N00236_004303
ALAMEDA POINT
SSIC NO. 5090.3.A

Final
Wetland Assessment
Installation Restoration Site 34

Alameda Point
Alameda, CA

December 2010
Document Control No: KCH-2622-0006-0066

Contract No: N62473-09-D-2622

CTO No: 0021

Prepared for:

Prepared by:

CH2M HILL-Kleinfelder Joint Venture

This page intentionally left blank.

Final

Wetland Assessment
Installation Restoration Site 34

Alameda Point
Alameda, California

Contract Number: N62473-09-D-2622
Solicitation Number: Modification 01
Contract Task Order 006
Document Control Number: KCH-2622-0006-0066

Prepared for

U.S. Department of the Navy
Base Realignment and Closure
Project Management Office West

December 2010

Prepared by

CH2M HILL Kleinfelder,
A Joint Venture (KCH)

Russell Huddleston
Certified Professional Wetlands Scientist

Diane Sarmiento, P.E.
Task Order Manager

This page intentionally left blank.

Contents

Appendices

Tables

Figures

Acronyms and Abbreviations

BRAC	Base Realignment and Closure
FAC	Facultative
FACW	Facultative wetland
GPS	Global Positioning System
HUC	Hydrologic Unit Code
IR	Installation Restoration
Navy	United States Department of the Navy
NRCS	Natural Resources Conservation Service
OBL	Obligate
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey

This page intentionally left blank.

Executive Summary

A Wetland Assessment was conducted at Installation Restoration (IR) Site 34 Alameda Point, Alameda, California, for the U.S. Department of the Navy (Navy), Base Realignment and Closure (BRAC) Program Management Office West, in accordance with Contract No. N62473-09-D-2622, Modification 1, under Contract Task Order 0006. Field surveys were completed by a KCH biologist on July 29, 2010. The results of the Wetland Assessment confirmed the presence of 0.25 acre of tidal waters and 0.17 acre of coastal salt marsh in the northern part of the site adjacent to the Oakland Inner Harbor. The 0.27 acre of seasonal wetlands and 0.15 acre of nontidal waters previously identified on the site (ChaduxTt, 2010) were not considered to meet the criteria for Section 404 Jurisdiction wetlands or waters.

This page intentionally left blank.

1.0 Introduction

CH2M HILL Kleinfelder, A Joint Venture (KCH), has prepared this Wetland Assessment report to provide information regarding the wetland delineation at Installation Restoration (IR) Site 34 Alameda Point, Alameda, California. This work was performed for the U.S. Department of the Navy (Navy), Base Realignment and Closure (BRAC) Program Management Office West, in accordance with Contract No. N62473-09-D-2622, Modification 1, under Contract Task Order 0006.

Alameda Point is a former military base located at the western end of Alameda Island in the San Francisco Bay. The United States Army first began development of the base in 1930 by using dredge material to fill what was at the time shallow open water. From the 1930s until its closure in 1997, Alameda Point was a major operations base for the Navy and also provided support for the United States Marine Corps and other operations that were supported by several thousand military and civilian personnel. The approximately 1,700-acre facility comprised hundreds of buildings and extensive infrastructure including utilities, roadways, tarmacs, piers, and berths.

1.1 Project Location and Description

IR Site 34 is a 4.18-acre site located along the northern border of Alameda Point, immediately south of the Oakland Inner Harbor in Alameda County, California (Figure 1).

Prior to the base closure in 1997, the site was a Naval Air Rework Facility that included maintenance, sandblasting, and painting facilities as well as wood and metal shops and storage areas. The site included 12 buildings, 7 aboveground storage tanks, generator accumulations points, 15 transformers, and an aviation fuel line. The buildings and structures were removed from the site between 1996 and 2000, leaving only concrete pads and foundations (ChaduxTt, 2010).

1.2 Environmental Setting

Alameda Point is located at the western edge of the East Bay Terraces and Alluvium ecological subsection of the Central California Coast subregion (Miles and Gouday, 1998). This subsection is generally characterized by the alluvial plain between the east bay hills and the San Francisco Bay.

1.2.1 Vegetation

Typical vegetation scattered throughout the site includes fennel (*Foeniculum vulgare*), pampas grass (*Cortaderia jubata*), birds-foot trefoil (*Lotus corniculatus*), English plantain (*Plantago lanceolata*), Mediterranean lineseed (*Bellardia trixago*), stinkwort (*Dittrichia graveolens*), velvet grass (*Holcus lanatus*), and Monterey centaury (*Centaurium muehlenbergii*). A narrow strip of coastal salt marsh habitat is present along the northern edge of the site, along the southern edge of the Oakland Inner Harbor, and north of a chain-link fence. This

area is characterized by relatively dense salt grass (*Distichlis spicata*) with scattered pickleweed (*Salicornia virginica*) and areas of open water.

1.2.2 Climate and Hydrology

The regional climate is moderated by maritime influences and is characterized by mild temperatures with generally wet winters and dry summers with a year-round growing season. Average temperatures range from a low of 44°F in December and January to a high of 75°F in September. Average annual precipitation is 23.10 inches, most of which occurs between November and March (USDA, 2002). Based on data from the Oakland Foothills weather station (UCIPM, 2010), located approximately 8 miles east of IR Site 2, the total precipitation between November 2009 and July 2010 was 97 percent of the average for this time period.

IR Site 34 is located in the East Bay Cities Hydrologic Area, which has a drainage area of 83,633 acres and is in the San Francisco Bay Hydrologic Unit (Hydrologic Unit Code [HUC] 18050004).

1.2.3 Soils

The entire area has been mapped as Xeropsamments fill by the United States Department of Agriculture (USDA, 2010). A soil map for the project area is included in Appendix A. This unit consists of sandy material that was dredged from old beach areas. Elevation ranges from near sea level to 10 feet with slopes less than 2 percent. Approximately 10 percent of the map area consists of areas that are underlain by strongly alkaline clay to a depth of 36 to 48 inches. An additional approximately 5 percent of the area includes concave areas that have a shallow water table (approximately 36 inches) and may be ponded during the winter. These soils are rapidly permeable but the root zone is restricted to a depth of 40 to 60 inches for water-sensitive plants (USDA, 1981).

2.0 Methods

The United States Army Corps of Engineers (USACE) defines wetlands as areas that are "inundated by surface water or groundwater with a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (Title 40 Code of Federal Regulations [CFR] Section 230.3 and Title 33 CFR Section 238). The survey methodology followed USACE's 1987 *Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008).

USACE uses the three-parameter approach (vegetation, soils, and hydrology) to determine the presence of wetlands. As a general rule, under this method, evidence of a minimum of one positive indicator for each parameter must be found (under normal circumstances and in nonproblem areas) to make a positive wetland determination. In general, wetlands will normally meet the following criteria:

Hydrophytic Vegetation: More than 50 percent of the dominant vegetation is composed of plant species that are adapted to survive and grow in hydrophytic (wet) conditions. Plants are assigned a wetland indicator status based on their probability of occurring in wetlands (Reed, 1988).

Hydric Soils: The Natural Resources Conservation Service (NRCS) defines hydric soil as "soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Federal Register, July 13, 1994). The criteria for establishing the presence of hydric soils vary among soil types, drainage classes, and land resource regions. NRCS has developed field indicators for identification of hydric soils (USDA 2006). These indicators are used by USACE in the Arid West Regional Supplement guidelines (USACE, 2008). These indicators rely on soil characteristics such as texture, color, and the presence of redoximorphic features to determine if soils are hydric.

