fill peds of several colors,
10 in mixed	Sandy loam	10YR5/1 (gray)/ 10YR4/4 mot	
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 o.c. in surface layer in sandy soils <input type="checkbox"/> Organic streaking in sandy soils <input type="checkbox"/> <input type="checkbox"/> Listed on local hydric soils list <input type="checkbox"/> Listed on national hydric soils list			
Hydric Soils Present? YES		Basis? Hydromorphic characteristics of low chroma and mottles may result from seasonal saturation	

Hydrology

Inundated? No	Depth of standing water: 0	Note: this site is on a slanting basin rim, earthworms (not found in saturated soils) were found in the pit
Saturated? No	Depth to saturated soil: > 18 inches	
Other primary indicators: <input type="checkbox"/> Water marks <input type="checkbox"/> Drift lines <input type="checkbox"/> Sediment deposits <input type="checkbox"/> Drainage patterns in wetlands		
Secondary indicators: <input type="checkbox"/> Oxidized rhizospheres in upper 12" <input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Local soil survey data <input type="checkbox"/> FAC_Neutral test		
Wetland Hydrology present? No	Basis: No evidence for ponding or saturation to the surface.	

Wetland Determination

Is this data point in a Corps wetland? No Reason?: Only the soil criterion is met.	Is this data point in a CCC wetland? yes Reason: soil criteria is potentially met
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Routine Wetland Delineation Data Form

Applicant:	Project:	Observer:
PG&E	Humboldt Power Plant	Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 7	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Mentha pulegium	herb	>20	OBL				

% of dominant species that are OBL, FACW, and/or FAC: 100%

Other Indicators:

Hydrophytic vegetation present? YES

Basis? >50% FAC, FACW, OBL

Soil

Map Unit: UI- urban/industrial		Subgroup: Misc. Land Type	
Field Observations: mixed gravelly fill			
Dept h	Texture	Color (Matrix/mottle)	Notes: this area is in a managed landscape (lawn) setting.
10 in mixed	Sandy clay loam	10YR5/1(gray)10YR 4/4 mot (abundant)	
Hydric soil Indicators: __ Histosol __ Histic epipedon __ X Sulfidic Odor __ Aquic moisture regime __ Reducing conditions X Gleyed or low-chroma colors __ Concretions __ High o.c. in surface layer in sandy soils __ Organic streaking in sandy soils __ __ Listed on local hydric soils list __ Listed on national hydric soils list			
Hydric Soils Present? YES		Basis? Hydromorphic characteristics of low chroma mottles may result from saturation to near the surface	

Hydrology

Inundated? No	Depth of standing water: 0	Note: this site is at the lower portion of a drainage swale
Saturated? yes	Depth to saturated soil: to surface	
Other primary indicators: __ Water marks __ Drift lines __ Sediment deposits <u>X</u> Drainage patterns in wetlands		
Secondary indicators: __ Oxidized rhizospheres in upper 12" __ Water-stained leaves __ Local soil survey data __ FAC_Neutral test		
Wetland Hydrology present? YES		Basis: Evidence for ponding or saturation to the surface.

Wetland Determination

Is this data point in a Corps wetland? YES Reason?: All criteria are met	Is this data point in a CCC wetland? YES Reason: All criteria are met.
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Routine Wetland Delineation Data Form

Applicant:	Project:	Observer:
PG&E	Humboldt Power Plant	Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 7A	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Hypochaeris radicata	herb	>20	Facu*	Lotus corniculatus	Herb	>20	FAC
Bellis perennis	herb	>20	UPL	Picris echiodes	Herb	>20	FAC*

% of dominant species that are OBL, FACW, and/or FAC: 50%

Other Indicators:

