APPENDIX C

Jurisdictional Delineation Report

AQUATIC RESOURCES JURISDICTIONAL DELINEATION REPORT

Haynes Generating Station Intake Channel Infill Project
Long Beach, California

PREPARED BY

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DECEMBER 2020

PRINTED ON 30% POST-CONSUMER RECYCLED MATERIAL.

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CWA	Clean Water Act
GIS	geographic information system
GPM	gallons per minute
HTL	high tide line
LADWP	Los Angeles Department of Water and Power
LARWQCB	Los Angeles Regional Water Quality Control Board
MGD	million gallons per day
MHHW	mean higher high water
MHWL	mean high water line
MLLW	mean lower low water
msl	mean sea level
NAVD88	North American Vertical Datum of 1988
NGVD29	National Geodetic Vertical Datum of 1929
NOAA	National Oceanic and Atmospheric Administration
OHWM	ordinary high water mark
OTC	once-through cooling
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1 INTRODUCTION

This report documents the methods and results of an aquatic resources jurisdictional delineation performed at the Haynes Generating Station (Haynes), located in Los Angeles County, California. This report focuses on identifying portions of the Haynes ocean-water once-through cooling (OTC) system intake channel (Haynes Intake Channel) that would be impacted by the proposed Haynes Generating Station Intake Channel Infill Project (project) and that are regulated by federal and California state agencies. This report is intended to be the basis for the analysis of potential impacts and regulatory permitting with the California Coastal Commission (CCC), California Department of Fish and Wildlife (CDFW), Los Angeles Regional Water Quality Control Board (LARWQCB), and U.S. Army Corps of Engineers (USACE).

1.1 Project Location

Haynes is located just inland from the Pacific Ocean in Long Beach, Los Angeles County, California (Figure 1, Vicinity Map). Specifically, Haynes is located at 6801 East 2nd Street immediately south of State Route (SR) 22 (Garden Grove Freeway–East 7th Street) and approximately 1 mile east of SR-1 (Pacific Coast Highway). Haynes is located within the northwestern portion of Section 12, Township 5 South, Range 12 West on the U.S. Geological Survey (USGS) Los Alamitos 7.5-minute quadrangle map (USGS 1964); latitude 33.760833° and longitude −118.094167° (Figure 2, USGS Topo Map). Access to Haynes is provided from 2nd Street, which forms the southern boundary of the project site. East 7th Street (SR-22) serves as the northern boundary. The western boundary of Haynes is bordered by the San Gabriel River channel, and the eastern boundary of Haynes is formed by an Orange County flood control channel.

1.2 Project Description

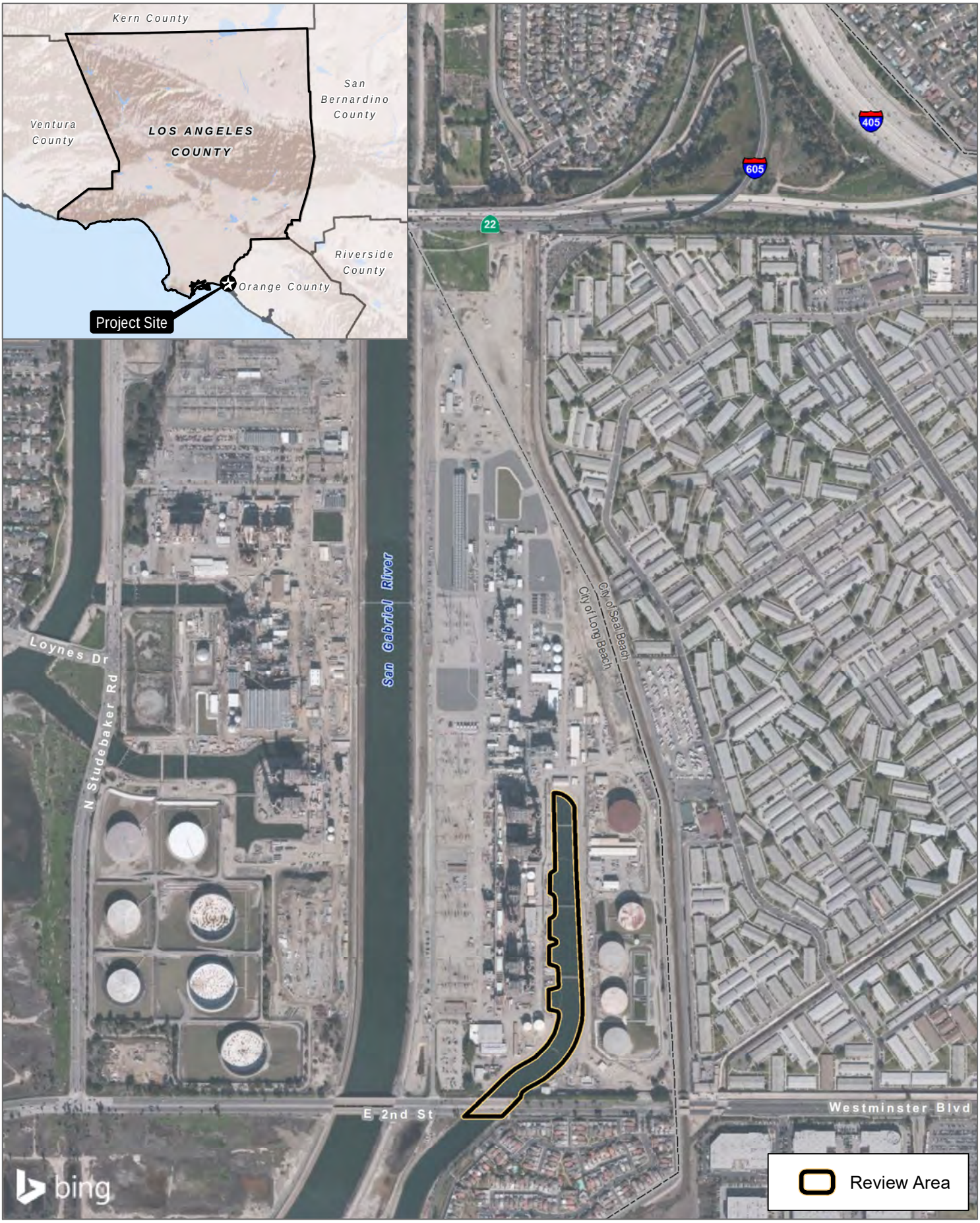
1.2.1 Existing Conditions

The Haynes Intake Channel is located north of Pacific Coast Highway. The channel consists of an open, earthen trapezoidal channel approximately 1.5 miles long that runs south to north and terminates within Haynes. The upper portions of the channel side walls are paved with a grouted gravel surface to below the high water line. The project site (or survey area) is defined as the northernmost 2,150 linear feet of the Haynes Intake Channel, north of the southern edge of the 2nd Street bridge. The channel conveys surface water to Haynes from a bulkhead intake structure located to the south in Alamitos Bay. Water passes through seven 8-foot-diameter underground conduits fitted with vertical trash bars. The underground conduits measure approximately 1,150 feet in length and transport water from Alamitos Bay underneath the San Gabriel River and Pacific Coast Highway. Only six of the seven intake conduits are used during normal operation. The velocity through the intake conduits is 5.0 feet per second. The calculated average velocity in the Haynes Intake Channel is 3.2 feet per second (LADWP 2010). Ocean water is drawn into the channel from the Pacific Ocean via Alamitos Bay by the Haynes generation unit condenser pumps, so the system is entirely marine.

1.2.2 Proposed Project Description

The Los Angeles Department of Water and Power (LADWP) is proposing to completely fill in 2,150 linear feet of the Haynes Intake Channel within Haynes using engineered fill (the proposed project). The infill area is expected to be used for potential future development at Haynes. The proposed project would occur over two phases: Phase I would consist of filling the northern 475 feet of the Haynes Intake Channel, and Phase II would consist of filling the remainder of the channel to approximately 2 feet south of the 2nd Street bridge, for a total of approximately 2,150 feet. The duration of Phase I construction activities would be approximately 15 months, with proposed construction scheduled to begin in late 2021 and end in 2023. The duration of Phase II construction activities would be approximately 30 months, beginning in 2030 and ending in 2032.

To enable the infill work and limit the potential indirect impacts to adjacent open water and associated marine biological resources, cofferdams would be placed at the southern boundary of the first phase of work and then at the southern end of the project site during Phase II. The cofferdams would be used to allow dewatering of the project site, which would entail pumping the water within the project site into the southern portion of the channel.