Wetland Hydrology: Areas with wetland hydrology are defined as "inundated either permanently or periodically at mean water depths less than 2 meters (6.6 feet), or the soil is saturated to the surface at some time during the growing season" (Environmental Laboratory, 1987). This saturation or inundation must be present for at least 5 percent of the growing season in order to be considered a potential wetland (Environmental Laboratory, 1987).

2.1 Pre-Field Investigation

Prior to conducting the field surveys existing available information, including the Oakland West USGS topographic map, the Alameda County Soil Survey (USDA, 1981), National Wetland Inventory Maps, and aerial photographs of the site were reviewed. The *Final Wetland Delineation Report for Installation Restoration Site 34* that was prepared for the Navy

BRAC Program Management Office West (ChaduxTt, 2010) was also reviewed prior to the field surveys.

2.2 Field Survey Methods

Pedestrian surveys were conducted throughout the entire 4.18–acre survey area on July 29, 2010, by KCH wetland ecologist Russell Huddleston and KCH environmental scientist Holly Barbare. Although the surveys were conducted in the summer the dominant plant species were still readily identifiable and evidence of seasonal inundation such as biotic crust, sediment deposits, and soil cracks were observed in other locations at Alameda Point at the same time.

A total of five sample points were established to characterize the vegetation hydrology at the site (Figure 2). The wetland determination data forms are included in Appendix B. No additional sample points were located in the coastal salt marsh area as the data sheets from the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010) and field observations during the present survey clearly indicate this area is a wetland.

At each sample point, all of the plant species present and identifiable were recorded and the percent cover was visually estimated. All taxonomic designations follow the *Jepson Manual of Higher Plants of California* (Hickman, 1993) or the updated taxonomy per the *Jepson Online Interchange for California Floristics* (UC, 2010). The wetland indicator status of each species was determined using the *National List of Plant Species that Occur in Wetlands* (Reed, 1988). Dominant species within each vegetation strata (tree, shrub, and herb) included the most abundant species whose cumulative cover accounted for at least 50 percent of the total cover, as well as any single species that accounted for at least 20 percent of the total vegetative cover. Strata that contained less than 5 percent total cover were not considered in the dominance test. The sample area for herbaceous species included a 5-foot radius from the sample point.

Evidence of flooding and the limit of the high tide were determined based on observations of debris, drift lines, algal matting, distinctive changes in dominant vegetation, and evident differences in topography along the shoreline. An evaluation of seasonal wetland hydrology in nontidal areas was done by examining the site for indicators of ponded surface water such as algal matting, soils cracks, sediment deposits, and remnants of aquatic invertebrates. Other factors such as site topography and drainage, localized topography (i.e., depressional basins or swales), and the presence or absence of water-sensitive plant species were also considered when making determinations on the presence or absence of wetland hydrology.

Soils throughout the areas are derived from dredged fill material (USDA, 2010). Because detailed soil investigations were completed as part of the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010) no additional soils investigations were completed as part of this assessment. The results of the ChaduxTt 2010 soil investigations are summarized in the results section of this report.

3.0 Results

The 4.18-acre study site is characteristic of many developed portions of Alameda Point. After base closure, remedial activities and physical removal of former buildings and other structures modified existing conditions. The site is currently characterized by open gravel areas, cement pads and foundations, open soils, and scattered weedy vegetation. A small area of coastal salt marsh (0.17 acre) and open tidal waters (0.25 acre) are present along the northern edge of the site, adjacent to the Oakland Inner Harbor (Figure 2). A small area of the site, near a storm drain, exhibited evidence of shallow ponding based on the presence of soil surface cracks. Descriptions of the wetlands and waters observed during the July 2010 field survey of IR Site 34 are provided below. The results of sampling points established in areas identified as potential jurisdictional wetlands in the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010) are also provided below. A discussion of findings and conclusions of this report relative to the findings presented in the *Final Wetland Delineation Report for Installation Restoration Site 34* prepared by ChaduxTt (2010) are provided in the following section.

3.1 Coastal Salt Marsh and Tidal Waters

The area to the north of the chain link fence along the northern border of IR Site 32 is characterized by a mosaic of coastal salt marsh and open water (Figure 2). Vegetation within the salt marsh is characterized by a mixture of saltgrass with scattered pickleweed, California sea lavender (*Limonium californicum*) and fleshy jaumea (*Jaumea carnosa*). Soils in this area consist of dredge fill material with abundant yellowish red (5 YR 5/8 and 5YR 4/6) iron concentrations and greyed soils at a depths between 4 and 9 inches below the ground surface (USDA, 2010; ChaduxTt, 2010). This area is located immediately adjacent to the Oakland Inner Harbor and appears to be subject to regular flooding during higher high tides based on the presence of debris, detritus, and algal matting as well as a distinct and abrupt boundary with the adjacent nonwetland habitat (Photo 1, Appendix C). The adjacent upland area is characterized by dense cover of ice plant (*Carpobrotus edulis*) with scattered ripgut brome, rat-tail fescue, white melilot (*Melilotus albus*), saltgrass, and pickleweed. Soils in the upland area consist of sandy dredge material with no evidence of redoximorphic conditions (USDA, 2010; ChaduxTt, 2010).

3.2 Potential Nontidal Waters

A very shallow, weakly expressed concave depression is present in the southwest corner of IR Site 34 to the west of a series of storm drains. Based on the presence of shallow surface soil cracks that formed as a result of drying and shrinking of fine grained sediments and organic material, this area appears to support some duration of surface ponding (Photo 2, Appendix C). The area where the surface soil cracks are present is devoid of vegetation. Soils in this area consist of dredged sandy fill material that lack evidence of reducing conditions (USDA, 2010; ChaduxTt, 2010).

3.3 Potential Seasonal Wetlands

Six sample points were established in areas that had been identified as potential jurisdictional seasonal wetlands in the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010). Descriptions of these sampling points are provided below. Information on soils at these sample locations are from the wetland datasheets included in Appendix C of the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010). The locations of the sample points are shown on Figure 2.

3.3.1 Sample Point 1

This sample point was located adjacent to a storm drain in the southwestern corner of IR Site 34 (Figure 2). This area was previously mapped as seasonal wetland W2 (ChaduxTt, 2010). Vegetation is characterized by low-growing salt grass with stunted brass buttons and rabbitsfoot grass (*Polypogon monspeliensis*) (Photo 3, Appendix C). Soil consists of dredged sandy fill material with no evidence of reducing conditions (USDA, 2010; ChaduxTt, 2010). Topography in this area is flat and no evidence of prolonged seasonal saturation or inundation was observed during the KCH July 2010 field survey.

3.3.2 Sample Points 2 and 3

Sample points 2 and 3 were located around the margins of the open, unvegetated area in the southwest part of IR Site 2 (Figure 2). This area was previously mapped as seasonal wetland W4 (ChaduxTt, 2010). Vegetation is generally sparse and characterized by a mixture birds-foot trefoil, low growing salt grass, and stunted brass buttons and rabbitsfoot grass with upland vegetation including red brome (*Bromus madritensis*) and Mediterranean lineseed also scattered throughout this area (Photo 4, Appendix C). Soils in this area are loamy sands derived from dredged fill material with a few ($\leq$ 2 percent) yellowish red (10 YR 5/8) concentrations below 4 inches in some areas (USDA, 2010; ChaduxTt, 2010). Topography throughout this area is flat and no evidence of seasonal saturation or inundation was noted in this area during the KCH July 2010 field survey. Thin, powdery salt deposits a resulting from capillary rise and evaporation of saline groundwater were also noted in this area.