Hydrophytic vegetation present? **NO** Basis? **Not > 50% FAC, FACW, OBL**

Soil

Map Unit: UI- urban/industrial		Subgroup: Misc. Land Type	
Field Observations: mixed fill with gravels			
Depth	Texture	Color (Matrix/mottle)	Notes: surface mottling suggests saturation from irrigation
10 in mixed	Very gravelly clay loam	10YR4/2 (dark grayish brown) faint 10YR4/4 mot in upper 2"	
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 o.c. in surface layer in sandy soils <input type="checkbox"/> Organic streaking in sandy soils <input type="checkbox"/> <input type="checkbox"/> Listed on local hydric soils list <input type="checkbox"/> Listed on national hydric soils list			
Hydric Soils Present? NO		Basis? Hydromorphic characteristics of low chroma and mottles unlikely to result from seasonal saturation	

Hydrology

Inundated? No	Depth of standing water: 0	Note: this site is on a slanting side slope above the swale
Saturated? No	Depth to saturated soil: > 18 inches	
Other primary indicators: <input type="checkbox"/> Water marks <input type="checkbox"/> Drift lines <input type="checkbox"/> Sediment deposits <input type="checkbox"/> Drainage patterns in wetlands		
Secondary indicators: <input type="checkbox"/> Oxidized rhizospheres in upper 12" <input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Local soil survey data <input type="checkbox"/> FAC_Neutral test		
Wetland Hydrology present? No	Basis: No evidence for ponding or saturation to the surface.	

Wetland Determination

Is this data point in a Corps wetland? No Reason?: No criteria are met.	Is this data point in a CCC wetland? No Reason: No criteria are met.
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Routine Wetland Delineation Data Form

Applicant:	Project:	Observer:
PG&E	Humboldt Power Plant	Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 13	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Alopecurus geniculatus	herb	>20	OBL				
Scirpus cernuus	Herb	>20	OBL				

% of dominant species that are OBL, FACW, and/or FAC: 100%

Other Indicators:

Hydrophytic vegetation present? YES

Basis? > 50% FAC, FACW, OBL

Soil

Map Unit: UI- urban/industrial		Subgroup: Misc. Land Type	
Field Observations: mixed fill			
Dept h	Texture	Color (Matrix/mottle)	Notes: No gravel, but mixed peds of clay indicate fill material
0-3 in	Clay	mixed	
3-10	Sandy clay loam	10YR5/1(gray)10YR 4/6 mot	
Hydric soil Indicators: __ Histosol __ Histic epipedon __ Sulfidic Odor __ Aquic moisture regime __ Reducing conditions <u>X</u> Gleyed or low-chroma colors __ Concretions __ High o.c. in surface layer in sandy soils __ Organic streaking in sandy soils __ __ Listed on local hydric soils list __ Listed on national hydric soils list			
Hydric Soils Present? YES		Basis? Hydromorphic features of low chroma suggest saturation to near the surface	

Hydrology

Inundated? No	Depth of standing water: 0	Note: site is at the lower end of a swale system, algal matting
Saturated? yes	Depth to saturated soil: to surface	
Other primary indicators: __ Water marks __ Drift lines __ Sediment deposits <u>X</u> Drainage patterns in wetlands		
Secondary indicators: __ Oxidized rhizospheres in upper 12" <u>X</u> Water-stained leaves __ Local soil survey data __ FAC_Neutral test		
Wetland Hydrology present? YES		Basis: Observation of saturation to the surface.

Wetland Determination

Is this data point in a Corps wetland? YES Reason?: All three criteria are met.	Is this data point in a CCC wetland? YES Reason: All three criteria are met.
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Routine Wetland Delineation Data Form

Applicant:	Project:	Observer:
PG&E	Humboldt Power Plant	Virginia Dains/ Richard Crowe
State: CA	County: Humboldt	T4N R1W SEC 8
Date: April 27, 2006	Data Point: 13D	

Do Normal Circumstances exist on the site? Yes
 Is the site significantly disturbed? Yes, soils are mixed fill.
 Is the area a potential Problem Area? No