SOURCE: BING MAPS

Los Angeles Department of Water & Power

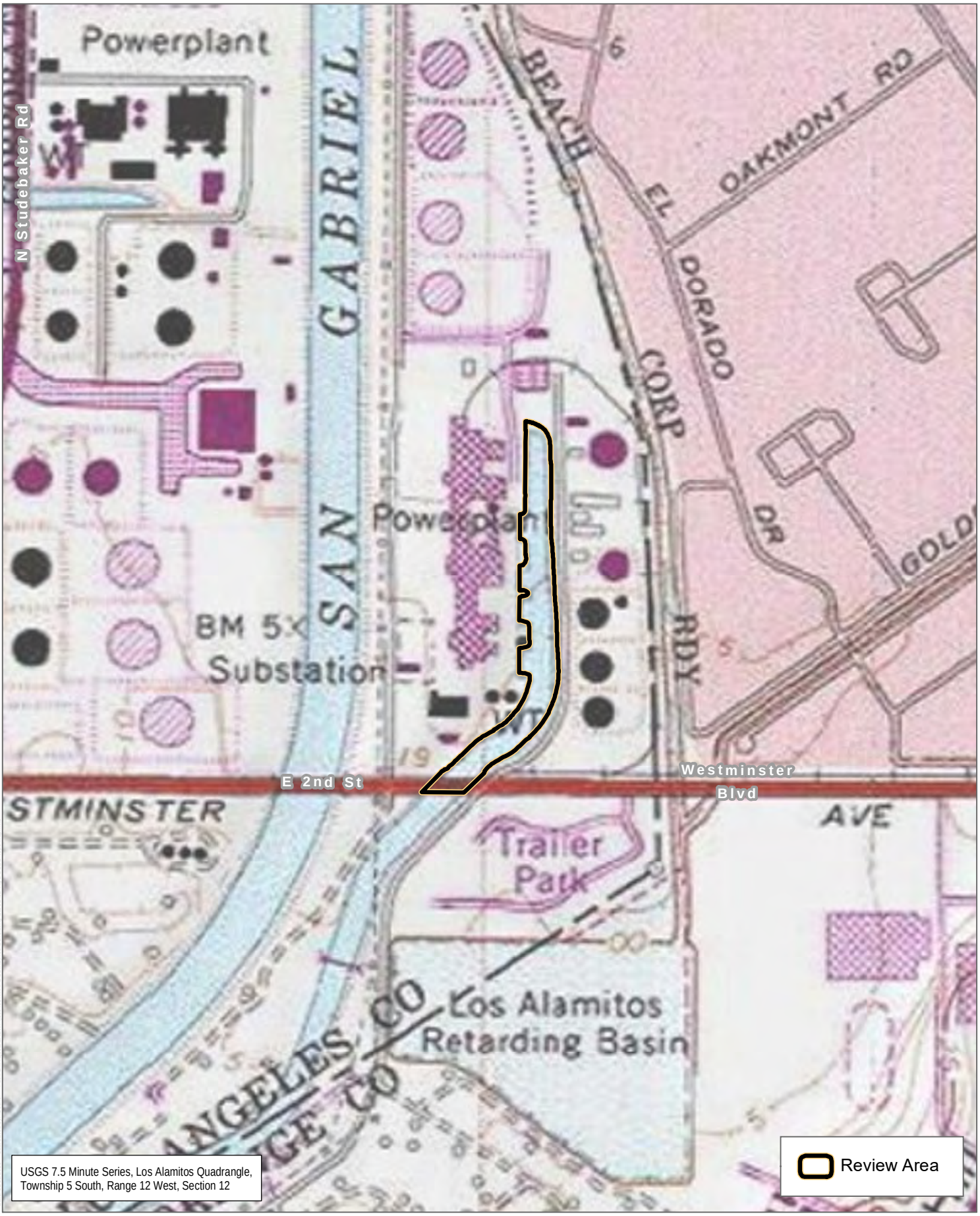
0 385 770 Feet

FIGURE 1

Vicinity Map

Haynes Generating Station Intake Channel

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SOURCE: USGS

Los Angeles Department of Water & Power

0 335 670 Feet

FIGURE 2

USGS Topo Map

Haynes Generating Station Intake Channel

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1.3 Regulatory Context

1.3.1 Federal Regulations

Clean Water Act and Rivers and Harbors Act

USACE has regulatory authority for activities within wetlands under the Clean Water Act of 1977, as amended (CWA), which serves as the primary federal law protecting the quality of the nation's surface waters. Section 404 of the CWA establishes a program that is administered by USACE to regulate discharge of dredged or fill material into waters of the United States. The term "waters" includes wetlands and non-wetland bodies of water that meet specific criteria, as defined in the Code of Federal Regulations. In general, a permit must be obtained under Section 404 of the CWA before fill can be placed in wetlands or other waters of the United States. The type of permit depends on the amount of acreage and the purpose of the proposed fill, subject to the discretion of USACE. Under Section 404, general permits may be issued on a nationwide, state, or regional basis for particular types of activities that will have only minimal adverse impacts. Individual permits are required for projects with potentially significant impacts.

Under Section 404 of the CWA, USACE generally takes jurisdiction within tidal waters to the high tide line (HTL), which encompasses spring high tides and other high tides that occur with periodic frequency (33 CFR, Section 328.3[c][7]). The HTL corresponds to the National Oceanic and Atmospheric Administration (NOAA) mean higher high water (MHHW) as established at the local NOAA tide gauge stations. For non-tidal rivers and streams, USACE takes jurisdiction to the ordinary high water mark, which is determined by erosion, staining, the deposition of vegetation or debris, and changes in vegetation. USACE defines jurisdictional wetlands as areas that contain hydrophytic vegetation, hydric soils, and wetland hydrology, in accordance with the procedures established in the Corps of Engineers Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). If there are wetlands meeting the USACE criteria abutting or adjacent to the HTL, then the USACE jurisdiction under Section 404 would extend to the limit of those wetlands.

Additionally, USACE regulates the construction of structures, and the excavation and deposition of materials into navigable waters under Section 10 of the Rivers and Harbors Act of 1899. Navigable waters include areas subject to the ebb and flow of the tide and/or are currently used, or have been used in the past, to transport interstate or foreign commerce. The shoreward limit to USACE jurisdiction under the Section 10 authorities in tidal areas extends to the line on the shore reached by the plane of the mean high water line (MHWL).

Under Section 401 of the CWA, the nine California Regional Water Quality Control Boards (RWQCBs) have regulatory authority over actions in waters of the United States through issuance of Water Quality Certifications, which are issued in conjunction with permits issued by USACE under Section 404 of the CWA. A CWA Section 401 Water Quality Certification is required from the appropriate RWQCB whenever improvements are made within jurisdictional waters of the United States.

1.3.2 State Regulations

California Coastal Act

In 1976, the California State Legislature enacted the California Coastal Act "to promote public safety, health, and welfare, and to protect public and private property, wildlife, marine fisheries, other ocean resources, and the natural environment, it was necessary to preserve the ecological balance of the coastal zone and prevent its further deterioration and destruction." The Act is the primary law governing the decisions of CCC and guides new development in an effort to improve public access to coastal areas. The California Coastal Zone encompasses 1.5 million acres of land, stretching from 3 miles at sea to an inland boundary that varies from several blocks in urban areas to as many as 5 miles in less developed areas. The California Coastal Zone extends into federal waters under the federal Coastal Zone Management Act, covering approximately 1,100 miles of California coastline from Oregon to Mexico.

The California Coastal Act directs CCC to preserve, protect, and restore wetlands. The California Coastal Act defines wetlands as "lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens." In addition, the California Coastal Act defines environmentally sensitive areas in a manner that includes rivers, streams, and other aquatic habitats. CCC uses the Cowardin Wetland Classification System (Cowardin et al. 1979), which includes both wetlands and deepwater habitats as defined by the U.S. Fish and Wildlife Service (USFWS), to guide implementation of its wetland protection policies.

California Fish and Game Code

In accordance with California Fish and Game Code, Sections 1600–1616 (Streambed Alteration), CDFW regulates activities that "will substantially divert, obstruct, or substantially change the natural flow or bed, channel or bank, of any river, stream, or lake designated by the Department [CDFW] in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit."