3.3.3 Sample Points 4 and 5

These sample points were established in the south central area of IR Site 34 adjacent to old building foundations (Figure 2) in areas mapped as seasonal wetlands W5 and W6 (ChaduxTt, 2010). Both locations are characterized by relatively high cover of small stunted rabbitsfoot grass along with stinkwort and birds-foot trefoil (Photo 5, Appendix C. Soils in these areas consist of mixed fill material with trace amounts of reddish yellow concentrations along gravel faces in some areas (USDA, 2010; ChaduxTt, 2010). Topography at both locations was flat and no evidence of prolonged seasonal saturation or inundation was noted in either location during the KCH surveys in July 2010.

4.0 Discussion

The results of the wetland assessment of IR Site 34 performed by KCH in July 2010 concur with some of the findings presented in the *Final Wetland Delineation Report for Installation Restoration Site 34* prepared by ChaduxTt (2010) and differ in other areas (Table 1). Based on the results described in the previous section:

- The 0.25-acre tidal waters and 0.17-acre coastal salt marsh previously mapped by ChaduxTt (2010) along the northern edge of IR Site 34 (Figure 2) are part of, or immediately adjacent to, the Oakland Inner Harbor, a traditional navigable waterway and are considered jurisdictional under Section 404 of the Clean Water Act
- The 0.27 acre of seasonal wetlands and 0.15-acre nontidal waters previously mapped by ChaduxTt (2010) are not considered jurisdictional under Section 404 of the Clean Water Act

The following sections provide a discussion of the basis and rational for the determination that areas previously mapped as wetlands and waters by ChaduxTt (2010) are not considered to be jurisdictional under Section 404 of the Clean Water Act.

TABLE 1
Summary of Findings from the KCH Wetland Assessment for IR Site 34

Description	Acres	Comments
Tidal Waters	0.25	S1, S2, S3 and S5; No change from ChaduxTt, 2010
Coastal Salt Marsh	0.17	W1; No change from ChaduxTt, 2010
Nontidal Waters	None	S4 indentified in ChaduxTt, 2010 (0.15 acres) does not meet criteria for jurisdictional nontidal waters
Seasonal Wetlands	None	W2, W3, W4, W5, W6 (0.27 acres) identified in ChaduxTt, 2010 do not meet criteria for jurisdictional wetlands
TOTAL	**0.42**	

4.1.1 Potential Non-Tidal Waters

A portion of the area mapped as nontidal waters in the *Final Wetland Delineation Report for Installation Restoration Site 34* prepared by ChaduxTt (2010) was found to exhibit evidence of shallow seasonal ponding as evidenced by thin soil cracking (Photo 2, Appendix C. While surface soil cracks are a primary indicator of wetland hydrology this indicator is also common in temporary ponds and puddles that are not wetlands based on the lack of vegetation and hydric soils (USACE, 2008). Nontidal waters include aquatic habitat such as rivers, streams, lakes and ponds. Small, shallow seasonal puddles associated with developed areas are generally not considered to be jurisdictional waters of the United States.

4.1.2 Wetland Indicators and Potential Seasonal Wetland Areas

Vegetation

Hydrophytic plants are defined as species that are tolerant of prolonged inundation or soil saturation during the growing season (USACE, 2008). The hydrophytic criterion is met in any area where more than 50 percent of the dominant plant species have an indicator status of Facultative (FAC – equally likely to occur in uplands and wetlands), Facultative wetland (FACW - occur more frequently in wetlands, but may also occur in nonwetlands) or Obligate (OBL – almost always found in wetlands) (USACE, 2008; Reed, 1988).

The wetland indicator status provides useful information on the probability of a plant species occurring in wetland or upland habitats; however, many factors other than wetness can affect the composition of plant communities (USACE, 2008). A number of plants have broad tolerance ranges that allow them to occur across a wide range of moisture regimes and the presence of a FAC or FACW plant community may not always be indicative of prolonged saturation or inundation during the growing season. The most common and widespread hydrophytic plant species observed in the areas mapped as seasonal wetlands include saltgrass, brass buttons, rabbitsfoot grass, and birds-foot trefoil, all of which are halophytic plants (tolerant of moderate to highly saline soils) (Khan and Weber, 2008; Ungar, 1991). Halophytic species are often found in wetlands but they can also be misleading indicators of wetland conditions in areas with saline soils (USACE, 2008).

In addition to the presence of halophytic species, no definitive correlation was evident between the distribution of hydrophytic vegetation and indicators of seasonal wetland hydrology. Species such as birds-foot trefoil, velvet grass, English plantain, white melilot, Muhlenberg's centaury, and yellow glandweed, all of which are listed as FAC on the *National List of Plants that Occur in Wetlands* (Reed, 1988) were common and widely distributed across the site. Dominant FACW species observed at the sample locations, were also observed throughout site during the July 2010 KCH field survey. Similar observations were documented by ChaduxTt (2010) where some of the dominant plants identified that were associated with wetland sample points, such as rabbitsfoot grass and birds-foot trefoil, were nearly as abundant in the adjacent nonwetland sample point locations (Table 2).

TABLE 2
Range of Percent Cover for Dominant Wetland Plant Species Reported by ChaduxTt (2010) in Seasonal Wetland and Upland Sample Points at IR Site 34

Species	Wetlands	Non-Wetlands	Indicator Status*
Distichlis spicata saltgrass	20%	5%	FACW
Polypogon monspeliensis rabbitsfoot grass	1% -40%	5%-30%	FACW
Cotula coronopifolia brass buttons	5%-50%	1%	FACW
Lotus corniculatus birds-foot trefoil	20%-60%	1%-30%	FAC

Source: (ChaduxTt, 2010)
*Indicator Status from the *National List of Plant Species that Occur in Wetlands* (Reed, 1988)

During the July 2010 field surveys of IR Site 34 all three of the dominant FACW plant species (saltgrass, brass buttons, and rabbitsfoot grass) observed at sample locations in potential seasonal wetland areas were low-growing, stunted plants with limited flowering. Other plant species also common throughout the area, such as birds-foot trefoil, Mediterranean lineseed, and stinkwort, did not exhibit any evidence of significantly reduced stature or flowering. In addition, saltgrass observed in the coastal salt marsh habitat at the north end of the site, exhibited relatively vigorous growth. It appears that plant species that are more commonly found in moist habitats were stressed relative to the same species found in the tidally flooded area and other FAC and nonwetland plants species on the site.

In summary hydrophytic vegetation was found to be present in the areas previously mapped by ChaduxTt (2010) as seasonal wetlands; however, there is insufficient evidence to support the conclusion that the presence and abundance of these species is the result of prolonged inundation or saturation during the growing season.

Hydrology and Hydrological Indicators

Seasonal wetlands are considered problem areas in terms of hydrology because the presence of surface ponding or saturated soil conditions are usually lacking during certain times of the year due to normal seasonal weather patterns (USACE, 2008; Environmental Laboratory, 1987). During dry times of the year determinations of wetland hydrology are based on indicators other than the presence of saturation or inundation. These indicators can be used to confirm that an area was subject to an episode of inundation or saturation recently, but they provide little information on the timing, duration, or frequency of such events (USACE, 2008; Nation Research Council, 1995).