Vegetation

Species	Strata	Cover	Status	Species	Strata	Cover	Status
Anthoxanthum odoratum	herb	>20	FACU	Lotus corniculatus	Herb	>20	FAC
Aster chilensis	herb	>20	FAC	Bromus diandrus	Herb	>20	UPL

% of dominant species that are OBL, FACW, and/or FAC: 50%

Other Indicators:

Hydrophytic vegetation present? **NO** Basis? **Not > 50% FAC, FACW, OBL**

Soil

Map Unit: UI- urban/industrial		Subgroup: Misc. Land Type	
Field Observations: mixed fill with gravels			
Depth	Texture	Color (Matrix/mottle)	Notes: dark surface horizons could be organic rich "top soil" for nearby rhododendron plantings
0-6	loam	10YR3/2 (very dark grayish brown)	
6-8	Clay loam	10YR3/1 (very dark gray)	
8-10	clay loam	7.5YR5/6 (strong brown)	
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 o.c. in surface layer in sandy soils <input type="checkbox"/> Organic streaking in sandy soils <input type="checkbox"/>			
<input type="checkbox"/> Listed on local hydric soils list <input type="checkbox"/> Listed on national hydric soils list			
Hydric Soils Present? NO		Basis? Hydromorphic characteristics of low chroma and mottles unlikely to result from saturation	

Hydrology

Inundated? No	Depth of standing water: 0	Note: this site is on a slanting side slope above the swale
Saturated? No	Depth to saturated soil: > 18 inches	
Other primary indicators: <input type="checkbox"/> Water marks <input type="checkbox"/> Drift lines <input type="checkbox"/> Sediment deposits <input type="checkbox"/> Drainage patterns in wetlands		
Secondary indicators: <input type="checkbox"/> Oxidized rhizospheres in upper 12" <input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Local soil survey data <input type="checkbox"/> FAC_Neutral test		
Wetland Hydrology present? No	Basis: No evidence for ponding or saturation to the surface.	

Wetland Determination

Is this data point in a Corps wetland? No Reason?: No criteria are met.	Is this data point in a DFG/CCC wetland? No Reason: No criteria are met.
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One-Parameter Wetland Vegetation Transects and Boundary Data Sheets

APPENDIX B

Plant Species Observed

TABLE B-1

Plant Species Observed At The PG&E Humboldt Bay Power Plant And Their Status As Wetland Indicator Species

Scientific Name	Common Name	Wetland Indicator (Reed 1988)
<i>Abronia latifolia</i>	yellow sand verbena	NI
<i>Achillea millefolium</i>	yarrow	FACU
<i>Agrostis capillaris</i>	colonial bentgrass	FAC
<i>Aira caryophylla</i>	silver hairgrass	NI
<i>Alnus rubra</i>	red alder	FACW
<i>Alopecurus geniculatus</i>	water foxtail	OBL
<i>Ambrosia chamissonis</i>	beach-bur	NI
<i>Anagallis arvensis</i>	scarlet pimpernel	FAC
<i>Anthoxanthum odoratum</i>	sweet vernal grass	FACU
<i>Aralia californica</i>	elk's clover	FACW
<i>Aster chilensis</i>	common California aster	FAC
<i>Atriplex triangularis</i>	spearscale	NI
<i>Avena barbata</i>	slender wild oats	NI
<i>Baccharis douglasii</i>	salt marsh baccharis	OBL
<i>Baccharis pilularis</i>	coyote brush	NI
<i>Bellis perennis</i>	English daisy	NI
<i>Brassica rapa</i>	field mustard	NI
<i>Briza maxima</i>	big quaking grass	NI
<i>Bromus carinatus</i>	California brome	NI
<i>Bromus diandrus</i>	ripgut brome	NI
<i>Cakile maritima</i>	European sea rocket	FACW
<i>Carex jonesii</i>	Jones' sedge	FACW
<i>Carex luzulina var. ablata</i>	wood rush sedge	OBL
<i>Carex obnupta</i>	slough sedge	OBL
<i>Carpobrotus chilensis</i>	sea fig	-
<i>Castilleja ambigua ssp. humboldtiensis</i>	Humboldt Bay owl's-clover	OBL
<i>Centaureum sp.</i>	Centaury	-
<i>Cerastium glomeratum</i>	mouse-ear chickweed	FACU
<i>Cirsium vulgare</i>	bull thistle	FAC
<i>Cordylanthus maritimus ssp. maritimus</i>	salt marsh bird's-beak	OBL
<i>Cortaderia seloana</i>	pampas grass	NI
<i>Cotula coronopifolia</i>	brass-buttons	FACW+
<i>Cuscuta salina</i>	saltmarsh dodder	NI
<i>Cyperus eragrostis</i>	tall flatsedge	FACW
<i>Dactylis glomerata</i>	orchard-grass	FACU
<i>Daucus carota</i>	carrot	NI
<i>Deschampsia cespitosa</i>	tufted hair-grass	FACW
<i>Distichlis spicata</i>	saltgrass	FACW
<i>Eleocharis macrostachya</i>	common spikerush	OBL
<i>Epilobium angustifolium ssp. circumvagum</i>	fireweed	FAC
<i>Epilobium ciliatum</i>	willowherb	FACW
<i>Equisetum telmateia ssp. braunii</i>	giant horsetail	OBL
<i>Erechtites glomerata</i>	cut-leafed erechtites	NI