The California Fish and Game Commission defines "stream" as a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that support or have supported riparian vegetation. Within estuarine environments, a "preponderance of evidence" standard is necessary where it is not readily apparent where Section 1600 jurisdiction ends. Under this standard, the geometry of the water feature, the predominant salinity of the waters, the composition of vegetation, and the predominant fauna are used to determine the limits of CDFW jurisdiction under Section 1600. Waters are not regulated under Section 1600 where waters are principally marine, aquatic shorelines are shaped principally by tidal current and wave action rather than by fluvial processes, vegetation is saline marsh and not brackish or freshwater vegetation, and marine fish and invertebrate communities are prevalent. Conversely, areas dominated by fresh and brackish salinities and freshwater aquatic species, with fluvial erosion patterns, are regulated under Section 1600.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act protects water quality and the beneficial uses of water. It applies to surface water and groundwater. Under this law, the State Water Resources Control Board develops statewide water quality plans, and the nine RWQCBs develop regional basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of statewide plans and basin plans. Waters regulated under the Porter-Cologne Water Quality Control Act and Section 401 of the CWA are defined by the State Water Resources Control Board's State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Wetland Definition and Procedures; SWRCB 2019). The Wetland Definition and Procedures provides guidance to state permit applicants as to the features that are considered wetlands or non-wetland waters of the state. The Wetland Definition and Procedures (SWRCB 2019, page 1) defines a state wetland as follows:

> An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

In addition, features are considered to be wetlands if they meet the current or historic federal definition. The delineation methods for potential USACE aquatic resources as described in various federal documents define the extent of potential RWQCB wetlands. In addition to these methods, RWQCB wetlands must be considered to be potentially present in all features not included in a USACE-verified aquatic resources delineation report. This includes areas where there is no surface connection to a traditional navigable water and those that lack hydrophytic vegetation (less than 5% during peak growing season) (SWRCB 2019).

The Wetland Definition and Procedures does not explicitly define waters of the state, but instead references the California Water Code definition, which broadly includes "any surface water or groundwater, including saline waters, within the boundaries of the state." Interpretation is also provided in the Wetland Definition and Procedures that the State Water Resources Control Board considers waters of the state to include all waters of the United States. Therefore, for purposes of this report, the mapped extents of waters of the state coincide with the extents of waters of the United States in the study area.

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2 METHODOLOGY

Data regarding aquatic resources present within the project site were obtained through a review of pertinent literature and field assessment, as described below.

2.1 Literature Review

Prior to visiting the project site, potential and historic drainages and aquatic features were investigated based on a review of the following: USGS topographic maps (1:24,000 scale), aerial photographs (Microsoft 2018), the National Wetlands Inventory database (USFWS 2018), and local soil surveys (USDA 2017, 2018). In addition, hydrologic information from previous marine biological studies at Haynes (MBC 2009) and the NOAA tide gauge stations in the vicinity of the project site were obtained.

2.2 Field Assessment

Following the literature review, wetland delineators performed a wetlands delineation within the project site on July 13, 2018, and October 29–30, 2018. All areas that were identified as being potentially subject to the jurisdiction of USACE, LARWQCB, CDFW, and CCC were field-verified and mapped.

The USACE wetlands delineation was performed in accordance with the Corps of Engineers Wetlands Delineation Manual (USACE 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008), A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008), and changes to the Code of Federal Regulations (33 CFR Part 328) provided by USACE and the U.S. Environmental Protection Agency on the geographic extent of jurisdiction based on the U.S. Supreme Court's interpretation of the CWA (USACE and EPA 2008).

Since the Haynes Intake Channel is hydrologically connected to Alamitos Bay, the jurisdictional extent for Section 10 of the Rivers and Harbors Act was initially determined by the MHWL, which corresponds with the mean high water (MHW) elevation established by local NOAA tide gauge station data. The jurisdictional extent for Section 404 of the CWA was initially determined by the HTL, which corresponds with the MHHW elevation established by NOAA tide gauge station data and site observations.

During the site visit, the Haynes Intake Channel was examined by wetland delineators for evidence of surface water inundation and fluctuations on the banks as indicated by physical characteristics such as the presence of litter and debris and a clear, natural line impressed on the bank (i.e., water staining), which has resulted from nearly 60 years of operation of the ocean-water OTC system at Haynes.

Given the lack of potential wetlands or other aquatic resource features outside the limits of the Haynes Intake Channel, the limits of waters of the state (regulated by LARWQCB and CCC) are coincident with those for waters of the United

States (regulated by USACE). Similarly, because the Haynes Intake Channel is exclusively a marine channel with no riverine influence, despite its proximity to the San Gabriel River, no potential CDFW-regulated lakes, streambeds, or riparian habitats were identified on the project site.

A detailed topographic survey of the channel (Appendix A) was also conducted as part of the field survey on October 5, 2020, to accurately establish the elevational contours in the channel to help determine the extent of potential jurisdictional waters. The topographic survey involved an aerial flight over the study area to photograph and capture elevations, an on-the-ground field assessment of control points, digital triangulation and compilation of data collected, and creation of a digital, ortho-rectified dataset. The aerial flight was conducted from a Piper Navajo Chieftain equipped with a digital mapping camera (DMCII). The survey was conducted at an altitude of approximately 1,800 feet and included one flight pass with two stereo models and five control points to generate a photo-scale of 1 inch = 250 feet. The ground survey team collected aerial ground control points and existing LADWP control points to process and correct data collected during the flight. The ground survey team also collected the current surface water elevations and long-term upper limit of surface water in the Haynes Intake Channel, as evidenced by the water staining on the side walls of the channel.

3 RESULTS

Using the methods described in Chapter 2, the potential extent of USACE, LARWQCB, and CCC jurisdiction within the project site was determined. The Haynes Intake Channel was investigated as the only potential jurisdictional resource. The identification of jurisdictional limits within the project site was affected by the historic and ongoing management practices that have altered the natural vegetation, soils, and hydrology of the area. The determination of aquatic resource jurisdiction within the project site was supported by information obtained from the USGS topographic map, soil survey, USFWS National Wetlands Inventory, field assessment, and topographic survey. Information obtained from each source is described in the following sections.

3.1 USGS Topographic Map

The USGS 7.5-minute Los Alamitos, California, topographic map was used to identify natural and built features occurring within the vicinity of the project site (USGS 1964). Information obtained from the map included contour lines, streets, streams, and vegetation. The Los Alamitos map was based on aerial photography from 1964 that was photorevised in 1981. The project site was generally mapped as developed land with structures and tanks associated with the Haynes generation station. The Haynes Intake Channel is mapped as an open water feature. The channelized reach of the San Gabriel River occurs west of the project site. Several paved roads occur around the project site, including 2nd Street, Studebaker Road, and East 7th Street. The Los Alamitos Retarding Basin is just south of 2nd Street and the project site. Aside from the Haynes Intake Channel, no aquatic features or significant structural features within the project site are identified on the map.

3.2 Soil Survey

The U.S. Department of Agriculture's Official Soil Series Descriptions (USDA 2018) and Supplement to the Soil Survey of Los Angeles County, California, Southeastern Part (USDA 2017), were consulted, and two mapping units were identified as occurring throughout the project site: Urban Land–Typic Xerorthents, dredged spoil complex, 0% to 2% slopes (1231), and Water (W) (Figure 3, Soils Map).

Urban Land–Typic Xerorthents, dredged spoil complex, 0% to 2% slopes (1231). This mapping unit consists of very deep, poorly drained soils that formed in human-transported materials overlying mixed alluvium. These soils occur on filled and drained wetlands (USDA 2017). This mapping unit supports little to no vegetation.

Water (W). Although not part of a typical soil series, the Water mapping unit consists of open water. This mapping unit supports little to no emergent vegetation.

According to the Hydric Soils List of California (USDA 2012), neither of these mapping units is listed as hydric.

3.3 National Wetlands Inventory

One wetland feature was identified within the project site according to the USFWS National Wetlands Inventory database (USFWS 2018) (Figure 4, National Wetlands Inventory Map, Appendix B, Wetland Data Sheet):

E1UBLx (Haynes Intake Channel): estuarine (E), subtidal (1), unconsolidated bottom (UB), subtidal water regime (L), excavated (x) wetland. "Estuarine" systems, as defined by the National Wetlands Inventory database, include deepwater tidal habitats and adjacent tidal wetlands that have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The "subtidal" subsystem generally refers to areas where the substrate is continuously covered with tidal water. The "unconsolidated bottom" describes areas with at least 25% cover of particles less than 2.4 to 2.8 inches and less than 30% cover of vegetation. The "excavated" special modifier refers to wetland basins or channels that were excavated by humans.