Seasonal weather patterns and conditions can influence the presence or absence of wetland hydrology indicators in the arid west region. In some years, typical indicators may be absent due to extended periods of drought. Conversely, periods of above average rainfall can result in indicators of wetland hydrology in nonwetland areas (USACE, 2008). Daily rainfall records from the Oakland Foothills weather station (UCIPM, 2010), located approximately 8 miles east of IR Site 34, were compared with the long-term average rainfall for Oakland, California, (WRCC, 2010) between January and May of 2009 and January and July of 2010. Total rainfall for these periods in 2009 and 2010 was approximately 94 percent and 97 percent of the average, respectively. While the total amount of rainfall was generally similar, the timing and amounts of rainfall were notably different between these 2 years (Figure 3). One notable difference in the rainfall patterns is over half of the total rainfall between January and May of 2009 occurred in a series of major storms in February, where rainfall was generally more evenly distributed throughout the season in 2010 (Figure 4).

No measurable precipitation was reported in the month of July 2010 (UCIPM, 2010). The ChaduxTt (2010) wetland delineation was conducted on May 14, 2009, 8 days after 1.54 inches of rainfall were recorded between May 1 and May 5 (UCIPM, 2010). Despite the recent storm events immediately prior to the May 2009 field surveys, no surface water, saturated soils, or moist soils were noted at any of the sample points established in areas mapped as seasonal wetlands in the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010).

Because of the lack of surface water and saturated soils, indicators such as the presence of a salt crust, biotic crust (described as dried algae on the soil surface), and small sediment deposits observed in one location were used to infer the presence of wetland hydrology during the previous field surveys conducted in May 2009, as described in the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010).

Salt crust, when used as an indicator of wetland hydrology, refers to hard or brittle deposits of salts that form on the ground due to evaporation of saline surface water (USACE, 2008). No salt crusts were observed on IR Site 34 during the July 2010 field surveys conducted by KCH; however, fluffy, powdery salt deposits resulting from the capillary rise and evaporation of saline groundwater were observed in several locations. These powdery salt deposits are not considered salt crusts and are not indicative of seasonal wetland hydrology (USACE, 2008).

The *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010) also relied on the presence of algae to infer the presence of seasonal wetland hydrology. The presence of algae on the soil surface is indicative that ponded water was present in an area, but provides no information on the frequency and duration of such events. While the presence of surface algae is a reasonable indicator of wetland hydrology, this indicator has not been scientifically tested as to its validity as an indicator of prolonged wetland hydrology (NRC, 1995). No algal matting was observed outside of the salt marsh habitat during the July 2010 field surveys conducted by KCH. It is likely that the algal matting noted during the May 2009 surveys (ChaduxTt, 2010) was the result of widespread flooding of the site due to heavy, prolonged rainstorms in February 2009, as evidenced by the observations of algal matting in nonwetlands areas (Sample Point 8 in Appendix C of the *Final Wetland Delineation Report for Installation Restoration Site 34* by ChaduxTt (2010).

Another relevant factor, in terms of wetland hydrology, is the duration of saturation or inundation. In general, seasonal wetlands are areas that are continuously saturated or inundated between 12.5 and 25 percent of the growing season (Environmental Laboratory, 1987). The growing season in Alameda County is 365 days (USDA, 2002); therefore, most seasonal wetlands would exhibit continuous saturation or inundation for a minimum of 45 days. The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008) suggests that only 14 or more consecutive days of flooding or ponding are required per the National Research Council (1995). What the regional supplement does not report is that, while the 14 days of flooding or ponding is an appropriate regional threshold in most situations, it should not be used in areas were the growing season is more than 285 days, and in such areas different regional standards should be developed (NRC, 1995). Where the growing season is 365 days, a minimum threshold of 5 percent of the growing season (per the 1987 Wetland Delineation Manual) would equal a minimum of 18 consecutive days of ponding, flooding, or saturation. However many areas that are ponded or are saturated less than 45 days (less than 12.5 percent of the growing season) are **not** wetlands (Environmental Laboratory, 1987). During the July 2010 field surveys there was no evidence to suggest prolonged continuous saturation in any of the areas that had been identified as seasonal wetlands in the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010).

Soils

Soils in this area were considered to be problematic because they are derived from dredged fill material (USDA, 2010, 1981). Soils derived from dredge fill material are problematic because it can be difficult to determine if the presence of hydric indicators are the result of current anaerobic conditions in a given location or if the indicators represent relict features that formed in the area from which the soils were excavated. Observations of surface soil conditions reported in the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010) are consistent with what would be expected with sandy, dredged fill material.

None of the areas mapped as seasonal wetlands in the *Final Wetland Delineation Report for Installation Restoration Site 34* met the criteria for hydric soils; however, hydric soils were identified in one upland sample point location (ChaduxTt, 2010). It was concluded that the lack of hydric soil indicators in seasonal wetland areas was the result of these areas having been recently formed with insufficient time having passed for hydric soil indicators to develop (ChaduxTt, 2010). Based on the above discussion of vegetation and hydrology conditions observed on IR Site 34 during the KCH field surveys in July 2010, it seems unlikely that soils in these areas mapped as seasonal wetlands are saturated or inundated with a frequency and duration long enough to result in anaerobic conditions in the upper part.

Use of Indicators

The use of hydrophytic vegetation, wetland hydrology, and hydric soils indicators are intended to provide a consistent technical basis to determine the limits of wetland ecosystems under normal circumstances. The *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) as well as the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008) provide guidance for the use of various indicators in making wetland determinations. However, they also caution that "application of methods described in the manual …requires the user be familiar with wetlands of the area and use his or her training, experience, and good judgment in making wetland determinations" (Environmental Laboratory, 1987). As noted in the previous sections indicators of wetland conditions at IR Site 34 are problematic. Based on a review of the findings in the *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010) and additional field surveys conducted in July of 2010, there is insufficient evidence to suggest that the 0.27 acre mapped as a seasonal depression meets the criteria to qualify as wetlands. The rationale for this determination includes the following points:

1. While all of the mapped wetland areas meet the hydrophytic vegetation criteria, the dominant species are all halophytes that may be present due to saline soil conditions unrelated to prolonged seasonal saturation and inundation

2. Many of the plants observed in wetlands included FAC species that were also commonly found in nonwetland areas and there were no distinct changes between the area mapped as seasonal wetlands and the adjacent nonwetland areas

3. Plant species more commonly found in wetlands such as saltgrass, brass buttons, and rabbitsfoot grass were all very small-stature plants that exhibited poor growth and vigor relative to the other plant species observed at the site and relative to similar species found in the coastal salt marsh habitat

4. Surveys in May 2009 were completed 8 days after 1.54 inches of rainfall were reported at a nearby weather station, but no surface water, ground water, saturation, or moist soils were noted at any if the sample points associated with mapped seasonal wetlands
5. No defined topographic basins or distinct concave depressions were evident in any of the areas mapped as seasonal wetlands
6. The presence of a salt crust was inappropriately used as a primary indicator of wetland hydrology
7. The presence of algae on the soil surface was likely the result of heavy rain storms widespread flooding during February of 2009, based on the observations of dried algae in areas identified as seasonal wetlands as well as in nonwetland areas
8. There is insufficient evidence to support the assumption that soils in the areas mapped as seasonal wetlands are anaerobic in the upper part for a prolonged duration during the growing season, and hydric soil indicators are lacking due to the wetlands areas having been recently formed

4.1.3 Discussion of Jurisdictional Status

The *Final Wetland Delineation Report for Installation Restoration Site 34* (ChaduxTt, 2010) identified a total of 0.42 acre of potential Section 404 jurisdictional nontidal waters and wetlands at IR Site 34. As described above, the characterization of these areas as wetlands is debatable. An equally important question is, "would such areas would be considered jurisdictional under the Clean Water Act. "

Wetlands are defined as "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (CFR 33, Part 328). However, not every area that appears to be a wetland or other waters of the United States is jurisdictional. The USACE Standard Operating Procedures for the Regulatory Program (1999) states: "The preamble to 33 CFR Part 328 states that features excavated from uplands are not considered waters of the United States. For example, a drainage ditch excavated in the uplands, and/or located along a roadway, runway, or railroad that only carries water from upland areas, is not considered jurisdictional, even if it supports hydrophytic vegetation. Other common examples of non-jurisdictional areas excavated from uplands include storm water or other treatment ponds, detention basins, retention ponds, sediment basins, artificial reflecting pools, and golf course ponds. Gravel pits excavated from uplands are not considered jurisdictional, so long as the areas in question have not been abandoned (i.e., the area is under some sort of management plan related to the gravel operation, including use as a water supply or water storage area). Wetlands that form on top of a landfill are not subject to Corps jurisdiction."

