Investigation of the Presence of Wetlands Subject to Regulation under the California Coastal Act
Balloon Track Property
Eureka, Humboldt County, California

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1.0 INTRODUCTION

At the request of CUE VI, LLC, Huffman-Broadway Group, Inc. (HBG) conducted an on site investigation to identify the presence and geographic extent of wetlands at an approximately 38-acre former industrial property in Eureka, Humboldt County, California. The site is locally known as the Balloon Track Property and was primarily used as a railroad switching, maintenance, and freight yard beginning in the late 1800s. Because the site lies within California's Coastal Zone, the investigation utilized the California Coastal Act definition of wetlands and followed the recommended California Coastal Commission (CCC) staff wetland delineation methodology, which uses a one-parameter approach to identify and delineate wetlands. No detailed delineation of wetlands had previously been conducted at the site. Due to the highly disturbed nature of the site this investigation was extended over a several year period beginning in August 2005 and ending in January 2008. Given that the site was periodically mowed, surface trash and debris were removed, and existing access roads were repaired during this extended period study allowed for a more accurate determination of species composition and allowed for collection of inundation (ponding and flooding) and soil moisture data during above normal rainfall periods. Previous draft reports relied on field indicator data collected from January 2006 to March 2007. This updated report includes this information as well as vegetation, soil and hydrology field indicator data obtained during the remainder of 2007 and January 2008. We also reviewed an independent wetland investigative report (Zentner and Zentner, 2007) prior to the preparation of this report.

The report is divided into the following sections:

- Section 2.0. Regulatory Background, presents wetland definitions and describes wetland delineation methods, identifies situations in which wetlands are not readily identifiable by simple means, and describes methods to aid in identification and delineation of wetlands.
- Section 3.0. Environmental Setting, presents relevant information on historical land use, geology, climate, and soils at the Balloon Track Property.
- Section 4.0. Methods, describes methods used in this investigation.
- Section 5.0. Findings, presents a summary of the data collected in support of the wetland delineation.
- Section 6.0. Conclusions, uses the data to delineate wetland boundaries.
- Section 7.0. References, identifies references used in this technical investigation.

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2.0 REGULATORY BACKGROUND

2.1 Definition of Coastal Act Wetlands

Wetlands in California's Coastal Zone are regulated under the California Coastal Act (CCA) of 1976, which is administered by the California Coastal Commission (CCC). Section 30121 of the CCA defines "wetlands" as *"lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens*." Subsequently, the term wetland was further defined in Title 14 *California Code of Regulations* Section 13577(b):

> . . . land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated soil at some time during each year and their location within, or adjacent to, vegetated wetland or deepwater habitats.

On the basis of the above definitions, the CCC considers a wetland to be any area that is sufficiently wet for a long enough period of time to promote the formation of hydric soils or a predominance of hydrophytic vegetation. Title 14 CCR Section 13577 designates the following features to define the upper limits of wetlands:

1. The boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;
2. The boundary between soil that is predominantly hydric and soil that is predominantly non hydric; or
3. In the case of wetlands without vegetation or soil, the boundary between land that is flooded or saturated at some time each year and land that is not.

2.2 Identification of Wetlands

The Coastal Commission requires wetland identification and delineation methodology to be based on the definition in its regulations. A one-parameter approach must be followed to identify and delineate the geographic extent of wetland boundaries. The parameter used can be either (1) conditions that promote the formation of hydric soils, which are generally demonstrated by field indicators of hydric soils, or (2) the presence of a predominance of hydrophytes. The Coastal Commission does *not* accept delineations that require either the presence of both wetland vegetation and wetland soils or the presence of one of these parameters plus evidence of hydrology. However, all three wetland parameters should be evaluated in the field as a basis for identifying and mapping wetland boundaries. Typically, CCC staff recommends that the wetland identification and delineation process begin by mapping areas with a preponderance of wetland indicator species.

Determining the presence or absence of a parameter is accomplished by making an onsite determination as to the presence of indicators. In general, the Commission accepts the field methods described in the Corps of Engineers' 1987 *Wetlands Delineation Manual*. However, the Commission is free to consider all available evidence and other guidance, such as the conclusions of the National Research Council Committee on Characterization of Wetlands (1995). The following sections present the methods used to determine the presence of wetland indicators.

2.3 Wetland Delineation Methodology

2.3.1 Hydrophytic Vegetation

The Coastal Commission's guidelines (1981) adopted the U.S. Fish and Wildlife Service (FWS) definition of hydrophyte. FWS defines the term as "plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content" (Cowardin *et al*. 1979). An area is considered to contain a preponderance of hydrophytic vegetation when more than 50 percent of its plant life is tolerant of anaerobic soil conditions. This determination is made by sampling vegetation in a given location, identifying plant species present, classifying species with respect to their tolerance of anaerobic soil conditions, and determining the plant community's "dominant" species.

Species classifications (e.g., tolerance of anaerobic soil conditions) are determined by consulting *National Lists of Plant Species that Occur in Wetlands*, which are published by FWS' National Wetlands Inventory (NWI). Regional Interagency Review Panels develop the lists by determining species' estimated probability of occurrence in wetlands vs. non-wetlands. Classifications are made by unanimous agreement of the Panel. If the Panel is unable to reach a unanimous decision on the status of a species, "no agreement" (NA) is recorded. If insufficient information exists to determine the status of a species, "no indicator" (NI) is recorded. Species that are not included in the NWI list are assigned a "not listed" (NL) designation in this report.

The resulting NWI lists include plants that grow in a range of soil conditions from permanently wet to dry. Species are divided into the following "indicator categories":

- **"Obligate wetland" (OBL)** species, which, under natural conditions, occur almost always in wetlands (estimated probability >99 percent);

- **"Facultative wetland" (FACW)** species, which usually occur in wetlands (estimated probability 67 – 99 percent), but are occasionally found in non-wetlands;

- **"Facultative" (FAC)** species, which are equally likely to occur in wetlands or non-wetlands (estimated probability 34 – 66 percent);

- **"Facultative upland" (FACU)** species, which sometimes occur in wetlands (estimated probability 1 – 33 percent), but more often occur in non-wetlands; and

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- **"Obligate upland" (UPL)** species, which occur in wetlands in other regions, but, under natural conditions, occur almost always in non-wetlands in the region specified (estimated probability >99 percent).