3.4 Hydrologic and Watershed Review

The project site lies within the Central (Split) Hydrologic Subarea (405.15) of the Coastal Plain Hydrologic Area (405.10), which occurs within the larger Los Angeles–San Gabriel Hydrologic Unit (405.00) (LARWQCB 1994). According to USGS, the project site is within the Lower San Gabriel subwatershed (USGS HUC10: 1807010606) of the larger San Juan watershed (USGS HUC8: 18070106). The Lower San Gabriel subwatershed encompasses a drainage area of approximately 50,240 acres, which comprises approximately 11% of the drainage area for the entire San Gabriel River watershed. The subwatershed has been extensively modified and receives flow dominated by effluent from several municipal facilities and urban runoff, which have impaired beneficial uses, as evidenced by ambient toxicity and bioaccumulation of metals in fish tissue (LARWQCB 1994).

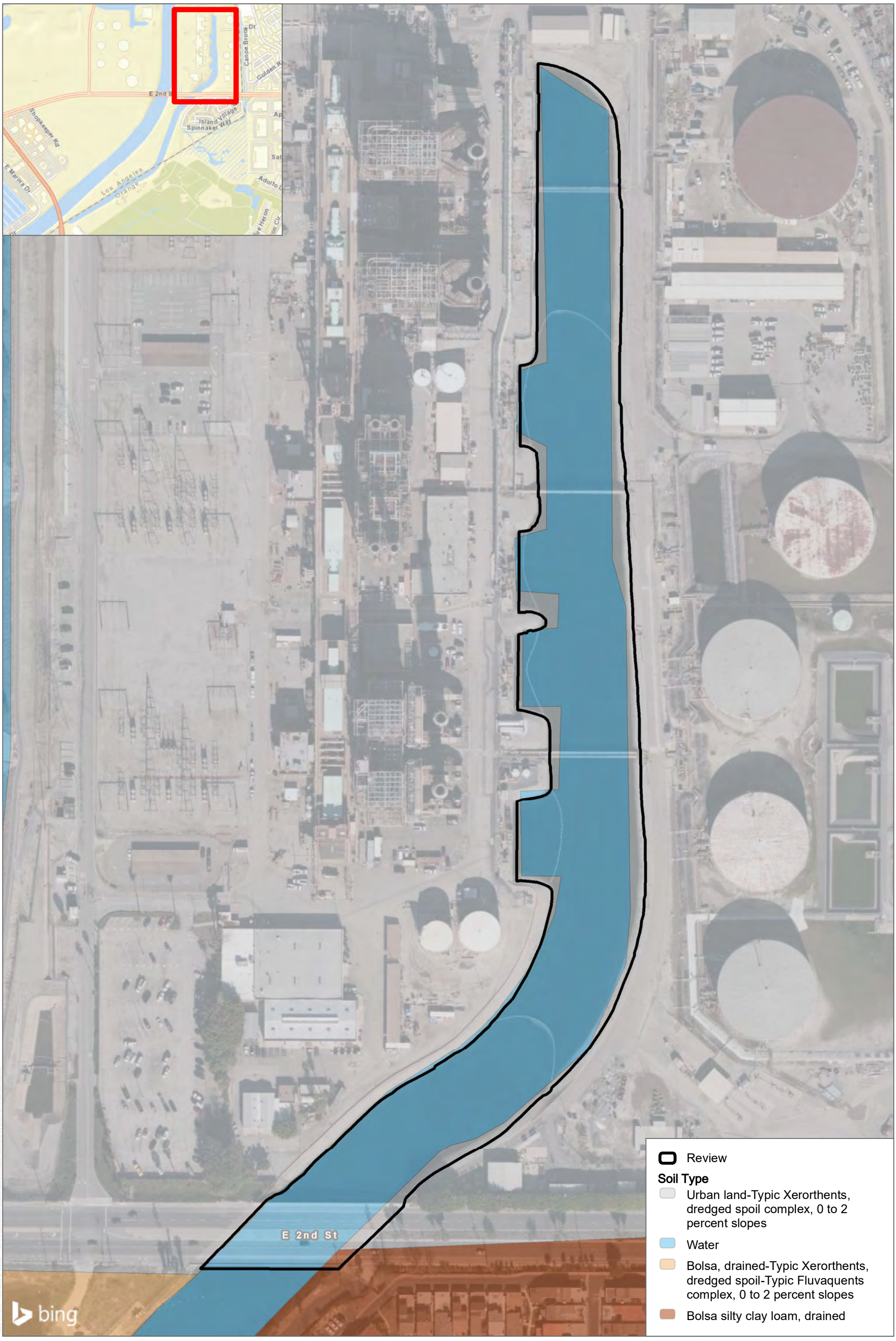
3.5 Topographic Survey

The full length of the Haynes Intake Channel within the project site was investigated during the jurisdictional delineation. The channel is subject to tidal flows, albeit partially obstructed by the intake conduits and influenced by the operation of the generation unit condenser pumps. The Haynes Intake Channel within the project site has an earthen bottom and partially paved slopes with portions of riprap protection that support no vegetation. No wetland plant species, plant communities, or habitat types were present within the survey area (see Figures 5a through 5c, Site Photographs, for photographs of existing conditions on the project site).

Federal jurisdiction within tidal systems is determined by the HTL (under Section 404 of the CWA) and MHWL (under Section 10 of the Rivers and Harbors Act). However, while the Haynes Intake Channel is connected to the Pacific Ocean via Alamitos Bay and is therefore influenced by the ebb and flow of tides, given the operation of the OTC system at Haynes, the surface water elevations within the channel do not correlate exactly with the various tidal datums, including the HTL and MHWL. Nonetheless, the long-term upper limit of water in the channel can be ascertained by the evident staining on the side walls of the channel. Appendix C includes the OHWM Data Sheet.

Therefore, a topographic survey of the Haynes Intake Channel was conducted in October 2020 to accurately capture the maximum surface water elevation for the purposes of establishing the extent of open water in the channel, as described in Section 2.2, Field Assessment, of this report. The topographic survey was based on vertical control points established adjacent to the channel based on the National Geodetic Vertical Datum of 1929 (NGVD29), which was the vertical control convention in the United States when the Haynes control points were established in the 1960s. Based on the NGVD29 control points, the top of bank was determined to be 10 feet in elevation, and the elevation of the permanent stain mark on the channel side walls ranged between 4 and 5 feet. The area encompassed by the stain mark, which represents the long-term maximum lateral extent of open water, from the northern end of the channel to 2 feet south of the 2nd Street bridge (i.e., the limits of the proposed infilling), was determined to be 7.64 acres.