TABLE B-1
Plant Species Observed At The PG&E Humboldt Bay Power Plant And Their Status As Wetland Indicator Species

Scientific Name	Common Name	Wetland Indicator (Reed 1988)
<i>Erica lusitanica</i>	Spanish heather	NI
<i>Erodium cicutarium</i>	red-stemmed filaree	NI
<i>Festuca arundinacea</i>	tall fescue	FAC-
<i>Festuca californica</i>	California fescue	FACU*
<i>Festuca rubra</i>	red fescue	FAC
<i>Foeniculum vulgare</i>	fennel	FACU-
<i>Fragaria chiloensis</i>	beach strawberry	NI
<i>Galium trifidum var. pacificum</i>	three-petaled bedstraw	FACW
<i>Geranium dissectum</i>	cut-leaved geranium	NI
<i>Grindelia stricta</i>	coastal gumweed	FACW*
<i>Hedera helix</i>	English ivy	NI
<i>Heliotropium europaeum</i>	European heliotrope	NI
<i>Heracleum lanatum</i>	cow parsnip	FACU
<i>Holcus lanatus</i>	common velvetgrass	FAC
<i>Hordeum brachyantherum</i>	meadow barley	FACW
<i>Hordeum marinum ssp. gussoneanum</i>	Mediterranean barley	FAC
<i>Hordeum murinum ssp. leporinum</i>	foxtail barley	UPL
<i>Hypochaeris radicata</i>	rough cat's ear	FACU*
<i>Juncus balticus</i>	Baltic rush	FACW+
<i>Juncus bufonius</i>	toad rush	FACW+
<i>Juncus capitatus</i>	Leafy bracked dwarf rush	FACU
<i>Juncus effusus</i>	common bog rush	FACW+
<i>Juncus lesueurii</i>	dune rush	FACW
<i>Juncus patens</i>	common rush	FAC
<i>Leontodon taraxacoides</i>	hawkbit	FACU
<i>Linum usitatissimum</i>	common flax	NI
<i>Lolium perenne</i>	English rye-grass	FAC*
<i>Lonicera conjugialis</i>	double honeysuckle	FAC
<i>Lotus corniculatus</i>	bird's-foot trefoil	FAC
<i>Lotus micranthus</i>	small-flowered lotus	NI
<i>Lupinus rivularis</i>	riverbank lupine	FAC
<i>Lythrum hyssopifolia</i>	hyssop loosestrife	FACW
<i>Medicago polymorpha</i>	California burclover	FACU-
<i>Melilotus alba</i>	white sweetclover	UPL
<i>Mentha pulegium</i>	pennyroyal	OBL
<i>Montia fontana</i>	water chickweed	FACW
<i>Myrica californica</i>	wax-myrtle	FAC+
<i>Nothoscordum inodorum</i>	false garlic	NI
<i>Oenanthe sarmentosa</i>	Pacific oenanthe	OBL
<i>Parapholis incurva</i>	sickle grass	OBL
<i>Parentucellia viscosa</i>	yellow parentucellia	FAC
<i>Picea sitchensis</i>	Sitka spruce	FAC
<i>Picris echioides</i>	bristly ox-tongue	FAC
<i>Pinus radiata</i>	Monterey pine	NI