Species that have an indicator status of OBL, FACW, and FAC are typically considered to be adapted for life in anaerobic soil conditions (Corps 1987) and are used as evidence of hydrophytic vegetation when they dominate plant community composition or cover. Despite widespread use of the lists for wetland delineations, it is important to note that wetland indicator species assignments are not based on the results of a statistical analysis of species occurrence. The indicator assignments are approximations of wetland affinity based on a synthesis of submitted review comments, published botanical literature, and the field experience of the members of the Interagency Review Panel. For this reason and because many plants have properties that enable them to occur in a range of microhabitats (i.e., wetlands and non-wetlands), the presence of wetland indicator species is not unequivocal evidence of the presence of wetland hydrology and hydric soils. A positive indicator or indicators of wetlands should be emphasized, such as an assemblage or populations of plants that can only be considered "hydrophytes" when they are growing in water or partly drained, not effectively drained, hydric soils (Corps 1987). From the FWS perspective, all species on the NWI plant lists are hydrophytes at one time or another and the wetland indicator status (OBL, FACW, FAC, or FACU) reflects the likelihood that a given individual of a species is a hydrophyte or a certain population of these plants is hydrophytic. While OBL and FACW species are the most reliable plant indicators of wetlands, FAC and FACU species also contain populations of hydrophytes (Tiner 2006). However, irrespective of the above technical issues, the Coastal Commission takes the conservative approach that a predominance of wetland indicator species is presumptive evidence of the presence of a wetland.

2.3.2 Hydric Soils

The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the concept of hydric soils. Also, soils in which the hydrology has been artificially modified are hydric if the soil, in an unaltered state, was hydric. Some series, designated as hydric, have phases that are not hydric depending on water table, flooding, and ponding characteristics. The Coastal Commission, like the NRCS, Corps of Engineers, and FWS, has typically accepted guidance for the identification of hydric soils developed by the National Technical Committee for Hydric Soils (NTCHS). The NTCHS, a working group organized by NRCS, has developed criteria for identifying and mapping hydric soils throughout the United States and defines a hydric soil as "a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part [of the soil profile]" (http://soils.usda.gov/use/hydric/intro.html). The most recent (2000) version of the NTCHS hydric soils criteria identifies those soils that are likely to meet this definition. These criteria, which are accepted by most state and federal agencies, are as follows (http://soils.usda.gov/use/hydric/criteria.html):

(1) All Histels except Folistels and Histosols except Folists, or

(2) Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are:

a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or

b. poorly drained or very poorly drained and have either:

(i). water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in),

or for other soils

(ii).water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or

(iii). water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or

(3) Soils that are frequently ponded for long duration or very long duration (7 to 30 days) during the growing season, or

(4) Soils that are frequently flooded for long duration or very long duration (7 to 30 days) during the growing season.

On the basis of computer database searches for soils meeting the second criterion, NRCS has developed hydric soils lists for many parts of the country. Although they are useful for determining whether a particular soil series *has the potential to support current hydric soil conditions*, caution should be used when using these lists for site-specific hydric soil determinations. Many soils on the lists have ranges in water table depths and other characteristics that allow them to be either hydric or nonhydric depending on landscape position and other site-specific factors (e.g., soil clay content, depth to bedrock). It is also important to note, that although a soil for a particular site may be classified as a hydric soil by the NRCS, it can nevertheless fail to exhibit wetland soil characteristics if it has been drained to the extent that flooding, ponding, and or surface soil saturations no longer occur for extended time periods. The converse is also possible when a soil is not listed as hydric, but site drainage conditions bring about wetland soil characteristics. Accordingly, hydric soils lists are good ancillary tools to facilitate wetland determinations, but are not a substitute for onsite investigations.

Field indicators of hydric soil conditions include the following:

1. **Indicators of Historical Hydric Soil Conditions**
   a. Histic epipedons;
   b. Soil colors (e.g., gray colors, soils with bright mottles and/or low matrix chroma)
   c. Iron and manganese concretions.

d. Depleted soil matrix

2. **Indicators of Current Hydric Soil Conditions**
   a. Aquic or peraquic moisture regime (Inundation and/or soil saturation for ≥7 continuous days)
   b. Reducing soil conditions (Inundation and/or soil saturation for ≥ 7 continuous days)
   c. Sulfidic material (e.g., rotten egg smell)

The presence of one or more of the field indicators in "1 a, b c, and/or d" above suggests that historical processes associated with hydric soil development have taken place at a given site. These indicators are useful in determining if soils at a site were historically formed under hydric soil conditions because they persist in soils during both wet and dry periods and may remain for decades and even centuries after changes in site conditions occur that inhibit subsequent wetland development, such as the elimination of wetland hydrology (NRCS 1995). However, only the presence of field indicators "2 a, b, and/or c" confirms that hydric soils occur at a site during the period of observation. The Commission accepts the presence of hydric soil indicators as presumptive evidence that a wetland is present.

2.4 Wetlands Not Readily Identifiable by Standard Methods Because Some Field Indicators Are Unreliable Due to Local Conditions

As described above, CCC generally delineates wetlands based on changes in vegetation or soils as they relate to upland conditions. These include:

1. Boundaries between a predominance of hydrophytic vegetation and a predominance of upland vegetation, or
2. Boundaries between hydric and non-hydric soils.

In some cases, however, the boundaries between wetland and non-wetland are unclear. These situations are summarized in the following table.

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One Parameter Approach Using:	Presence of CCC Wetlands is Unclear	Potential Negative Result
Presence of a Predominance of Hydrophytic Vegetation	Field indicators are unreliable because they are an artifact of prior conditions. This is suggested when a small island of vegetation contains a predominance of wetland indicator species (OBL, FACW, or FAC), but is closely surrounded by a predominance of FAC, FACU, or other mesophytic or xerophytic plants indicative of upland conditions and the area is not topographically, edaphically, or hydrologically distinct from the surrounding landscape.	A false positive determination may be made that the predominant wetland indicator species are acting as hydrophytes, whereas they are actually growing in upland mesic or xeric habitat conditions. This situation may result when wetland indicator species colonize in the absence of competition, for example following the cessation of farming or after the removal of ground cover.
	Field indicators are unreliable because the site contains a predominance of FAC wetland indicator species and there are either no subdominants present or the subdominants are mesophytic or xerophytic species.	A false positive determination may be made that the predominant species are acting as hydrophytes, whereas they are actually growing in upland mesic or xeric habitat conditions.
	Field indicators are unreliable because the delineation is conducted in the fall when seasonal wetlands are often dominated by mesophytic or xerophytic species.	A false negative determination may be made because the wetland indicator species that are predominant in the spring are no longer apparent.
Presence of Hydric Soils	Field indicators are unreliable because they are relicts of past hydric soil conditions (e.g., historical salt marsh that is no longer tidal).	A false positive determination may be made that hydric soils currently exist at the site evaluated.
	Field indicators are unreliable because the characteristics of some soil types may mask wetland soil features or may mimic wetland soils features.	A false negative or false positive determination may result.