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SOURCE: USDA 2017, 2018

LA DWP Los Angeles Department of Water & Power

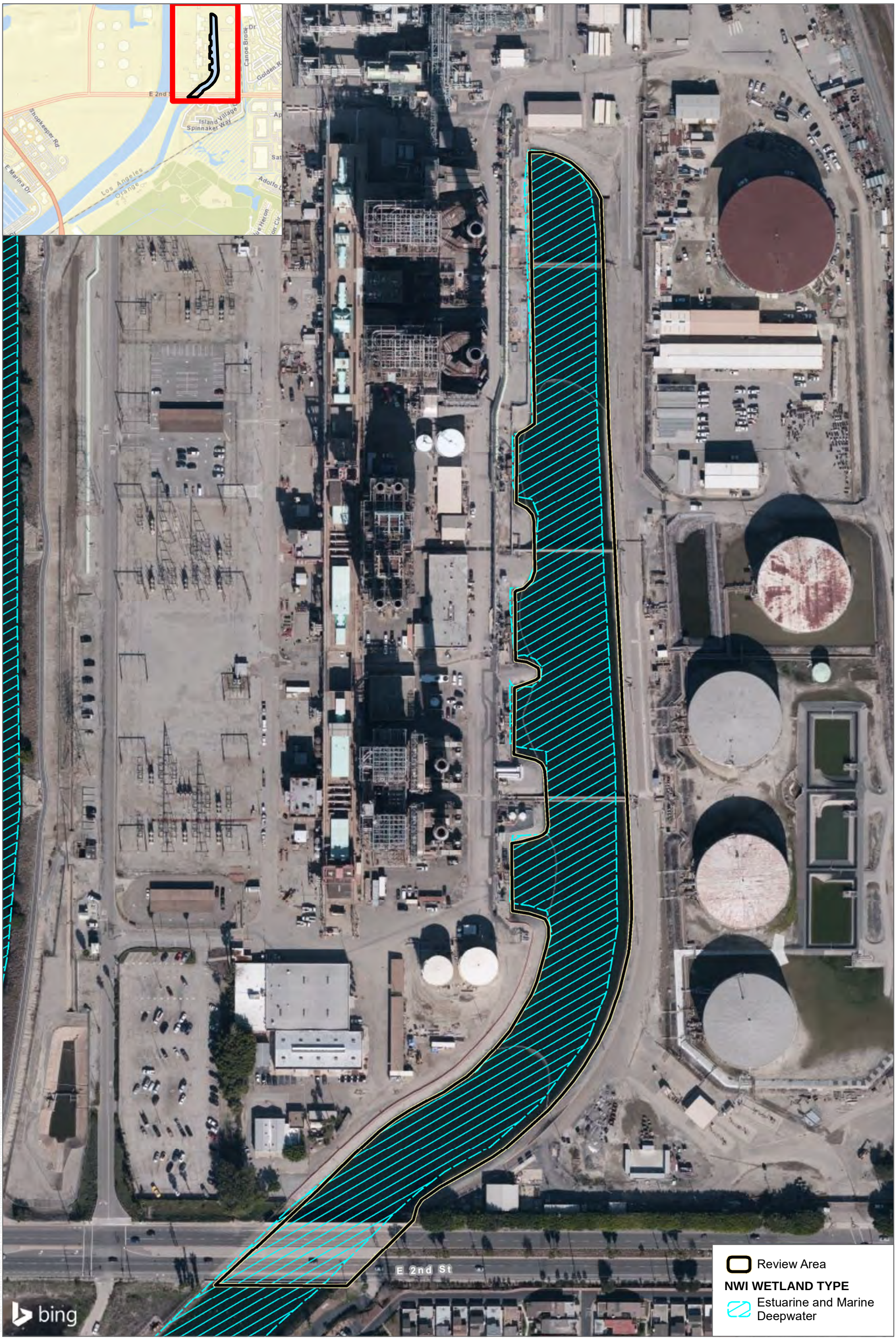
0 70 140 Feet

FIGURE 3

Soils Map

Haynes Generating Station Intake Channel

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SOURCE: National Wetlands Inventory

Los Angeles Department of Water & Power

0 75 150 Feet

FIGURE 4

National Wetlands Inventory Map

Haynes Generating Station Intake Channel

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Photo 1: View looking southwest.



Photo 2: View looking northwest.

FIGURE **5a**

Site Photographs

Haynes Generating Station Intake Channel

LA DWP Los Angeles Department of Water & Power

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Photo 3: View looking north.

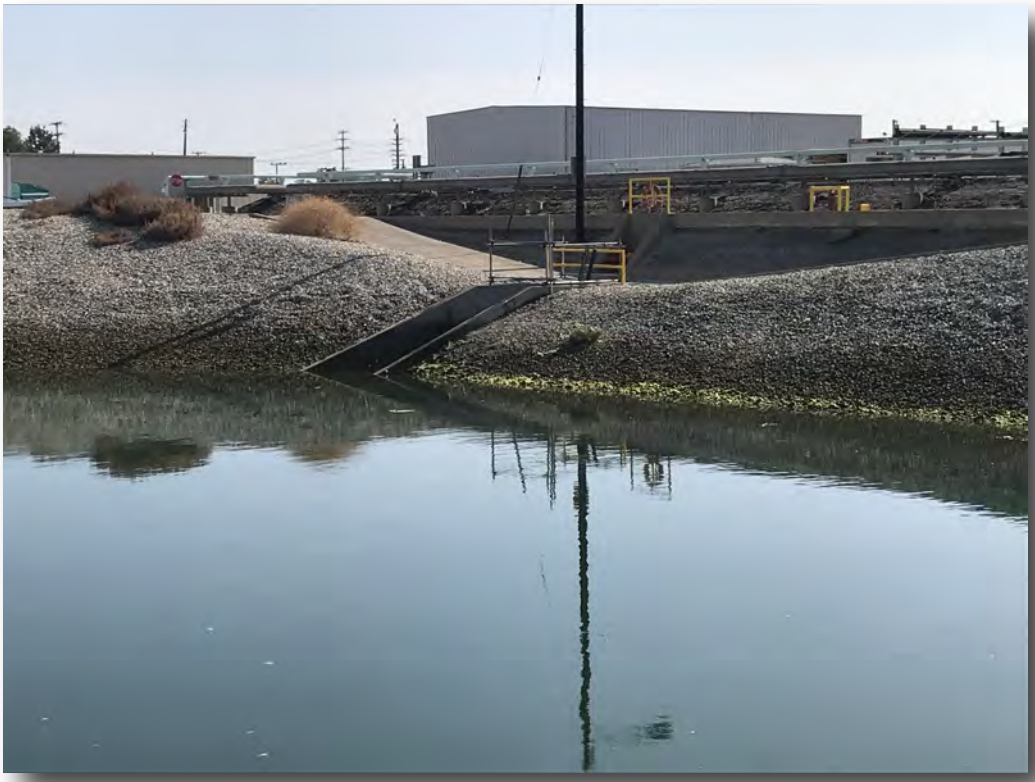


Photo 4: View looking northeast.

FIGURE **5b**

Site Photographs

Haynes Generating Station Intake Channel

Los Angeles Department of Water & Power

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Photo 5: View of Haynes Intake Channel looking north from center of project site.



Photo 6: View of Haynes Intake Channel looking south toward 2nd Street.

FIGURE **5c**

Site Photographs

Haynes Generating Station Intake Channel

Los Angeles Department of Water & Power

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4 CORRELATION WITH TIDE LEVELS

As discussed in Sections 2.2 and 3.5, a topographic survey of the Haynes Intake Channel was conducted in October 2020. The elevations determined for the channel in this survey were based on fixed vertical control points at Haynes established under the NGVD29. The NGVD29 was the fixed datum adopted as a national standard geodetic reference for elevation in 1929, and it was the convention when the vertical control points at Haynes were established in the 1960s. However, the NGVD29 has since been superseded by the North American Vertical Datum of 1988 (NAVD88). Because they were derived through different methodologies, the NGVD29 and the NAVD88 do not correlate consistently from one location to another. The NOAA tidal datum is based on a 19-year National Tidal Datum Epoch (NTDE) pertaining to local mean sea level (msl), which likewise does not correlate consistently with the NAVD88 from one location to another (NOAA 2011a). However, at any given location, both the NGVD29 and NOAA tidal datums can be correlated to the NAVD88.

Based on recorded NOAA tidal datums, the values of which are set relative to the mean lower low water (MLLW) elevation of 0.00 feet, the NAVD88 elevation for the NOAA Los Angeles tide gauge station (9410660) is 0.20 feet (NOAA 2011b). The conversion of NOAA tidal datums for the Los Angeles tide gauge station to NAVD88 is shown in Table 1. Based on the Nation Geodetic Survey Coordinate Conversion and Transformation Tool, the NAVD88 elevation at the Haynes Intake Channel is 0.738 meters (2.42 feet) higher than the NGVD29 elevation (National Geodetic Survey n.d.). The conversion of the NGVD29 elevations for the Haynes Intake Channel to NAVD88 is shown in Table 2. This correlation of elevations under the NAVD88 indicates that the high water level in the Haynes Intake Channel, as demarcated by the permanent staining on the side walls, is 0.73 to 1.73 feet above the MHHW/HTL at the Los Angeles tide gauge station.

Table 1 Conversion of NOAA Tidal Datums to NAVD88

Los Angeles Station MLLW		
9410660		
Datum	*NOAA Tidal*	*NAVD88*
Elevation (feet)	0.00	0.20
MHHW	5.49	5.69
MHW	4.75	4.95
msl	2.82	3.02

Notes: NOAA = National Oceanic and Atmospheric Administration; NAVD88 = North American Vertical Datum of 1988; MLLW = mean lower low water; MHHW = mean higher high water; MHW = mean high water; msl = mean sea level.

Table 2 Conversion of NGVD29 to NAVD88

Haynes Intake Channel		
N 33.760833, W −118.094167		
Datum	*NGVD29*	*NAVD88*
Elevation (feet)	0.00	2.42

Table 2 Conversion of NGVD29 to NAVD88

Haynes Intake Channel		
N 33.760833, W −118.094167		
Datum	*NGVD29*	*NAVD88*
Top of bank	10.00	12.42
Top of stain	5.00	7.42
Bottom of stain	4.00	6.42

Notes: NVGD = National Geodetic Vertical Datum of 1929; NAVD88 = North American Vertical Datum of 1988.

5 CONCLUSIONS

The differential in water levels between the Haynes Intake Channel and the tides recorded at the Los Angeles gauge station is attributable to the hydrodynamics of the intake channel related to the operation of the ocean-water OTC system, which tends to control the velocity, flow, and level of the water in the channel when compared to an exclusively tidally influenced system. These dynamics are enabled by the operation of the generator condenser pumps and by the physical segregation of the Haynes Intake Channel from the open tidal system by the closed conduits originating at the intake structure in the Alamitos Bay and passing beneath the San Gabriel River and Pacific Coast Highway before daylighting into the open channel east of the highway (approximately 1,150 feet).

