# Aquatic Resources Delineation Report

±920-Acre Eliot Facility Plan Boundary
Alameda County, California

**Prepared for**:

U.S. Army Corps of Engineers

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# Acronyms and Abbreviations

| | |
|---|---|
| ADV | Arroyo del Valle |
| CEMEX | CEMEX Construction Materials Pacific, LLC. |
| CWA | Clean Water Act |
| EPA | Environmental Protection Agency |
| FAC | Facultative plants |
| FACU | Facultative upland plants |
| FACW | Facultative wetland plants |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| HUC | Hydrologic Unit Code |
| msl | mean sea level |
| NAD | North American Datum |
| NRCS | Natural Resource Conservation Service |
| OBL | Obligate wetland plants |
| OHWM | Ordinary High-Water Mark |
| PEM | palustrine emergent |
| PFO | palustrine forested |
| UPL | Upland |
| U.S. | United States |
| USACE | U.S. Army Corps of Engineers |
| USDA | U.S. Department of Agriculture |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| UTM | Universal Transverse Mercator coordinate system |
| WIS | Wetland Indicator Status |

# Executive Summary

This report presents the results of a delineation of the aquatic resources at the ±920-acre Eliot Facility Plan Area (Study Area), located in Alameda County, California. Aquatic resources were identified and delineated following the technical guidelines provided in the *Corps of Engineers Wetlands Delineation Manual* (USACE Manual) (Environmental Laboratory 1987) and the U.S. Army Corps of Engineers (USACE) *Arid west Regional Supplement* (Regional Supplement) (USACE 2008b). The Regional Supplement presents wetland indicators, delineation guidance, and other information that is specific to the Arid west Region. The jurisdictional boundaries for other waters of the U.S. were identified based on the presence of an ordinary high-water mark (OHWM) as defined in 33 C.F.R. 328.3(e).

A total of 314.71 acres of aquatic resources were delineated within the Study Area consisting of depressional seasonal marsh, riverine seasonal marsh, willow riparian wetland, intermittent streams, perennial stream (the Arroyo del Valle), breached quarry ponds, quarry pond, silt pond, and percolation ponds. **Section 5.0**, **Table 1** summarizes acreage per type of aquatic resource and the total acreage of other waters within the Study Area.

# 1.0 INTRODUCTION

The purpose of this document is to present the results of a formal delineation of jurisdictional waters of the United States (U.S.), including wetlands, within the ±920-acre Eliot Facility Plan Area site located in unincorporated Alameda County (**Figure 1**). This report and the resulting delineation were prepared in accordance with the *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (USACE 2016a), The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: *Arid west Region* (2008b) and *A Field Guide to the Identification of the Ordinary High-Water Mark in the Arid west Region of the Western United States* (2008a). This report presents the results of Foothill Associates' review of available literature, aerial photographs, soil surveys (**Figure 2**), and fieldwork within the Study Area. The delineation methodology is described in this report, followed by the results of the delineation. Contact information and directions to the Study Area are provided in **Appendix A**. Details regarding soils, topography, hydrology, and vegetation are summarized herein. Wetland Delineation Data Forms are provided in **Appendix B**. A detailed delineation map that illustrates potential waters of the U.S. within the Study Area is included in **Figure 3** and a list of plant species observed during the delineation is provided in **Appendix C**.

## *1.1. Project Description*

CEMEX Construction Materials Pacific, LLC. ("CEMEX") owns and operates the Eliot Quarry, a ±920-acre sand and gravel mining facility, located between the cities of Livermore and Pleasanton, at 1544 Stanley Boulevard in unincorporated Alameda County. CEMEX and its predecessors-in-interest have been continuously mining for sand and gravel at the Eliot Quarry since at least 1906. In addition to mining and reclamation, existing permitted and accessory uses at the Eliot Quarry include aggregate, asphalt and ready-mix concrete processing, as well as ancillary uses such as aggregate stockpiling, load-out, sales, construction materials recycling, and equipment storage and maintenance. CEMEX's mining operations at the site are vested per pre-1957 mining activities and Alameda County Quarry Permits Q-1 (1957), Q-4 (1957), and Q-76 (1969). Surface mining reclamation activities at the site are currently conducted pursuant to Surface Mining Permit and Reclamation Plan No. SMP-23 ("SMP-23"), approved in 1987.

Under the Eliot Quarry SMP-23 Reclamation Plan Amendment Project ("Project"), CEMEX proposes a revised Reclamation Plan that serves to adjust reclamation boundaries and contours, enhance drainage and water conveyance facilities, incorporate a pedestrian and bike trail, and achieve current surface mining reclamation standards. The planned post-mining end uses are water management, open space, and agriculture (non-prime).

Consistent with prior approvals, the Project will develop Lake A and Lake B, which are the first two lakes in the Chain of Lakes pursuant to the *Alameda County Specific Plan for Livermore-Amador Valley Quarry Area Reclamation* adopted in 1981 ("Specific Plan"). Upon reclamation, Lake A and Lake B, along with their appurtenant water conveyance facilities, will be dedicated to the Zone 7 Water Agency ("Zone 7") for purposes of water storage, conveyance and recharge management.

Lake A reclamation will include installation of a surface water diversion from the Arroyo del Valle ("ADV") to Lake A; conversion of a berm that crosses the west side of the lake to a small island to allow water to flow across the lake; installation of a water conveyance pipeline from Lake A to future Lake C (located off-site to the northwest); and an overflow outlet to allow water to flow back into ADV when Lake A water levels are high to prevent flooding in the localized area. The final surface area of Lake A will be 81 acres as compared to 208 acres in SMP-23. No further mining will occur in Lake A.

Lake B reclamation will include installation of a pipeline turn-out from Lake A, a water pipeline conduit to future Lake C, and an overflow outlet to allow water to flow back into ADV when Lake B water levels are high. The final bottom elevation of Lake B is proposed at 150 feet above mean sea level ("msl"), in order to maximize the available aggregate resource. The final surface area of Lake B will be 208 acres as compared to 243 acres in SMP-23.

To facilitate the southerly progression of Lake B, the Project includes realignment and restoration of a ±5,800 linear foot reach of the ADV. The proposed ADV realignment will result in an enhanced riparian corridor that flows around, rather than through (as currently anticipated in SMP-23), Lake B. The ADV realignment was contemplated in the Specific Plan and subject to environmental review in 1981.

Outside of Lake A and Lake B, reclamation treatment for other disturbed areas, including the Lake J excavation (not part of the Chain of Lakes), processing plant sites, and process water ponds will involve backfills and/or grading for a return to open space and/or agriculture.

The Project is a modification of an approved project. Except as outlined above, CEMEX proposes no change to any fundamental element of the existing operation (e.g., mining methods, processing operations, production levels, truck traffic, or hours of operation). A more complete description of the proposed Project is contained in CEMEX's Project Description, Revised Reclamation Plan, and other application materials provided to the County.

# 2.0 REGULATORY BACKGROUND

The USACE regulates discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act (CWA). "Discharges of fill material" are defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes; and subaqueous utility lines [33 C.F.R. §328.2(f)].

Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Section 404 of the CWA requires approval prior to discharging dredged or fill material into the waters of the United States. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the U.S. or adjacent wetlands;
- Site development for residential, commercial, or recreational developments resulting in discharging dredged or fill material into waters of the United States;
- Construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs; and
- Placement of riprap and road fills.

## *2.1. Waters of the United States*

Waters of the United States were defined in a Federal Rule (Rule) published on June 29, 2015 and which went into effect on August 28, 2015. The term "waters of the United States" includes (a) traditional navigable waters, (b) interstate waters, (c) territorial seas, (d) impoundments of jurisdictional waters, and (e) their tributaries. Tributaries must have a bed and bank and ordinary high-water mark and may have ephemeral, intermittent, or perennial flow. Additionally, the rule defines "adjacent waters" as jurisdictional due to their significant nexus with a jurisdictional water in class (a) through (e). Adjacent waters include any waters located in whole or part within 100 feet of a jurisdictional water in class (a) through (e); any waters located within the 100-year floodplain and within 1,500 feet of a jurisdictional water in class (a) through (e); and any waters within 1,500 feet (f) of the ordinary high-water mark of a traditionally navigable water. Western vernal pools were determined to be jurisdictional due to their nexus with jurisdictional waters when considered in combination with similarly situated waters. Other waters not previously defined as jurisdictional that are located within the 100-year floodplain of a traditionally navigable water, or are within 4,000 feet of the ordinary high-water mark of a jurisdictional water in class (a) through (e) are evaluated on a case-specific basis.

The Rule specifically exempts the following types of features from federal jurisdiction: waste treatment systems, including ponds or lagoons designed to meet the requirements of the Clean Water Act, prior converted cropland, ditches with ephemeral or intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands, ditches that do not flow directly or indirectly into a jurisdictional water, artificially irrigated areas that would revert to dry land should irrigation cease, artificially constructed lakes, ponds, reflecting pools, or swimming pools constructed in uplands, *water-filled depressions created in dry land incidental to mining or construction activity including pits excavated for obtaining fill, sand or gravel that fill with water*, erosional features, puddles, and stormwater control features and wastewater recycling structures constructed in uplands [33 C.F.R. § 328.3] (emphasis added).

The new Rule was challenged in court and on October 9, 2015 the U.S. Court of Appeals for the Sixth Circuit stayed the new Rule nationwide. In response to the Sixth Circuit stay, the Environmental Protection Agency (EPA), the Department of the Army and the USACE resumed nationwide use of the "waters of the U.S." definition promulgated in 1986/1988, implemented consistent with subsequent Supreme Court decisions and guidance documents. In February of 2017, the Trump administration issued an Executive Order directing the EPA and the Department of the Army to renew and rescind or rewrite the 2015 rule. The EPA, Department of the Army and the USACE are engaged in that process now. Until a final ruling is made, the USACE will continue to operate pursuant to the Supreme Court's decision in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (126 S. Ct. 2208) and agency guidance subsequent to this decision. Under these rules, the USACE will assert jurisdiction over wetlands adjacent to traditional navigable waters, relatively permanent non-navigable tributaries (i.e., waters that have a continuous flow at least three months out of the year), and wetlands that abut relatively permanent tributaries. The USACE will determine jurisdiction over waters that are non-navigable tributaries that are not relatively permanent, and wetlands adjacent to these tributaries, by making a determination whether such waters "significantly affect the chemical, physical, and biological integrity of other jurisdictional waters more readily understood as "navigable". Finally, the USACE generally does not consider the following to be "waters of the United States": swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent or short duration flow) and ditches "wholly in and draining only uplands…which do not carry a relatively permanent flow of water". Navigable waters of the United States are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation.

Section 404 permits are required for construction activities in these waters. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and non-tidal waters are described below.

> Wetlands are defined as "*those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in*

*saturated soil conditions*" [33 C.F.R. §328.3(b)]. Presently, to be a wetland, a site must exhibit positive indicators of three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site. The lateral regulatory extent of non-tidal waters is determined by delineating the ordinary high-water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the USACE as "*that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas*" [33 C.F.R. §328.3(e)].

# 3.0 METHODS

## *3.1. Site-Specific References*

Available information pertaining to the natural resources of the region and specific to the Study Area were reviewed. All references reviewed for this delineation are listed in **Section 6.0**. Pertinent site-specific reports, online resources and general references utilized for the delineation include the following:

- Baldwin. G., D. Goldman, D. Keil, R. Patterson, and T.J. Rosatti. 2012. T*he Jepson Manual, 2nd Edition*. Vascular Plants of California. ISBN: 9780520253124. January 12, 2013. 1,600 pp;

- Calflora. 2017. *Information on California plants for education, research and conservation*. Berkeley, California. Available online at: http//www.calflora.org. Accessed [11/14/2017, 11/28/2017, and 11/29/2017];

- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS;

- Lichvar, R.W., Butterwick, M., Melvin, N.C., and Kirchner, W. 2016. *The National Wetland Plant List: 2016 Wetland Ratings*. Phytoneuron 2016-30: 1–17. Published April 28, 2016. ISSN 2153 733X;

- U.S. Army Corps of Engineers (USACE). 2008a. *A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid west Region of the Western United States*. U.S. Army Engineer Research and Development Center. Vicksburg, MS;

- USACE. 2008b. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid west Region (Version 2.0)*. U.S. Army Engineer Research and Development Center. Vicksburg, MS;

- USACE. 2016b. *National Wetland Plant List Viewer v3.3*. Available: http://wetland_plants.usace.army.mil. Accessed [11/27/2017];

- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS). 1966. S*oil Survey of the Alameda Area, California*. USDA, NRCS, in cooperation with the Regents of the University of California (Agricultural Experiment Station);

- USDA, NRCS. 2017b. *Web Soil Survey*. Available: http://websoilsurvey.sc.egov.usda.gov. Accessed [11/15/2017];

- U.S. Fish and Wildlife Service. 2018. National Wetlands Inventory Mapper. Available at: https://www.fws.gov/wetlands/data/Mapper.html. Accessed [08/24/2018]; and

- U.S. Geological Survey (USGS). 1961. *Livermore, California* 7.5-minute series topographic quadrangle (photorevised 1980). U.S. Department of the Interior.

## *3.2. Research and Field Methodology*

This delineation utilized the USACE's 1987 three-parameter (vegetation, hydrology, and soils) methodology to delineate aquatic resources. The Regional Supplement to the *Corps of Engineers Wetland Delineation Manual: Arid west Region* was also used in conjunction with the Corps Manual for delineations. Where differences in the two documents occur, the Regional Supplement takes precedence over the Corps Manual. In addition, the USACE's *Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid west Region* of the United States was utilized in order to delineate other waters of the U.S.

The Arid west Region consists of all or significant portions of 11 states, including California (USACE 2008b). This region is differentiated from other surrounding areas by having a predominantly dry climate and long summer dry season. Vegetation characteristics of the Arid west Region include little to no forest cover consisting of mainly annual grasslands, shrublands, hardwood savannas, deciduous woodlands, and pinyon/juniper woodlands. The Arid west Supplement was used on this site because it is located in the *Mediterranean California* Land Resource Region (LRR C), an area which is characterized by warm, wet winters and dry summers.

The three-parameter methodology requires the collection of data on soils, vegetation, and hydrology at several locations to establish the jurisdictional boundary of wetlands. Additional methods to identify and delineate other waters of the U.S. (e.g., streams, drainages, lakes) were used as applicable. The method typically used for delineation of non-wetland waters of the U.S. is the delineation of the OHWM.