Because wetland delineation is not an exact science, the Commission recognizes the importance of professional judgment as articulated in the following passage from the 1981 interpretive guidelines:

> *Some wetlands may not be readily identifiable by simple means. In such cases, [CCC] will also rely on the presence of hydrophytes and/or the presence of hydric soils. . . . Thus, the presence or absence of hydrophytes and hydric soils make excellent physical parameters upon which to judge the existence of wetland habitat areas for the purposes of the Coastal Act, but they are not the sole criteria. In some cases, proper identification of wetlands will require the skills of a qualified professional.*

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The Commission accepts wetland determinations based on the presence of one parameter – wetland vegetation, wetland soils, or, under certain conditions, wetland hydrology. The extent of both hydric soils and wetland vegetation should be determined and the wetland boundary drawn to coincide with that parameter that results in the larger wetland area. Where the presence of wetlands is difficult to determine because some field indicators appear ambiguous or unreliable, the Commission has occasionally in past actions considered strong evidence of upland conditions in making its wetland determination. However, the Commission has not considered the simple absence of standard field indicators of either hydric soils or wetland hydrology to be strong evidence of upland conditions and, hence, evidence that wetland conditions do not exist.

Showing strong evidence of upland conditions requires collecting field data during the rainy season to determine whether the site evaluated becomes inundated or not or whether the major portion of the root zone of the predominant vegetation becomes saturated for ≥7 continuous days or not. This information will then be used to determine if the previously assessed vegetation or soil field indicators found to be ambiguous or unreliable is indicative of wetland or upland conditions.

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3.0 ENVIRONMENTAL SETTING

3.1 Location

The site is an approximately 38-acre former railroad yard and industrial site at the northwestern tip of Eureka. The locally known name for the site, "the Balloon Track", is from the balloon shape of the railroad yard tracks that once occurred within the site. Highway 101 (aka Broadway Street) forms much of the eastern edge of the property; several industrial buildings and a portion of West Washington Street form the southern boundary of the site; and Waterfront Drive forms the western boundary of the property. At its nearest point, Humboldt Bay, which connects the property to the Pacific Ocean, is approximately 150 feet west-northwest of the site across Waterfront Drive. The general site vicinity and location are shown in the regional map on Figure 1 and the relevant portion of the Eureka USGS 7.5-minute quadrangle map on Figure 2. An aerial photograph of the property is included as Figure 3. The site lies within Township 5 North, Range 1 West, Sections 21, 22, and 28, Humboldt Base and Meridian.

3.2 Historical Land Use

The site was historically used as a railroad switching, maintenance, and freight yard beginning in the late 1800s. An 1888 survey map of the City of Eureka (U.S. Surveys 1888) shows that the entire site was undeveloped tidal marsh except for one main railroad track that traversed north – south along the present northwestern site boundary. A small railroad depot and railroad spur were present at the current location of A Street and Waterfront Drive. Clark Slough, a large tidal channel, drained the southwestern portion of the site. Smaller tidal channel tributaries extended onto the site.

Between the late 1800s and early 1900s, tidal marsh in the eastern part of the site was gradually filled to allow construction of railroad maintenance buildings. During the early to mid-1900s, the railroad yard accommodated passenger as well as freight service. Locomotives, railroad boxcars, and passenger cars were frequently refueled and repaired onsite. Additionally, portions of the site were leased to Richfield Oil Company and General Petroleum Company around 1939; these firms were still present as late as 1954. By December 1946, a large part of the tidal marsh had been diked off with a soil berm. By July 1947, the previously diked area, including the southeast corner of the site, had been filled completely. Although Clark Slough was still present, the channel width has been reduced significantly from infilling with dredge materials. Buildings constructed onsite by 1962 were most recently occupied by Redwood Empire Company, Zabel Frank Trucking Company, and Paint Connection Company.

The railroad yard was originally owned and operated by Northwestern Pacific Railroad Company (NWP). In 1986, Southern Pacific Transportation Company (SPTCo) bought the NWP. However, SPTCo did not operate the railroad yard; concurrently with SPTCo's purchase of NWP, the Eureka Southern Railroad Company (ESRC) was created. ESRC leased the railroad yard from SPTCo and continued operation of the railroad line immediately north and south of Eureka. In 1996, the Surface Transportation Board approved the merger of Union Pacific and Southern Pacific. The Union Pacific-Southern Pacific

merger formed the largest railroad in the U.S. Today, the property is owned by CUE VI, LLC.

3.3 Topography

Figure 2 is a U.S. Geological Survey (USGS) 7.5-minute topographic map showing the area around the City of Eureka. As shown on this map, the Balloon Track Property is very flat with an elevation close to sea level. Site elevations range from 8 to 12 feet North American Vertical Datum (NAVD). The terrain is uneven, consisting of a variety of landforms: upland areas, depressions, mounds of debris, a channelized muted tidal drainage (Clark Slough), and upland stormwater drainages and depressions created by industrial cleanup activities (Figure 3).

3.4 Geology

Numerous investigations conducted at the area of study indicate that the area is underlain by a sequence of three relatively continuous stratigraphic units to at least a depth of 65 feet below ground surface (bgs) (Geomatrix, December 2001). The units consist of a sandy fill layer from the surface to approximately 3 to 6 feet bgs. The second unit is estuarine clay (bay mud), which extends from the base of the sandy fill to approximately 13 feet bgs. The third unit is a coarse-grained sandy layer that extends from the base of the estuarine clay to a depth of at least 65 feet (Geomatrix 2001).

3.5 Climate and Precipitation

The area has a mild Mediterranean climate, with average temperatures ranging from over 63.9°F in the summer to 40.6° in the winter months. Annual precipitation is normally about 38.1 inches. The majority of the precipitation occurs between October and April. Occasional thunderstorms occur in the summer months.

3.6 Soils

The study area has not been officially mapped by the NRCS (Natural Resources Conservation Service. The majority of surface soils within the upper 12 inches of the soil surface consist of fill material.