Historically, when all the original Haynes steam-boiler generation units (units 1 through 6) were in operation, the OTC system's condenser pumps operated at a combined maximum of approximately 700,000 gallons per minute (GPM), or over 1,000 million gallons per day (MGD). Under current operations based on the generation units that still use OTC (Units 1, 2, and 8), the condenser pumps operate at a combined minimum of 48,000 GPM (69 MGD) and a maximum of 352,000 GPM (507 MGD). While the Haynes Intake Channel is influenced by tidal flows through its connection to Alamitos Bay, the cooling system pumping operations have modified the relative influence of tidal flows and have partially controlled the water level in the Haynes Intake Channel, which, depending on pumping rates, may be higher or lower than tide levels at a given time.

The long-term upper limit of water in the Haynes Intake Channel is ascertained by the evident staining on the side walls of the channel. The stain mark, which is based on nearly 60 years of generating station operations, generally demarcates the lateral limits of the open water surface in the channel. Based on these circumstances and conditions, an aerial topographic boundary survey of the Haynes Intake Channel was conducted to define the maximum outer extent of the water surface at the high water mark. As discussed above, the results of the survey indicated that approximately 7.64 acres of open water surface has been present during high water within the boundary of the project site (i.e., the Haynes Intake Channel north of the south side of the 2nd Street bridge).

Although the water level in the Haynes Intake Channel is not directly linked to the levels of tides in the Alamitos Bay, the channel is nonetheless connected through an intake structure to the marina, which in turn connects to the Pacific Ocean at Long Beach Harbor. Because the Haynes Intake Channel draws water exclusively from the marina via the intake structure and since there are no perennial or ephemeral freshwater tributaries to the channel, it consists of entirely marine waters, which would fall under the jurisdiction of USACE in accordance with the CWA.

The project would result in filling of a portion of the Haynes Intake Channel with earthen material. This would result in the direct loss of a maximum of approximately 7.64 acres of USACE-jurisdictional non-wetland waters of the United States and LARWQCB/CCC-jurisdictional non-wetland waters of the state. No impacts to potential CDFW-regulated lake, streambeds, or riparian habitats would occur.

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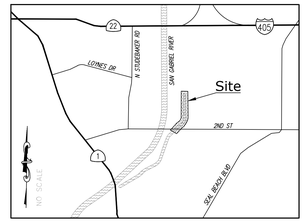
APPENDIX A

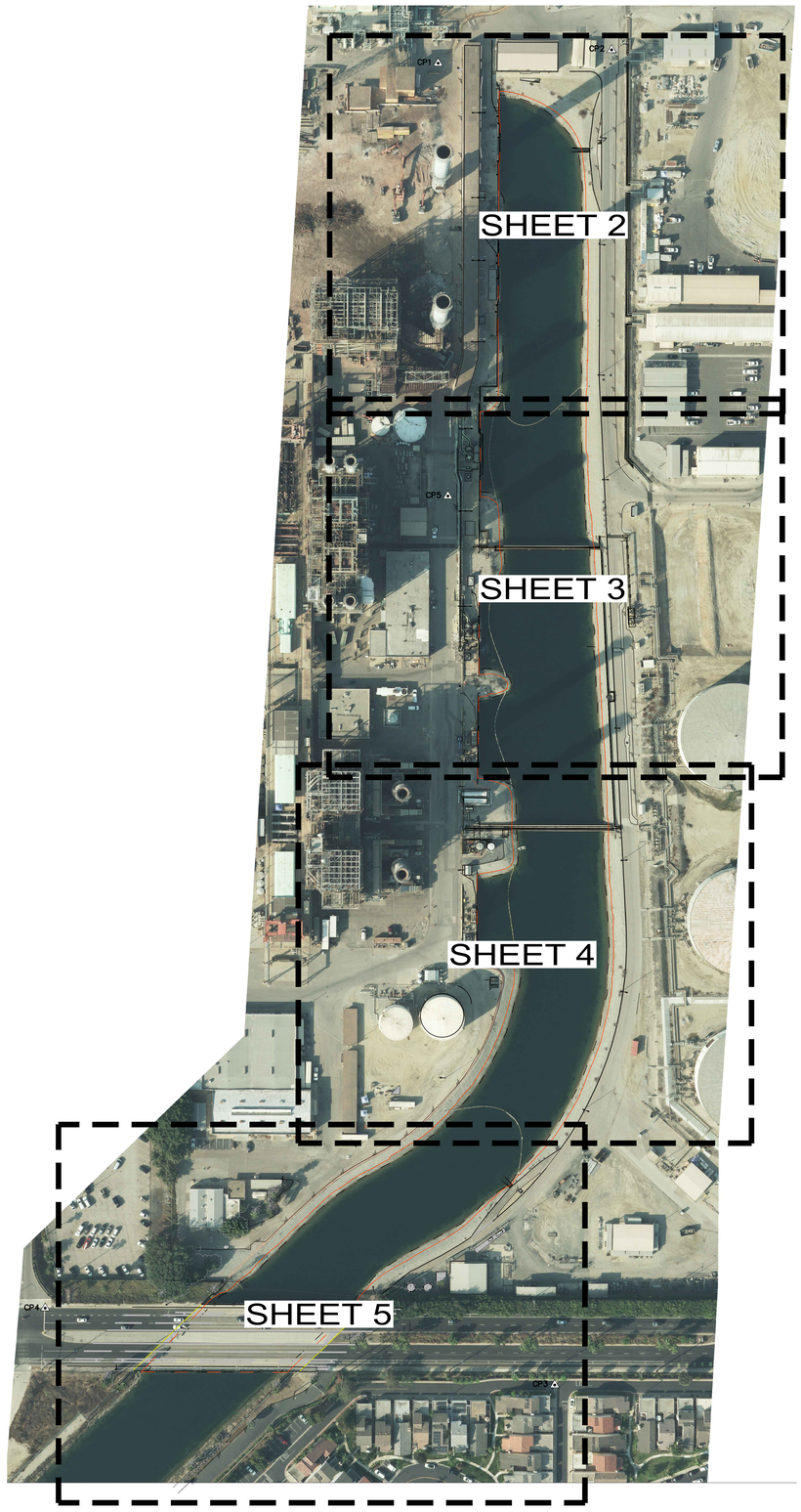
Topographic Survey

TOPOGRAPHIC SURVEY

HAYNES POWER PLANT
6801 EAST SECOND STREET, LONG BEACH, CA 90803

VICINITY MAP





GRAPHIC SCALE
80 0 40 80
FEET

CONTROL POINTS				
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CHANNEL ACREAGE	
AT MAXIMUM WATER LEVEL (WATER STAIN)	7.644 ACRES
AT WATER LEVEL (10/2/2020 - 3:15 PM)	7.051 ACRES

LEGEND

- ASPHALT PAVEMENT
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- WATER LEVEL (10/2/2020 - 3:15 PM)
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REVISIONS			
NO.	DATE	REVISIONS	BY
0	20/10/19	SUBMITTAL	AA

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BASIS OF BEARINGS

THIS SURVEY WAS ADJUSTED TO A CONTROL PROVIDED BY CLIENT.

BENCHMARK

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SITE INFORMATION

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SURVEYOR OF RECORD

FIELD COMPLETION DATE: OCTOBER 15, 2020.