A review of historic and recent aerial photographs, topographic maps, and soils survey data was conducted before reviewing and updating the delineation of the Study Area on November 15 and 16, 2017 and April 3 and 4, 2018. The Study Area was visually inspected on foot and data collected on vegetation, soils, and hydrology. The channel of the Arroyo del Valle was surveyed for wetland hydrology indicators such as, but not limited to, the presence of litter or debris, wracking, matted vegetation, scouring, deposition and the presence of a bed and bank. A list of all plant species observed during the delineation and their respective wetland indicator status is provided in **Appendix C**. Correlations were developed between the three parameters (vegetation, hydrology, and soils) to make wetland determinations. Specifically, plots at data point locations were evaluated to determine the composition and identification of dominant plant species. The indicator status of all dominant plant species [as determined by the current *National Wetland Plant List*] was applied and evaluated as part of the vegetation assessment portion of the wetland determination process. The plant indicator status includes the following categories:

| | |
|---|---|
| Obligate wetland plants (OBL): | Occur almost always under natural wetland conditions (estimated probability > 99%). |

| | |
|---|---|
| Facultative wetland plants (FACW): | Usually occur in wetlands, but occasionally found in non-wetlands (67-99%). |
| Facultative plants (FAC): | Equally likely to occur in wetlands and non-wetlands (34-66%). |
| Facultative upland plants (FACU): | Usually occur in non-wetlands, but occasionally found in wetlands (1-33%). |
| Upland (UPL): | Occur almost always under natural conditions in non-wetlands (>99%); may occur in wetlands in other regions. |

The absolute cover was estimated for each vegetation stratum; these strata include tree, sapling/shrub, herb, and woody vine. Species that are dominant in more than one stratum were counted multiple times. Some wetland plant communities may fail a test based only on dominant species. Where indicators of hydric soils and hydrology are present, and vegetation is not dominated by hydrophytes, the vegetation was re-evaluated with the prevalence index, which takes into consideration all plant species in the community, not just the subset of dominant species.

The onsite soils were examined for hydric indicators. Hydric soil indicators are described in the *Field Indicators of Hydric Soils in the U.S.*, Version 7.0 (USDA, NRCS 1966 and 2017b). If one or more of these indicators are present, then the soil is hydric. Nearly all hydric soils exhibit characteristic morphologies that are caused by anaerobic, reduced soil conditions due to prolonged soil saturation. The most commonly observed indicators are related to iron (Fe) and manganese (Mn) redox concentrations or depletions. Less commonly observed indicators include gleyed matrix and black histic (low amounts of Fe-Mn and accumulations of organic carbon).

Observations were made and recorded for both primary and secondary wetland hydrology indicators, if present. Without monitoring or direct observation of inundation/saturation, indirect indicators of wetland hydrology are typically used and include primary indicators such as water marks, drift lines, and sediment deposits, or secondary indicators such as crayfish burrows or the FAC-neutral test. These results are presented in **Figure 3.**

## *3.3. GPS Data Integration*

Boundaries of wetlands and other waters of the U.S. within the Study Area were surveyed and mapped with a Trimble GeoXT Global Positioning System (GPS) hand-held unit. This is a mapping-grade GPS unit capable of real-time differential correction and sub-meter accuracy. The GPS data were downloaded from the unit and differentially corrected utilizing Trimble Pathfinder Office software and appropriate base station data, and then converted to ESRI® shape file format. Data are typically exported to the Geographic Information System (GIS) software in the State Plane coordinate system (NAD 83) with units as "survey feet". Within the GIS, data are edited, and linear features are built into polygons using recorded width

information. All wetland shape files are merged to create a single wetland file with calculated acreages.

# 4.0 RESULTS

## *4.1. Site Location and Land Use*

### 4.1.1. Site Location

The approximate 920-acre Study Area is located in unincorporated Alameda County, between the cities of Pleasanton and Livermore. The Study Area occurs within portions of Sections 13, 14, 19, 23, 24, 29, and 30, within Township 3 South, and Ranges 1 and 2 East of the USGS 7.5-minute series *Livermore* quadrangle. The approximate location of the center of the Study Area is 37° 39' 40.438" North, 121° 48' 54.723" West (**Figure 1**).

### 4.1.2. Land Use

The majority of the Study Area is an active sand and gravel quarry that has been continuously mined for over 100 years. Primary land uses surrounding the Study Area include industrial scale mining activities (Vulcan Materials Quarry), residential housing, agricultural activities, and open space in the form of Shadow Cliffs Regional Recreation Area and Sycamore Grove Park. There is no foreign commerce associated with aquatic resources within the Study Area.

### 4.1.3. Site History

The Eliot Facility is a sand and gravel quarry that has been mined for over 100 years. During that time, nearly the entirety of the Study Area has been repeatedly and regularly disturbed by mining activities, including the Arroyo del Valle. Mining activities are currently ongoing and dynamic. The long-term actively mined nature of the Study Area has produced a highly degraded non-natural landscape both within the Arroyo del Valle and within the surrounding upland areas.

## *4.2. Physical Features*

### 4.2.1. Soils

The Natural Resource Conservation Service (NRCS) has mapped and identified eleven map units occurring within the Study Area (**Figure 2**): **Livermore Gravelly Loam**; **Livermore Very Gravelly Coarse Sandy Loam**; **Pleasanton Gravelly Loam, 0 to 3 Percent Slopes**; **Pleasanton Gravelly Loam, 3 to 12 Percent Slopes**; **Positas Gravelly Loam, 2 to 20 Percent Slopes, Eroded**; **Yolo Loam, 0 to 3 Percent Slopes**; **Yolo Loam Over Gravel, 0 to 3 Percent Slopes**; **Yolo Sandy Loam, 0 to 3 Percent Slopes**; **Zamora Silt Loam, 0 to 4 Percent Slopes**; **Gravel Pit**; and **Riverwash**. Also depicted in **Figure 2** there are features consisting largely of open water, including silt ponds and quarry ponds. The general characteristics and properties associated with these map units are described below.

- **(Lg) Livermore Gravelly Loam**: This soil type occurs on alluvial fans and fluvial terraces. The parent material is alluvium derived from sandstone and shale. Most areas of this soil type are nearly level and have slopes of three percent or less. The amount of gravel ranges from 20 to 40 percent. The available water storage is low, and it is somewhat

excessively drained. The hydric soils list for Alameda County does not identify this soil type as hydric (USDA, NRCS 1966 and 2017b).

- **(Lm) Livermore Very Gravelly Coarse Sandy Loam**: This soil type occurs on alluvial fans and fluvial terraces. The parent material is alluvium derived from sandstone and shale. Most areas of this soil type are level or nearly so, with slopes no greater than seven percent. The percent of gravel ranges from 40 to 75 percent. The available water storage is low, and it is somewhat excessively drained. The hydric soils list for Alameda County does not identify this soil type as hydric (USDA, NRCS 1966 and 2017b).

- **(PgA) Pleasanton Gravelly Loam, 0 to 3 Percent Slopes**: This soil type occurs on alluvial fans and fluvial terraces. The parent material is alluvium derived from sandstone and shale. It is reddish-brown in color, medium acidic to moderately alkaline clay substrate. This soil type is extremely hard when dry and plastic when wet. The available water storage is moderate, and it is well drained. This soil type is used for pasture, range, and dry farming. The hydric soils list for Alameda County does not identify this soil type as hydric (USDA, NRCS 1966 and 2017b).

- **(PgB) Pleasanton Gravelly Loam, 3 to 12 Percent Slopes**: This soil type occurs on alluvial fans and fluvial terraces. The parent material is alluvium derived from sandstone and shale. The available water storage is moderate, and it is well drained. This soil type is used for farming activities. The hydric soils list for Alameda County does not identify this soil type as hydric (USDA, NRCS 1966 and 2017b).

- **(PoC2) Positas Gravelly Loam, 2 to 20 Percent Slope, Eroded**: This soil type is located on fluvial terraces. The parent material is alluvium derived from sandstone and shale. The available water storage is low, and it is well drained. These soils have less than 35 percent clay, moderate drainage, very slow permeability, and very high runoff. The hydric soils list for Alameda County does not identify this soil type as hydric (USDA, NRCS 1966 and 2017b).

- **(YmA) Yolo Loam, 0 to 3 Percent Slopes**: This soil type occurs on alluvial fans. The parent material is alluvium derived from sedimentary rock. The available water storage is high, and it is well drained. This soil type is composed of 85 percent of Yolo and similar soils, and 15 percent of minor components made up of 5 percent Unnamed, 5 percent Sycamore, and 5 percent Livermore soils. The hydric soils list for Alameda County does not identify this soil type as hydric; however, the unnamed soil inclusion is rated as hydric (USDA, NRCS 1966 and 2017b).

- **(Yo) Yolo Loam Over Gravel, 0 to 3 Percent Slopes**: This soil type is located on valley floors. The parent material is alluvium derived from sandstone and shale. The available water storage is moderate, and it is well drained. The permeability is moderately-high to high and the surface runoff is low. This soil type is composed of 85 percent of Yolo and similar soils, and 15 percent of minor components made up of 5 percent Unnamed, 5 percent Sycamore, and 5 percent Livermore soils. The hydric soils list for Alameda

County does not identify this soil type as hydric; however, the unnamed soil inclusion is rated as hydric (USDA, NRCS 1966 and 2017b).

- **(Ys) Yolo Sandy Loam, 0 to 3 Percent Slopes**: This soil type occurs on fans and valley floors. The parent material is alluvium derived from sandstone and shale. The available water storage is moderate, and it is well drained. This soil type is composed of 85 percent of Yolo and similar soils, and 15 percent of minor components made up of 5 percent Unnamed, 5 percent Sycamore, and 5 percent Livermore soils. The hydric soils list for Alameda County does not identify this soil type as hydric; however, the unnamed soil inclusion is rated as hydric (USDA, NRCS 1966 and 2017b).

- **(Za) Zamora Silt Loam, 0 to 4 Percent Slopes**: This soil type occurs on flood plains. The available water storage is high, and it is well drained. This soil has parent material consisting of alluvium derived from sandstone and shale. This soil is composed of 85 percent of Zamora and similar soils, and 15 percent of minor components made up of 10 percent Pleasanton, and 5 percent Rincon soils. The hydric soils list for Alameda County does not identify this soil type as hydric (USDA, NRCS 1966 and 2017b).

- **(GP) Gravel Pit**: This unit consists of gravel substrate. It is composed of 95 percent Gravel pit, and 5 percent of minor components made up of 5 percent of Unnamed soils. The hydric soils list for Alameda County does not identify this unit as hydric; however, the unnamed soil inclusion is rated as hydric (USDA, NRCS 1966 and 2017b).

- **(Rh) Riverwash**: This unit occurs in channels and is excessively drained. The permeability is very high, and the surface runoff is negligible. This soil has parent material consisting of alluvium derived from sandstone and shale. This soil is composed of 100 percent Riverwash. The hydric soils list for Alameda County identifies this soil type as hydric (USDA, NRCS 1966 and 2017b). Riverwash is the map unit that occurs within the Arroyo del Valle. The hydric soils list for Alameda County identifies this map unit as having a positive hydric rating and a hydric criterion of four. According to the NRCS, a map unit with a hydric criterion of four is correlated to map unit components that are frequently flooded for a long duration or very long duration during the growing season such that:

    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or

    b. Show evidence that the soils meet the definition of a hydric soil.

- **(W) Water**: Areas mapped as water in the Study Area generally consist of relatively large areas of open water such as quarry ponds and silt ponds.

### 4.2.2. Topography

The vast majority of the topography within the Study Area has been severely altered as the result of continual mining activities for over 100 years, resulting in a highly degraded, artificially contoured landscape. The topography within the Study Area varies from nearly flat to steeply

sloped and consists of many man-made topographic alterations including but not limited to basins, ponds, the channel of the Arroyo del Valle and adjacent slopes, actively mined areas, gravel piles, sand piles and an intricate and dynamic road network that facilitates the movement of heavy mining equipment as well as the accrual and removal of aggregate material. The elevation within the Study Area ranges from approximately 254 to 460 feet (77 to 140 meters) above msl.

### 4.2.3. Regional Hydrology

The Study Area is located within Land Resource Region C, an area characterized as having a Mediterranean climate of relatively warm wet winters and dry summers. Most precipitation falls between November and April. According to the NRCS Water and Climate Center the average annual rainfall for Livermore, located approximately 4 miles northeast of the Study Area, is 14.61 inches. At the time the delineation was conducted, rainfall totals for the 2017-2018 season were below normal. However, the 2016-2017 water year was officially California's second wettest year on record and many primary and secondary wetland hydrology indicators from that water year, if present, would persist into the 2017-2018 water year.

Direct precipitation, runoff from adjacent uplands, groundwater, stormwater runoff, arroyos, creeks, tidal lagoons (Lake Merritt) and artificial impoundments in the form of ponds and reservoirs constitute the majority of the hydrologic resources within the greater region.

The hydrology of the region has been significantly and permanently altered via the construction and management of a network of flood control structures such as levees, pump stations and related hydrologic resource manipulation and management activities such as the channelization of natural creeks and the impoundment of hydrologic resources. For example, the construction of Del Valle Dam resulted in the creation Lake Del Valle, a reservoir. Currently, the hydrology of the Arroyo del Valle is supplemented via controlled releases from Del Valle Dam and it now functions as an unnatural, highly altered and degraded system.

The Arroyo del Valle flows through the southern portion of the Study Area and is part of the Alameda Creek Watershed, one of the major drainages of the Livermore/Amador Valley. The Arroyo del Valle begins in northeastern Santa Clara County and flows northwesterly into Alameda County where it is impounded by Del Valle Dam and forms Lake Del Valle. The Arroyo del Valle then flows downstream and westward from Lake Del Valle and eventually through the Study Area. The Arroyo del Valle is tributary to Arroyo de la Laguna, itself a tributary to Alameda Creek. In turn, Alameda Creek is tributary to the San Francisco Bay, a Traditionally Navigable Water, approximately 18 air miles from the Study Area.

### 4.2.4. Site-Specific Hydrology

The Study Area is located within two watersheds: Dry Creek-Arroyo Valle, Hydrologic Unit Code (HUC) 180500040503 and Lower Arroyo Mocho, HUC 180500040503. The hydrology within the Study Area has been severely altered due to continual mining activities which have occurred for over 100 years and the upstream construction of flood control/prevention infrastructure, i.e. the Del Valle Dam.