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4.0 METHODS

4.1 Overview of Sampling Methodology

HBG conducted onsite investigations within the site boundary shown by Figures 2 and 3 starting in August 2005 and ending January 2008. The focus of HBG's investigation was to identify and map areas meting the definition of wetlands under the California Coastal Act and City of Eureka's LCP with a focus on identifying wetlands using the one-parameter methodology for determining the predominance of hydrophytic vegetation as described in Sections 2.2 and 2.3.1.

4.2 Predominance of Hydrophytes

A one-parameter study was conducted to determine the presence or absence of a predominance of hydrophytes either throughout or in localized areas within the study site using the methodology described in Sections 2.2 and 2.3.1.

Field work involving general site reconnaissance consisting of qualitative assessments of landscape and drainage features as relates to general plant species composition was conducted on various protons of the site on August 8 and 31, September 1 and 18, and October 24, 2005 and January 26, 2006. Based on this review it was determined that vegetation identification and associated wetland delineation efforts were complicated given that the majority of the site had been mowed close to the ground to comply with City of Eureka police and fire control abatement orders. More specifically, vegetation associated with the Clark Slough channel was readily identifiable, however vegetation associated with other areas on the property was difficult to identify. Therefore, further site investigation was suspended until the height of the 2006 rainy season (January-May) when the vegetation would be more readily identifiable as to species.

Botanist Virginia Dains initially prepared a botanical inventory based on spring season field reviews conducted April 28 and 29, 2006. In addition, the various landscape and drainage features on the site were surveyed on foot and assessed for vegetation similarity. Qualitative information on the composition and distribution of plant species associated with the landscape and drainage features found was used to classify by community type the various vegetation assemblages of plant species found.

Quantitative vegetation sampling occurred during April 25, 26 and 29, May 12 and 13, 2006. The purpose of the sampling was to collect plant cover data for individual species associated within and immediately adjacent to the landscape and drainage features identified during the above described site reconnaissance surveys. Plant cover was visually estimated within 5 x 5 foot square plots at each sample location. Quantitative vegetation sampling to collect plant cover data was also conducted during April 9, July 30 and 31, August 29, and October 24, 2007. This additional sampling was needed in order to further document vegetation coverage due to what appeared to be changes in the growth patterns of various species observed the previous year.

Sample locations where plant cover data were taken were memorialized as point features using a hand-held Trimble Pathfinder global positioning system (GPS) unit with sub-meter accuracy. Areas dominated by hydrophytes were mapped as polygons using a GPS unit.

4.3 Presence of Hydric Soils

A separate one-parameter study was conducted to determine the presence or absence of hydric soils field indicators using the methodology described in Sections 2.2 and 2.3.2. A total of 115 soil pits were dug between April 25, 26, and 27, 2006, April 9 and July 31, 2007 using a sharpshooter shovel within a representative range of landscape and drainage features that could potentially contain hydric soils, as well as just outside those areas for comparison purposes. The presence or absence of hydric soil indicators found at the pit locations was recorded. Observations as to the presence or absence of hydrology indicators (see Section 2.3.3), including the presence of ponded water, were also recorded at each soil pit location. Soil pit locations were memorialized as point features using a hand-held Trimble Pathfinder global positioning system (GPS) unit with sub-meter accuracy. Areas where the soil surface was found to be ponded for ≥ 7 continuous days and/or the soils saturated for ≥ 7 continuous days[1] within the major portion of the root zone of the plants associated with the soil pit location were mapped as polygons using a GPS unit. Soil pits were filled following examination for soil saturation and/or presence of a groundwater table.

4.4 Significant Indictors of Upland Hydrology Conditions

This additional soil field indicator study was initiated because the presence of wetlands was difficult to determine in some areas of the historically filled tidal marsh site because field indicators of vegetation and hydric soils appear ambiguous or unreliable. In some cases hydric soil indicators (color and presence of redoximorphic features) indicated hydric soils could extend beyond areas with a predominance of hydrophytic vegetation. At other locations islands of hydrophytic vegetation surrounded by mesophytic vegetation were found where soil textures indicated the presence of well drained soil conditions. Still others had the colonial grass species, common reed (*Phragmites australis*) extending from low-lying depressional areas into significantly higher topographic elevations (1 to 4+ feet) on the site where the soils were well drained according to the soil textures observed.

Soils pit data was collected during January 27, February 17, March 22, and April 2, 9 and 25, and May 11, 2006; and January 10, 11 and 18, 2008 to determine the presence or absence of hydric soils through the collection of data to determine if there was strong indication of upland soil conditions following significant rainfall (>normal). Indicators evaluated for included (1) ponding, (2) flooding, and (3) soil moisture/wetness (soil saturation present or not) within a major portion (> half) of the root zone of the dominant vegetation. The 2006 time period selected site conditions during the months that on average typically have the highest amounts of rainfall on an annual basis. The January 2008 time frame was selected as the amounts of rainfall received prior to initiation of sampling were already above normal for the month of January. Normal rainfall conditions were determined using the Corps WETS analysis procedure[2].

[1] This is a conservative standard selected by the investigator. Current Corps of Engineer policy for soil saturation is ≥ 14 days.

[2] U.S. Army Corps of Engineers. (2005) "Technical Standard for Water-Table Monitoring of Potential Wetland Sites, " *WRAP*

For the purpose of this study, saturated soils found to occur for long durations (≥ 7 continuous days) within the major portion of the root zone of the predominant grass, and/or forb species were determined to be indicative of hydric soil conditions.

Soil saturation criteria were taken from the Corps' 1987 *Wetlands Delineation Manual.* Saturated soil conditions are defined on page "A11" of the manual as those "*in which all easily drained voids (pores) between soil particles in the root zone are temporarily or permanently filled with water to the soil surface at pressures greater than atmospheric.*" The Corps *Manual* also indicates that for the visual indicator criterion of soil saturation to be met, saturation must occur within a major portion of the root zone; specifically, the *Manual* states on page 38:

> *For soil saturation to impact vegetation, it must occur within a major portion of the root zone (usually within 12 inches of the surface) of the prevalent vegetation. The major portion of the root zone is that portion of the soil profile in which more that one half of the plant roots occur.*

Site evaluation for the presence of inundation and soil saturation were conducted a total of 7 times during the months of January, February, March, April and May 2006. The presence of inundation (ponded and/or flooded) was determined visually by walking the entire site during each period of observation and geographically delineated depressional or low-lying areas and drainages which where inundated for greater than 7 continuous days. Soil saturation was evaluated in areas with ambiguous or unreliable field indicators by excavating a 12-inch-deep soil pit at the margin of ponded depressional areas exhibiting reliable vegetation (predominance of hydrophytes) and hydric soil (ponding) indicators and an adjacent location representative of the next recognizable topographic elevation outward from the perimeter of the ponded area in order to determine if soils saturation within a major portion of the root zone was present. A total of six (6) locations with two 12-inch deep paired soil pits per location[3] were evaluated in this manner. Soil pits were filled following examination for soil saturation and/or presence of a groundwater table.