The *Final Wetland Delineation Report for Installation Restoration Site 34* prepared by ChaduxTt (2010) suggests that the nontidal waters and seasonal wetlands are the result of human-induced activities. Human-induced wetlands typically include such features as irrigated wetlands, impoundments, dredge material disposal areas, and stream channel realignments. Human-induced wetlands are almost always in areas where there has been a significant change to the natural hydrologic regime that results in an increase or decrease in the

wetness of an area (Environmental Laboratory, 1987). IR Site 34 previously had numerous buildings, structures, and storage areas until the decommissioning of the naval base in the late 1990s. Subsequent activities have included the removal of buildings and materials from the site as well as minor remedial activities. Several storm drains remain onsite, and no significant change to the site elevation or hydrology has occurred as a result of these activities. The areas identified as potential jurisdictional nontidal waters and seasonal wetlands in this area are found to be relatively flat areas associated with former storage areas and between building foundations that may become temporarily flooded during heavy storm events, but do not appear to meet either the ecological or regulatory definitions of wetland or waters. This report presents the findings and analysis of the conditions that were observed at IR Site 34. However, the final jurisdictional determination regarding limits of waters of the United States, including wetlands, is made by the USACE. Any results and conclusions presented in this document should be considered preliminary until they have been formerly verified by the USACE.

This page intentionally left blank.

5.0 References

ChaduxTt, 2010. *Final Wetland Delineation Report for Installation Restoration Site 34, Alameda Point, Alameda, California.* Prepared for: Department of the Navy Base Realignment and Closure Program Management Office, San Diego, CA. January, 2010.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. Available online at: http://www.wetlands.com/regs/tlpge02e.htm.

Hickman, James C., Editor. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press. Berkeley, California.

Khan, M. Ajmal and Darrel J. Weber. 2008. *Ecophysiology of High Salinity Tolerant Plants.* Springer. Dordrecht, The Netherlands.

Miles, Scott and Charles Goudey (editors). 1998. *Ecological Subregions of California*. United States Department of Agriculture, Forest Service. Pacific Southwest Division. R5-EM-TP-005. San Francisco.

National Research Council (NRC). 1995. *Wetlands Characteristics and Boundaries*. National Academy Press, Washington, D.C.

Reed, P.B. 1988. *National List of Plant Species that Occur in Wetlands, Region 0.* U.S. Fish and Wildlife Service, National Wetlands Inventory, St. Petersburg, FL.

United States Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. Version 2.0 September. ERDC/EL TR-08-28.

United States Department of Agriculture (USDA). 1981. Soil Survey for Alameda County, Western Part. Natural Resources Conservation Service. Available on line at: http://soils.usda.gov/survey/online_surveys/california/

United States Department of Agriculture (USDA). 2002. Climate Analysis for Wetlands by County (WETS). Natural Resources Conservation Service. Available on line at: http://www.wcc.nrcs.usda.gov/climate/wetlands.html

United States Department of Agriculture (USDA). 2006. *Field Indicators of Hydric Soils in the United States.* Version 6.0 G.W. Hurt and L.M. Vasilas (eds). Natural Resources Conservation Service in cooperation with the National Technical Committee for Hydric Soils.

United States Department of Agriculture (USDA). 2010. Soil Survey for Alameda County, Web Soil Survey 2.0 National Cooperative Soil Survey. Natural Resources Conservation Service. Available online at: http://websoilsurvey.nrcs.usda.gov/app/ University of California (UC). 2010. *Jepson Online Interchange for California Floristics*. Available online at: http://ucjeps.berkeley.edu/interchange.html

University of California Statewide Integrated Pest Management (UCIPM). 2010. Daily Climate Data for Mills College (CIMIS#149, Oakland Foothills). Available online at: http://www.ipm.ucdavis.edu/WEATHER/wxretrieve.html.

Ungar, Irwin A. 1991. *Ecophysiology of Vascular Halophytes.* CRC Press, Boca Raton, Florida.

Western Regional Climate Center (WRCC). 2010. Climate Summary for Oakland California (046332). Available online at: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6332

Figures

This page intentionally left blank.

Aerial image source: © Google; additional content by CH2M HILL

0 400 800 1,600

Feet

N

IR Site 34 Wetland Assessment Study Area

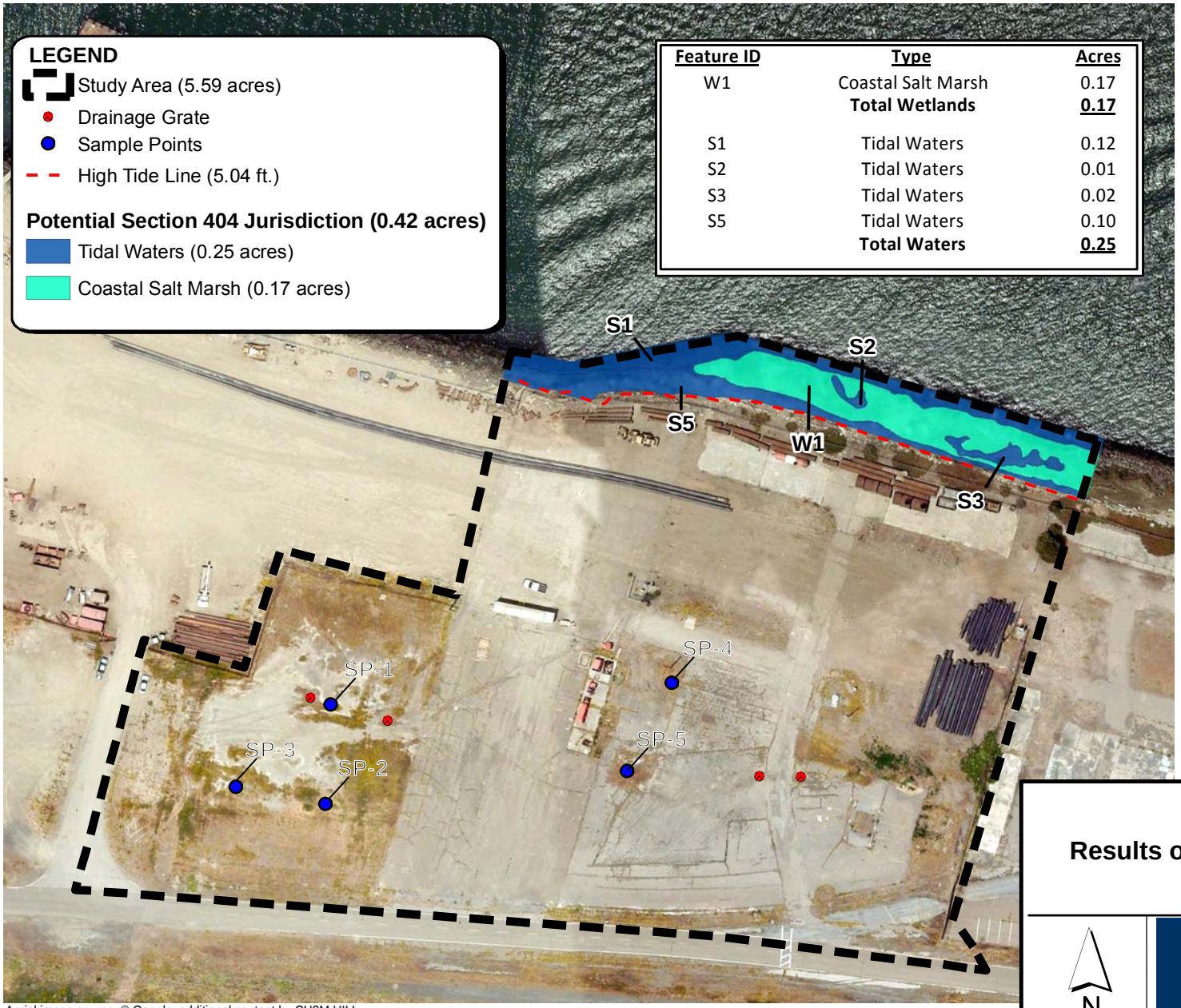
Wetland Delineation, IR Site 34
Alameda Point, Alameda, California

FIGURE

1

ES071410053357BAO wetland_study_areas_IRSite34_v2.ai 11-24-10 lho

This page intentionally left blank.



Feature ID	Type	Acres
W1	Coastal Salt Marsh	0.17
	Total Wetlands	**0.17**
S1	Tidal Waters	0.12
S2	Tidal Waters	0.01
S3	Tidal Waters	0.02
S5	Tidal Waters	0.10
	Total Waters	**0.25**

Notes:

1) Wetland and Waters boundaries shown along northern site boundary are from Figure 2 in Final Wetland Delineation Report for Installation Restoration Site 34, Alameda Point, Alameda, California (Chadux Tt, January 2010) and confirmed by this assessment.

2) Wetland and Waters areas superimposed on Google Earth aerial (June 2007).

Aerial image source: © Google; additional content by CH2M HILL

IR Site 34
Results of Wetland Assessment

Alameda Point
Alameda, California

N

FIGURE
2

ES071410053357BAO IRSite_34_wetland_results_v2.ai 11-24-10 lho

This page intentionally left blank.

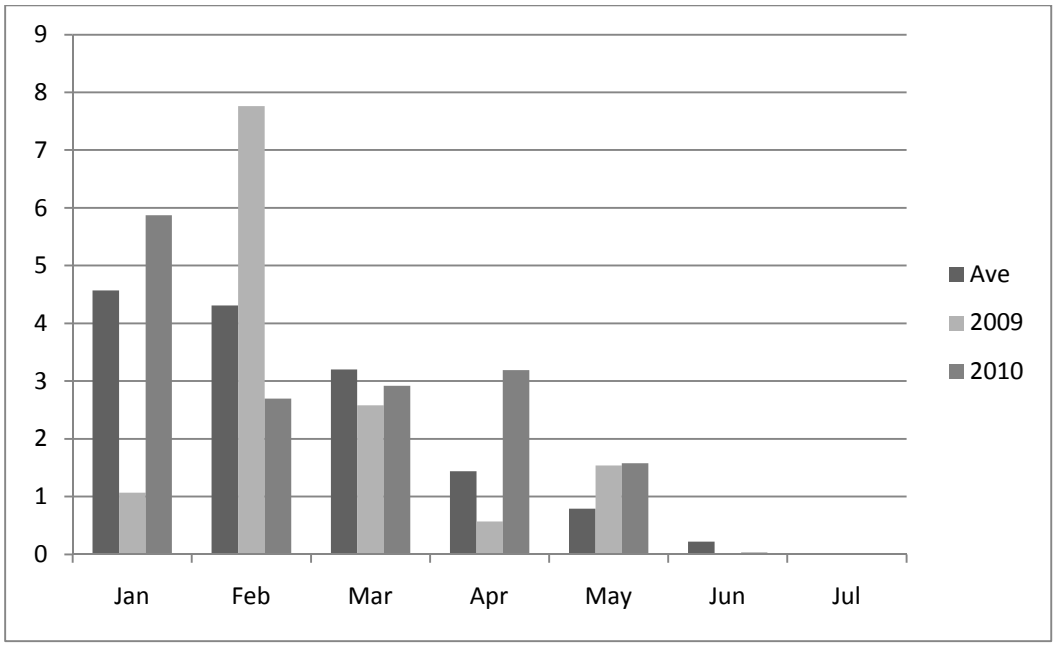


FIGURE 3
Monthly Rainfall (inches) between January and May 2009 and January and July 2010 for Oakland, California.

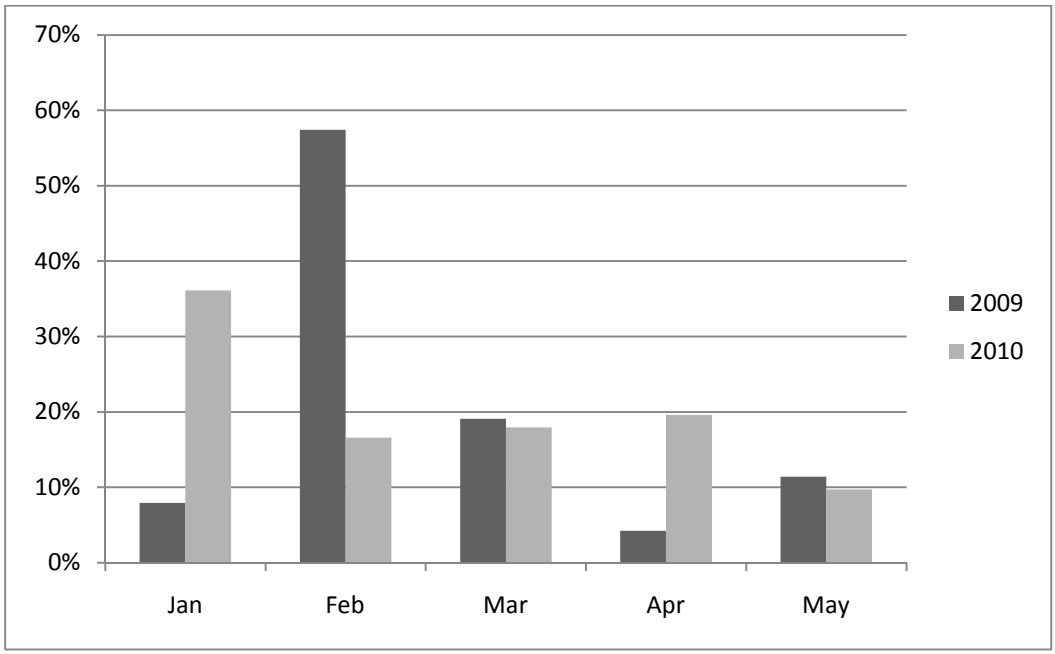


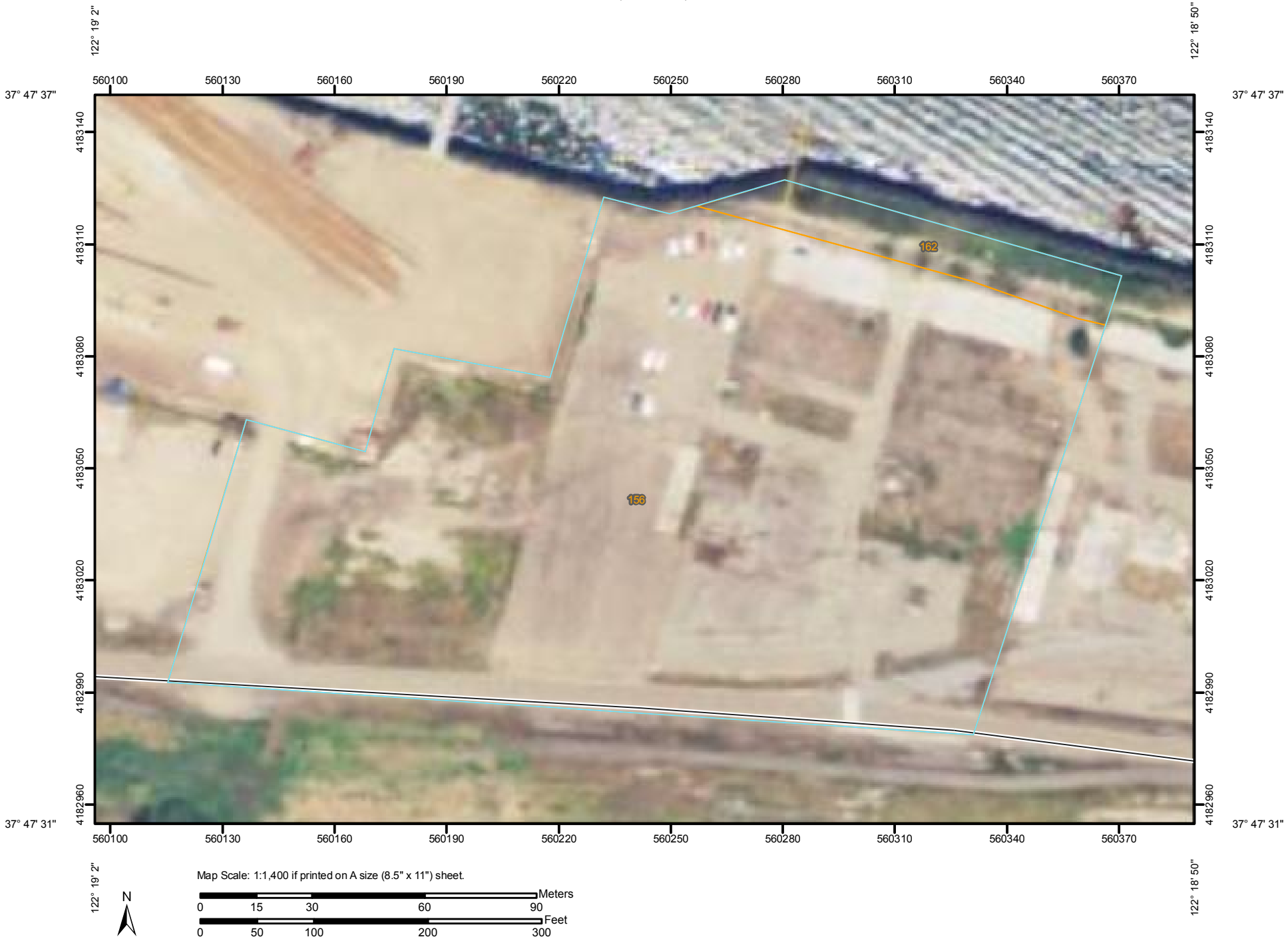
FIGURE 4
Percentage of Total Rainfall that Fell Each Month Between January and May of 2009 and 2010.

This page intentionally left blank.

Appendix A
Soil Map

This page intentionally left blank.

Soil Map—Alameda County, California, Western Part
(IR Site 34)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

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

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

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

MAP INFORMATION

Map Scale: 1:1,400 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

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

Soil Survey Area: Alameda County, California, Western Part
Survey Area Data: Version 7, Jul 27, 2010

Date(s) aerial images were photographed: 6/12/2005

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

Map Unit Legend

Alameda County, California, Western Part (CA610)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
156	Xeropsamments, fill	5.9	94.7%
162	Water	0.3	5.3%
Totals for Area of Interest		**6.3**	**100.0%**

This page intentionally left blank.

Appendix B
Wetland Determination Data Sheets

This page intentionally left blank.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 34 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-1

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 33 01S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792772 North Long: -122.316429 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation X , Soil X , or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** **No** X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks: Sample point taken adjacent to storm drain in area previously mapped as a seasonal wetland – Considered a problem area due to halophytic vegetation, soils derived from dredge fill material and potential seasonal hydrology.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Distichlis spicata*	70	Yes	FACW
2. *Cotula coronopifolia*	5		FACW
3. *Polypogon monspeliensis*	5		FACW
4. *Lotus corniculatus*	3		FAC
5. *Dittrichia graveolens*	2		NL
6.			
7.			
8.			
Total Cover:	85%		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15% % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:	Multiply By:	
OBL species		×1 =	
FACW species	80	×2 =	160
FAC species	3	×3 =	9
FACU species		×4 =	
UPL species	2	×5 =	10
Column Totals:	85 (A)		179 (B)

Prevalence Index = B/A = 2.10

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: *Distichlis, Cotula* and *Polypogon* in this area are all very small and exhibit stunted growth and reduced flowering - indication of stressed plants, no apparent stress observed for *Lotus* or *Dittrichia. Distichlis* observed in tidal salt marsh habitat to the north exhibits robust and vigorous growth relative to this area.

SOIL

Sampling Point SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[a]	Redox Features Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[c]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ **No** X

Remarks: Soil data from the ChaduxTt, 2010 *Final Wetland Delineation Report for Installation restoration Site 34* indicate soil in this area is a brown to olive brown loamy sand with trace amounts of gravel – consistent with dredged sandy material. No redoximorphic features or other hydric soil indicators were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): N/A

Saturation Present? Yes ___ No ___ Depth (inches): N/A (includes capillary fringe)

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: * Some evidence of saturation and possible inundation is evident on aerial photographs taken following above average rainfall see Appendix E.

Remarks: No evidence of surface water was evident in this location; area is located adjacent to a storm drain, but no apparent depressional feature, drainage patterns, flow lines or other evidence that seasonal wetland hydrology is present at this location.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 34 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-2

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 33 01S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792530 North Long: -122.316411 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation X , Soil X , or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** **No** X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks: Sample point taken in southwest part of the site - Considered a problem area due to halophytic vegetation, soils derived from dredge fill material and potential seasonal hydrology.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Distichlis spicata*	25	Yes	FACW
2. *Lotus corniculatus*	10	Yes	FAC
3. *Polypogon monspeliensis*	3		FACW
4. *Bellardia trixago*	2		NL
5. *Bromus madritensis*	1		NL
6. *Cotula coronopifolia*	1		FACW
7. *Dittrichia graveolens*	1		NL
8.			
Total Cover:	43		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum >60% % Cover of Biotic Crust N/A

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	29	×2 =	58	
FAC species	10	×3 =	30	
FACU species		×4 =		
UPL species	4	×5 =	20	
Column Totals:	43	(A)	104	(B)

Prevalence Index = B/A = 2.51

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: *Distichlis, Cotula* and *Polypogon* in this area are all very small and exhibit stunted growth and reduced flowering - indication of stressed plants, no apparent stress observed for *Lotus, Bellardia* or *Dittrichia. Distichlis* observed in tidal salt marsh habitat to the north exhibits robust and vigorous growth relative to this area.

SOIL

Sampling Point SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[a]	Redox Features Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[c]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks: Soil data from the ChaduxTt, 2010 *Final Wetland Delineation Report for Installation restoration Site 34* indicate soil in this area is a very dark grayish brown to olive brown loamy sand with a few yellowish brown concentrations between 4 and 12 inches. Soil observations in this area are consistent with dredged sandy material.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): N/A

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No depressional basin in this area and nothing to suggest that seasonal ponding occurs at this location. Some light thin powdery salt deposits due to capillary rise of saline ground water notes in this area – but this is not indicative of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 34 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-3

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 33 01S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792575 North Long: -122.316641 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation X , Soil X , or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** **No** X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks: Sample point taken in southwest part of the site - Considered a problem area due to halophytic vegetation, soils derived from dredge fill material and potential seasonal hydrology.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Distichlis spicata*	20	Yes	FACW
2. *Bellardia trixago*	5	No	NL
3. *Polypogon monspeliensis*	2		FACW
4. *Lotus corniculatus*	2		FAC
5. *Bromus madritensis*	1		NL
6. *Cotula coronopifolia*	1		FACW
7. *Dittrichia graveolens*	1		NL
8.			
Total Cover:	32		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum >70% % Cover of Biotic Crust N/A

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:	Multiply By:
OBL species		×1 =
FACW species	23	×2 = 46
FAC species	2	×3 = 6
FACU species		×4 =
UPL species	7	×5 = 35
Column Totals:	32 (A)	87 (B)

Prevalence Index = B/A = 2.72

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0*

Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: *Distichlis, Cotula* and *Polypogon* in this area are all very small and exhibit stunted growth and reduced flowering - indication of stressed plants, no apparent stress observed for *Lotus, Bellardia* or *Dittrichia. Distichlis* observed in tidal salt marsh habitat to the north exhibits robust and vigorous growth relative to this area.

SOIL

Sampling Point SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[a]	Redox Features Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[c]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____ **Hydric Soil Present? Yes** ___ **No** X

Remarks: Soil data from the ChaduxTt, 2010 *Final Wetland Delineation Report for Installation restoration Site 34* indicate soil in this area is a very dark brown to dark grayish brown loamy sand to sand with a few reddish yellow concentrations and approximately 20% mixed gleyed sand between 5 and 12 inches. Soil observations in this area are consistent with dredged sandy fill material and do not appear to represent current anaerobic conditions in the upper part.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): N/A **Wetland Hydrology Present? Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No depressional basin in this area and nothing to suggest that seasonal ponding occurs at this location. Some light thin powdery salt deposits due to capillary rise of saline ground water notes in this area – but this is not indicative of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 34 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-4

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 33 01S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792834 North Long: -122.315540 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation X , Soil X , or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	**Yes**	**No** X
Hydric Soil Present?	Yes	No X			
Wetland Hydrology Present?	Yes	No X			

Remarks: Sample point taken in southwest part of the site - Considered a problem area due to halophytic vegetation, soils derived from dredge fill material and potential seasonal hydrology.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Polypogon monspeliensis*	25	Yes	FACW
2. *Dittrichia graveolens*	20	Yes	NL
3. *Lotus corniculatus*	10		FAC
4. *Cotula coronopifolia*	5		FACW
5.			
6.			
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 40% % Cover of Biotic Crust N/A

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:	Multiply By:	
OBL species		×1 =	
FACW species	30	×2 =	60
FAC species	10	×3 =	30
FACU species		×4 =	
UPL species	20	×5 =	100
Column Totals:	60 (A)		190 (B)

Prevalence Index = B/A = 3.16

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0*

___ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** **No** X

Remarks: *Polypogon* and *Cotula* in this area are all very small and exhibit stunted growth and reduced flowering - indication of stressed plants. This area generally characterized by hydrophytic and also salt tolerant species - *Dittrichia graveolens* is a late season annual.

SOIL

Sampling Point SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[a]	Redox Features Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[c]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ **No** X

Remarks: Soil data from the ChaduxTt, 2010 *Final Wetland Delineation Report for Installation restoration Site 34* indicate soil in this area is a dark brown to dark olive brown sand to sand with very few reddish yellow concentrations. Soil observations in this area are consistent with dredged sandy fill material and do not appear to represent current anaerobic conditions in the upper part.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): N/A

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No depressional basin in this area and nothing to suggest that seasonal ponding occurs at this location.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alameda Point – IR Site 34 City/County: Alameda County Date: July 29, 2010

Applicant/Owner: U.S. Navy State: CA Sampling Point: SP-5

Investigator(s): Russell Huddleston and Holly Barbare Section, Township, Range: 33 01S 04W (Mt. Diablo Meridian)

Landform (hillslope, terrace, etc.): Fill Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): C-14 Lat: 37.792605 North Long: -122.315581 West Datum: WGS84

Soil Map Unit Name: Xeropsaments, Fill NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation X , Soil X , or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	**Yes** **No** X
Hydric Soil Present?	Yes	No X		
Wetland Hydrology Present?	Yes	No X		

Remarks: Sample point taken in southwest part of the site - Considered a problem area due to halophytic vegetation, soils derived from dredge fill material and potential seasonal hydrology.

VEGETATION

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Polypogon monspeliensis*	70	Yes	FACW
2. *Dittrichia graveolens*	20	Yes	NL
3. *Centaurium muehlenbergii*	5		FAC
4. *Lotus corniculatus*	3		FAC
5.			
6.			
7.			
8.			
Total Cover:	98		
Woody Vine Stratum			
1. N/A			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 2% % Cover of Biotic Crust N/A

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index Worksheet:

	Total % Cover Of:		Multiply By:	
OBL species		×1 =		
FACW species	70	×2 =	140	
FAC species	8	×3 =	24	
FACU species		×4 =		
UPL species	20	×5 =	100	
Column Totals:	98	(A)	264	(B)

Prevalence Index = B/A = 2.69

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- X Prevalence Index is ≤3.0*
- Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation* (Explain)

* Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: *Polypogon* in this area are all very small and exhibit stunted growth and reduced flowering - indication of stressed plants. This area generally characterized by hydrophytic and also salt tolerant species - *Dittrichia graveolens* is a late season annual.

SOIL

Sampling Point SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[a]	Redox Features Loc[b]	Texture	Remarks

[a] Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [b] Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[c]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[c] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ **No** X

Remarks: Soil data from the ChaduxTt, 2010 *Final Wetland Delineation Report for Installation restoration Site 34* indicate soil in this area is a very dark brown loam mixed with large cobbles and rock with some minor reddish yellow observed on rock faces. Soil observations in this area are consistent with dredged sandy fill material and do not appear to represent current anaerobic conditions in the upper part.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (two or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): N/A

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No depressional basin in this area and nothing to suggest that seasonal ponding occurs at this location.

Appendix C
Photographs

This page intentionally left blank.

PHOTO 1
Coastal salt marsh and open water habitat along the Oakland Inner Harbor with distinct upland boundary at high tide limit.

PHOTO 2
Shallow soil cracks indicative of ponded water in southwest part of IR Site 34, west of storm drain.

PHOTO 3
Sample Point SP-1 - Low saltgrass with stunted brass buttons and rabbitsfoot grass around storm drain.

PHOTO 4
Sparse vegetation and powdery salt deposits in the southwest part of IR Site 34

PHOTO 5
Sample Point SP-4 adjacent to building foundation, characterized by a mix of low stunted hydrophytic plants and non-wetland species.

This page intentionally left blank.