Mining activities have resulted in the repeated channelization and relocation of the Arroyo del Valle, affecting the duration and rate of flows as well as overall stream flow dynamics. The upstream section of the Arroyo del Valle, from the Study Area's southeastern boundary at Vallecitos Road and approximately to the point where it flows under Highway 84, has been artificially straightened and channelized; it is relatively narrow and constrained to a much greater degree than the channel downstream of Highway 84, which exhibits a meandering nature.

The Arroyo del Valle is a perennial stream depicted as a blue-line waterway on the USGS *Livermore, California* 7.5-minute series topographic quadrangle. Prior to the construction of Del Valle Dam in 1968, the Arroyo del Valle would have conveyed flows after significant storm events during the wet season and/or after significant unseasonable storm events. Post-dam construction, the Arroyo del Valle flows year-round due to the controlled release of water from Del Valle Dam.

Direct precipitation, runoff from adjacent uplands, groundwater, stormwater runoff and the controlled upstream release of water from Del Valle Dam constitute the majority of the hydrologic resources within the Study Area. Artificially created aquatic resources on the site include silt ponds used to capture and store stormwater runoff, quarry ponds that were created when excavation activities occurred at a depth below the water table, causing the permeation of groundwater and periodic stream flows through inlet channels into inactive mine pits, percolation ponds, as well as breached quarry ponds that are artificial excavated pits within the OHWM of the Arroyo del Valle. Additional hydrologic features identified and mapped within the Study Area include one perennial stream (the Arroyo del Valle) and three intermittent streams, (**Figure 3**). Diagnostic characteristics of the features mapped within the Study Area are defined and discussed below in **Section 4.4**.

The U.S. Fish and Wildlife Wetland Inventory Mapper has mapped five (5) wetland communities within the Study Area including Freshwater Forested/scrub Wetland, Riverine habitat, Lake, Freshwater Pond, and Freshwater Emergent Wetland (USFWS 2018).

## *4.3. Vegetation*

The vegetation communities within the Study Area have been severely degraded as a result of intensive and ongoing mining activities for over 100 years. The majority of vegetation communities that once occurred within the Study Area have either been entirely displaced with primarily non-native species or have been severely altered and/or impacted by continual mining activities occurring for over 100 years. The vegetation within the actively mined portions of the Study Area is predominantly limited to locations around mining infrastructure, between and alongside roads utilized to access the active quarry, relatively undisturbed piles of sand and gravel, and other areas that have remained undisturbed for sufficient periods of time to allow colonization by primarily annual non-native plant species. In the southern and western portions of the Study Area immediately adjacent to and within the Arroyo del Valle, the vegetation has had much longer to re-establish in areas that were previously impacted by mining activities and broadly consists of more perennial, riparian plant species. The vegetation types occurring in the

Study Area are described below. A complete list of plant species observed within the Study Area is included in **Appendix C**.

### 4.3.1. Disturbed/Actively Mined

Current and past mining-related activities have created a large amount of disturbed and degraded land within the Study Area. These areas are dominated by ruderal plant species, i.e. those plant species first able to colonize disturbed areas. Representative plant species observed within these portions of the Study Area include but are not limited to the following species: soft chess (*Bromus hordeaceous*), ripgut brome (*Bromus diandrus*), foxtail chess (*Bromus madritensis*), slim oat (*Avena barbata*), and yellow star thistle (*Centaurea solstitialis*).

### 4.3.2. Willow Riparian Wetland

Willow riparian wetland occurs within the Study Area both as a separate vegetation community as well as within the OHWM of the Arroyo del Valle. This vegetation type is comprised primarily of narrow-leaved willow (*Salix exigua* var. *hindsiana*) cattails (*Typha* spp.), tall flatsedge (*Cyperus eragrostis*), tule (*Schoenoplectus acutus* var. *occidentalis*), Bigelow's sneezeweed (*Helenium bigelovii*), watercress (*Nasturtium officinale*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), and white alder (*Alnus rhombifolia*).

### 4.3.3. Sycamore Woodland

Sycamore woodland occurs within the southeastern portion of the Study Area. This vegetation type is comprised primarily of California sycamore (*Platanus racemosa*) with an understory most commonly composed of non-native plant species such as smilo grass (*Stipa miliacea* var. *miliacea*), milk thistle (*Silybum marianum*), soft chess, ripgut brome, slim oat, and yellow star thistle.

### 4.3.4. Freshwater Marsh

Freshwater marsh occurs within the OHWM of the Arroyo del Valle. This vegetation type is comprised of common reed (*Phragmites australis*), tall flatsedge, tule, and cattails. Since this community occurs within the OHWM of the Arroyo del Valle, the acreage was included in the perennial stream acreage and this community is denoted as "Other Aquatic Resources" (**Figure 3**).

### 4.3.5. Native Revegetation Area

Native revegetation areas occur primarily within the southeastern portion of the Study Area. This vegetation type is comprised of valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia* var. *agrifolia*), and occasionally northern California black walnut (*Juglans hindsii*), and California sycamore.

## *4.4. Classification of Aquatic Resources*

As discussed previously in **Section 2.0**, aquatic resources are classified into multiple types based on topography, edaphics (soils), vegetation, and hydrologic regime. Primarily, the USACE

recognizes two distinctions: wetlands and non-wetland waters of the U.S. Non-wetland waters are commonly referred to as “other waters”.

Aquatic features delineated within the Study Area include: 0.06 acres of depressional seasonal marsh outside of the OHWM of the Arroyo del Valle, 0.09 acres of riverine seasonal marsh outside of the OHWM of the Arroyo del Valle, 2.69 acres of willow riparian wetland outside of the OHWM of the Arroyo del Valle, 68.14 acres of perennial stream (the Arroyo del Valle) which includes some marsh habitat located within the OHWM of the Arroyo del Valle, 16.12 acres of breached quarry ponds, 0.34 acres of intermittent stream, 118.70 acres of quarry ponds, 108.50 acres of silt ponds, and 0.07 acres of percolation ponds (**Figure 3**). A description of all the features delineated within the Study Area are provided in the following sections. A table is also provided in **Section 5.0** of this document which includes each aquatic resource type, corresponding Cowardin alpha numeric code, respective acreages, and linear feet, if applicable. Representative photographs of aquatic features are included in **Appendix D**.

### 4.4.1. Depressional Seasonal Marsh

A total of **0.06** acres of depressional seasonal marsh was delineated within the Study Area outside of the Arroyo Del Valle. Depressional seasonal marshes are wetlands that are seasonally inundated or saturated, but inundation/saturation persists for some period into the warm season. The persistence of inundation/saturation into the warm season permits the growth of primarily perennial herbaceous plant species capable of withstanding extended periods of inundation or saturated soil conditions. These features are typically located on the fringes of naturally occurring or artificially created impoundments, such as ponds or reservoirs. These features are also associated with slow moving riverine systems where natural and/or artificial flows persist into the warm season. The depressional seasonal marsh within the Study Area appears to be associated with the historic alignment of the Arroyo del Valle although it is not hydrologically connected to the current stream alignment. Vegetation observed in the seasonal marsh within the Study Area included: cattail (*Typha angustifolia*), pampas grass (*Cortaderia jubata*), and stinkwort (*Dittrichia graveolens*).

### 4.4.2. Riverine Seasonal Marsh

A total of **0.09** acres (approximately 496 linear feet) of riverine seasonal marsh was delineated within the Study Area outside of the Arroyo del Valle. Seasonal marshes are those wetlands that are seasonally saturated and/or inundated and the saturation/inundation persists for some period into the warm season, but generally not beyond. Plants species found within riverine seasonal marshes are typically adapted to this hydrologic regime. Riverine seasonal marshes are dominated by unidirectional flow of water for some portion of the wet season. Riverine seasonal marshes are typically represented by areas that receive additional hydrology from nearby perennial features during high flow or flood level events. These features are typically located along the fringes of slow moving, low gradient riverine systems or at the lower extents of the downstream terminus of riverine seasonal features. Vegetation observed in the riverine seasonal marsh within the Study Area was similar to the depressional seasonal marsh described above.

### 4.4.3. Willow Riparian Wetland

A total of **2.69** acres (approximately 1,410 linear feet) of willow riparian wetland was delineated within the Study Area outside of the Arroyo del Valle. Riparian wetlands support a relatively dense vegetation cover comprised mainly of riparian tree and shrub species. Riparian wetlands typically occur adjacent to perennial, flowing features such as creeks and streams. In this case, the willow riparian wetland is associated with an arm of Quarry Pond A. From a review of historical photos, this area appears to follow the historical alignment of the Arroyo del Valle before it was realigned for mining operations associated with Quarry Pond A. The willow riparian wetland does not appear to be hydrologically connected with the current alignment of the Arroyo del Valle. Plant species observed within this community are described in **Section 4.3.3**.

### 4.4.4. Intermittent Stream

A total of **0.34** acres (approximately 597 linear feet) of intermittent streams were delineated within the Study Area (**Figure 3**). The intermittent streams originate from outside of the Study Area. They are conveyed into the Study Area via culverts installed on Vineyard Avenue and are directly tributary to the Arroyo del Valle. These features generally lack adjacent wetland vegetation, the banks being commonly dominated by upland non-native plant species, but generally exhibit a well-defined bed and bank and were flowing at the time they were delineated.

### 4.4.5. Perennial Stream (the Arroyo del Valle)

A total of **67.36** acres of perennial stream (the Arroyo del Valle) (approximately 13,307 linear feet) was delineated within the Study Area (**Figure 3**). Perennial streams are features that may not meet the three-parameter criteria for hydrophytic vegetation, wetland hydrology, and hydric soils but do convey water and exhibit an OHWM. Perennial streams generally convey unidirectional water flows throughout the entire year and typically consist of a bed and bank and a channel which may be vegetated in part or in full or devoid of vegetation altogether due to the scouring effects of flowing water. Perennial streams are often bordered by wetland vegetation communities of various composition and cover depending on flow rates, duration of flows and soil types. Perennial streams also often include wetland vegetation types within the OHWM, as is the case with the Arroyo del Valle.

The majority of the channel of the Arroyo del Valle is vegetated with hydrophytic plant species such as, but not limited to, the following: mule fat (*Baccharis salicifolia* ssp. *salicifolia*) red willow, arroyo willow, narrow leaved willow, white alder, giant reed, common reed, tule, and cattails. Conversely, there are many gravel bars (primarily but not solely within the lower stretch of the Arroyo del Valle, downstream of Highway 84) that are nearly unvegetated or sparsely vegetated. These gravel bars are generally bound by perennial hydrophytic vegetation on one or both sides.

Additionally, it was observed that some areas within the OHWM exhibit soil deposition and development as opposed to the more dominant gravel and cobble riverwash in the majority of the Arroyo del Valle. These soils are assumed to be hydric based on their submersed setting

and, in conjunction with the associated dominant hydrophytic perennial plant species and wetland hydrology, support wetlands. These wetland types occur entirely within the OHWM of the Arroyo del Valle as depicted in **Figure 3** and therefore were not differentiated from the perennial stream.

A thorough examination of indicators observed in the field was undertaken to evaluate whether the Arroyo del Valle consists of one or more confined, narrow, and entrenched channels or whether it constitutes a broader area constrained by local topography. The following physical characteristics and indicators were observed within the OHWM of the Arroyo del Valle: presence of litter and debris, wracking, matted vegetation, disturbed leaf litter, scouring, deposition, and the presence of a bed and bank.

Based on the indicators observed in the field, it was determined that the Arroyo del Valle does not consist of one or more confined, narrow channels but is a broad channel confined by local topography.

### 4.4.6. Breached Quarry Ponds

A total of **16.90** acres of breached quarry ponds were delineated within the Study Area (**Figure 3**). These features were created as result of excavation directly related to past mining activities. These features either receive direct flows from the Arroyo del Valle or otherwise contribute to the hydrology of the Arroyo del Valle. These features were initially created during the regular process of mining activities and are entirely man-made.

### 4.4.7. Quarry Pond

A total of **118.70** acres of quarry ponds were delineated within the Study Area (**Figure 3**). All of the quarry ponds within the Study Area were formed when excavation activities associated with sand and gravel mining occurred at depths greater than the water table, causing water to fill them. There is no above ground hydrologic connection between the quarry ponds within the Study Area and the Arroyo del Valle. As stated in 40 CFR §122.2 ((iv), (E)), water-filled depressions created in dry land incidental to mining or construction activity including pits excavated for obtaining fill, sand, or gravel that fill with water may not meet the definition of waters of the U.S.

### 4.4.8. Silt Pond

A total of **108.50** acres of silt ponds were delineated within the Study Area (**Figure 3**). As with the quarry ponds, the silt ponds within the Study Area were formed when excavation activities associated with sand and gravel mining occurred below the level of the water table, thus allowing water to fill them. There is no above ground hydrologic connection between the silt ponds within the Study Area and the Arroyo del Valle. As stated in 40 C.F.R §122.2 ((iv), (E)), water-filled depressions created in dry land incidental to mining or construction activity including pits excavated for obtaining fill, sand, or gravel that fill with water may not meet the definition of waters of the U.S. [33 C.F.R. §328.2(f)].

### 4.4.9. Percolation Pond

A total of **0.07** acres of percolation ponds were delineated within the Study Area (**Figure 3**). As with the other pond features, the percolation ponds were constructed and associated with sand and gravel mining. These small features were created to allow accumulated water to percolate back into the water table. These features were generally dry during the site visits and based on the grassland community within these features observed during the site visit, they appear to generally be dry. There is no above ground hydrologic connection between the percolation ponds and the Arroyo del Valle. As stated in 40 C.F.R §122.2 ((iv), (E)), water-filled depressions created in dry land incidental to mining or construction activity including pits excavated for obtaining fill, sand, or gravel that fill with water may not meet the definition of waters of the U.S. [33 C.F.R. §328.2(f)].

# 5.0 CONCLUSIONS

A total of 314.71 acres of potential waters of the U.S. and State (including wetlands and other waters), were mapped within the Study Area. Wetlands delineated within the Study Area include depressional seasonal marsh, riverine seasonal marsh, and willow riparian wetland. Other aquatic resources mapped within the Study Area include intermittent streams, perennial stream, perennial stream impoundment, quarry ponds, silt ponds and percolation ponds. Freshwater marsh and willow riparian wetlands were also mapped within the OHWM of the Arroyo del Valle. The acreage of freshwater marsh and willow riparian wetlands within the OHWM of the Arroyo del Valle are not included separately in the delineated aquatic resource acreage to avoid double-counting acreages. **Table 1** below provides the resource type, corresponding Cowardin alpha numeric code, acreage per feature type, linear feet, if applicable, and summarizes the total acreage of other waters delineated within the Study Area. **Appendix E** includes the complete Aquatic Resources Spreadsheet.

**TABLE 1 — AQUATIC RESOURCES WITHIN THE STUDY AREA**

| Aquatic Resource Type | Aquatic Resources Classification *(Cowardin)* | Aquatic Resource Size *(acres)* | Aquatic Resource Size *(linear feet)* | Potentially Jurisdictional *(acres)* |
|---|---|---|---|---|
| Depressional Seasonal Marsh | PEM1E | 0.06 | — | Yes |
| Riverine Seasonal Marsh | PEM1E | 0.09 | 496 | Yes |
| Willow Riparian Wetland | PFO1E | 2.69 | 1,410 | Yes |
| Intermittent Stream | R4SB1 | 0.34 | 597 | Yes |
| Perennial Stream (the Arroyo del Valle) | R2UB1 | 67.36 | 13,307 | Yes |
| Breached Quarry Pond | R2UB3 | 16.90 | — | Yes |
| Quarry Pond | L1UB3 | 118.70 | — | No |
| Silt Pond | L2UB3 | 108.50 | — | No |
| Percolation Pond | L2UB3 | 0.07 | — | No |
| **Total** | **—** | **314.71** | **15,810** | |

# 6.0 REFERENCES


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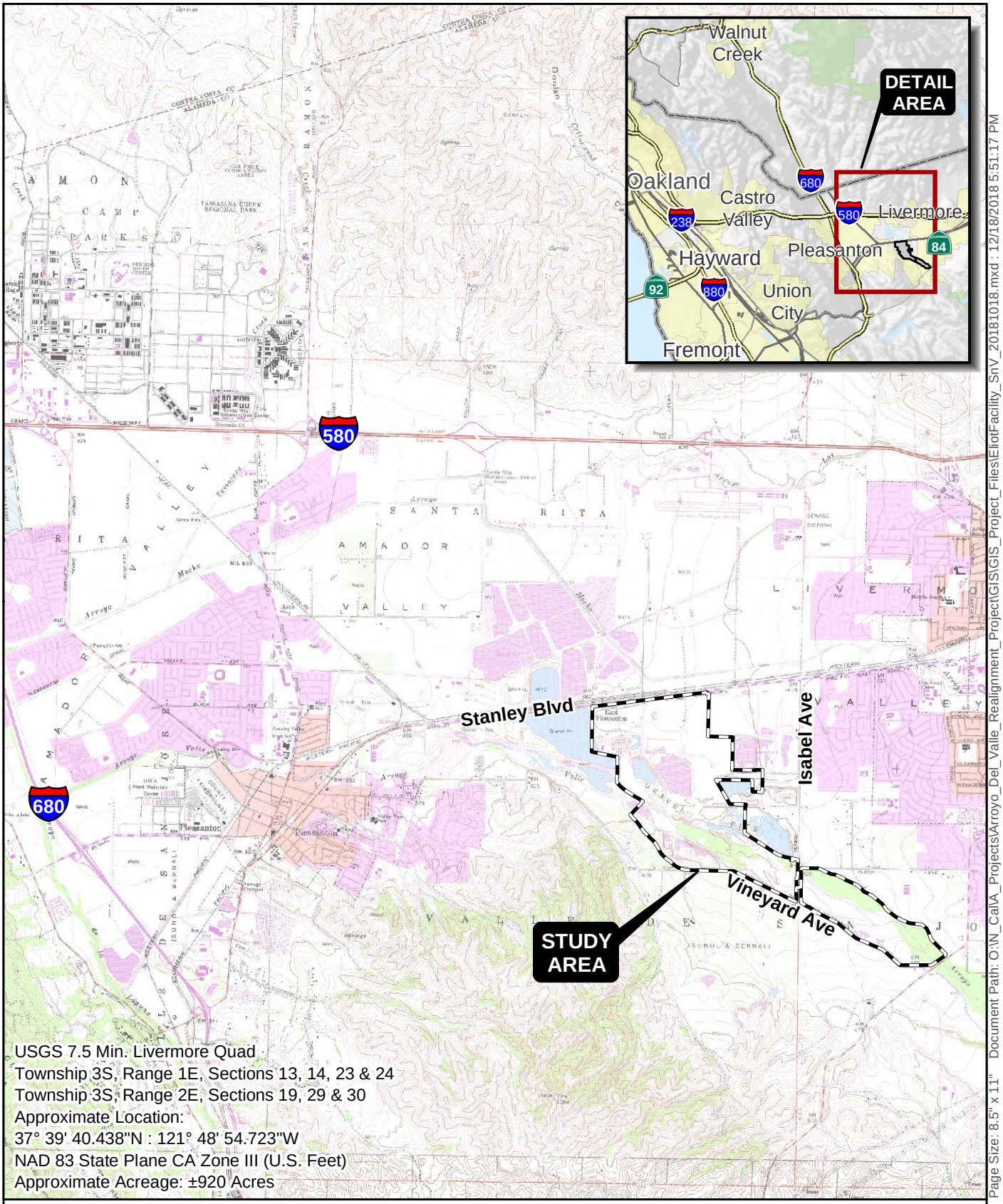


USGS 7.5 Min. Livermore Quad
Township 3S, Range 1E, Sections 13, 14, 23 & 24
Township 3S, Range 2E, Sections 19, 29 & 30
Approximate Location:
37° 39' 40.438"N : 121° 48' 54.723"W
NAD 83 State Plane CA Zone III (U.S. Feet)
Approximate Acreage: ±920 Acres

# SITE AND VICINITY

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N

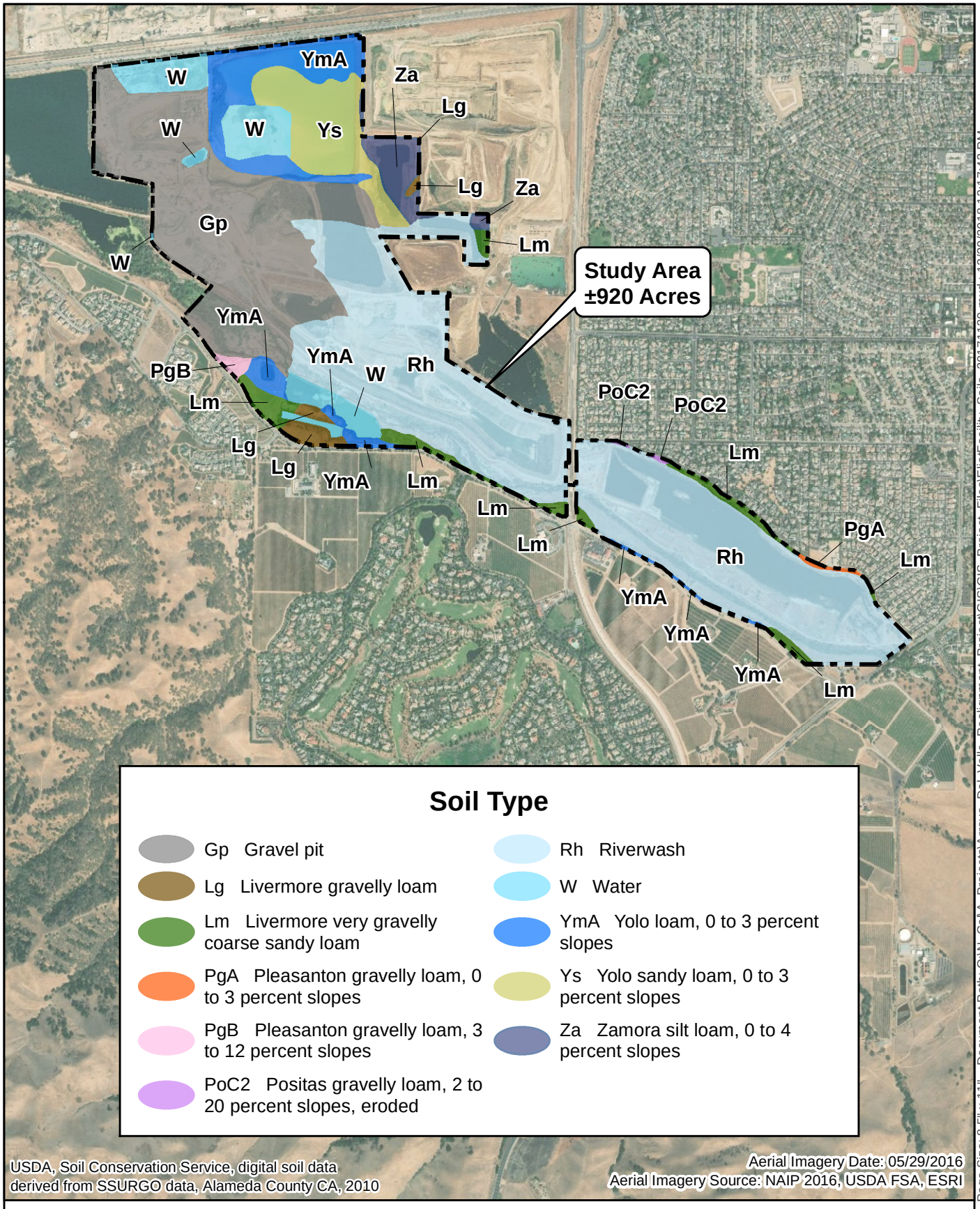
0 0.5 1
Miles
1 in = 1 mile

Drawn By: MUB
QA/QC: AMP
Date: 12/18/2018

**FIGURE 1**

ELIOT FACILITY

Page Size: 8.5" x 11" Document Path: O:\N_Cal\A_Projects\Arroyo_Del_Valle_Realignment_Project\GIS\GIS_Project_Files\EliotFacility_SnV_20181018.mxd : 12/18/2018 5:51:17 PM




# SOILS

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N

0 1,120 2,240
Feet
1 inch = 2,240 feet

Drawn By: MUB
QA/QC: AMP
Date: 12/20/2018

**FIGURE 2**

ELIOT FACILITY

Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

## Aquatic Resources Individual Feature Acreage Table

**Depressional Seasonal Marsh**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| DSM-01 | 0.060 | n/a | 37.647351 | -121.790115 |
| **Subtotal:** | **0.06** | | | |

**Riverine Seasonal Marsh**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| RSM-01 | 0.093 | 496 | 37.647787 | -121.790010 |
| **Subtotal:** | **0.09** | **496** | | |

**Intermittent Stream**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| IS-01 | 0.073 | 233 | 37.659792 | -121.826075 |
| IS-02 | 0.060 | 92 | 37.655707 | -121.814638 |
| IS-03 | 0.115 | 140 | 37.649619 | -121.798676 |
| IS-04 | 0.089 | 132 | 37.649487 | -121.798417 |
| **Subtotal:** | **0.34** | **597** | | |

**Willow Riparian Wetland**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| WRW-01 | 1.440 | 803 | 37.648509 | -121.788137 |
| WRW-02 | 1.253 | 607 | 37.647607 | -121.788519 |
| **Subtotal:** | **2.69** | **1,410** | | |

**Perennial Stream**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| PS-01 | 67.357 | 13,307 | 37.655215 | -121.810293 |
| **Subtotal:** | **67.36** | **13,307** | | |

**Breached Quarry Pond**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| BQP-01 | 6.646 | n/a | 37.657994 | -121.820938 |
| BQP-02 | 10.258 | n/a | 37.656715 | -121.819081 |
| **Subtotal:** | **16.90** | | | |

**Quarry Pond**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| QP-A | 59.403 | n/a | 37.651541 | -121.795675 |
| QP-B | 7.759 | n/a | 37.654156 | -121.802433 |
| QP-C | 1.790 | n/a | 37.665756 | -121.812563 |
| QP-D | 15.770 | n/a | 37.667833 | -121.816088 |
| QP-E | 0.974 | n/a | 37.668403 | -121.833069 |
| QP-F | 1.357 | n/a | 37.658903 | -121.823106 |
| QP-G | 13.016 | n/a | 37.664173 | -121.818286 |
| QP-H | 9.744 | n/a | 37.666459 | -121.819215 |
| QP-I | 1.477 | n/a | 37.668714 | -121.827588 |
| QP-J | 7.410 | n/a | 37.661698 | -121.820985 |
| **Subtotal:** | **118.70** | | | |

**Silt Pond**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| S-01 | 108.503 | n/a | 37.670817 | -121.822263 |
| **Subtotal:** | **108.50** | | | |

**Percolation Pond**

| Label | Acres | Length | Latitude | Longitude |
|---|---|---|---|---|
| PP-01 | 0.010 | n/a | 37.648494 | -121.794254 |
| PP-02 | 0.013 | n/a | 37.647530 | -121.792150 |
| PP-03 | 0.029 | n/a | 37.647086 | -121.790980 |
| PP-04 | 0.016 | n/a | 37.646968 | -121.789737 |
| **Subtotal:** | **0.07** | | | |

| **TOTAL:** | **314.71** | **15,810** |
|---|---|---|

## AQUATIC RESOURCES

| CLASSIFICATION | ACREAGE* | LENGTH FT |
|---|---|---|
| *Depressional Wetlands* | | |
| Seasonal Marsh | 0.06 | n/a |
| *Riverine Wetlands* | | |
| Seasonal Marsh | 0.09 | 496 |
| Willow Riparian Wetland | 2.69 | 1,410 |
| *Other Aquatic Resources* | | |
| Intermittent Stream | 0.34 | 597 |
| Perennial Stream | 67.36 | 13,307 |
| Breached Quarry Pond | 16.90 | n/a |
| Quarry Pond | 118.70 | n/a |
| Silt Pond | 108.50 | n/a |
| Percolation Pond | 0.07 | n/a |
| **TOTAL:** | **314.71** | **15,810** |

*Acreages calculated at 6 significant figures and subsequently rounded.

## NOTES

- Aquatic resources are subject to U.S. Army Corps of Engineers verification.
- Aquatic resources were mapped by Foothill Associates using a Trimble Global Positioning System on 11/02/2017 through 11/16/2017 and 4/3/2018 through 4/4/2018.
- Delineated By: C. Marks and C. Singer
- This delineation utilizes the Corps' 1987 three-parameter methodology and Arid West Supplement to delineate jurisdictional waters of the U.S.
- The Hydrologic Unit Code for this site is 180500040406 and 180500040302.
- Digital base data provided by WRA Environmental Consultants.
- Coordinate System: NAD 83 UTM Zone 10N
- Projection: Transverse Mercator
- Datum: North American Datum 1983

### Other Features

- Corner Coordinates
- Upland Data Point
- Wetland Data Point
- Photo Point
- Culvert
- Ordinary High Water Mark
- Study Area ±920 Acres

**Other Aquatic Resources**

- Freshwater Marsh
- Willow Riparian Wetland



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0 1,500 3,000
Feet

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE 1**

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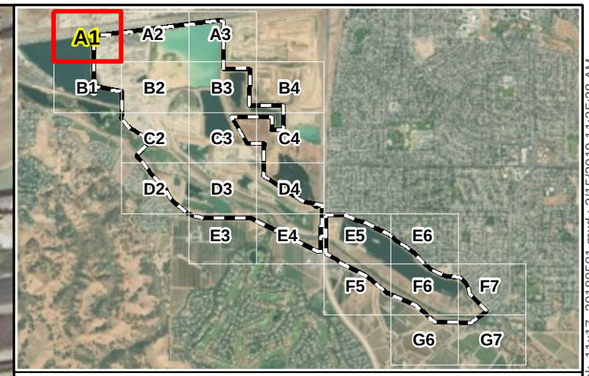


## Legend

- Upland Data Point
- Wetland Data Point
- Photo Point
- Culvert
- Ordinary High Water Mark
- Study Area ±920 Acres

**Aquatic Resources**

- Depressional Seasonal Marsh - 0.06 Acres
- Riverine Seasonal Marsh - 0.09 Acres
- Willow Riparian Wetland - 2.69 Acres
- Intermittent Stream - 0.34 Acres
- Perennial Stream - 67.36 Acres
- Breached Quarry Pond - 16.90 Acres
- Quarry Pond - 118.70 Acres
- Silt Pond - 108.50 Acres
- Percolation Pond - 0.07 Acres

**Other Aquatic Resources**

- Freshwater Marsh
- Willow Riparian Wetland

Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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0 200 400 800
Feet
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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE A1**

ELIOT FACILITY

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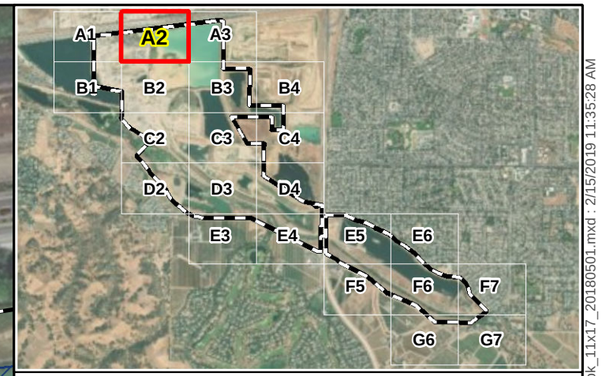


## Legend

- Upland Data Point
- Wetland Data Point
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- Willow Riparian Wetland

Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE A2**

ELIOT FACILITY

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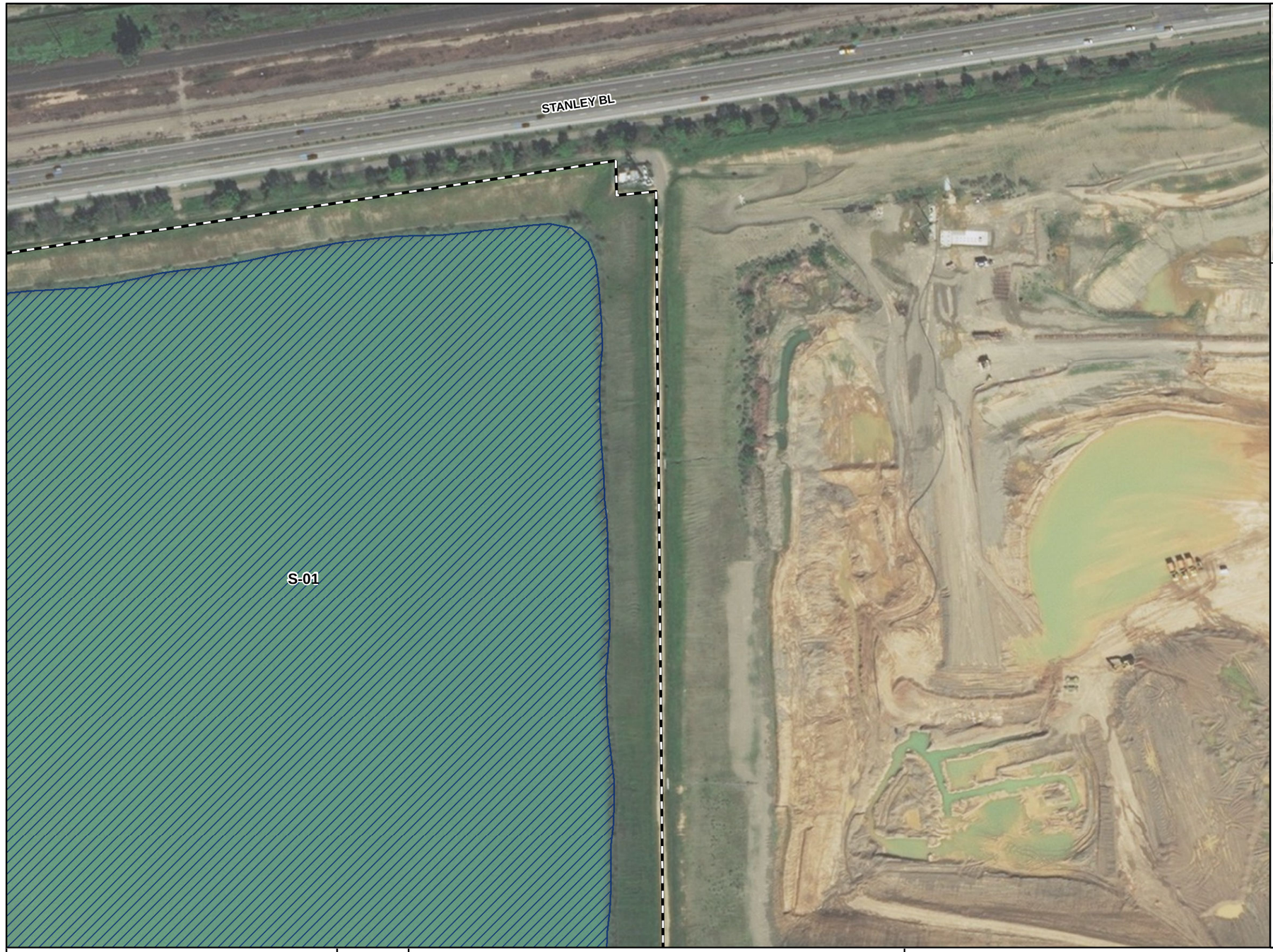


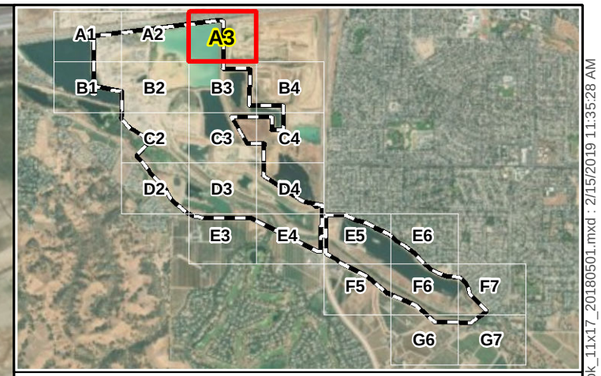


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- Study Area ±920 Acres

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**Other Aquatic Resources**

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Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE A3**

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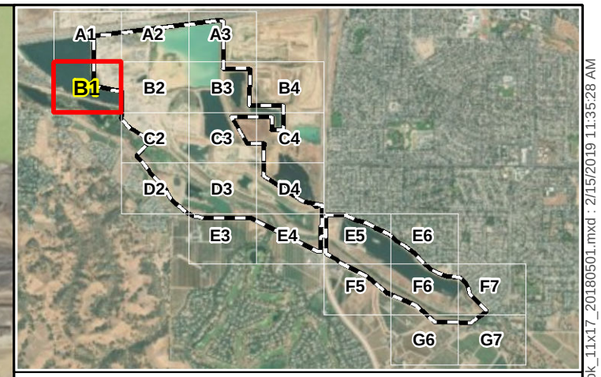


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**Other Aquatic Resources**

- Freshwater Marsh
- Willow Riparian Wetland

Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE B1**

ELIOT FACILITY

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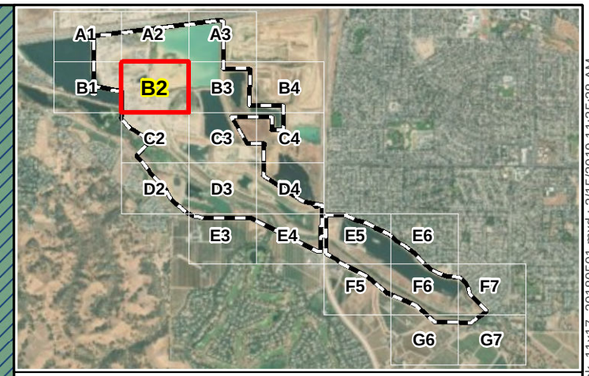


## Legend

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- Wetland Data Point
- Photo Point
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**Aquatic Resources**

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**Other Aquatic Resources**

- Freshwater Marsh
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Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE B2**

ELIOT FACILITY

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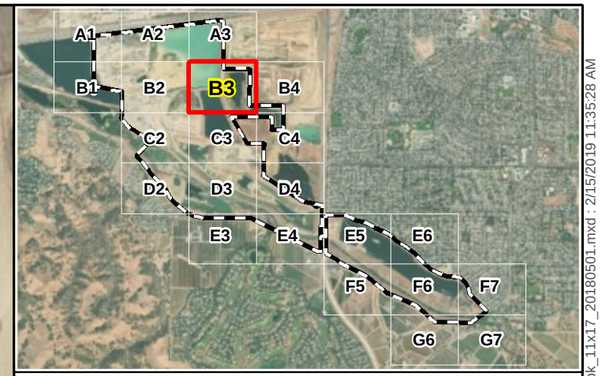


## Legend

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**Other Aquatic Resources**

- Freshwater Marsh
- Willow Riparian Wetland

Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE B3**

ELIOT FACILITY

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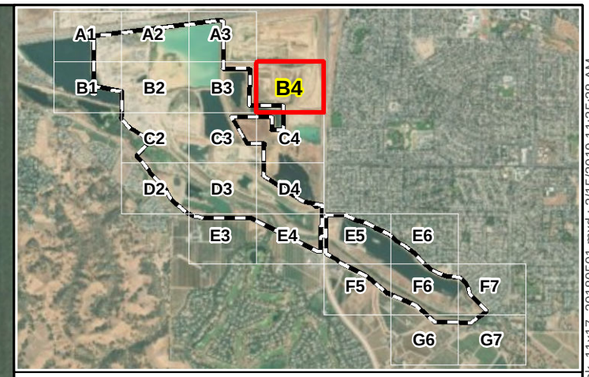


## Legend

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Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE B4**

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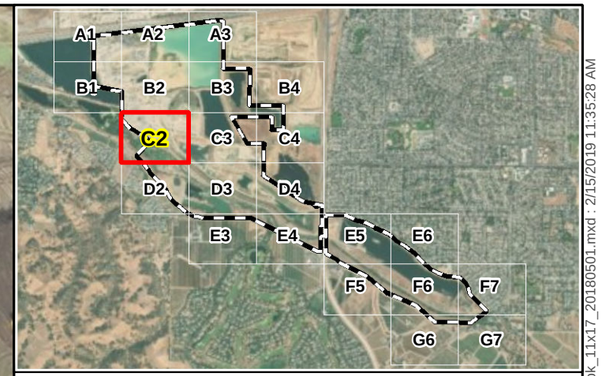


## Legend

- Upland Data Point
- Wetland Data Point
- Photo Point
- Culvert
- Ordinary High Water Mark
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**Other Aquatic Resources**

- Freshwater Marsh
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Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE C2**

ELIOT FACILITY

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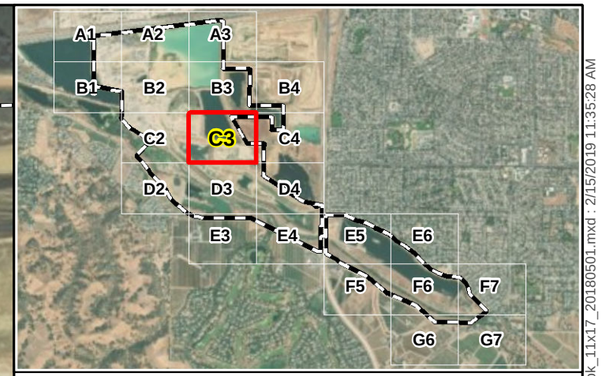


## Legend

- Upland Data Point
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**Other Aquatic Resources**

- Freshwater Marsh
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Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE C3**

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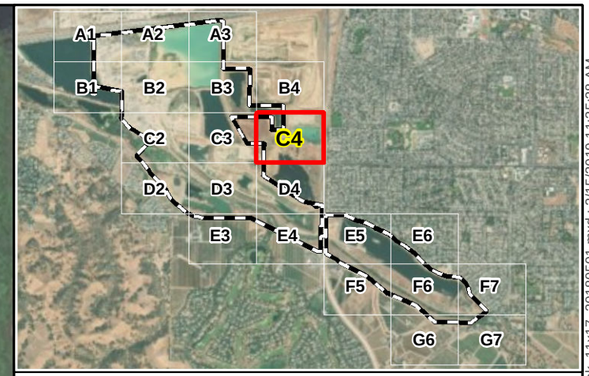


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Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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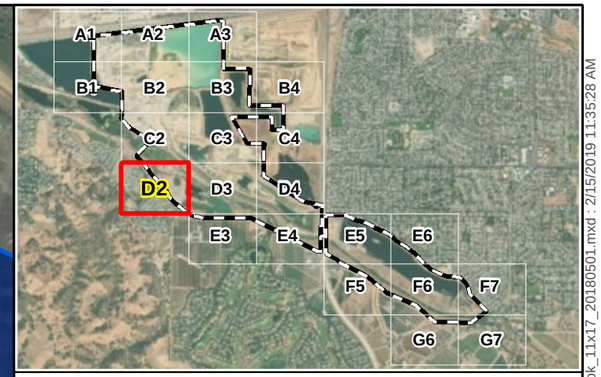
**1 : 2,400**

# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE C4**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Aerial Imagery Date: 06/06/2014
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Drawn By: MUB QA/QC: AMP Date: 2/15/2019



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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE D2**

ELIOT FACILITY

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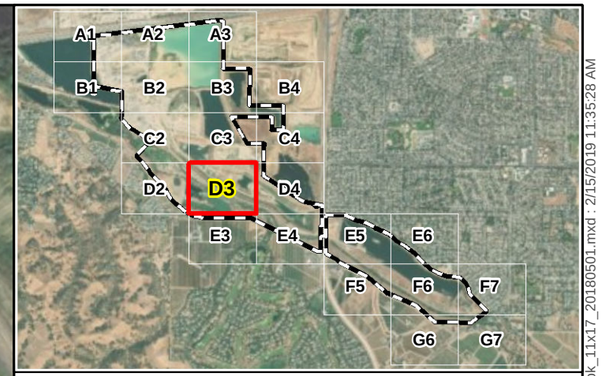


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Aerial Imagery Date: 06/06/2014
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Drawn By: MUB QA/QC: AMP Date: 2/15/2019



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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE D3**

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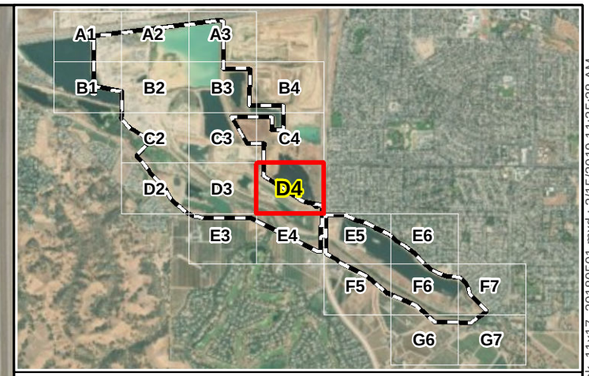


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- Freshwater Marsh
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Aerial Imagery Date: 06/06/2014
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Drawn By: MUB QA/QC: AMP Date: 2/15/2019



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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE D4**

ELIOT FACILITY

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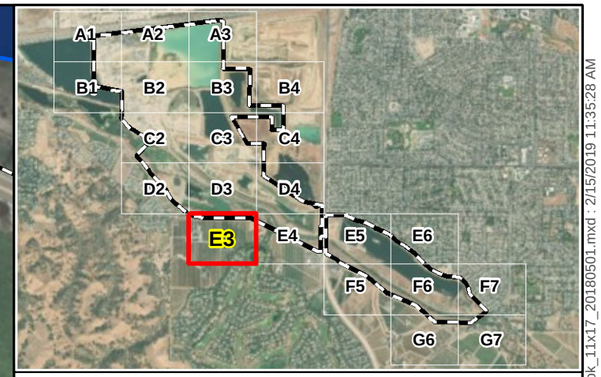


## Legend

- Upland Data Point
- Wetland Data Point
- Photo Point
- Culvert
- Ordinary High Water Mark
- Study Area ±920 Acres

**Aquatic Resources**

- Depressional Seasonal Marsh - 0.06 Acres
- Riverine Seasonal Marsh - 0.09 Acres
- Willow Riparian Wetland - 2.69 Acres
- Intermittent Stream - 0.34 Acres
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- Percolation Pond - 0.07 Acres

**Other Aquatic Resources**

- Freshwater Marsh
- Willow Riparian Wetland

Aerial Imagery Date: 06/06/2014
Aerial Imagery Source: Airphrame Drone Aerial Imagery

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Drawn By: MUB QA/QC: AMP Date: 2/15/2019



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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE E3**

ELIOT FACILITY

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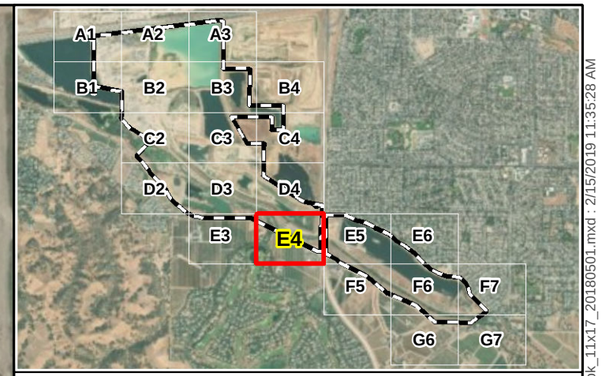


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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE E4**

ELIOT FACILITY

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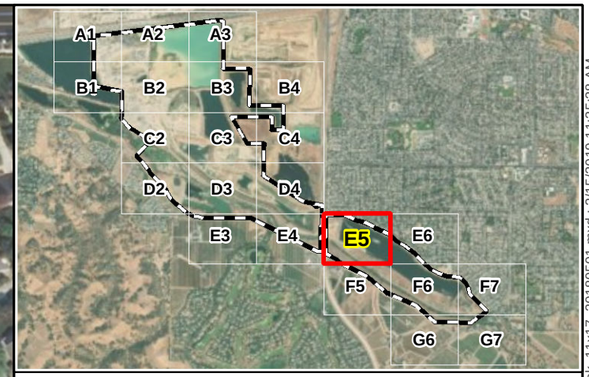


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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE E5**

ELIOT FACILITY

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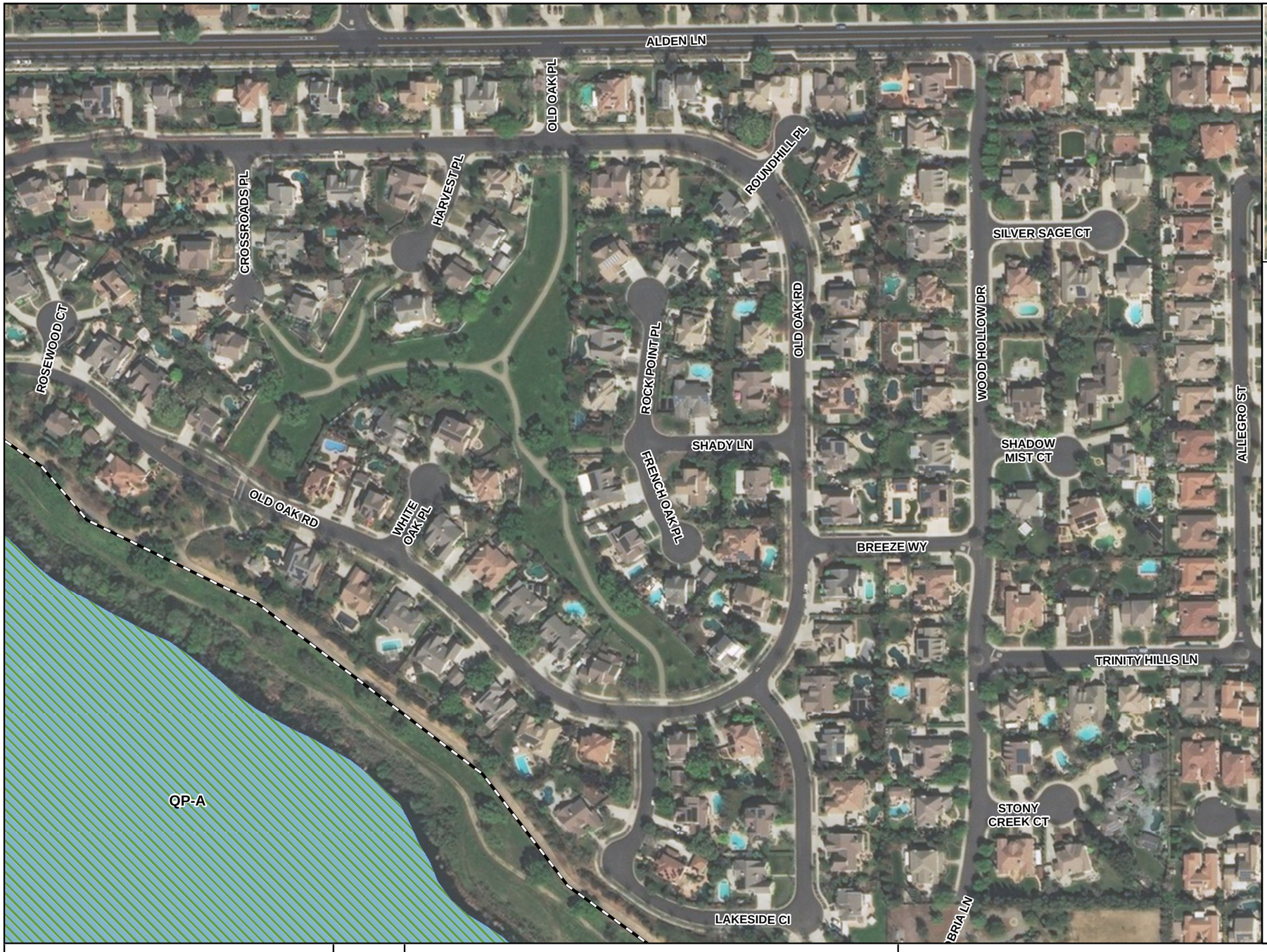


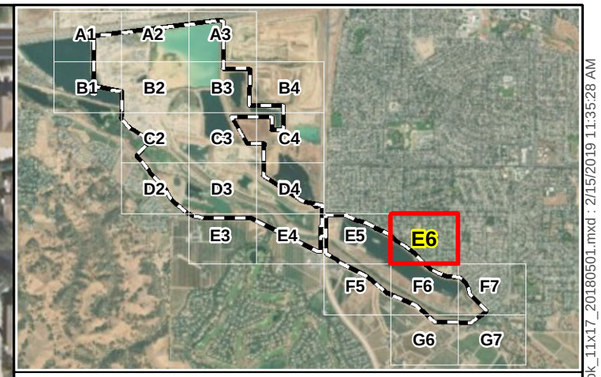


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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE E6**

ELIOT FACILITY

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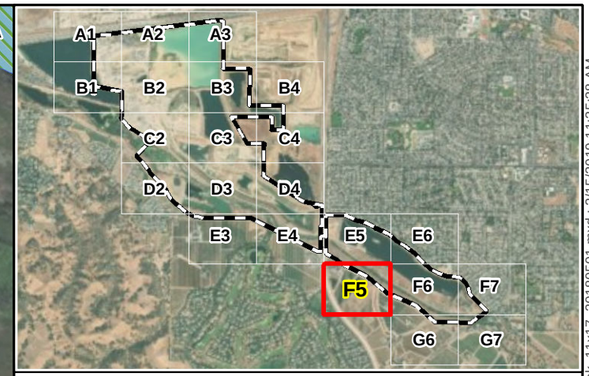


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# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE F5**

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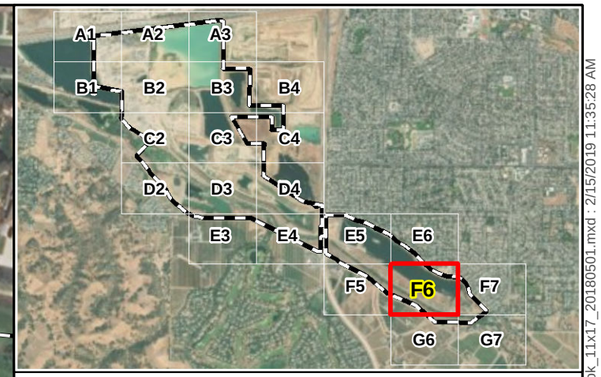


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# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE F6**



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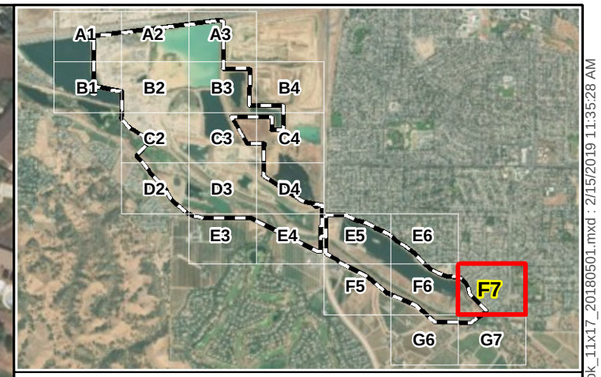


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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE F7**

ELIOT FACILITY

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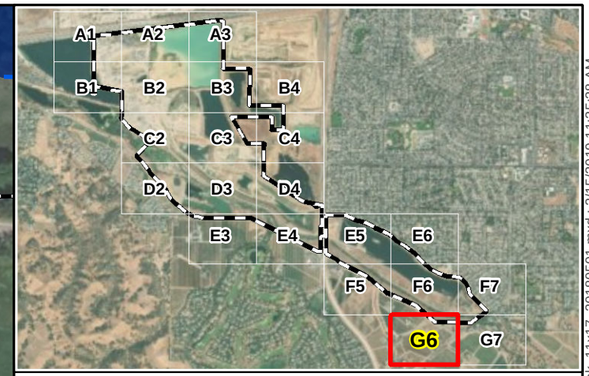


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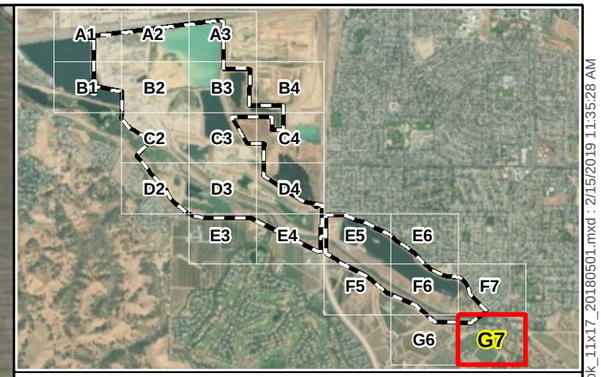
# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE G6**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# ELIOT FACILITY
# AQUATIC RESOURCES DELINEATION MAP

**FIGURE 3**
**PAGE G7**

ELIOT FACILITY

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# Appendix A — Contact Information and Directions

| | |
|---|---|
| Client Contact Information: | Debbie Haldeman<br>Regional Natural Resources Manager<br>CEMEX, Northern California/Nevada<br>2365 Iron Point Road, Suite 120<br>Folsom, CA 95630<br>Phone Number: (916) 941-2844<br>Email: deborahg.haldeman@cemex.com |
| Delineation Conducted by: | David Bise, Senior Biologist<br>Marisa Brilts, Biologist<br>Cristian Singer, Senior Botanist<br>Foothill Associates<br>590 Menlo Drive, Suite 5<br>Rocklin, CA 95765<br>Phone Number: (916) 435-1202<br>Email: csinger@foothill.com |
| Directions to the Study Area: | From Sacramento, take Interstate 80 (I-80) West towards San Francisco for approximately 50 miles. Take exit 40 for Interstate 680 (I-680) toward Benicia/San Jose. Take I-680 for approximately 40 miles. Take exit 30A in order to merge onto Interstate 580 East (I-580) toward Stockton. Take exit 47 for Santa Rita Road toward Tassajara Road. Follow the signs for Downtown and merge onto Santa Rita Road. Turn left onto Valley Avenue and then turn left again onto Stanley Boulevard. Travel for approximately 1.5 miles, and the Study Area will be on the right at 1544 Stanley Boulevard. |

# Appendix B — Routine Wetland Determination Data Forms

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Eliot Facility City/County: Unincorporated/Alameda Sampling Date: 04/03/2018

Applicant/Owner: CEMEX State: CA Sampling Point: 1A

Investigator(s): David Bise, Cristian Singer Section, Township, Range: 23, T3S, R1E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): concave Slope (%): ~1

Subregion (LRR): Land Resource Region C Lat: 37.662962 Long: -121.827347 Datum: NAD 83

Soil Map Unit Name: Riverwash NWI classification: R3 (Upper perennial, ri

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ 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 _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ No _____ | |
| Wetland Hydrology Present? | Yes ✓ No _____ | |

Remarks:

Wetland vegetation dominant, hydric soil indicators present, wetland hydrology indicators present.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. Arundo donax | 30 | Yes | FACW |
| 2. Baccharis salicifolia ssp. salicifolia | 5 | No | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 35 | = Total Cover | |
| **Herb Stratum** (Plot size: _____) | | | |
| 1. Berula erecta | 15 | Yes | OBL |
| 2. Rumex sp. | 2 | No | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 17 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 48 % Cover of Biotic Crust _____

**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 | x 1 = | 0 |
| FACW species | x 2 = | 0 |
| FAC species | x 3 = | 0 |
| FACU species | x 4 = | 0 |
| UPL species | x 5 = | 0 |
| Column Totals: 0 (A) | | 0 (B) |

Prevalence Index = B/A = NaN

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Hydrophytic vegetation dominant.

## SOIL

Sampling Point: 1A

**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 % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 95 | 7.5YR 4/6 | 5 | C | M | Sandy,cob | Cobble up to 3-4" diameter |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, 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[3]:**

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

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

Remarks:

Riverwash is classified as a hydric soil on the National List of Hydric Soils. Soil profile is mixture of sand and cobble. Redox features observed in portions of soil profile where sand has accumulated sufficiently.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ 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 Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ 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): 12

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 10

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

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

Remarks:

Wetland hydrology present.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Eliot Facility City/County: Unincorporated/Alameda Sampling Date: 04/03/2018

Applicant/Owner: CEMEX State: CA Sampling Point: 1B

Investigator(s): David Bise, Cristian Singer Section, Township, Range: N23, T3S, R1E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): ~55

Subregion (LRR): Land Resource Region C Lat: 37.66298 Long: -121.827338 Datum: NAD 83

Soil Map Unit Name: Riverwash NWI classification: N/A: Upland

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ 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 ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Upland vegetation dominant, no hydric soil indicators, no wetland hydrology indicators, upland topography.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: _____) | | | |
| 1. Lupinus bicolor | 15 | Yes | UPL |
| 2. Bromus diandrus | 15 | Yes | UPL |
| 3. Centaurea solstitiaqlis | 15 | Yes | UPL |
| 4. Erodium botrys | 10 | No | FACU |
| 5. Avena sp. | 5 | No | UPL |
| 6. Eschscholzia californica | 5 | No | UPL |
| 7. Carduus pycnocephalus | 5 | No | UPL |
| 8. | | | |
| | 70 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: | |
|---|---|---|
| OBL species _____ | x 1 = | 0 |
| FACW species _____ | x 2 = | 0 |
| FAC species _____ | x 3 = | 0 |
| FACU species _____ | x 4 = | 0 |
| UPL species _____ | x 5 = | 0 |
| Column Totals: 0 (A) | | 0 (B) |

Prevalence Index = B/A = NaN

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

Upland vegetation dominant.

## SOIL

Sampling Point: 1B

**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 % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 7.5YR 3/2 | 100 | N/A: No redox | | | | Silty, sand | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, 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[3]:**

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

Riverwash is classified as a hydric soil on the National List of Hydric Soils but no hydric soil indicators observed in the field. Data point location is well above the bed of the arroyo on adjacent, steep hillslope.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ 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 Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ 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): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No ✓

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

Remarks:

No wetland hydrology indicators. Upland topography; point is above the bed of the arroyo on a hillslope.

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Eliot Facility City/County: Unincorporated/Alameda Sampling Date: 04/03/2018

Applicant/Owner: CEMEX State: CA Sampling Point: 2A

Investigator(s): David Bise, Cristian Singer Section, Township, Range: 24, T 3S, R 1E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): none Slope (%): ~1

Subregion (LRR): Land Resource Region C Lat: 37.658168 Long: -121.81858 Datum: NAD 83

Soil Map Unit Name: Riverwash NWI classification: R3 (Upper perennial, ri

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

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

Are Vegetation _____, Soil ✓, or Hydrology _____ 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 _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks:

Coarse textured soil lacking clear hydric soil indicators. In the absence of clear hydric soil indicators, soils were considered hydric based on presence of wetland vegetation and wetland hydrology and position within the landscape. Riverwash is listed as hydric on the National List of Hydric Soils.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: _____) | | | |
| 1. Phragmites australis | 95 | Yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 95 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

**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 _____ | x 1 = 0 |
| FACW species _____ | x 2 = 0 |
| FAC species _____ | x 3 = 0 |
| FACU species _____ | x 4 = 0 |
| UPL species _____ | x 5 = 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A = NaN

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Hydrophytic vegetation dominant.

## SOIL

Sampling Point: 2A

**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 % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 7.5YR 3/2 | 100 | N/A: No redox | | | | Sandy, gr | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, 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[3]:**

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** ✓ **No** _____

Remarks:

Riverwash is classified as a hydric soil on the National List of Hydric Soils. Lower sand content compared to previous wetland point (1A). This location has very coarse textured soils that lack enough fine material in order for clear hydric soil indicators to be observed. Point exhibits strong wetland vegetation and strong wetland hydrology indicators and is located within the bed of the arroyo.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ 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 Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ 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): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** **Yes** ✓ **No** _____

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

Remarks:

Wetland hydrology indicators present.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Eliot Facility City/County: Unincorporated/Alameda Sampling Date: 04/03/2018

Applicant/Owner: CEMEX State: CA Sampling Point: 2B

Investigator(s): David Bise, Cristian Singer Section, Township, Range: 24, T 3S, R 1E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): ~1

Subregion (LRR): Land Resource Region C Lat: 37.658219 Long: -121.81855 Datum: NAD 83

Soil Map Unit Name: Riverwash NWI classification: N/A: Upland

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ 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 ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Point is unvegetated, lacks hydric soil indicators, lacks wetland hydrology indicators and exhibits upland topography.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 0 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: NaN (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = 0 |
| FACW species _____ | x 2 = 0 |
| FAC species _____ | x 3 = 0 |
| FACU species _____ | x 4 = 0 |
| UPL species _____ | x 5 = 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A = NaN

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

Unvegetated.

## SOIL

Sampling Point: 2B

**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 % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 2.5Y 3/2 | 100 | N/A: No redox | | | | Sandy, co | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, 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[3]:**

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

Riverwash is classified as a hydric soil on the National List of Hydric Soils but this point lacks hydric soil indicators, lacks wetland vegetation, lacks wetland hydrology indicators and the position of the point within the landscape is upland (located above the bed of the arroyo).

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ 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 Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ 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): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No ✓

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

Remarks:

No wetland hydrology indicators. Point is located above the bed of the arroyo.

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Eliot Facility City/County: Unincorporated/Alameda Sampling Date: 04/03/2018

Applicant/Owner: CEMEX State: CA Sampling Point: 3A

Investigator(s): David Bise, Cristian Singer Section, Township, Range: 19, T 3S, R2E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): none Slope (%): ~1

Subregion (LRR): Land Resource Region C Lat: 37.651068 Long: -121.800944 Datum: NAD 83

Soil Map Unit Name: Riverwash NWI classification: R3 (Upper perennial, ri

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ 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 _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ No _____ | |
| Wetland Hydrology Present? | Yes ✓ No _____ | |

Remarks:

Hydrophytic vegetation dominant, hydric soil indicator present, wetland hydrology present.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: _____) | | | |
| 1. Typha angustifoia | 55 | Yes | OBL |
| 2. Lysimachia arvensis | 5 | No | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 60 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust _____

**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 _____ | x 1 = | 0 |
| FACW species _____ | x 2 = | 0 |
| FAC species _____ | x 3 = | 0 |
| FACU species _____ | x 4 = | 0 |
| UPL species _____ | x 5 = | 0 |
| Column Totals: 0 (A) | | 0 (B) |

Prevalence Index = B/A = NaN

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Hydrophytic vegetation dominant.

## SOIL

Sampling Point: 3A

**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 % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 3/1 | 100 | N/A: No redox | | | | Coarse sil | Somewhat mucky, greasy |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, 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[3]:**

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

Riverwash is classified as a hydric soil on the National List of Hydric Soils. Very low chroma. Soil texture somewhat mucky, greasy. Shovel refusal just beyond depth of four inches due to large cobbles.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ 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 Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ 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): 6"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 5"

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

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

Remarks:

Wetland hydrology indicators present.

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Eliot Facility City/County: Unincorporated/Alameda Sampling Date: 04/03/2018

Applicant/Owner: CEMEX State: CA Sampling Point: 3B

Investigator(s): David Bise, Cristian Singer Section, Township, Range: 19, T 3S, R2E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): ~1

Subregion (LRR): Land Resource Region C Lat: 37.651032 Long: -121.80099 Datum: NAD 83

Soil Map Unit Name: Riverwash NWI classification: N/A: Upland

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ 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 ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Upland vegetation dominant, no hydric soil indicators, no wetland hydrology indicators.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. Baccharis pilularis ssp. consanguinea | 5 | Yes | UPL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 5 = Total Cover | | |
| **Herb Stratum** (Plot size: _____) | | | |
| 1. Dittrichia graveolens | 15 | Yes | UPL |
| 2. Festuca bromoides | 15 | Yes | UPL |
| 3. Bromus hordeaceus | 10 | Yes | FACU |
| 4. Plantago lanceolata | 10 | Yes | FAC |
| 5. Foeniclulum vulgare | 5 | No | UPL |
| 6. Avena sp. | 5 | No | UPL |
| 7. Centaurea solstitialis | 5 | No | UPL |
| 8. | | | |
| | 65 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: | |
|---|---|---|
| OBL species _____ | x 1 = | 0 |
| FACW species _____ | x 2 = | 0 |
| FAC species _____ | x 3 = | 0 |
| FACU species _____ | x 4 = | 0 |
| UPL species _____ | x 5 = | 0 |
| Column Totals: 0 (A) | | 0 (B) |

Prevalence Index = B/A = NaN

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

Upland vegetation dominant.

## SOIL

Sampling Point: 3B

**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 % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 3/2 | 100 | N/A: No redox | | | | Coarse,g | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, 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[3]:**

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

Riverwash is classified as a hydric soil on the National List of Hydric Soils but this point lacks hydric soil indicators, lacks wetland vegetation, lacks wetland hydrology indicators and the position of the point within the landscape is upland (located on a hillslope). Shovel refusal at 8 inches.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ 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 Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ 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): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No ✓

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

Remarks:

Upland topography: point is located on a slope.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Eliot Facility City/County: Unincorporated/Alameda Sampling Date: 04/03/2018

Applicant/Owner: CEMEX State: CA Sampling Point: 4A

Investigator(s): David Bise, Cristian Singer Section, Township, Range: 30, T3S, R2E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): ~5

Subregion (LRR): Land Resource Region C Lat: 37.647451 Long: -121.790129 Datum: NAD 83

Soil Map Unit Name: Riverwash NWI classification: RP

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ 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 _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks:

Coarse textured soil lacking clear hydric soil indicators. In the absence of clear hydric soil indicators, soils were considered hydric based on presence of wetland vegetation and wetland hydrology indicators and position within the landscape. Riverwash is listed as hydric on the National List of Hydric Soils.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. Salix sp. | 15 | Yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 15 = Total Cover | | |
| **Herb Stratum** (Plot size: _____) | | | |
| 1. Typha angustifolia | 50 | Yes | OBL |
| 2. Medicago sp. | 10 | No | FACU |
| 3. Cortaderia jubata | 10 | No | FACU |
| 4. Dittrichia graveolens | 2 | No | UPL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 72 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 28 % Cover of Biotic Crust _____

**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 _____ | x 1 = 0 |
| FACW species _____ | x 2 = 0 |
| FAC species _____ | x 3 = 0 |
| FACU species _____ | x 4 = 0 |
| UPL species _____ | x 5 = 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A = NaN

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Indicator status of Salix sp. applied based on ecological setting (saturated soil). Hydrophytic vegetation dominant.

## SOIL

Sampling Point: 4A

**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 % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2 | 2.5Y 3/2 | 100 | N/A: No redox | | | | Gravelly | |
| 3-10 | 5Y 3/1 | 100 | N/A: no redox | | | | Gravelly | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, 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[3]:**

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

Riverwash is listed as hydric on the National List of Hydric Soils. Low chroma. Coarse textured soil lacking clear hydric soil indicators. In the absence of clear hydric soil indicators, soils were considered hydric based on presence of wetland vegetation and strong wetland hydrology indicators and position within the landscape.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ 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 Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ 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): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 8

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

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

Remarks:

Wetland hydrology indicators present.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Eliot Facility City/County: Unincorporated/Alameda Sampling Date: 04/03/2018

Applicant/Owner: CEMEX State: CA Sampling Point: 4B

Investigator(s): David Bise, Cristian Singer Section, Township, Range: 30, T3S, R2E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): ~1

Subregion (LRR): Land Resource Region C Lat: 37.647483 Long: -121.790126 Datum: NAD 83

Soil Map Unit Name: Riverwash NWI classification: N/A: Upland

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ 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 ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Upland vegetation dominant, no hydric soil indicators, no wetland hydrology indicators.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. Baccharis pilularis ssp. consanguinea | 30 | Yes | UPL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 30 | = Total Cover | |
| **Herb Stratum** (Plot size: _____) | | | |
| 1. Cortaderia jubata | 20 | Yes | FACU |
| 2. Bromus hordeaceus | 10 | Yes | FACU |
| 3. Medicago sp. | 10 | Yes | FACU |
| 4. Geranium dissectum | 5 | No | UPL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 45 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | | = Total Cover | |

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: | |
|---|---|---|
| OBL species | x 1 = | 0 |
| FACW species | x 2 = | 0 |
| FAC species | x 3 = | 0 |
| FACU species | x 4 = | 0 |
| UPL species | x 5 = | 0 |
| Column Totals: 0 (A) | | 0 (B) |

Prevalence Index = B/A = NaN

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

Upland vegetation dominant.

## SOIL

Sampling Point: 4B

**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 % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 2.5Y 3/2 | 100 | N/A: No redox | | | | Gravelly | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, 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[3]:**

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

Riverwash is classified as a hydric soil on the National List of Hydric Soils but this point lacks hydric soil indicators, lacks wetland vegetation, lacks wetland hydrology indicators and the position of the point within the landscape is upland (located on a hillslope). Shovel refusal at 12 inches.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ 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 Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ 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): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No ✓

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

Remarks:

No wetland hydrology indicators.

# Appendix C — List of Plants Observed within the Study Area

| Scientific Name | Common Name | Wetland Indicator Status (WIS) |
|---|---|---|
| *Acer negundo* | Boxelder | FACW |
| *Acmispon glaber* var. *glaber* | Deerweed | UPL |
| *Aesculus californica* | California buckeye | UPL |
| *Aira caryophyllea* | Silver hairgrass | FACU |
| *Alnus rhombifolia* | White alder | FACW |
| *Artemisia californica* | Coastal sage brush | UPL |
| *Artemisia douglasiana* | Douglas' sagewort | FAC |
| *Arundo donax* | Giant reed | FACW |
| *Avena barbata* | Slender oat | UPL |
| *Azolla filiculoides* | American water fern | OBL |
| *Baccharis glutinosa* | Douglas' baccharis | FACW |
| *Baccharis pilularis* ssp. *consanguinea* | Coyote brush | UPL |
| *Baccharis salicifolia* ssp. *salicifolia* | Mule fat | FAC |
| *Berula erecta* | Cut leaved water parsnip | OBL |
| *Bromus diandrus* | Ripgut brome | UPL |
| *Bromus hordeaceus* | Soft chess | FACU |
| *Bromus madritensis* | Foxtail chess | UPL |
| *Carduus pycnocephalus* ssp. *pycnocephalus* | Italian thistle | UPL |
| *Castilleja exserta* ssp. *exserta* | Purple owl's clover | UPL |
| *Ceanothus cuneatus* var. *cuneatus* | Buckbrush | UPL |
| *Centaurea solstitialis* | Yellow star thistle | UPL |
| *Cirsium vulgare* | Bull thistle | FACU |
| *Conium maculatum* | Poison hemlock | FACW |
| *Cortaderia jubata* | Pampas grass | FACU |
| *Croton setiger* | Turkey-mullein | UPL |
| *Cyperus eragrostis* | Tall flatsedge | FACW |
| *Daucus carota* | Wild carrot | UPL |
| *Datura stramonium* | Jimson weed | UPL |
| *Dipsacus fullonum* | Fuller's teasel | FAC |
| *Dittrichia graveolens* | Stinkwort | UPL |
| *Epilobium brachycarpum* | Annual fireweed | UPL |
| *Epilobium ciliatum* | Fringed willowherb | FACW |

| Scientific Name | Common Name | Wetland Indicator Status (WIS) |
|---|---|---|
| *Erodium botrys* | Broad leaf filaree | FACU |
| *Erodium moschatum* | Whitestem filaree | UPL |
| *Eucalyptus* sp. | Eucalyptus | UPL |
| *Eschscholzia californica* | California poppy | UPL |
| *Euthamia occidentalis* | Western goldenrod | FACW |
| *Festuca perennis* (=*Lolium perenne*) | Perennial ryegrass | FAC |
| *Ficus carica* | Edible fig | FACU |
| *Foeniculum vulgare* | Fennel | UPL |
| *Galium aparine* | Common bedstraw | FACU |
| *Genista monspessulana* | French broom | UPL |
| *Geranium molle* | Crane's bill geranium | UPL |
| *Gnaphalium palustre* | Lowland cudweed | FACW |
| *Helenium bigelovii* | Bigelow's sneezeweed | FACW |
| *Heliotropium curassavicum* var. *occulartum* | Alkali heliotrope | FACU |
| *Helminthotheca echioides* | Bristly ox-tongue | FAC |
| *Heteromeles arbutifolia* | Toyon | UPL |
| *Heterotheca grandiflora* | Telegraph weed | UPL |
| *Hirschfeldia incana* | Mediterranean hoary mustard | UPL |
| *Hordeum murinum* | Foxtail barley | FACU |
| *Hordeum marinum* ssp. *gussoneanum* | Seaside barley | FAC |
| *Hypochaeris glabra* | Smooth cat's ear | UPL |
| *Juglans hindsii* | Northern California black walnut | FAC |
| *Lactuca serriola* | Prickly lettuce | FACU |
| *Lemna* sp. | Duckweed | OBL |
| *Lepidium latifolium* | Broadleaved pepperweed | FAC |
| *Lobularia maritima* | Sweet alyssum | UPL |
| *Loggfia gallica* | Narrowleaf cottonrose | UPL |
| *Lotus corniculatus* | Bird's foot trefoil | FAC |
| *Lupinus* sp. | Lupine | UPL |
| *Lysimachia arvensis* | Scarlet pimpernel | FAC |
| *Lythrum hyssopifolia* | Hyssop loosestrife | OBL |
| *Marrubium vulgare* | White horehound | FACU |

| Scientific Name | Common Name | Wetland Indicator Status (WIS) |
|---|---|---|
| *Melilotus albus* | White sweetclover | UPL |
| *Mentha spicata* | Spearmint | FACW |
| *Nasturtium officinale* | Watercress | OBL |
| *Nerium oleander* | Oleander | UPL |
| *Nicotiana* cf. *acuminata* var. *multiflora* | Tobacco | |
| *Olea europaea* | Olive | UPL |
| *Paspalum dilatatum* | Dallis grass | FAC |
| *Persicaria* cf. *hydropiper* | Common smartweed | OBL |
| *Phoenix canariensis* | Canary island date palm | UPL |
| *Phragmites australis* | Common reed | FACW |
| *Pinus* sp. | Pine | UPL |
| *Plantago lanceolata* | English plantain | FAC |
| *Platanus racemosa* | California sycamore | FAC |
| *Polypogon monspeliensis* | Rabbitfoot grass | FACW |
| *Populus fremontii* ssp. *fremontii* | Fremont cottonwood | UPL |
| *Portulaca oleracea* | Common purslane | FAC |
| *Prunus dulcis* | Domestic almond | UPL |
| *Quercus agrifolia* ssp. *agrifolia* | Coast live oak | UPL |
| *Quercus lobata* | Valley oak | FACU |
| *Robinia pseudoacacia* | Black locust | FACU |
| *Rubus armeniacus* | Himalayan blackberry | FAC |
| *Rumex crispus* | Curly dock | FAC |
| *Rumex pulcher* | Fiddle dock | FAC |
| *Salix exigua* var. *hindsiana* | Narrow-leaved willow | FACW |
| *Salix laevigata* | Red willow | FACW |
| *Salix lasiolepis* | Arroyo willow | FACW |
| *Salsola tragus* | Tumbleweed | FACU |
| *Salvia apiana* | White sage | UPL |
| *Sambucus nigra* ssp. *caerulea* | Blue elderberry | UPL |
| *Schinus molle* | Peruvian pepper tree | FACU |
| *Schoenoplectus acutus* var. *occidentalis* | Tule | OBL |
| *Sequoia sempervirens* | Coast redwood | UPL |

| Scientific Name | Common Name | Wetland Indicator Status (WIS) |
|---|---|---|
| *Silybum marianum* | Milk thistle | UPL |
| *Stipa miliacea* var. *miliacea* | Smilo grass | UPL |
| *Tamarix* sp. | Tamarisk | FAC |
| *Toxicodendron diversilobum* | Poison-oak | FACU |
| *Trichostema lanceolatum* | Vinegarweed | FACU |
| *Trifolium dubium* | Shamrock | UPL |
| *Trifolium hirtum* | Rose clover | UPL |
| *Typha* spp. | Cattails | OBL |
| *Urtica dioica* | Stinging nettle | FAC |
| *Verbascum thapsus* | Common mullein | FACU |
| *Xanthium strumarium* | Rough cockleburr | FAC |

# Appendix D — Representative Site Photographs

Description: Gravel bar located within the OHWM of the Arroyo del Valle adjacent to willow riparian wetland in the northwestern portion of the Study Area.

Date: 10/26/2017 Photographer: Zachary Neider

Description: Perennial stream impoundment located in the northeast section of the Study Area.

Date:11/1/2017 Photographer: Marisa Brilts

## REPRESENTATIVE SITE PHOTOGRAPHS

Description: Marsh habitat within OHWM of perennial drainage.

Date: 4/3/2018 Photographer: David Bise

Description: West side of Quarry Pond A, looking east

Date: 4/4/2018 Photographer: David Bise

## REPRESENTATIVE SITE PHOTOGRAPHS

Description: Interface between perennial drainage and upland slope (Datapoint 1A).

Date: 4/3/2018 Photographer: David Bise

Description: Overview of Quarry Pond C.

Date: 11/2/2017 Photographer: Zachary Neider

## REPRESENTATIVE SITE PHOTOGRAPHS

Description: Active mining operation, centrally located within the Study Area.

Date: 11/27/2017 Photographer: Marisa Brilts

Description: Overview of large clumps of *Arundo donax*, a highly invasive plant species.

Date: 11/27/2017 Photographer: Zachary Neider

## REPRESENTATIVE SITE PHOTOGRAPHS

# Appendix E — Aquatic Resources Excel Spreadsheet

| Waters_Name | State | Cowardin_Code | HGM_Code | Meas_Type | Amount | Units | Waters_Type | Latitude | Longitude | Local_Waterway |
|---|---|---|---|---|---|---|---|---|---|---|
| BQP-01 | CALIFORNIA | R2UB | | Area | 6.64592 | ACRE | DELINPJD | 37.65799400 | -121.82093800 | |
| BQP-02 | CALIFORNIA | R2UB | | Area | 10.2578 | ACRE | DELINPJD | 37.65671500 | -121.81908100 | |
| DSM-01 | CALIFORNIA | PEM | | Area | 0.059774 | ACRE | DELINPJD | 37.64735100 | -121.79011500 | |
| IS-01 | CALIFORNIA | R4SB | | Area | 0.073056 | ACRE | DELINPJD | 37.65979200 | -121.82607500 | |
| IS-02 | CALIFORNIA | R4SB | | Area | 0.060053 | ACRE | DELINPJD | 37.65570700 | -121.81463800 | |
| IS-03 | CALIFORNIA | R4SB | | Area | 0.115432 | ACRE | DELINPJD | 37.64961900 | -121.79867600 | |
| IS-04 | CALIFORNIA | R4SB | | Area | 0.009663 | ACRE | DELINPJD | 37.64948700 | -121.79841700 | |
| PP-01 | CALIFORNIA | L2UB | | Area | 0.013201 | ACRE | DELINPJD | 37.64849400 | -121.79425400 | |
| PP-02 | CALIFORNIA | L2UB | | Area | 0.029148 | ACRE | DELINPJD | 37.64753000 | -121.79215000 | |
| PP-03 | CALIFORNIA | L2UB | | Area | 0.016372 | ACRE | DELINPJD | 37.64708600 | -121.79098000 | |
| PP-04 | CALIFORNIA | L2UB | | Area | 0.009663 | ACRE | DELINPJD | 37.64696800 | -121.78973700 | |
| PS-01 | CALIFORNIA | R2UB | | Area | 67.3571 | ACRE | DELINPJD | 37.65521500 | -121.81029300 | |
| QP-A | CALIFORNIA | L1UB | | Area | 59.4028 | ACRE | DELINPJD | 37.65154100 | -121.79567500 | |
| QP-B | CALIFORNIA | L1UB | | Area | 7.75927 | ACRE | DELINPJD | 37.65415600 | -121.80243300 | |
| QP-C | CALIFORNIA | L1UB | | Area | 1.79029 | ACRE | DELINPJD | 37.66575600 | -121.81256300 | |
| QP-D | CALIFORNIA | L1UB | | Area | 15.7702 | ACRE | DELINPJD | 37.66783300 | -121.81608800 | |
| QP-E | CALIFORNIA | L1UB | | Area | 0.974384 | ACRE | DELINPJD | 37.66840300 | -121.83306900 | |
| QP-F | CALIFORNIA | L1UB | | Area | 1.35658 | ACRE | DELINPJD | 37.65890300 | -121.82310600 | |
| QP-G | CALIFORNIA | L1UB | | Area | 13.0159 | ACRE | DELINPJD | 37.66417300 | -121.81828600 | |
| QP-H | CALIFORNIA | L1UB | | Area | 9.74359 | ACRE | DELINPJD | 37.66645900 | -121.81921500 | |
| QP-I | CALIFORNIA | L1UB | | Area | 1.47654 | ACRE | DELINPJD | 37.66871400 | -121.82758800 | |
| QP-J | CALIFORNIA | L1UB | | Area | 7.41002 | ACRE | DELINPJD | 37.66169800 | -121.82098500 | |
| RSM-01 | CALIFORNIA | PEM | | Area | 0.093167 | ACRE | DELINPJD | 37.64778700 | -121.79001000 | |
| S-01 | CALIFORNIA | L2UB | | Area | 108.503 | ACRE | DELINPJD | 37.67081700 | -121.82226300 | |
| WRW-01 | CALIFORNIA | PFO | | Area | 1.44035 | ACRE | DELINPJD | 37.64850900 | -121.78813700 | |
| WRW-02 | CALIFORNIA | PFO | | Area | 1.2525 | ACRE | DELINPJD | 37.64760700 | -121.78851900 | |