To evaluate soil moisture, every 1-inch unit of broken soil removed from the soil pit was examined. The examination focused on soil taken from the center portion of the ped because soil along the edges is exposed to the downward movement of surface water or exposed soil macropores containing free water resulting from the auguring process. Soil moisture levels were characterized by loosely holding the fresh soil and assigning observed soil moisture conditions that occurred over the entire surface of the soil ped to one of the following six categories:

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[3] one at margin of ponded area and one at next recognizable topographic change in elevation

Soil Moisture Category	Presence or Absence Categorization Criteria
Dry	Not malleable; crumbly or solid
Moist	Malleable; damp to the touch; pore space apparent with no water glistening or sheen visible on the soil surface
Moist/Wet	Predominantly moist with wet patches common
Wet	Obvious glistening or sheen at the surface; no water drains when held or gently squeezed
Very Wet	Strong sheen to thin film of water at surface; pore spaces not evident, uniform sheen; no water drains when held or gently squeezed; if vibrated in hand, loses form and liquefies to consistency of wet pudding
Saturated	Close to pudding consistency; soft mass; water drains when held or gently squeezed.

If a soil ped sample contained conditions where the difference between one category and another could not be easily discerned, both categories were documented (i.e., wet-saturated).

An additional evaluation for the presence or absence of hydric soils using indicators that provide strong evidence of upland hydrology conditions occurred during January 10, 11 and 18, 2008. Inundation and soil saturation was observed over an 8 day period where rainfall for the preceding days within the month exceeded normal rainfall conditions. Sample locations for ponding and flooding observations extended throughout the site in the same manner as the January to May 2006 studies including areas previously mapped as being inundated. Sample locations for soil saturation were located (1) along the upper elevation limits of the large common reed (*Phragmites*) which extends from the former edge of the balloon rail yard track northward, and (2) an area within the southeastern portion of the site where vegetation sampling and a high groundwater (observed January 10, 2008) had indicated ambiguous results.

The location of areas where the soils were found to be flooded, ponded, and/or saturated during the January 27, February 17, March 16 and 23, and April 2 and 9, 2006, and January 18, 2008 site visits was documented using the above described GPS unit or located with a compass and topographic map[4]. The geographic extent of ponding and/or flooding was also documented using a GPS unit.

4.5 Mapping

GPS location data for the field sample points described were incorporated into a Geographic Information System (GIS) and overlain on a topographic map with one foot contour intervals produced by 3Di West (GeoTerra). On the basis of the data obtained in the above-described investigations, the geographic extent of wetlands potentially subject to CCC jurisdiction resulting from each one-parameter study (1) presence of a predominance of hydrophytic

[4] Determined compass azimuths to known positions then performed intersection/resection determination process.

vegetation, and (2) presence of hydric soils were separately mapped in the field using a hand-held Trimble Pathfinder global positioning system (GPS) unit with sub-meter accuracy. The boundaries were overlain onto the topographic map described above. These boundaries resulting from each of these studies were field verified during December 2007 and January 2008.

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5.0 FINDINGS

5.1 PREDOMINANCE OF HYDROPHYTES

On the basis of the field surveys conducted onsite by HBG staff and the botanical inventory conducted by botanist Virginia Dains, vegetation communities at the site were catalogued by Ms. Dains and are described below. A list of plant species identified onsite is presented in Appendix 4. Wetland plant communities were classified by Dr. Terry Huffman using the U.S. Fish and Wildlife's Service's "Classification System for Wetland and Deepwater Habitats" (Cowardin et al. 1979). Two types of wetland plant communities containing emergent vegetation were identified, (1) estuarine emergent, and (2) palustrine emergent. Emergent wetlands are characterized by erect, rooted herbaceous hydrophytes, excluding mosses and lichens, and the vegetation is present for most of the growing season in most years. These wetland plant communities are usually dominated by perennial plants. Estuarine emergent wetland vegetation is found in habitats that occur on periodically and permanently flooded substrates and open water portions of semi-enclosed coastal waters where tidal seawater is diluted by flowing fresh water. This mix of fresh and ocean waters usually forms a horizontal salinity gradient that varies by area and location, with seasonal variations in freshwater inflow and tidal action. The various physiological stresses exerted in the estuarine environment, especially those related to changing salinities, result in natural communities that are low in species richness but high in density. Palustrine wetlands include all nontidal wetlands dominated by hydrophytes consisting of trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 percent.

Appendix 1 provides a summary of site investigations conducted by HBG. Appendices 2A, 2B, 2D to 2H provide figures showing the sample locations where plant cover data was obtained and provides mapping showing the locations of areas where a predominance of hydrophytes was found.

5.1.1 Disturbed Grassland

Much of the Balloon Track Property is dominated by ruderal (weedy) vegetation. Ruderal vegetation within the railyard and industrial areas occurs in waste areas such as scraped shallow soils, mounds of fill and debris, dredged material deposits, concrete structures, utility infrastructure consisting of metal pipes and wire, railroad tracks, and the roadways currently used to access the site that were constructed during railyard and industrial operations. A large number of potholes formed within the compacted roadbase materials on these roadways as a result of years of vehicular use and lack of maintenance. Although the potholes fill with water periodically during the rainy season, any sparse vegetation that may form is crushed or otherwise heavily impacted by continued vehicle use. Vehicle tracks and ruts within upland and wetland areas adjacent to the larger potholes on the roadways indicate that the potholes are bypassed by vehicles on occasion, likely when the deeper potholes are completely filled with water.

Review of vegetation sample plots within the above described areas shows a predominance of mostly weedy introduced species with a U.S. Fish and Wildlife Service National Wetlands Inventory wetland indicator status representative of upland habitats. These species include

the NI rip-gut brome (*Bromus diandrus*), FACU sweet vernal grass (*Anthoxanthum odoratum*), NI quaking grass (*Briza maxima*), and herbs such as FACU* rough cat's ear (*Hypochaeris radicata*). In addition, shallow soils were sometimes carpeted with NI yellow owl's clover (*Triphysaria versicolor*), NI rose clover (*Trifolium hirtum*) or FAC- English plantain (*Plantago lanceolata*). Mounded areas were covered in introduced non-native tall grasses, FACU- wild fennel (*Foeniculum vulgare*), NI field mustard (*Brassica rapa*), or UPL wild radish (*Raphanus sativus*) or supporting occasional shrubby NI coyote bush (*Baccharis pilularis*). The exception to this is the grass FACW common reed (*Phragmites australis*). The Jepson Manual (Hickman 1993) indicates that common reed is found associated with pond and lake margins, sloughs and marshes[5]. At the site common reed is found on old dredged material deposits adjacent to Clark Slough and extends to the north over 600 feet to within the location of the former balloon shaped segment of the railroad track that was constructed within the site. Comparison of 2006 and 2007 vegetation sampling data indicates that this area expanded by over one acre in size following successive mowing of the area. Vegetation data taken in 2006 within the area of expansion indicates that common reed was present but not a dominant species. In contrast common reed became a dominant plant in the area of expansion. The rate of growth is not surprising considering the potential removal of plant competition by mowing and the documented ability of common reed for rapid growth. Common reed stolons[6] can grow dozens of feet annually, and new plants can sprout at nodes located every few inches along the stolon. Common reed rhizomes, which create thick underground mats, can expand at the rate of 30 feet per year, with new plants sprouting all along the rhizome[7] (USFWS 2007).

Common reed is also found adjacent to drainages and within depressional areas which seasonally pond as described below.

5.1.2 Seasonal Ponds

This habitat type is found in low-lying depressional areas resulting from soil compaction or scraping. These areas pond water periodically during the rainy season for periods of time greater than ≥ 7 continuous days. Analysis of vegetation sample data indicates a predominance of hydrophytes. Characteristic species that dominate in these areas are diminutive annuals such as FACW^{+} toad rush (*Juncus bufonius*), OBL annual tule (*Scirpus cernuus*), and FAC annual bluegrass (*Poa annua*). Where water ponds for long durations of time, taller-growing plants such as water foxtail (*Alopecurus geniculatus*), western mannagrass (*Glyceria occidentalis),* OBL spikerush (*Eleocharis macrostachya*), OBL penny royal (*Mentha pulegium)* and FACW tall flatsedge (*Cyperus eragrostis)* are established. The FACW common reed was found associated with depressions located within dredged material disposal areas adjacent to and several hundred feet north of Clark Slough channel.

[5] This plant is considered by the California Invasive Plant Council as an invasive non-native species.

[6] A plant stolon is a slender stem that grows horizontally along the ground, giving rise to roots and aerial (vertical) branches at specialized points called nodes.

[7] A plant rhizome is any fleshy stem that grows horizontally, as a food-storing organ, beneath the surface of the ground, and enables a plant to reproduce itself. Unlike true roots, rhizomes have nodes, buds, and tiny leaves and do not die when cut; replanted, they yield new plants.

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5.1.3 Non-tidal Drainage

Analysis of vegetation sample data collected within various drainages ditches found on the property indicates a predominance of hydrophytes. These species include FAC+ Himalyan blackberry (*Rubus discolor*), OBL cattail (*Typha latifolia*), and fringes of water-loving herbs such as FACW Bloomer's beaked buttercup (*Ranunculus orthorhyncus* var. *bloomeri*), OBL Pacific oenanthe (*Oenanthe sarmentosa*), FACW hoary nettle (*Urtica dioica* ssp. *holosericea*), FACW- wild teasel (*Dipsacus fullonum*), and OBL giant horsetail (*Equisetum telnateia* ssp. *braunii*). A few OBL willows (*Salix drummondii*) can also be found but there is not a continuous riparian corridor of willows or other perennial or structurally diverse cover. The FACW common reed was found associated with portions of drainages located within several hundred feet of the Clark Slough channel.

5.1.4 Tidally Affected Drainage

A single large drainage channel which is connected to the bay is present in the western portion of the property. This remnant of Clark Slough is excavated into the local filled landscape with steep banks and partially rip-rapped vertical walls that are affected by tidal action. The vegetated fringe that borders the flooded margin of the channel is dominated by the FACW common reed. The OBL thickspike cordgrass (*Spartina densiflora*) also occurs within this area together with individuals of (*Potentilla anserina*), OBL arrow-grass (*Triglochin maritima*) and tussocks of FACW salt grass (*Distichlis spicata*) are also interspersed in the rock revetment along the steep channel side slopes. The introduced cordgrass is also present as a dominant plant within this area. A natural mixed intertidal community is not present.

5.2 Soils

5.2.1 Indicators of Hydric Soils

The site has not been officially mapped by NRCS (Natural Resources Conservation Service). However, staff from the field office in Eureka suggests that the soil underlying the fill material placed onsite could be Bayside silty clay loam. Fill material was pumped in from Humboldt Bay to raise the land above flood levels or structural fill material was placed by previous owners and operators of the site to construct building pads, storm drains, roadways, and work areas.

On the basis of the field surveys, HBG employees concluded that fill material covers the entire study area, with the exception of the bottom and lower portions of the drainage channel in the western portion of the study area that was constructed along portions of the historical alignment of Clark Slough. Appendix 1 provides a summary of site investigations conducted by HBG. Appendices 2A, 2B, 2D to 2H provide figures showing the sample locations where soil field indicator data was collected and the data. The fill material consists of well drained loamy sands and sandy loams, ranging in color from 10 YR 3/1 to 5/3, and mixed with large amounts of gravel. The fill soils were found in both upland areas and depressions. The depressional areas were moderately well drained to poorly drained showing signs of redoximorphic features from past periods of extended long (≥7 continuous days) to very long duration (≥30 continuous days) ponding and/or soil saturation resulting in anaerobic soil conditions. The redoximorphic features ranged in color from 5 YR 5/6 to 10 YR 4/6**.** These

same features can be found in other portions of the site that are well drained given that major portions of fill placed on site was from bay sediments that were pumped to the site.

Bayside silty clay loam was found in the bottom margins of the Clark Slough drainage channel. The soil forms in low-lying areas affected by salts. The surface horizon is frequently puddled. Discoloration is pronounced at the surface, indicating that water has stood for a matter of a week or more. The National Hydric Soils List (SCS 1991) indicates that the Bayside series is a hydric soil. It is important to note, however, that although a soil for a particular site may be classified as a hydric soil by the NRCS, it can nevertheless fail to exhibit wetland soil characteristics if it has been drained to the extent that flooding, ponding, and or surface soil saturations no longer occur for extended time periods. The converse is also possible when a soil is not listed as hydric, but site drainage conditions bring about wetland soil characteristics.

Soils in the Clark Slough channel were found to be flooded continually during the July 2005 to May 2006 periods of observation. Water levels varied on the individual days of observation. The fluctuation in water levels is due to tidal influence from Humboldt Bay and stormwater discharge upgradient of the site. The extent of tidal flow with each tidal cycle appears to be controlled by a tidegate at the channel outfall on the north side of Waterfront Drive. Soils composed of fill material located within approximately 150 to 200 feet of the Clark Slough channel were also found to be flooded during extreme rainfall events for short durations of time (usually less than 48 hours) where stormwater flooding coincided with high tide cycles, creating a backwater flow from the channel margins and over-bank flooding. Depressions within this flood zone were observed to remain ponded for a very long (≥ 30 days) continuous period from January to early April. These soils were determined to be hydric based on Hydric Soils Criterion 3 (see Section 2.3.2). The borders of these areas were also found to be saturated for a very long continuous period from January to early April 2006. Adjacent soils were found to be well drained.

Depressional areas and drainage ditches throughout the site were also observed to be ponded for a very long continuous period from January to early April. The borders of these areas were also found to be saturated for a very long continuous period from January to early April. As the above-described areas dried up, hydrology indicators were observed that provided evidence of past very long duration ponding; these included watermarks, sediment deposits, and prominent algal matting. These soils, which consist of fill material, were determined to be hydric based on Hydric Soils Criterion 3 (see Section 2.3.2). The borders of these areas were also found to be saturated for a very long continuous period from January to early April 2006. Adjacent soils were found to be well drained.

Table 1 identifies hydric soil indicators found on the Balloon Track property during onsite investigations. Table 2 lists wetland hydrology indicators found on the Balloon Track property during onsite investigations. Appendix 1 provides a summary of site investigations conducted by HBG. Figure 4 shows where hydric soils were found. Some of the field indicators observed provides significant hydrology data indicating hydric soil conditions. The wetland hydrology/soil moisture indicators observed include observed flooding, ponding, and/or soil saturation. Other observed field indicators of hydrology/soil

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moisture conditions such as water marks, drift lines, waterborne sediment deposits, and water-stained leaves are not considered significant indicators. This is because these latter indicators provide evidence of past events (e.g., observed water marks), but are not representative of observed ongoing events (e.g., observed ponding).

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Table 1. Hydric Soil Indicators[1] Found on the Balloon Track Property during Onsite Investigations

Soil Series Evaluated During January, February March, April, and May 2006; January 2008:	**Bayside silty clay loam**	**Fill material**	**Fill material**
Landform / Percent Slope:	Drainage channel / Topographic slope 0 – 2 %	Depressional areas and drainage ditches within urban industrial area / Topographic slope 0 – 2 %	Upland areas within urban industrial area having positive surface drainage / Topographic slope typically > 2 %
Historical Indicators of Past Hydric Soil Conditions:	**Indicators Present?**		
1. Histosol	No	No	No
2. Histic Epipedon	No	No	No
3. Gleyed or Low-Chroma Colors	Yes	Yes	No
4. Depleted Soil Matrix	No	No	No
5. High Organic Content in Surface Layer in Sandy Soil	No	No	No
6. Organic Streaking in Sandy Soil	No	No	No
7. Concretions	No	No	No
8. On County Hydric Soils List	Yes	Inclusions Only	No
Indicators[1] of Current Hydric Soil Conditions:	**Indicators Present?**		
1. Sulfidic Odor	No	Yes	No
2. Aquic Moisture Regime (long or very long duration inundation or saturation)	Yes	Yes	No
➢ Observed Flooding or Ponding for greater than ≥7 continuous days	Yes	Yes	No
➢ Observed Soil Saturation for greater than ≥7 continuous days within upper 12" of soil surface	Yes	Yes	No

[1] Based on field observations by HBG wetland scientists.

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Table 2. Wetland Hydrology/Soil Moisture Indicators[1] Found on the Balloon Track Property During Onsite Investigations

Soil Series Evaluated During January, February March, April, and May 2006; January 2008	Bayside silty clay loam (Clark Slough Channel)	Fill material	Fill material
Landform / Percent Slope:	Drainage channel/ Topographic slope 0 – 2 %	Depressional areas and drainage ditches within urban industrial area/ Topographic slope 0 – 2 %	Upland areas within urban industrial area having positive surface drainage / Topographic slope typically >2 %
Indicators:	**Indicators Present?**		
a. Observed To Be Ponded or Flooded for ≥7 Continuous Days	Yes (flooded)	Yes (depressions ponded; ditches flooded)	No
b. Observed To Be Saturated in Upper 12" for ≥7 Continuous Days	Yes	Yes	No
c. Observed Depth to Groundwater	<12"	<12"	>12"
d. Water Marks	Yes	Yes	No
e. Drift Lines	Yes	Yes	No
f. Sediment Deposits	Yes	Yes	No
g. Drainage Patterns in Wetlands	No	No	No
h. Oxidized Rhizospheres	Yes	Yes	No
i. Water-Stained Leaves	Yes	Yes	No

[1] Based on field observations by HBG wetland scientists.

5.2.2 Strong Indicators of Upland Hydrology

Inundation and soil saturation data collected was analyzed in relationship to the amounts of precipitation received during the period of study. Appendices 2C and 2I provide figures showing the sample locations where soil moisture data was obtained and the data. Appendix 3 provides precipitation data for the period (August 2005 to March 2008). A WETS analysis using the data in Appendix 3 for the months of December 2005, January, February, March, April, May and December 2006; and January 2008 was conducted to determine if during the month prior to and during the onsite soil moisture sampling and observations for ponding were during months with normal, above normal or below normal rainfall conditions[8]. City of

[8] U.S. Army Corps of Engineers. (2005) "Technical Standard for Water-Table Monitoring of Potential Wetland Sites, " *WRAP*

Eureka rainfall data for the period of study was obtained from AccuWeather, Inc[9]. The results of this analysis are also provided as part of Appendix 3. The analysis indicates that during the months of data collection February and May 2006 had normal amounts of precipitation. The months of January, March and April 2006 and January 2008 were above normal. Ponding was observed throughout most months except for May 2006. Figure 4 and Appendix 2C show areas determined to contain hydric soils based on strong indicator data to include field observations of inundation and/or saturation for ≥ 7 continuous days in 2006 during above rainfall conditions. The data also show that areas adjacent to depressional areas within the large grassland areas north of Clark Slough Channel where a predominance of the common reed occurs were found to have strong indicators of upland/ non hydric soil conditions during above normal rainfall conditions (Appendix 2C and Appendix 3).

Inundation data taken in January 2008 showed similar ponding patterns to those observed during the 2006 above normal rainy season (Appendix 2I and Appendix 3). Additional areas found to be ponded for ≥ 7 continuous days were primarily the result of removal of trash and debris from low-lying areas or created by vehicles when clean-up activities occurred or fencing was installed around the site during 2007. Soil moisture and groundwater data showed that the selected non depressional areas within and adjacent to the large continuous stand of common reed were within well drained soils found to have strong indicators of upland hydrology during above normal rainfall conditions (2I and Appendix 3).

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[9] AccuWeather, Inc., 385 Science Park Road, State College, Pennsylvania 16803 (http://www.accuweather.com/)

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6.0 CONCLUSIONS

6.1 Wetlands Determined Using Presumptive Evidence of a Predominance of Hydrophytic Vegetation

Figure 5 shows the location of wetland areas on the site subject to CCA jurisdiction using a one-parameter wetlands identification and delineation approach that assumes the presence of wetland habitat based on presumptive evidence of a predominance of hydrophytic vegetation. The majority of areas meeting the CCA definition of wetlands were found on the banks of the tidal Clark Slough Channel and non-tidal drainage ditches, and within depressions created by former industrial or site clean-up activities. The exceptions were areas where the colonial forming FACW common reed has spread beyond the margins of drainages and low-lying depressions into dredged material disposal areas located at higher elevations with well drained soils. Based on the one-parameter vegetation indicator approach the Balloon Track site was found to contain a total of 8.67 acres of wetlands consisting of 1.06 acres of estuarine emergent wetlands associated with the Clark Slough channel and 7.61 acres of palustrine emergent wetlands found scattered throughout other portions of the site[10].

6.2 Wetlands Determined Present When Considering Strong Evidence of Upland Hydrology Conditions

Evaluations conducted using one-parameter wetland identification and delineation approach where strong evidence of upland hydrology was used resulted in a smaller area being delineated as wetlands regulated by the CCA as shown by Appendix 1, Figure 6. This strong evidence included (1) observed lack of inundation in land forms outside of drainage areas and low-lying depressions throughout the site, and (2) lack of soil saturation within dredged material disposal areas with well drained soils following periods of above normal rainfall. Using this approach the Balloon Track site contains a total of 1.06 acres of estuarine emergent wetlands associated with the Clark Slough channel and 4.54 acres of palustrine emergent wetlands found scattered throughout other portions of the site.

6.3 Resolution of Delineation Results

To resolve the issue of which delineation result would be determined CCA wetlands by the CCC HBG discussed the issue with CCC staff. CCC staff indicated that the CCC, in the past, has usually considered these types of adjacent or contiguous areas with ambiguous vegetation or hydric soil indicators wetlands where (1) the preponderance of vegetation is classified by the U.S. Fish and Wildlife Service National Wetlands Inventory as Obligate (OBL), Facultative Wet (FACW) or a mixture thereof, and (2) is connected to a wetland lacking ambiguous wetland vegetation or hydric soil indicators forming a continuous patch.

An example of a similar situation familiar to HBG is a delineation made at the University of California at Santa Cruz Terrace Point property that was approved by the CCC in December

[10] A wetland delineation was prepared by Zentner and Zentner (Zentner and Zentner, 2007), which found a total of 8.761 acres of wetlands on the project site. As mapped, the overall pattern of occurrence of wetlands in both reports is similar. However, HBG's mapping and analysis provides a more detailed level of mapping the location of individual wetlands and more extensive field work (the Zentner delineation occurred on one day, whereas the HBG fieldwork occurred over 30+ days from August 2005 to mid-January 2008).

2007. In this situation, small (less that 0.01 acre) clonal patches of the OBL shrub species marsh Baccharis (*Baccharis douglasii*) were found growing along the edge of large expansive grassland areas several acres in size determined to be wetlands by the CCC. These patches of marsh Baccharis were also adjacent to and extended into areas with similar topographic relief, but contrasting strong evidence of upland hydrology. The CCC determined these areas to be wetlands under the CCA. The basis of this determination was the shared habitat connectivity of clonal populations of marsh Baccharis growing in both wetlands and uplands located immediately adjacent to wetlands.

However, in recognition of the fact that wetland indicator species are found in uplands with some frequency, the CCC has considered the wetland presumption rebuttable by compelling evidence of upland conditions. Figure 7 provides a comparison of wetlands delineation using a predominance of hydrophytic vegetation with the location of areas found to have strong field indicators of hydric soils, and areas with soil indicators providing strong evidence of upland hydrology. Unlike the above example where the shared connectivity of a small or transitional habitat is between a large continuous wetland and a large continuous upland areas the situation at the Balloon Track site is essential reversed. The clonal common reed dominated grassland areas growing within upland hydrology conditions completely surround smaller depressional areas or islands of common reed dominated areas found growing in soils found to have field indicators providing strong evidence of hydric soils (Figure 7). This makes the habitat connectivity rationale for wetlands boundary expansion questionable since it would result in a significant expansion of the boundary into areas with documented strong evidence that upland hydrology conditions exist even during above normal rainfall periods.

HBG believes the central issue here is whether wetland indicator species are growing as hydrophytes in soils that have been identified as having field indicators providing strong evidence that upland hydrology conditions exist during above normal rainfall conditions. HBG has provided strong evidence to show that a significant amount of the areas dominated by common reed are growing within soils with upland hydrology conditions and, therefore, has shown that common reed within these areas is growing as an upland plant not as a hydrophyte. HBG has also found a few similar areas at the site (but significantly smaller in size) dominated by plants listed as hydrophytes, but field indicators provide strong indication of the presence of upland hydrology. These areas are also depicted by Figure 7. It is recommended that the mapping presented by Figures 4 or 6 be used as the best representation of where the prevalent vegetation is growing as hydrophyte and as such subject to CCA regulation.

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FIGURES

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APPENDICES

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