LICENSED LAND SURVEYOR — ARMANDO D. DUPONT — L.S. 7780 — Date Signed: 10/22/2020 — STATE OF CALIFORNIA

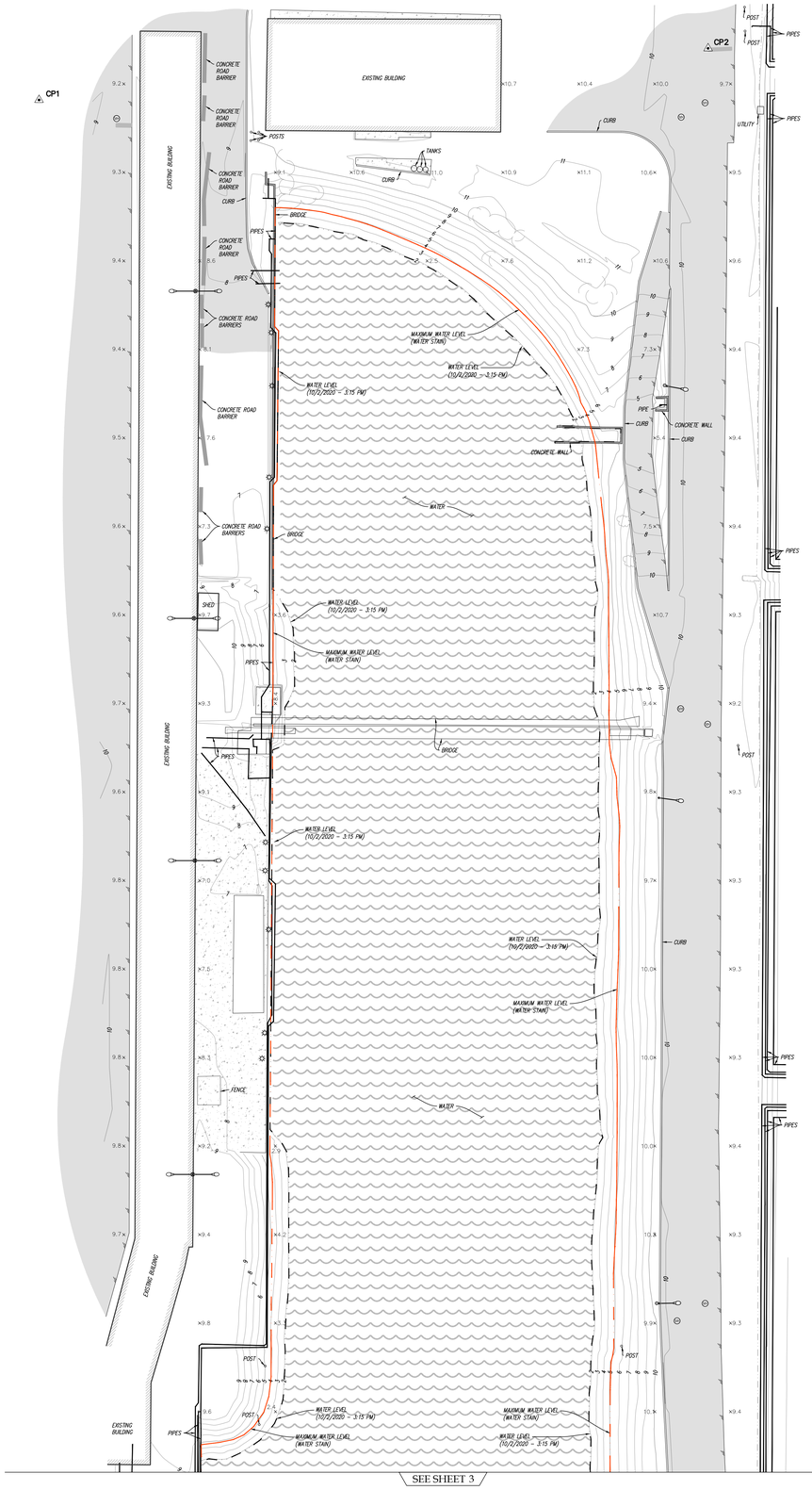
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HAYNES POWER PLANT

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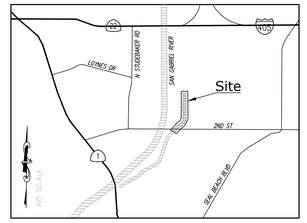
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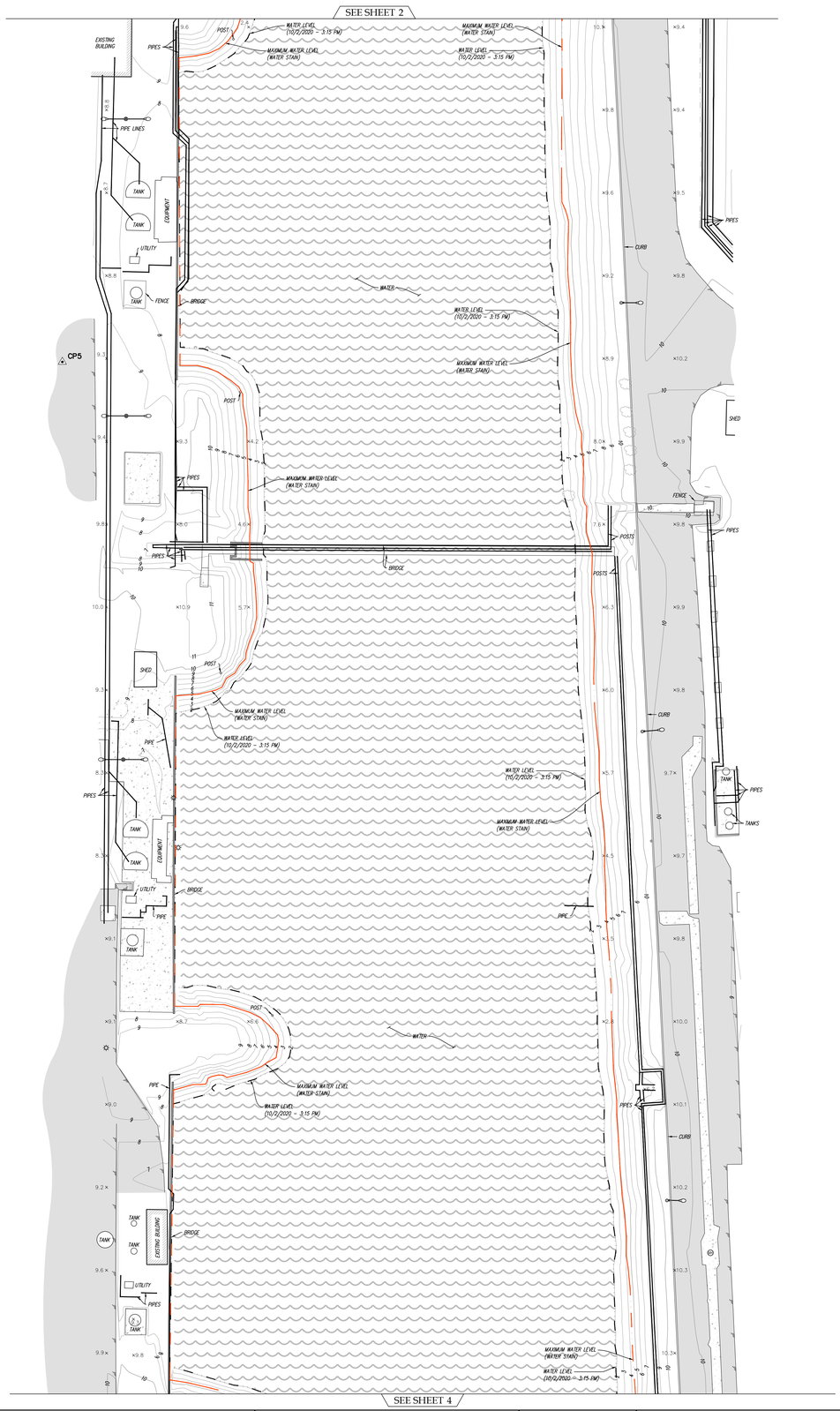
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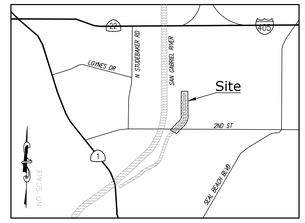
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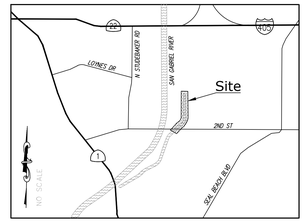
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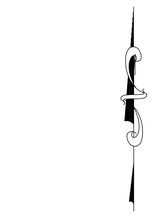
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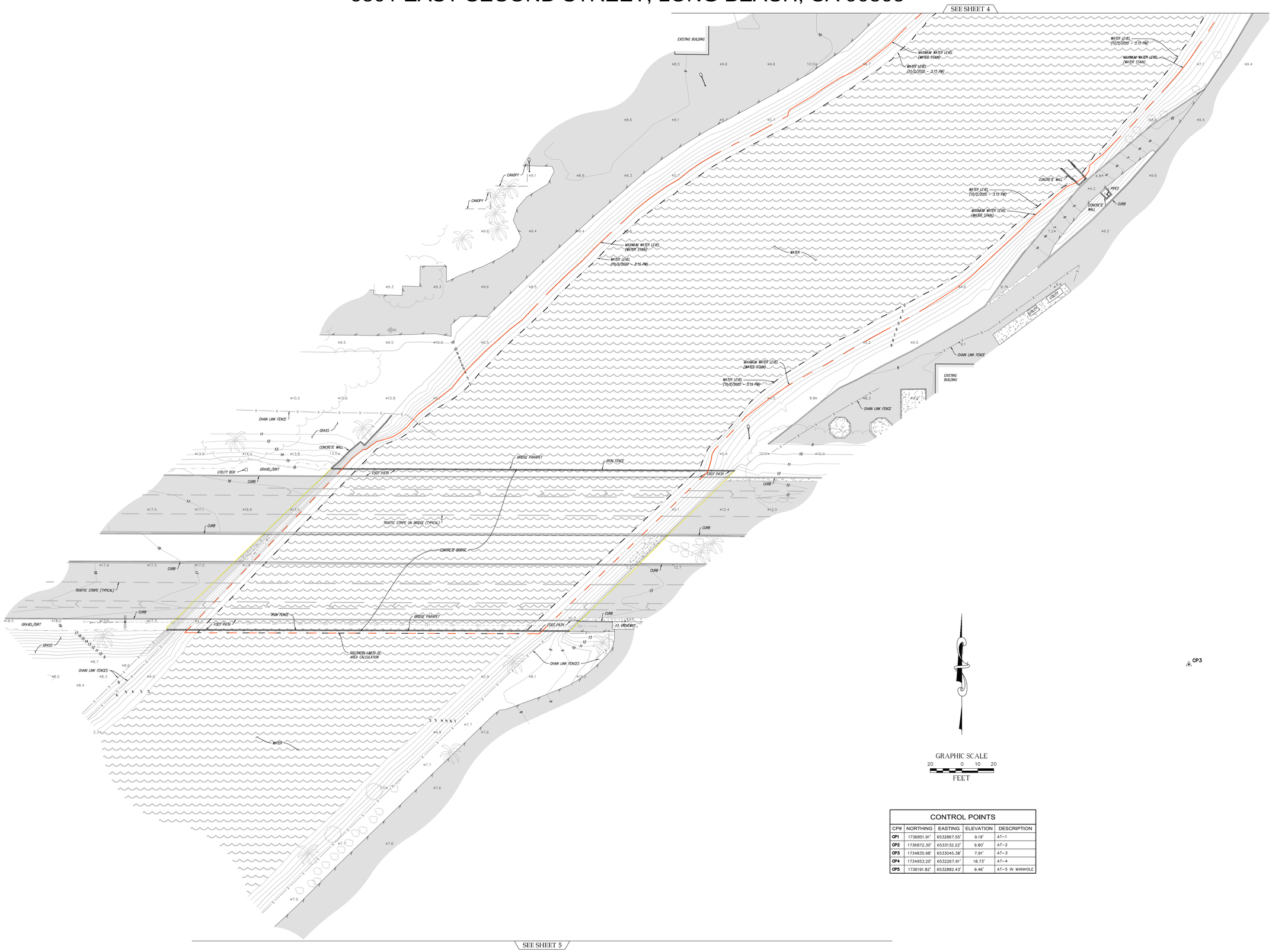
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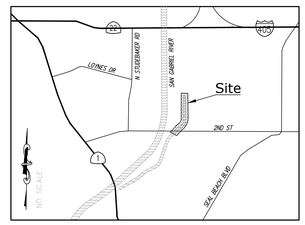
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FIELD COMPLETION DATE: OCTOBER 15, 2020.