TABLE B-1
 Plant Species Observed At The PG&E Humboldt Bay Power Plant And Their Status As Wetland Indicator Species

Scientific Name	Common Name	Wetland Indicator (Reed 1988)
<i>Plantago coronopus</i>	cut-leaf plantain	FAC
<i>Plantago lanceolata</i>	long-leaf plantain	FAC-
<i>Poa annua</i>	annual blue grass	FAC
<i>Poa douglasii</i>	sand dune blue grass	UPL
<i>Poa pratensis</i>	Kentucky blue grass	FAC
<i>Polystichum munitum</i>	western sword fern	FACU
<i>Potentilla anserina</i>	silver-weed cinquefoil	OBL
<i>Ranunculus orthorhynchus</i>	straight-beaked buttercup	FACW
<i>Raphanus sativus</i>	wild radish	UPL
<i>Ribes sanguineum var. glutinosum</i>	pink-flowering currant	NI
<i>Rosa nutkana var. nutkana</i>	Nootka rose	FAC*
<i>Rubus discolor</i>	Himalaya-berry	FAC+
<i>Rubus spectabilis</i>	salmon berry	FAC+
<i>Rubus ursinus</i>	California blackberry	FAC+
<i>Rumex acetosella</i>	common sheep sorrel	FAC-
<i>Rumex crispus</i>	curly dock	FACW-
<i>Rumex salcifolius</i>	Willow dock	OBL
<i>Ruppia maritima</i>	ditch grass	OBL
<i>Salicornia virginica</i>	pickleweed	OBL
<i>Salix sitchensis</i>	Sitka willow	FACW+
<i>Scirpus cernuus</i>	annual tule	OBL
<i>Scirpus maritimus</i>	prairie rush	OBL
<i>Scrophularia californica</i>	California figwort	FAC
<i>Senecio vulgaris</i>	common groundsel	NI*
<i>Sonchus arvensis</i>	perennial sow thistle	FACU
<i>Spartina densiflora</i>	Thick-spike cordgrass	OBL
<i>Stachys ajugoides var. rigida</i>	rigid hedge-nettle	OBL
<i>Stachys bullata</i>	southern hedge-nettle	NI
<i>Taraxacum officinale</i>	common dandelion	FACU
<i>Tragopogon porrifolius</i>	salsify	NI
<i>Trifolium depauperatum var. depauperatum</i>	dwarf sack clover	FAC-
<i>Trifolium fucatum</i>	Bull clover	FAC
<i>Trifolium repens</i>	white clover	FAC
<i>Typha latifolia</i>	broadleaf cattail	OBL
<i>Veronica scutellata</i>	marsh speedwell	OBL
<i>Vicia benghalensis</i>	purple vetch	NI
<i>Vicia hirsuta</i>	hairy vetch	NI
<i>Vicia sativa ssp. sativa</i>	spring vetch	FACU
<i>Vinca major</i>	greater periwinkle	NI
<i>Vulpia bromoides</i>	Brome fescue	FACW
<i>Vulpia myuros</i>	rattail fescue	FACU*