LICENSED LAND SURVEYOR — ARMANDO D. DUPUIS — L.S. 7780 — Date Signed 10/22/2020 — STATE OF CALIFORNIA

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APPENDIX B

Wetland Data Sheet

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Haynes Generating Station Intake Channel | City/County: Long Beach/Los Angeles | Sampling Date: 07/13/18

Applicant/Owner: Los Angeles Department of Water & Power | State: CA | Sampling Point: PD-01

Investigator(s): Jayme Timberlake, Monique O'Conner | Section, Township, Range: S12, T5S, R12W

Landform (hillslope, terrace, etc.): canal | Local relief (concave, convex, none): none | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 33.760833 | Long: -118.094167 | Datum: WGS84

Soil Map Unit Name: W - Water | NWI classification: E1UBLx

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 ◉	
Hydric Soil Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: Area is located adjacent to existing generating station and receives surface water flows from the Pacific Ocean via Los Alamitos Harbor.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % | % 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: 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:	(A)		0 (B)

Prevalence Index = B/A =

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.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: Data station located along bank of rip-rap lined canal. No vegetation present.

SOIL

Sampling Point: PD-01

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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:[4]

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Data station located along bank of rip-rap lined canal. No soils present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

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:

NOAA tide gauge station 9410660; HnGS Units 5 & 6 Repowering Project (MBC 2009)

Remarks:

APPENDIX C

OHWM Data Sheet

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: HAYNES
Project Number: 10649.42
Stream: HAYNES INTAKE CHANNEL
Investigator(s): J. TIMBERLAKE, M. O'CONNER
Date: 07/13/18 **Time:** 0847-0920
Town: LONG BEACH **State:** CA
Photo begin file#: **Photo end file#:**

Y ☐ / N ☒ Do normal circumstances exist on the site?

Y ☒ / N ☐ Is the site significantly disturbed?

Location Details:
HNGS INTAKE CHANNEL

Projection: LAT/LONG **Datum:** WGS84
Coordinates: 33.763570, -118.094429

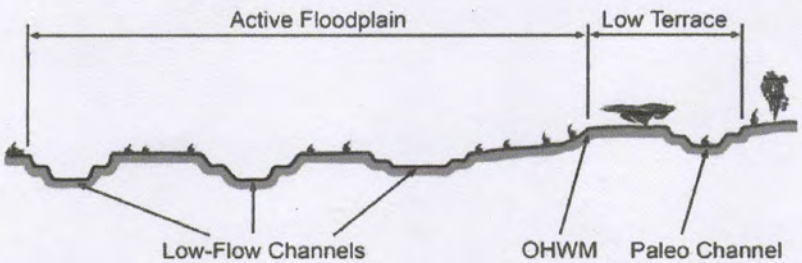
Potential anthropogenic influences on the channel system:
ONCE-THROUGH COOLING INFRASTRUCTURE (PUMPS IN BAY AND PIPING INTO UNITS)

Brief site description:
HNGS INTAKE CHANNEL HAS EARTHEN BOTTOM AND CONCRETE-LINED SLOPES W/ RIPRAP SECTION NAVIGABLE WATER THAT IS TIDALLY INFLUENCED

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2018
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies
- ☒ Stream gage data
  Gage number: 9410660
  Period of record: 1983-2001
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

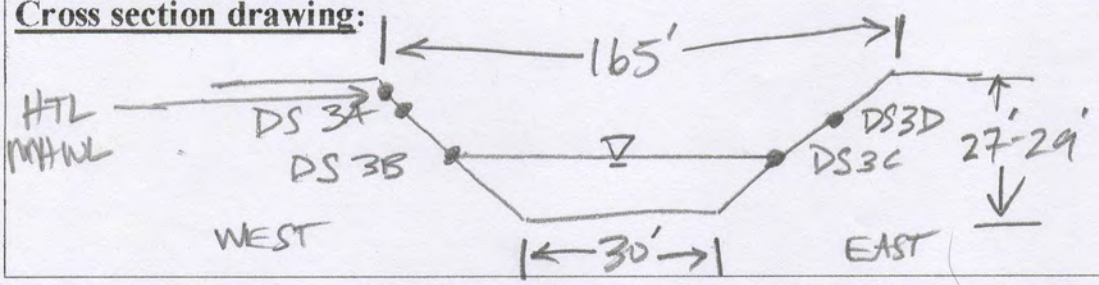


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS HTL/MHWL (PER USACE REQUEST)
   - ☐ Digitized on computer
   - ☐ Other:

Project ID: 10649,42 **Cross section ID:** DS 3A-3D **Date:** 07/13/18 **Time:** 0847

Cross section drawing:



OHWM MHWL/HTL

NOAA GAUGE STATION 9410660
HTL = 8.31 ft amsl
MHWL = 7.57 ft amsl

GPS point: DS3A-3D

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☒ Other: WATER STAINING (HIGHEST)
- ☐ Other: _____

Comments:

HTL CORRESPONDS WITH MHWL OBSERVED DISTINCT WATER STAINING ON UNVEGETATED CONCRETE-LINED BANKS. TOTAL OF 4 TRANSECTS TAKEN WITH LITTLE DEVIATION FROM BANK LOCATION/ELEVATION.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments: