APPENDIX C

Biological Resources Technical Report

BIOLOGICAL RESOURCES TECHNICAL REPORT

Big Canyon Habitat Restoration and Water Quality Improvement Project

January 2016

Prepared for
City of Newport Beach
Public Works Department

Prepared by
Environmental Science Associates
San Diego, California

This page intentionally left blank

TABLE OF CONTENTS

Biological Resources Technical Report

Big Canyon Habitat Restoration & Water Quality Improvement Project

APPENDICES

A. Jurisdictional Delineation Report
B. Pre-Project Riverine California Rapid Assessment (CRAM) Report
C. Rare Plant Survey Report
D. Coastal California Gnatcatcher Survey Report
E. Least Bell's Vireo Survey Report
F. Species Compendium
G. Potentially Occurring Species

List of Figures

Page

List of Tables

1.0 INTRODUCTION

This report has been prepared to document the results of biological resources surveys conducted within the Big Canyon Creek and Water Quality Project (project) area, and to describe potential direct or indirect impacts that could result from project implementation. The project has several objectives, including creek and riparian habitat restoration, habitat creation and enhancement, stormwater treatment wetland, dry-weather flow diversions, culvert improvements, and trail planning in the upper portion of the Big Canyon Nature Park. This report describes the environmental setting of the project site and immediate vicinity, including plant communities, habitats, and sensitive biological resources that have been documented onsite or have the potential to occur onsite. In addition, the report includes an analysis of project-related construction and operational impacts to sensitive biological resources within the context of applicable environmental regulations, and provides recommendations to mitigate these effects.

1.1 Project Location and Land Use

The project site is located within the city of Newport Beach, on a 10-acre site within the eastern portion of the 60-acre Big Canyon Nature Park (**Figure 1**). This area is east of Upper Newport Bay, adjacent to (east and west of) Jamboree Road, and includes a portion of Big Canyon Creek (**Figure 2**). Land uses within the project vicinity include residential development, a large golf course, a city maintenance facility, and commercial development. Onsite land uses include passive recreation, such as hiking on the public trail and/or access road that run through the site, and maintenance activities associated with the storm drain facilities.

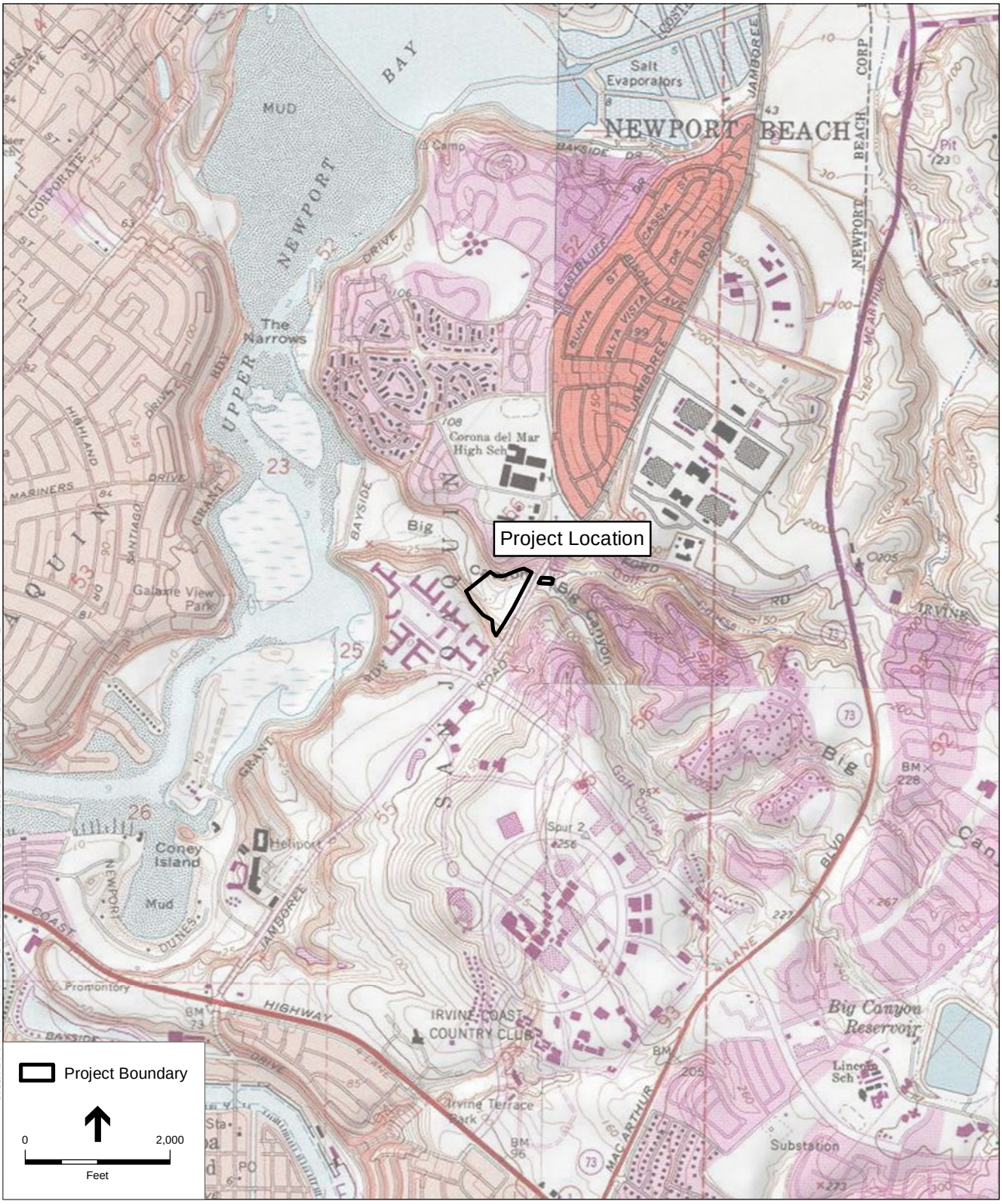
1.2 Project Overview and Design

The City of Newport (City) has contemplated restoration efforts within Big Canyon for over a decade. Currently, the City has funding for the restoration efforts that are part of Phases IA and IB (proposed project). Potential future restoration efforts within the 60-acre Big Canyon Nature Park could also be proposed as a separate project, if future funding is available. The proposed project is currently being planned in coordination with a Resource Management and Maintenance Plan (RMMP) that is being prepared by the Irvine Ranch Conservancy under contract with the City of Newport Beach for the Big Canyon Nature Park. The RMMP provides a framework for restoration and recreational improvements in the Nature Park that will be consistent with

SOURCE: City of Newport Beach, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 1
Regional Location



SOURCE: USGS 7.5' Topo Quad Newport Beach, 1977

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 2
Project Vicinity Map

recreational improvements in the Nature Park that will be consistent with the requirements of the Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP) for the central and coastal subregion of Orange County (Orange County Central-Coastal NCCP/HCP) in the event the City elects to incorporate the Nature Park into the NCCP. Potential future restoration efforts within Big Canyon would also be coordinated with the RMMP.

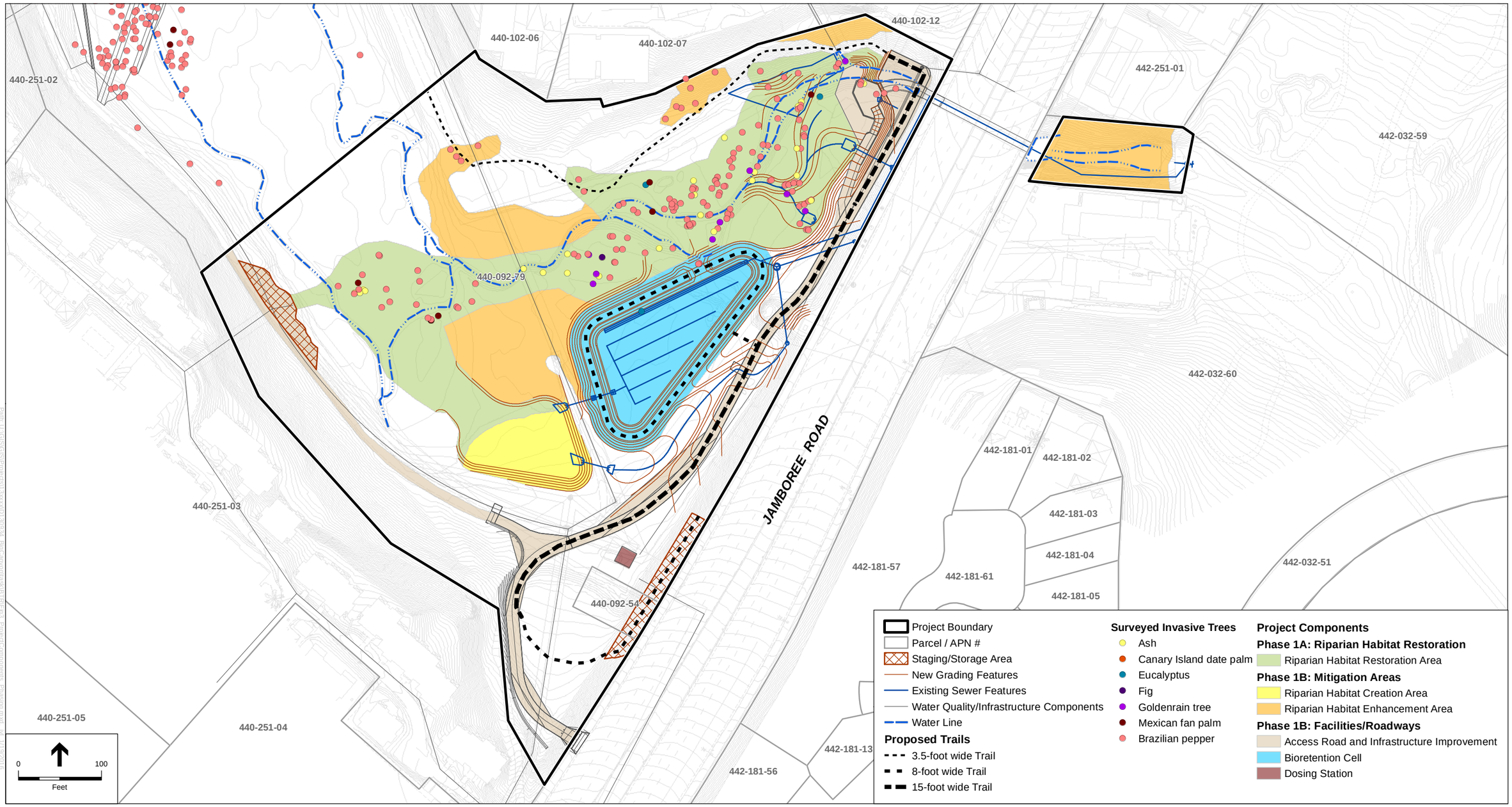
The proposed project has several objectives, including:

- Restore and Enhance Riparian Habitat
- Improve Water Quality
- Reduce Flood/Erosion/Sedimentation Damage
- Encourage Public Participation and Provide Education
- Provide Recreational Opportunities

To meet these objectives, the proposed project, as shown in **Figure 3**, includes the following elements.

1. **Creek Restoration**. The project proposes to conduct creek restoration activities, which will include floodplain restoration, streambank stabilization, and habitat restoration. The main channel is currently incised and is confined to the incised narrow creek bed. The channel will be realigned away from the eroding and undercut north bank into the center of the floodplain, and a new floodplain will be created on both banks. The north creek bank at the inlet will be stabilized using natural bioengineering techniques by adding encapsulated vegetated soil lifts, which will be planted with willows and other native vegetation to construct and protect the banks, and to provide erosion control. The existing area to the south of the creek would be lowered by approximately 6 feet to create a floodplain 2 to 3 feet above the low-flow channel to allow for frequent inundation during high-flow events. Willow brush mats will be placed over the cut bank and secured with biodegradable coir fabric, then secured with biodegradable rope and wooden stakes. Floodplain restoration and streambank stabilization activities will result in increased flood flow attenuation, stabilization of the north bank of the main channel, and creation of an active braided riparian floodplain.

   Riparian habitat will be restored directly downstream of the restored floodplain through the removal of invasive trees, soil modification to reduce plant-limiting sodium levels, and replacement with native riparian species. Under current conditions, invasive trees (mostly Brazilian peppertree) and an extensive understory of non-native forbs and grasses have been documented in the project area. In addition, soil testing results have indicated extremely high levels of sodium, boron, and sulfur in the soils, which inhibit growth of native plant species. The invasive plants are better able to compete under the poor soil conditions that are found within Big Canyon. The trees, forbs, and grasses will be aggressively removed as part of this project. Mature trees will be removed during mass grading and isolated individuals will be killed in place without soil disturbance. Following invasive plant removal, the soil will be amended to levels where native



SOURCE: Burns & McDonnell; Dudek; ESA

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 3
Project Components and Phasing

This page intentionally left blank

riparian vegetation can persist, and the areas will be actively planted, seeded, and maintained, with topically applied soil treatments continuing throughout the plant establishment period.

2. **Riparian Habitat Creation and Enhancement Activities**. Riparian habitat creation activities will be conducted directly to the southwest of the proposed bioretention cell, in an area adjacent to the riparian forest restoration area that currently supports non-native grasses and forbs. This area will be graded down to allow the newly planted riparian trees to access existing groundwater. The discharge of the stormwater treatment wetland will also be routed to this area to provide for periodic inundation during storm events. In addition, this area will be subject to flooding during larger storm events, but will not pond water or create a habitat for mosquito larvae.

   Riparian habitat enhancement will include removal of upstream and adjacent Brazilian peppertrees (*Schinus terebinthifolius*) both east of Jamboree Road and north of the creek, which will greatly reduce the seed source for this highly invasive species. The created and enhanced habitat areas will provide the required mitigation for loss of riparian habitat resulting from implementation of the water quality and infrastructure components of this project.

3. **Stormwater Water Quality Treatment Bioretention Cell**. The purpose of the stormwater treatment system, which consists of a primary treatment structure and a bioretention cell, is to improve water quality by reducing transportation-related pollutants currently discharged to Big Canyon Creek during storm events and to attenuate stormwater peak-flow discharge rates from the contributing Jamboree Road drainage area. A primary treatment structure would be constructed to receive runoff from existing stormwater inlets serving Jamboree Road. The purpose of this underground structure is to trap, contain, and pretreat trash, total suspended solids (TSS), and free oils prior to conveyance to the bioretention cell. Located adjacent to Jamboree Road, the primary stormwater treatment structure would be approximately 40 square feet in size and include three chambers. The first chamber would be designed to collect dense solids and trash (floatables); the second would collect sediment and finer solids; and the third would provide storage and delivery of dissolved phase constituents to the bioretention cell. Manhole access ports would be installed for periodic removal of trash and sediment from the three chambers.

   The bioretention cell will treat the stormwater flows that discharge from the primary stormwater treatment structure, and reduce the storm drain-associated vector habitat (i.e., ponded water that provides habitat for mosquito larvae) in Big Canyon Creek (see Figure 3). The basin of the bioretention cell will consist of (from top to bottom) layers of soil, sand, and gravel, underlain by an impermeable liner. The soil layer will be approximately 2 to 3 feet thick and would be underlain by a 6-inch sand filter bed located between the bioretention soil and drainage gravel layer situated in the bottom of the bioretention cell. The bottom 12-inch gravel drainage layer will form the base layer of the

bioretention cell and will be underlain by a geotextile cushion. The entire bioretention cell will be underlain by a 60-MIL high-density polyethylene liner. The outer banks of the bioretention cell will be vegetated with coastal sage scrub, and the inner basin will be vegetated with native riparian forbs, grasses, and shrubs. These species will have the ability to sequester toxins and tolerate flooded conditions for limited periods of time. The basin will be periodically maintained per an approved Operation and Maintenance Plan.

Stormwater will flow via gravity from the primary stormwater treatment structure to the top of the subcells through a series of perforated and solid inflow polyvinyl chloride (PVC) pipes. Pollutants will be removed from stormwater as it flows down through the treatment media. Treated water will flow from the bottom of the bioretention cell through a series of PVC pipes into the newly created wetland habitat area located to the southwest of the bioretention cell, and from there will infiltrate into the ground and/or flow into Big Canyon Creek.

4. **Dry-Weather Water Quality Selenium Reduction Measures**. The purpose of the dry-weather flow diversion is to limit the contact between dry-weather flows with low selenium concentrations and the groundwater seepage flows that contain much higher selenium concentrations. Monitoring investigations conducted by the City in 2015 determined that seepage flows with high selenium concentrations occur in the creek on the east side of Jamboree Road between the proposed diversion and the entrance to the existing culvert. High selenium seeps also occur on the west side of Jamboree Road just downstream of the mouth of the existing culvert (City of Newport Beach 2015, unpublished data). The project proposes to passively collect these high selenium concentration seeps and direct them to the sanitary sewer. A dry-weather flow diversion will re-route the flows of lower selenium concentration around identified sources of high selenium and return these better quality flows back into the restored creek. The dry-weather flows will be diverted from an underground culvert on the east side of Jamboree Road and routed through an above-ground pipe along the south bank of the creek and through the storm drain culvert under Jamboree Road. The pipe will discharge on the west side of Jamboree Road into the floodplain that will be graded as part of this project.

   The estimated seepage flows are anticipated to be less than 10% of the total current dry-weather flows in Big Canyon Creek. Therefore, approximately 90% of the current dry-weather flows will be returned to the creek. Diverting the high selenium seepage flows into the sanitary sewer will substantially reduce in-stream selenium concentrations in the downstream creek flowing through the restoration area.

5. **Infrastructure Improvements**. The project will also be constructed in coordination with infrastructure improvements by the Orange County Sanitation District (OCSD). The improvements are shown in Figure 3 and include the extension and improvement of the existing access road along the toe of slope along the west side of Jamboree Road. The access road improvements will be used to access and maintain the sanitary sewer manhole located to the north of the existing culvert outfall. The construction of the access

road to and over the existing culvert under Jamboree Road requires extension of the culvert. A concrete stilling basin will be located at the end of the culvert extension to dissipate hydraulic energy as the stormwater transitions from flow in the culvert and discharges to the regraded floodplain. This stilling basin will be periodically maintained to remove sediment and vegetation. Water from the stilling basin will exit via a rip-rap energy dissipater. OCSD will also install a permanent automatic chemical-dosing station and access area near the proposed habitat creation area. The dosing station consists of a 12-foot-high 8-foot-diameter tower that would be constructed on a 20-foot by 20-foot pad, and a gravel access road as needed to access the station. Native plants will be planted around the facility. The station would be maintained on a monthly basis.

6. **Community Access Improvements and Educational Opportunities**. The extended access road will provide an official trail where the public can learn about and enjoy the native habitats. In addition, an 8-foot-wide bicycle path connector will be installed to provide access directly from Jamboree Road. The maintenance road at the top of the bioretention cell will also be used as a side viewing trail with interpretive signs installed. Visitors using this trail will cross from the south to the north side of the creek via the OCSD-constructed turnaround area over the culvert and follow a footpath on the north side of the creek. The footpath on the north side of the creek will continue within the coastal sage scrub habitat, following existing ad hoc trails that will be expanded to approximately 42-inches wide. Trails allow for educational opportunities regarding water quality and creek restoration activities and, through the installation of signage and as-needed fencing, will keep the public out of sensitive habitats. This plan is consistent with ongoing efforts planned for the Big Canyon Watershed in consultation with the City, environmental organizations including the Newport Bay Conservancy and Irvine Ranch Conservancy, and the appropriate regulatory agencies.

This page intentionally left blank

2.0 METHODOLOGY

2.1 Literature and Database Review

Pertinent literature resources were reviewed by Environmental Science Associates (ESA) prior to conducting field surveys to determine if special-status biological resources occur or are known to occur within the vicinity of the project area. Literature sources included *Big Canyon Creek Historic Tidal Wetlands Conceptual Restoration Plan, Upper Newport Bay* (CCI 2004), and *Big Canyon Creek Restoration Project Phase II Feasibility Study* (WRA 2007). The following biological resource databases were also queried: U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC), California Department of Fish and Wildlife (CDFW—formerly California Department of Fish and Game) California Natural Diversity Database (CNDDB) (CDFW 2015), and California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants* (CNPS 2015). Database queries included all reported occurrences within the Newport Beach U.S. Geological Survey (USGS) 7.5-minute quadrangle map (quad) in which the project site is located, and all adjacent USGS quadrangles. In addition, *Biological Resources Inventory Report for the Big Canyon Nature Park Project, City of Newport Beach, Orange County, California* (Dudek 2015) was reviewed after all field surveys were completed, as this report was not available until November of 2015.

A list of potentially occurring special-status species and sensitive natural communities was developed for the project site based on the database search results and evaluated. Potentially occurring special-status species were defined as having a geographic range and habitat requirement similar to those found on, or within the vicinity of, the project site, and thus having the potential to occur.

Available background information, including USGS topographic maps, U.S. Department of Agriculture soil survey data (NRCS 2015), National Wetland Inventory maps, and current and historical aerial photographs were used in conjunction with Geographic Information System (GIS) data to characterize soils and to map vegetation communities, and to identify any USFWS-designated critical habitat boundaries or CDFW Natural Community Conservation Planning areas.

2.2 Biological Resource Surveys

General Biological Resources Survey and Constraints Assessment

A general biological resources survey was conducted within an area that included the area of potential direct impacts plus a buffer to capture potential indirect impacts to biological resources.

The survey was conducted on foot by ESA biologist Rosanne Humphrey on March 12, 2015, to identify potential biological resources onsite and potential constraints associated with the implementation of the proposed project. Special attention was paid to habitats having the potential to support sensitive biological resources (e.g., special-status species and sensitive natural communities). Aerial photography and global positioning system (GPS) technology was used to accurately locate any sensitive biological resources encountered.

All plant and wildlife species observed during site surveys were identified and recorded into a field notebook. Wildlife species were identified during the field reconnaissance by sight and call or other evidence of presence such as tracks, nests, scat, and remains and with use of binoculars and taxonomic keys where appropriate. Plant taxonomy followed Baldwin et al. (2012).Vertebrate taxonomy followed Crother (2015) and CalHerps (2015) for amphibians and reptiles, the American Ornithologists' Union for birds (AOU 2015), and Wilson and Reeder (2005) for mammals.

Vegetation Mapping

Vegetation mapping was conducted on March 12 and December 16, 2015, by ESA biologist Rosanne Humphrey. Vegetation communities were characterized based on the presence of dominant plant species and were delineated within the project area. In addition, during the surveys, a habitat evaluation was conducted to determine the potential for each habitat area to support sensitive native species. Vegetation communities were initially mapped directly on aerial photographs and then digitized in ArcGIS. Vegetation community classification and descriptions were determined according to the Orange County Habitat Classification System (Jones and Stokes 1993, Gray and Bramlet 1992) to be consistent with the Orange County Central-Coastal NCCP/HCP and previous vegetation mapping (CCI 2004, WRA 2007). Each vegetation community was delineated based on the dominant plants observed onsite following CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009). In addition, vegetation alliances based on the CDFW Manual of California Vegetation (Sawyer et al. 2009), a higher resolution classification system, were delineated by Dudek in 2015. Vegetation alliances within each OCHCS vegetation community are described in Section 3. Unique classifications were developed for those land cover types not addressed by either classification system based on field observations of dominant species.

The analysis of potential wildlife habitat linkages (i.e., wildlife migration corridors) on the project site or immediate vicinity was based on the conditions documented during the field reconnaissance surveys, as well as information compiled from literature and analysis of physical barriers observed on aerial photographs. This information was used to identify whether the project site and immediate vicinity could be used as an important wildlife movement corridor connecting large open space areas located upstream and downstream from the project site. The discussions in this report related to wildlife movement are intended to focus on areas within the project boundaries, immediate vicinity, and general region (project area).

Jurisdictional Assessment

ESA biologist Julie Fontaine conducted site visits on March 12 and 18, and December 15, 2015, to evaluate potentially jurisdictional features within the project area, including waterways and associated habitats potentially subject to U.S. Army Corps of Engineers (Corps), CDFW, Regional Water Quality Control Board (RWQCB), and California Coastal Commission (CCC) regulations. The purpose of the jurisdictional assessment was to identify regulated wetlands and waters of the United States and the State of California within the project area.

Prior to field surveys, a desktop analysis was conducted to obtain contextual information relevant to the project area. ESA conducted a review of available background information pertaining to the project, geography, and topography prior to conducting the jurisdictional delineation in March 2015. A site map was generated with available aerial photographs, and potentially jurisdictional features were identified and marked with lines and GPS coordinates to assist in field verification. Soil types mapped within the project area were consulted prior to field efforts to target areas with potentially hydric soils. In addition, the following published and grey literature were reviewed and consulted:

- 1996 National List of Vascular Plant Species that occur in Wetlands (USFWS 1996).
- *2006 U.S. Army Corps of Engineers Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*.
- *Field Guide for Wetland Delineation* (1987 Corps Manual) prepared by the Wetland Training Institute (WTI 1999).
- *A Field Guide to Lake and Streambed Alteration Agreements* (CDFG 1994).
- *USFWS Definition of Wetlands adopted by CCC.* (Cowardin et al. 1979.)

The delineation was conducted in accordance with the Arid West Supplement to the 1987 Wetlands Delineation Manual, which reflects the required methods by the Corps as well as using the CCC definition of wetlands since the project falls within the Coastal Zone. In addition, CDFW riparian habitat was mapped as jurisdictional based upon the presence of hydrophytic vegetation to the dripline of the riparian vegetation. The CCC definition was met if one or more wetland parameters (soil, hydrology, and/or vegetation) were met.

Appendix A provides the full jurisdictional delineation report, including methodologies and results.

California Rapid Assessment Method Survey

A Riverine California Rapid Assessment Method (CRAM) assessment was conducted by ESA biologists Rosanne Humphrey (CRAM Practitioner) and Alanna Bennett on December 16, 2015, following the *Riverine Wetlands Field Book, Version 6.1* (CWMW, 2013). The purpose of the assessment was to evaluate the pre-project condition of Big Canyon Creek within the project area. One Assessment Area (AA) was delineated west of Jamboree Road. The AA extends from

approximately 25 meters downstream of the outflow to 100 meters downstream, and encompasses the associated riparian vegetation along Big Canyon Creek. The width of the AA varies from approximately 12 to 30 meters.

The following wetland attributes were assessed: Buffer and Landscape Context, Hydrology, Physical Structure, and Biotic Structure. Each attribute is based on the values of individual metrics. A rating of A, B, C, or D was given for each metric pursuant to the *Riverine Wetlands Field Book*, and then converted to a numeric value (A=12, B=9, C=6, and D=3). These numeric values were then used to calculate attribute scores and overall CRAM scores.

Appendix B provides the full pre-project CRAM report, including methodologies and results.

Focused Species Surveys

Rare Plant Survey

A rare plant survey was performed by ESA biologist Rosanne Humphrey on March 12, 2015, following the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009). The entire project area plus a buffer area was assessed for the presence of rare plant species. The full rare plant survey report is included in **Appendix C**.

Coastal California Gnatcatcher

Focused surveys were performed for the federally threatened California gnatcatcher (*Polioptila californica californica*) on March 27, April 3, and April 17, 2015, by ESA biologists Dallas Pugh (TE-79192A-1) and Alanna Bennett. The surveys were conducted pursuant to the most current USFWS survey protocol (USFWS 1997). A total of three surveys were conducted between 6:00 AM and 12:00 PM at least 7 days apart within all suitable habitat in the project area. Recorded vocalizations were played to elicit a response if birds were not readily detected. All observations were recorded (including time, number of individuals, and sex), and the coordinates of the observation were recorded with a hand-held GPS unit. The full protocol survey report for the California gnatcatcher is included in **Appendix D**.

Least Bell's Vireo

Focused surveys were performed for the state and federally endangered least Bell's vireo (*Vireo bellii pusillus*) on March 27, April 3, and April 17, 2015, by ESA biologists Dallas Pugh and Alanna Bennett. The survey methods were consistent with the most current USFWS survey protocol (USFWS 2001), except for the number of survey visits. A total of three surveys were conducted between 6:00 AM and 11:00 PM at least 10 days apart within all suitable riparian habitat in the project area. Recorded vocalizations were played to elicit a response if birds were not readily detected. All observations were recorded (including time and number of individuals), and the coordinates of the observation were recorded with a hand-held GPS unit. Although the protocol requires a total of eight survey visits between April and July, only three survey visits were conducted as a result of the project timeline. It was anticipated that Dudek would be

conducting the entire eight-visit protocol survey; therefore, the results of both ESA's and Dudek's 2015 least Bell vireo surveys are included in this biological technical report (see Section 3). ESA's protocol survey report for least Bell's vireo is included in **Appendix E**.

2.3 Survey Limitations

Focused species surveys were done early in the spring to accommodate project scheduling constraints. Because of the restrictive project timeline, many of the plants onsite were not yet in bloom during rare plant surveys. In addition, as discussed previously, only three site visits for the least Bell's vireo surveys were conducted; however, Dudek performed rare plant surveys full protocol surveys for the coastal California gnatcatcher and least Bell's vireo throughout the Big Canyon Nature Park, and these results will be discussed in Section 3.

This page intentionally left blank

3.0 ENVIRONMENTAL SETTING

3.1 Regional Setting

The project site is located in Orange County near the coastline within a drainage that runs into upper Newport Bay, and eventually to the Pacific Ocean. Significant regional geographic features around the area include the peninsular ranges to the northeast and south, and the Pacific Ocean to the southwest. Eleven major watersheds traverse the county, transporting water from the surrounding mountains and deserts to the Pacific Ocean (OCPW 2014). Dense urban development occurs within the general area surrounding the project site in all directions.

The project site is located within the Big Canyon Watershed, which consists of approximately 1,062 acres that drain to the Upper Newport Bay Ecological Reserve in the city of Newport Beach (Figure 1). Big Canyon Creek, which drains the watershed, is one of the few perennial streams that discharges to Upper Newport Bay, with a sustained dry-weather flow of approximately 0.4 cubic feet per second. The creek flows from southeast to northwest through Big Canyon Nature Park, ultimately draining into Upper Newport Bay (Figure 2). Big Canyon is the only natural, undeveloped portion of the Big Canyon Creek Watershed, and the only significant remaining natural canyon on the east side of Newport Bay.

The climate in the region is Mediterranean, with dry summers and moderately wet winters; however, the region has experienced severe drought conditions over the past few years. The region lies in the semi-permanent high-pressure zone off the eastern Pacific Ocean, resulting in a mild climate tempered by moderate onshore winds, but is occasionally interrupted by periods of hot weather, winter storms, or Santa Ana winds; however, these interruptions are seasonal and do not generally affect the region for extended periods of time.

Plant communities typically found within the coastal plains of the region include a mosaic of xeric habitats including sage scrub, grassland, and chaparral, with occasional riparian or woodland habitat associated with riverine or other aquatic features. Some creeks in the region are perennial; however, many are intermittent or ephemeral. Estuarine areas are influenced by tidal flows and may also be affected by dry season flows due to urban runoff. These habitats are known to support a wide variety of common plant and wildlife species, as well as many special-status species protected by federal, state, and local regulations.

3.2 Topography

The project area is characterized topographically by steeply sloping bluffs and a narrow, moderately sloped floodplain; slopes range in elevation from 20 to 75 feet above mean sea level,

and the canyon creek ranges in elevation from below mean sea level to 25 feet above mean sea level. A perennial stream identified as Big Canyon Creek traverses the project area and supports degraded riparian habitat.

3.3 Soils

The U.S Department of Agriculture NRCS maps Upper Big Canyon Creek and the surrounding area as Sorrento Loam and Tidal Flats (SSURGO online database) (**Figure 4**). Tidal flats are remnant map units from before the time that the hydrology of the system was altered. The habitat is no longer tidally influenced but does retain the high salt content within the soil. Despite being altered, the soil exhibited hydric characteristics in the emergent marsh habitat. Areas containing predominantly Brazilian Peppertree did not exhibit hydric soil characteristics either in the Tidal Flats soils or the Sorrento loam soils. The Sorrento loam (fine-loamy, mixed, superactive, thermic Calcic Haploxerolls) occurs on alluvial fans and floodplains, originating from sedimentary rocks. It is not a hydric soil.

The project area is generally quite disturbed. The area has been degraded as the result of decades of dredging spoils from the bay and dumping onsite; the quality of soils throughout the site is generally very poor as a result. There are six soils classes within the project area according to the Natural Resources Conservation Service (NRCS) (2015). Each soil type in the project vicinity is described below and shown in Figure 4.

Balcom Clay Loam

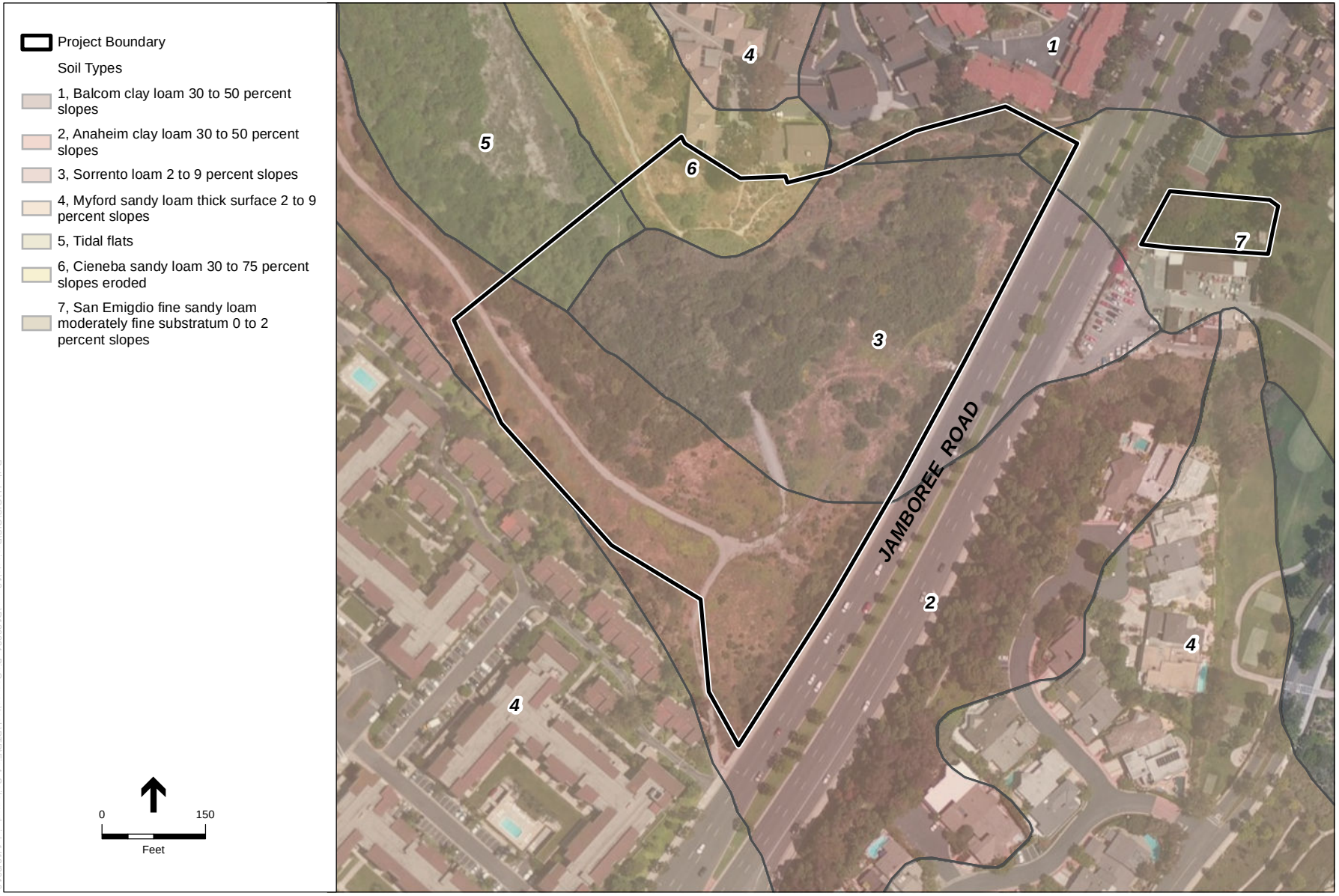
Balcom clay loam 30 to 50 percent slopes soils are located in a small portion along the eastern side of the northern border of the site. This soil class is well-drained with moderate to moderately slow permeability and a range of low to high runoff. Most commonly found vegetation on this soil series is annual grasses and mustard. Balcom clay loam soils have the potential to support clay specialist sensitive plant species.

Anaheim Clay Loam

Anaheim clay loam 30 to 50 percent slopes soils are located throughout most of the southern portion of the site. The soil ranges from slightly acidic to slightly alkaline and is well-drained. Runoff is rapid to very rapid and permeability is moderate to moderately slow. The vegetation found on this soil series is most often brush, annual grasses, and forbs. Anaheim clay loam soils have the potential to support clay specialist sensitive plant species.

Sorrento Loam

Sorrento loam 2 to 9 percent slopes soils are located throughout the central and northern portion of the site. Sorrento soils are found in alluvial fans and consist of very deep, well-drained soils with negligible to medium runoff and moderate to moderately slow permeability. Vegetation



SOURCE: City of Newport Beach; ESRI; SSURGO

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 4
Soils

commonly found on this soil consists mostly of annual grasses and forbs, and sycamores (*Platanus* sp.) along drainageways.

Myford Sandy Loam

Myford sandy loam thick-surface 2 to 9 percent slopes soils are located just outside of the project boundary to the north, southwest and southeast. Myford soils are deep, well-drained soils, runoff is moderate to rapid, and permeability is very slow. Annual grasses, forbs, and low-growing brush are the best suited vegetation to grow in soils within the Myford series.

Tidal Flats

Saline coastal tidal flats are located on a small portion of the site in the northwest corner. Tidal flats occur on the border of a saline body of water with fluctuating water levels. These soils are important as they support transitional vegetation between terrestrial and marine habitats, providing fodder, shelter, and protection for local wildlife. Forbs, grasses, and vines are commonly found associated with tidal flats. Tidal flats are remnant map soil units from before the time that the hydrology of the system was altered. The habitat is no longer tidally influenced but does retain the high salt content within the soil.

Cieneba Sandy Loam

Cieneba sandy loam 30 to 75 percent slopes eroded soils are located in a small area of the northwest portion of the site. Cieneba soils are very shallow, fast-draining soils, with low to high runoff and rapid permeability. Chaparral, oak trees, and annual grasses are most commonly associated with this soil series.

San Emigdio Fine Sandy Loam

San Emigdio fine sandy loam moderately fine substratum 0 to 2 percent slopes soils are located in a small portion of the northwestern corner of the site. This soil series consists of deep, well-drained soils occurring within floodplains and fans; runoff is very low and permeability is moderately rapid. Annual grasses and forbs are commonly associated with this series.

3.4 Vegetation Communities

Throughout much of the project area, the vegetation is highly disturbed; non-native plant species intermixed with native plant species is characteristic of the project area. Even within coastal sage scrub vegetation communities, non-native annuals cover the ground space between native shrubs, and within the southern riparian forest, Brazilian peppertree (*Schinus terebinthifolius*) and other invasive tree species are dispersed throughout much of the forest. As a result, much of the site is a mosaic of different types, levels of disturbance, and status of succession, rather than distinct,

well-defined habitat types. Vegetation communities are mapped in **Figure 5**. The vegetation communities are described below according to the Orange County Habitat Classification System (Jones and Stokes 1993, Gray and Bramlet 1992). Each description includes a list of the California vegetation alliances (Sawyer et al. 2009) that are found within that vegetation type. Acreages of each vegetation community in the project area are summarized in **Table 1**.

TABLE 1
ACREAGES OF VEGETATION COMMUNITIES

Vegetation Community	Acres	State Rank[1]
Southern Riparian Forest (SRF)	4.00	S.3.2
Alkali Meadow (AM)	0.10	S2.1
Coastal Sage Scrub (CSS)	1.53	S3.1
Non-Native Grassland (NNG)	2.83	S4
Disturbed (Existing Access Roads and Trails)	0.40	None
Ornamental (ORN)	0.78	None
Developed (DEV)	0.04	None
Grand Total	**9.67**	

[1] CDFW state rank denotes the rarity and endangerment of an vegetation type within the state as follows:
S2 = 2,000-10,000 acres; S2.1 = very threatened
S3 = 10,000-50,000 acres; S3.1 = very threatened; S 3.2 = threatened
S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. No threat rank.

Southern Riparian Forest

Southern riparian forest occurs along streams and rivers, and is characterized by a dense canopy cover of western sycamore (*Platanus racemosa*), cottonwood (*Populus* spp.), mature willows (*Salix spp.*), and an understory of mulefat and small willows. Typically, trees in this community are mature and have closed, or nearly closed, canopies.

A total of 4.00 acres of southern riparian forest were mapped within the project area, which is the most abundant community onsite. This vegetation community occurs throughout most of the central and north-central region of the project area, following the streambed, as well as in a small, isolated patch near the east-central region of the project area. It is a closed canopy forest dominated by Brazilian peppertree and arroyo willow (*Salix lasiolepis*). For the most part, there is little undergrowth near the center; however, non-native forbs are abundant along the edges where the sun is able to penetrate to the ground. The peppertrees occur throughout the southern riparian forest community (see Figure 5). These trees are most likely volunteers from the peppertrees planted as ornamentals on the hills above the project area and upstream, east of Jamboree Road. Other tree species in this community include blue elderberry (*Sambucus nigra* ssp. *caerulea*), Shamel ash (*Fraxinus udehi*), Mexican fan palm (*Washingtonia robusta*), and Canary Island date palm (*Phoenix canariensis*). Mugwort (*Artemisia douglasiana*) and garden nasturtium

SOURCE: ESA, ESRI; Dudek

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 5

Biological Resources

(*Tropaeoleum majus*) show prevalence throughout the understory, and pride of Madera (*Echium candicans*) is common on the northern and eastern edge of the forest.

One California vegetation alliance was mapped by Dudek (2015) within the southern riparian forest. Peppertree or Myoporum Groves Semi-Natural Stands is typically dominated or co-dominated by Brazilian peppertree, Peruvian peppertree (*Schinus molle*), or myoporum (*Myoporum laetum*), which are all highly invasive non-native tree species. The rest of this area was mapped as Arroyo Willow Disturbed Mapping Unit, which is not recognized by the CDFW Natural Communities List (CDFG 2010), but was used to differentiate areas dominated by arroyo willow, but characterized by areas of disturbance.

Alkali Meadow

Alkali meadow is characterized by a dense to somewhat open distribution of perennial grasses and shrubs in alluvial slopes, salty grasslands, and alkali seeps. Soil within the community is moist, fine-textured, and alkaline. Plant species are typically low-growing and few in number, blooming from late spring to early fall. Species commonly associated with alkali meadow include yerba mansa (*Anemopsis californica*), sedge species (*Carex* spp.), rush species (*Juncus* spp.), saltgrass (*Distichlis spicata*), alkali sacaton (*Sporobolus airoides*), and alkali cord grass (*Spartina gracilis*).

A total of 0.10 acre of alkali meadow was mapped within the northwest region of the project area. The dominant plant species onsite is Alkali heath (*Frankenia salina*) dominates this community in the project area. Other species include pickleweed (*Salicornia subterminalis*) and saltgrass (*Distichlis spicata*), as well as an abundance of wild radish (*Raphanus sativus*) and non-native grasses.

The majority of this habitat type in the project area, which occurs in an opening within the riparian forest, was mapped as part of the Arroyo Willow Disturbed Mapping Unit by Dudek (2015). The rest was mapped as Alkali Heath Marsh Alliance.

Diegan Coastal Sage Scrub

Diegan coastal sage scrub is characterized by a variety of low, aromatic shrubs and soft-woody subshrubs, many of which are drought-deciduous. These species are typically most active in the winter and early spring, going dormant during the dry summer months. Although the species composition of the vegetation community varies substantially depending abiotic factors (slope, aspect, distance to the coast, soils, etc.) and successional stage, this community is often characterized by California sagebrush (*Artemisia californica*), flattop buckwheat (*Eriogonum fasciculatum*), California encelia (*Encelia californica*), black sage (*Salvia mellifera*), and white sage (*Salvia apiana*). Other common species include lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and deerweed (*Acmispon glaber*). Diegan coastal sage scrub generally occurs in dry areas on steep, south-facing slopes. The shrub canopy is typically more open than in

chaparral habitat, resulting in patches of bare ground, with native grasses or herbaceous species interspersed between shrubs.

A total of 1.53 acres of highly disturbed Diegan coastal sage scrub were mapped in small isolated patches in the project area. One area consists of a row of tall lemonadeberry shrubs along Jamboree Road, presumably planted as ornamentals to provide a screen between the road and the habitat. The area between Jamboree Road and the riparian scrub habitat occurs in a mosaic within the non-native grassland and other habitat types and consists of scattered individual sagebrush and coyote brush (*Baccharis pilularis*) shrubs with a dense understory of non-native forbs and grasses, such as mustards (*Brassica* spp. and *Hirschfeldia incana*), and brome grasses (*Bromus* spp.). Larger patches occur on the south-facing slopes below residential development on the north side. These areas are also highly disturbed, consisting of isolated sagebrush shrubs with patches of bare ground and slender leaf ice plant (*Mesembryanthemum nodiflorum*) and crystalline ice plant (*Mesembryanthemum crystallinum*), as well as a variety of non-native grasses and forbs, such as mustards, bromes, and sweet clovers (*Melilotus* spp). At the bottom of the slope, there is a small patch that consists of a monoculture of California sagebrush.

Three California vegetation alliances were mapped within the coastal sage scrub areas by Dudek (2015). Lemonadeberry Alliance was mapped along the western side of Jamboree Road; Coyote Brush Scrub-California Sagebrush Alliance was mapped in the low-lying areas between Jamboree Road and the riparian scrub habitat; and California Sagebrush Alliance was mapped along the south-facing slopes on the northern portion of the project area.

Non-Native Grassland

Non-native grasslands are characterized by a dense to sparse cover of annual non-native grasses, which can reach up to one meter in height. Often, native annual forbs are dispersed among the non-native grasses, and are sometimes more abundant that the grasses. Germination occurs in the late fall and flowering and seed-set occurs in the spring; plants dry out and die-off in the dry summer months. Non-native grasslands typically support wild oat (*Avena* spp.), brome (*Bromus* spp.), filaree (*Erodium* spp.), and other non-native annual species. This community usually occurs in areas of previous disturbance, sometimes associated with grazing and fallow agricultural fields, located on fine-textured, well-drained soils that are moist in winter but very dry during summer months.

A total of 2.83 acres of non-native grassland were mapped within the project area on the north-facing slopes along the southwestern border of the project area, in the low-lying areas between Jamboree Road and the riparian forest habitat, and in a few small areas on the south-facing slopes in the southern portion of the project area. The dominant species within the project area are black mustard (*Brassica nigra*), field mustard (*Brassica rapa*), shortpod mustard (*Hirschfeldia incana*), and wild radish.

Non-native grassland was mapped as Upland Mustards Semi-Natural Stands by Dudek (2015). These areas are characterized by weedy, upland mustard species.

Disturbed

Disturbed areas include lands that have been significantly disturbed as the result of human activity. These lands provide little to no habitat value for wildlife; the vegetation present in these areas is negligible. Onsite, disturbed areas consist of an unpaved access road, which runs for 800 feet north to south near the western region of the site, and connects with Jamboree Road on the southern end. A short, off-shoot road about 300 feet long leads to the center of the southern riparian bluff. On the northern border of the site, a small trail along the bottom of the slope. This trail is for public access and is approximately 900 feet long within the project area. A total of 0.40 acre of disturbed land cover was mapped. These areas were mapped as Developed – Disturbed or Barren Mapping Unit. This land cover type is not recognized by the CDFW Natural Communities List (CDFG 2010) because it is unvegetated.

Ornamental

Ornamental is a land cover type characterized by parks and ornamental plantings, consisting of introduced species of trees and other landscaping that is actively managed. This land cover type was also used by Dudek (2015). A total of 0.78 acre of ornamental land cover is present within the project area along the northern and southwestern borders; both areas are atop manufactured slopes, the result of adjacent landscaping to residential developments. The small area east of Jamboree Road is also composed almost entirely of ornamental trees, mostly Brazilian peppertrees. This is likely one of the seed sources for the peppertrees in the native riparian habitat downstream. Other species within this land cover type include Sydney golden wattle (*Acacia longifolia*), myoporum, eucalyptus (*Eucalyptus* spp.), ash, and pride of Madera.

Developed

Developed areas contain commercial or residential buildings, paved roads, and landscaped surfaces and generally do not support natural plant or wildlife species. Only one small area (0.04 acre) was mapped as developed. This area is east of Jamboree road in a portion of the project boundary that overlaps with the golf course.

3.5 CRAM Assessment Results

Figure 6 shows the location of the AA within the project area. The overall CRAM score for the AA within the project area was fairly low (42). In addition, each individual attribute scored fairly low as well, ranging from 38 for the Buffer and Landscape Context and Physical Structure, to 50 for the Hydrology attribute (**Table 2**). The fourth attribute, Biotic Structure, scored 44. Some of these scores are reflective of the highly urbanized environment of the project area, which affects the volume and velocity of dry-season and wet-season flows, and the high levels of disturbance, which affect the physical and biological structure of Big Canyon Creek. Many of these environmental conditions, such as dense development, cannot be changed; however, the project proposes a number of components, including habitat restoration and water quality improvement, that are expected to greatly improve the function and habitat value of the stream channel, riparian habitat, and surrounding upland habitat. It is recommended that a CRAM assessment be conducted after the project is complete, especially after the restoration has become self-sustaining, to measure the functional improvement of the habitat within the project area. The full CRAM report is included in Appendix B.

TABLE 2
SUMMARY OF CRAM SCORES

Attributes and Metrics	Numeric Values
Buffer and Landscape Context	**38**
Stream Corridor Continuity	3
Buffer Submetrics	
% of AA with Buffer	12
Average Buffer Width	3
Buffer Condition	6
Hydrology	**50**
Water Source	6
Channel Stability	6
Hydrologic Connectivity	6
Physical Structure	**38**
Structural Patch Richness	3
Topographic Complexity	6
Biotic Structure	**44**
Plant Community Submetrics	4
No. of Plant Layers	6
No. of Co-dominants	3
Percent Invasion	3
Horizontal Interspersion	3
Vertical Biotic Structure	9
Overall AA Score	**42**

SOURCE: City of Newport Beach, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 6

California Rapid Assessment Method (CRAM) Assessment Area

3.6 Jurisdictional Resources

Table 3 and **Figure 7** quantify the area regulated by the CCC, Corps, RWQCB, and California Department of Fish and Game within the project area. A more detailed description of the plant communities and their dominant species can be found in the ESA Jurisdictional Delineation Report (ESA 2015).

TABLE 3
JURISDICTIONAL AREAS WITHIN THE PROJECT SITE

Habitat Types	Jurisdictional Acres
Corps/RWQCB Wetlands	0.65
Corps/RWQCB Non-Wetlands	4.00
CDFW Riparian	4.82
CCC Wetland	4.95

SOURCE: ESA, 2015

California Coastal Commission Jurisdiction

Wetlands defined under the Coastal Act (Section 30121 of California Coastal Act as of January 1, 2005) were delineated based upon the USFWS definition (Cowardin et al. 1979) of wetlands. Big Canyon contains 4.95 acres of jurisdictional wetlands, including riparian and marsh habitat, as depicted in **Figure 8**.

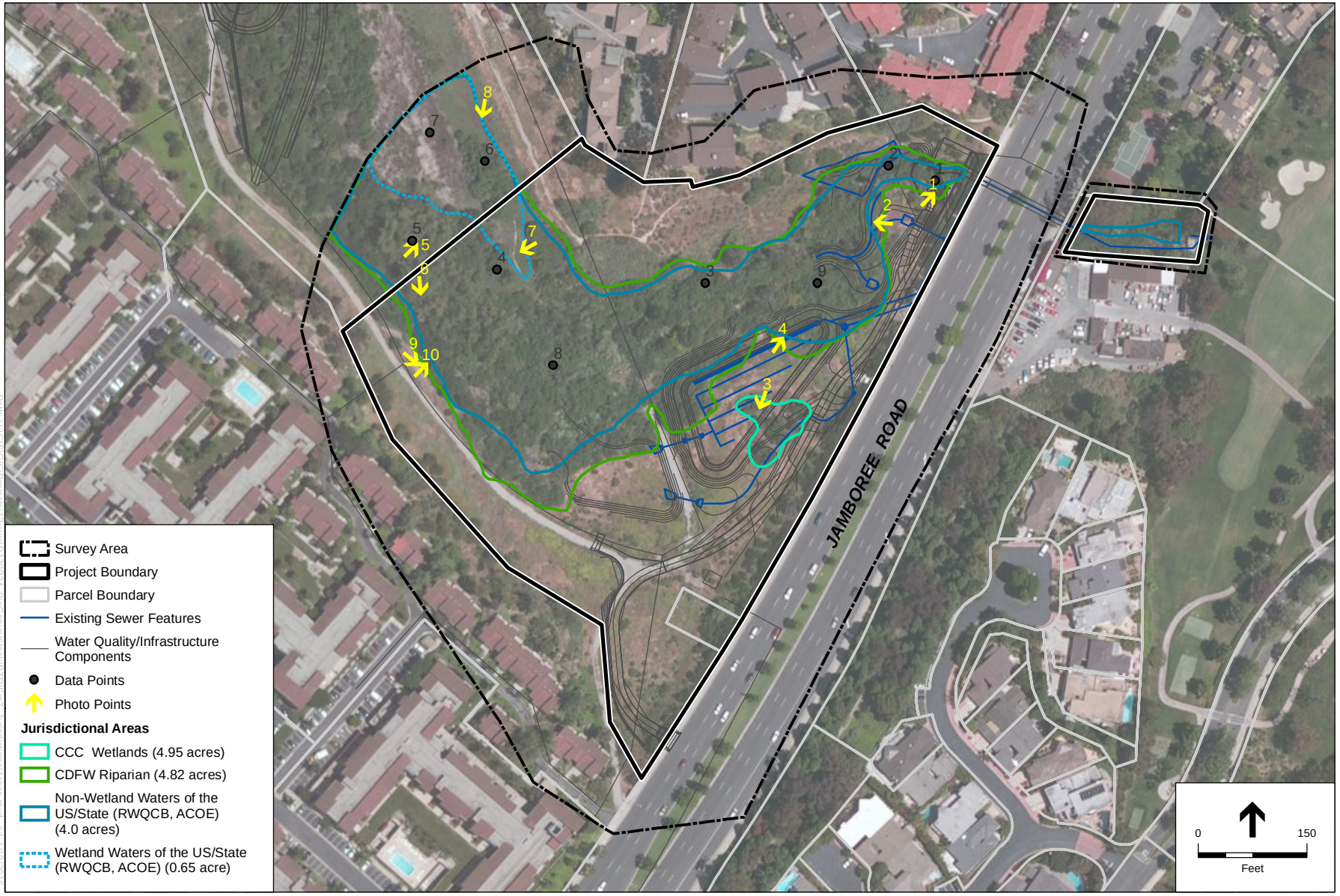
U.S. Army Corps of Engineers/Regional Water Quality Control Board Jurisdiction

The Big Canyon project area contains both Wetland Waters and Non-Wetland Waters of the United States/State of California, subject to jurisdiction by the Corps and RWQCB, pursuant to Section 404 and 401 of the federal Clean Water Act (CWA), respectively. Big Canyon flows directly to the Pacific Ocean, which is a Traditionally Navigable Water (TNW).

Based upon the ESA jurisdictional mapping within the defined limits of the Corps and RWQCB jurisdiction, the project area contains 4.65 acres of jurisdictional Waters of the United States/State (Table 3 and Figure 8), which includes 0.65 acre of wetlands. Information about the jurisdictional determinations and quantifications are detailed in the Jurisdictional Delineation Report (ESA 2015, the Corps' Preliminary Jurisdictional Determination form and associated site photos.

California Department of Fish and Game Jurisdiction

The Big Canyon project area contains streambed habitat classified as riparian that is subject to jurisdiction under Section 1600 of the California Fish and Game Code (see Table 3 and Figure 8). Approximately 4.82 acres of riparian and wetland habitat area exist within the project area.



SOURCE: City of Newport Beach, ESA, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 7
Jurisdictional Areas

3.7 Flora

A total of 90 plant species were observed within the project area during the 2015 rare plant surveys and other site visits. Of these species, 33 were (37%) native and 57 species (63%) were non-native. Although the project area includes a large amount of highly disturbed areas that are invaded with non-native and invasive species, some moderate quality riparian habitat is also present, which can provide habitat for a variety of wildlife species, such as riparian birds and raptoras. A full plant species compendium is included in **Appendix F**. Special-status plant species are discussed in Section 3.11.

3.8 Wildlife Species

Although much of the project area is composed of disturbed riparian forest, non-native grassland, and low-quality coastal sage scrub, a variety of wildlife species were nevertheless observed within the project area. Most of the species observed are highly adapted to urban environments, such as mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), house finch (*Haemorhous mexicanus*), house sparrow (*Passer domesticus*), Cooper's hawk (*Accipiter cooperi*), and Anna's hummingbird (*Calypte anna*). It is likely that the area also supports urban-adapted mammals, such as raccoon (*Procyon lotor*), opossum (*Didelphis* sp.), and coyote (*Canis latrans*).Other species observed are adapted to riparian habitats, including common yellowthroat (*Geothlypis trichas*), pacific-slope flycatcher (*Empidonax difficilis*), and yellow warbler (*Setophaga petechia*). A full plant species compendium is included in **Appendix F**. Special-status plant species are discussed in Section 3.11.

3.9 Special-Status Biological Resources

3.9.1 Special-Status Vegetation Communities

Sensitive natural communities are designated as such by various resource agencies, such as the CDFW, or in local policies and regulations. These communities are generally considered to have important functions or values for wildlife and/or are recognized as declining in extent or distribution, and are considered threatened enough to warrant some level of protection. Sensitive natural communities include those that are identified in the CDFW *List of California Natural Communities* (CDFW, 2010). The CDFW state rank denotes the rarity and endangerment of a vegetation type within the state as described on the next page. In addition, riparian habitats and coastal sage scrub are considered sensitive habitats and are protected by the CCC through the Local Coastal Plan (LCP).

State Rank

S1 = less than 1,000 individuals OR less than 2,000 acres

S2 = 2,000-10,000 acres

S3 = 10,000-50,000 acres

S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.

S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

Threat Rank

.1 = very threatened

.2 = threatened

.3 = no current threats known

Based on the state and threat ranks, three sensitive communities occur within the project area: southern riparian forest, alkali meadow, and coastal sage scrub.

3.9.2 Potentially Occurring Special-Status Species

"Special-status" species are plants and animals that are listed under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA), as well as species protected under other regulations and species that are considered sufficiently rare or sensitive by the scientific community to be considered rare. Special-status species are categorized as follows:

- Species listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under CESA or FESA.
- Species protected under the federal Bald and Golden Eagle Protection Act.
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines § 15380).
- Plants listed as rare under the California Native Plant Protection Act (NPPA; Fish and Game Code § 1900 et seq.).
- Plants considered by the CNPS to be rare, threatened, or endangered in California.
- Species covered under an adopted Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP).
- CDFW Special Animals and wildlife species of special concern.
- Wildlife fully protected in California (Fish and Game Code § 3511, 4700, and 5050).
- Avian species protected by the federal Migratory Bird Treaty Act (MBTA).

Based on the literature/database review and field reconnaissance, 133 special-status species were evaluated for their potential to occur in the project site or immediate vicinity, based on the following definitions:

Unlikely: The project site or immediate vicinity do not support suitable habitat for a particular species, and therefore the species is unlikely to occur within the area.

Low Potential: The project site or immediate vicinity only provide low-quality or very limited habitat for a particular species. In addition, the known range for a particular species may be outside of the project site or immediate vicinity.

Moderate Potential: The project site or immediate vicinity provide suitable habitat for a particular species. However, the habitat or substrate may be limited or the desired vegetation assemblage or density is less than ideal.

High Potential: The project site or immediate vicinity provides high-quality suitable habitat conditions for a particular species. Additionally, known populations of the species may occur in the project site or immediate vicinity.

Present: The species was observed within the project site during relevant biological surveys or other project visits.

A total of 69 special-status plant species were assessed for their potential to occur within the study area. Eight species have a moderate potential to occur and three have a high potential to occur. The remaining 59 species were assessed as having either an unlikely or low potential to occur. A total of 64 special-status wildlife species were assessed for their potential to occur in the area; 12 species have a moderate potential to occur, 6 species have a high potential to occur, and 2 species were observed during various biological surveys. The remaining 44 wildlife species were determined to have an unlikely to low potential to occur.

Tables 4 and **5** include the species that were considered to have a moderate to high potential to occur, as well as those that were observed onsite during the 2015 surveys. **Appendix G** provides a complete list of the 133 species that were evaluated, and includes the sensitivity status, habitat preferences, potential to occur onsite, and justification. Sensitive species occurrences from the CDNNB database within 2 km of the site are shown in Figure 8 (note that the assessment of potentially occurring species included documented occurrences within the Newport Beach topographic quadrangle and all surrounding quadrangle maps; however, the map in Figure 8 is zoomed in to focus on coastal habitats).

TABLE 4
SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR ONSITE

Species	Status[1] Federal/State/ County	Habitat Requirements	Potential to Occur
Coulter's saltbush (*Atriplex coulteri*)	--/1B.2/Not covered	Found on alkaline or clay substrate within coastal bluff scrub, coastal dune, coastal scrub and valley and foothill grassland habitats. Blooming period is March–October. Occurs at elevations from 3–460 m.	**High.** Suitable habitat is present onsite or within the immediate vicinity.
South Coast saltscale (*Atriplex pacifica*)	--/1B.2/Not covered	Found within chenopod scrub, coastal bluff and coastal scrub habitats. Blooming period is March–October. Occurs at elevations up to 140 m.	**High.** Suitable habitat is present onsite or within the immediate vicinity.
Parish's brittescale (*Atriplex parishii*)	--/1B.1/Not covered	Found in alkali meadows, vernal pools, playas and chenopod scrub. Associated with alkaline soils. Blooming period is June–October. Occurs at 25–1,900 m elevation.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
San Diego sagewort (*Artemisia palmeri*)	--/4.2/Not covered	Perennial deciduous herb found in chaparral, coastal scrub, riparian forest, riparian scrub, and riparian woodland; sandy, mesic soils at 15–915 m elevation. Blooming period is February–September.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Brewer's calandrinia (*Calandrinia breweri*)	--/4.2/Not covered	Annual herb occurs in chaparral and coastal scrub; often found in disturbed or burned areas in sandy or loamy soils. Blooming period is March–June and occurs at elevations from 10–1,220 m.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Southern tarplant (*Centromadia parryi* ssp. *australis*)	--/1B.1/Not covered	Found in the margins of marshes and swamps, vernally mesic valley and foothill grasslands, and vernal pool habitats. This species is commonly found in disturbed areas, in relatively close proximity to a seasonal or perennial water source. Blooming period is May–November; occurs at elevations up to 425 m.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Small spikerush (*Eleocharis parvula*)	--/4.3/Not covered	Perennial herb found in marshes and swamps at 1–3,020 m. Blooming period is April–September.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	--/4.2/Not covered	Perennial rhizomatous herb found in coastal dunes (mesic), meadows and seeps (alkaline seeps), and marshes and swamps (coastal salt). Occurs from 3–900 m elevation; blooming period is March–June.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity. This species has been observed downstream of the project.
Oscillated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)	--/4.2/Not covered	Occurs in openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland at 30–1,800 m in elevation. Blooming period is March–August.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.

Species	Status[1] Federal/State/ County	Habitat Requirements	Potential to Occur
California box-thorn (*Lycium californicum*)	--/4.2/Not covered	Perennial shrub found in coastal bluff scrub and coastal scrub at 5–150 m elevation. Blooming period is December–August.	**High.** Suitable habitat is present onsite or within the immediate vicinity. This species has been observed in the immediate vicinity of the project.
White rabbit-tobacco (*Pseudognaphalium leucocephalum*)	--/2B.2/Not covered	Found within riparian woodland, coastal scrub and chaparral habitats. Blooming period is August–November and occurs at elevations up to 1400 m.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.

[1] Description of status codes:
FE = Listed as endangered under the FESA
FT = Listed as threatened under the FESA
ST= Listed as threatened under the CESA
SE = Listed as endangered under the CESA
CRPR = California Rare Plant Rank (CNPS, 2014)
CRPR 1B.1 = Seriously threatened in California and elsewhere
CRPR 1B.2 = Fairly threatened in California and elsewhere
CRPR 1B.3 = Not very threatened in California and elsewhere
CRPR 2B.2 = Fairly threatened in California, but more common elsewhere
CRPR 4.2 = Fairly threatened in California, placed on a watch-list due to limited distribution throughout its range
CRPR 4.3 = Plant of limited distribution, not very threatened in California
Covered = Covered under the County of Orange NCCP/HCP
Not covered = Not covered under the County of Orange NCCP/HCP

TABLE 5
SPECIAL-STATUS WILDLIFE WITH THE POTENTIAL TO OCCUR ONSITE

Species	Status[1] Federal/State	Habitat Requirements	Potential to Occur
Amphibians			
Northern leopard frog (*Lithobates pipiens*)	--/SC/Not covered	Near permanent or semi-permanent water in a variety of habitats. Highly aquatic species. Shoreline cover, submerged and emergent aquatic vegetation are important habitat characteristics.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Reptiles			
Two-striped garter snake (*Thamnophis hammondii*)	--/SC/Not covered	Habitat includes marsh and swamp, riparian scrub, riparian woodland, and wetland. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	**Moderate.** Suitable but low-quality habitat is present onsite or within the immediate vicinity.
Western pond turtle (*Emys marmorata*)	--/SC/Not covered	Known to occur in slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter.	**Moderate.** Suitable but low-quality habitat is present onsite or within the immediate vicinity.
Birds			
Cooper's hawk (*Accipiter cooperii*)	--/WL/Not covered	Found in riparian areas, and open woodlands, chiefly of open, interrupted or marginal type. Nests in riparian growths of deciduous trees and live oak woodlands.	**Present.** This species was observed onsite during 2015 biological surveys.
Sharp-shinned hawk (*Accipiter striatus*)	--/WL/Not covered	Ponderosa pine, black oak, riparian deciduous, mixed conifer & Jeffrey pine habitats. Prefers riparian areas. This species does not nest in coastal California.	**High.** Suitable foraging habitat is present onsite or within the immediate vicinity. Observed within project vicinity during 2003 surveys.
Great blue heron (Ardea herodias)	--/--/Not covered	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity. However, nesting habitat is very limited; not expected to nest in project vicinity.

Species	Status[1] Federal/State	Habitat Requirements	Potential to Occur
Swainson's hawk (*Buteo swainsoni*)	BCC/ST/Not covered	Breeds in desert, shrub steppe, agricultural, and grassland habitats. Nests in a variety of tree species in existing riparian forests, remnant riparian trees, shade trees at residences and alongside roads, planted windbreaks, and solitary upland oaks. Typically does not nest in large continuous patches of woodland other than along edges next to open habitats. This species does not nest in coastal California.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Northern harrier (*Circus cyaneus*)	--/SC/Not covered	Coastal salt and fresh-water marsh. Nests and forages in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity. Observed within project vicinity during 2003 surveys. However, nesting habitat is very limited and low quality; not expected to nest in project vicinity.
White-tailed kite (*Elanus leucurus*)	--/FP/Not covered	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity. Observed in vicinity of project during 2003 and 2015 (Dudek) surveys.
Merlin (*Falco columbarius*)	--/WL/Not covered	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees or windbreaks are required for roosting in open country.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity. Observed within project vicinity during 2003 surveys. However, nesting habitat is very limited; not expected to nest in project vicinity.
Yellow-breasted chat (*Icteria virens*)	--/SC/Not covered	Known to occur within riparian forest, scrub and woodland habitats.	**Present.** Observed within project area by Dudek (2015).
Least bittern (*Ixobrychus exilis*)	BCC/SC/Not covered	Colonial nester in marshlands and borders of ponds and reservoirs which provide ample cover. Nests usually placed low in tules, over water.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Loggerhead shrike (*Lanius ludovicianus*)	BCC/SC/Not covered	Broken woodlands, savannah, pinyon-juniper, Joshua tree, & riparian woodlands, and desert oases, scrub & washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.

Species	Status[1] Federal/State	Habitat Requirements	Potential to Occur
Osprey (*Pandio haliaetus*)	--/WL/Not covered	Ocean shore, bays, fresh-water lakes, and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	**High.** Suitable habitat is present onsite or within the immediate vicinity. Observed in vicinity of Project during 2003 and 2015 (Dudek) surveys. Nesting could occur in the area.
Yellow warbler (*Setophaga petechia*)	BCC/SC/Not covered	Riparian plant associations in close proximity to water. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	**Present.** This species was observed onsite during 2015 (ESA and Dudek) biological surveys.
Least Bell's vireo (*Vireo bellii pusillus*)	FE/SE/Not covered	Known to occur in riparian forest, scrub, and woodland habitats. Nests primarily in willow, baccharis, or mesquite habitats.	**High.** Suitable habitat is present onsite or within the immediate vicinity. Not observed in 2003 or 2015 surveys.
Mammals			
Southern California saltmarsh shrew (*Sorex ornatus salicornicus*)	--/SC/Not covered	Known to occur in salt marsh habitat within Southern California. Requires dense vegetation and woody debris for cover.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Pallid bat (*Antrozous pallidus*)	--/SC/Not covered	Known to occur in a wide variety of habitats including deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting; particularly associated with buildings and bridges.	**High.** Suitable habitat is present onsite or within the immediate vicinity.
Hoary bat (*Lasiurus cinerus*)	--/--/Not covered	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	**High.** Suitable habitat is present onsite or within the immediate vicinity.
Yuma myotis (*Myotis yumanensis*)	--/--/Not covered	This species is typically associated with a nearby water source. Maternity colonies are found in buildings, under bridges, and in mines and caves.	**High.** Suitable habitat is present onsite or within the immediate vicinity.

[1] Description of status codes:
FE = Listed as endangered under the FESA
DE = Delisted under the FESA
FT = Listed as threatened under the FESA
BCC = Bird of Conservation Concern
WL= Watch listed
SE = Listed as endangered under the CESA
SC = Species of Special Concern
FP = Listed as fully protected under CDFW code
Covered = Covered under the County of Orange NCCP/HCP
Not covered = Not covered under the County of Orange NCCP/HCP

Project Boundary

Mammals

1. big free-tailed bat
2. hoary bat
3. Pacific pocket mouse
4. Southern California saltmarsh shrew
5. western mastiff bat

Birds

1. bank swallow
2. Belding's savannah sparrow
3. burrowing owl
4. California black rail
5. California horned lark
6. California least tern
7. coastal cactus wren
8. coastal California gnatcatcher
9. grasshopper sparrow
10. least Bell's vireo
11. light-footed clapper rail
12. osprey
13. white-tailed kite
14. yellow-breasted chat

Reptiles

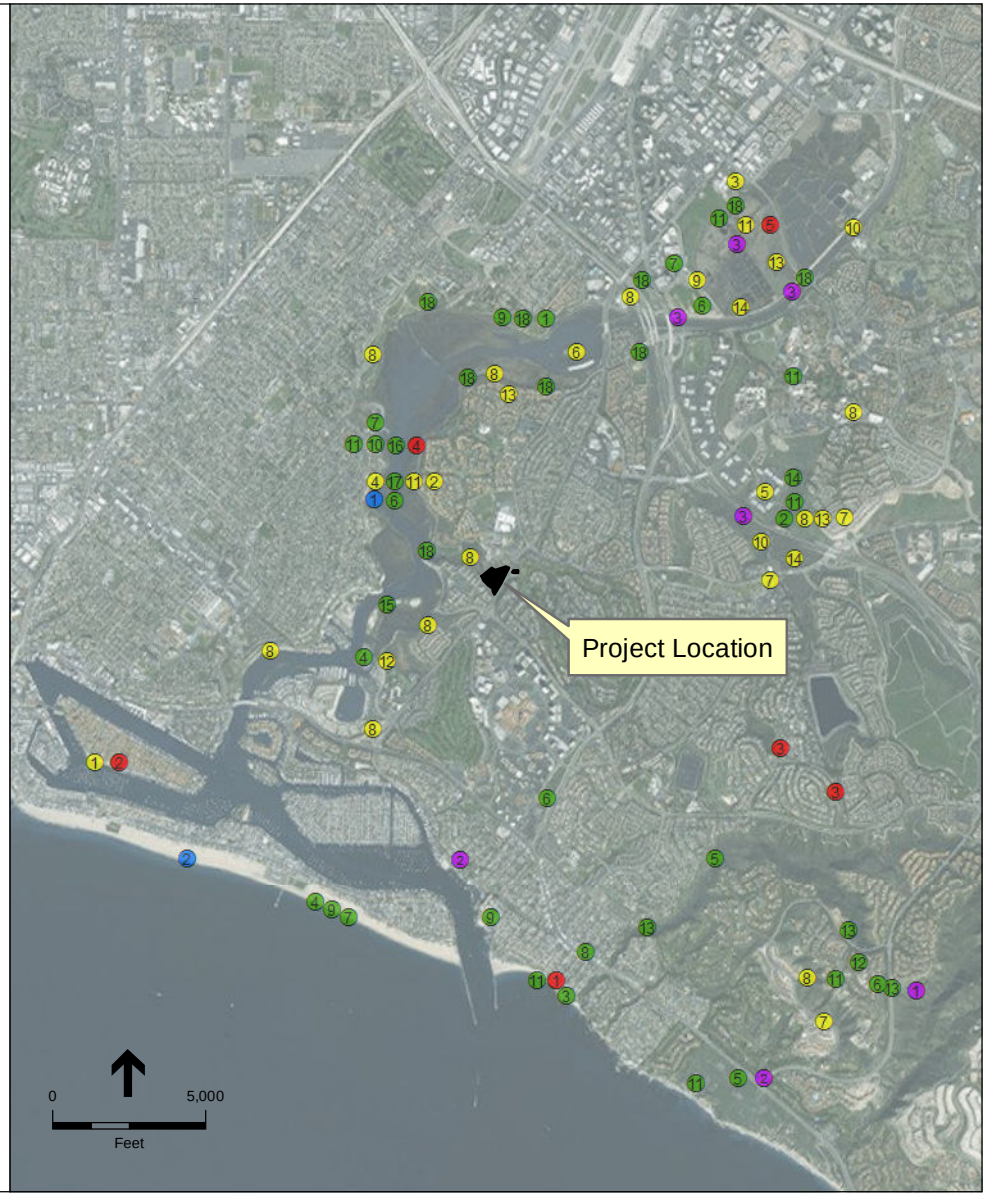
1. coast horned lizard
2. orangethroat whiptail
3. western pond turtle

Plants

1. aphanisma
2. chaparral ragwort
3. cliff spurge
4. coast woolly-heads
5. Coulter's goldfields
6. Coulter's saltbush
7. Davidson's saltscale
8. decumbent goldenbush
9. estuary seablite
10. Los Angeles sunflower
11. many-stemmed dudleya
12. mesa horkelia
13. Nuttall's scrub oak
14. Robinson's pepper-grass
15. salt marsh bird's-beak
16. San Bernardino aster
17. south coast saltscale
18. southern tarplant

Invertebrates

1. California brackishwater snail
2. sandy beach tiger beetle



SOURCE:City of Newport Beach, CDFW, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 8
CNDDB Occurrences

3.9.3 Special-Status Species Observed Onsite

Special-Status Plant Species

No special-status plants were observed in the project area during surveys conducted by ESA (2015), Dudek (2015), or CCI (2003). This is not surprising considering the highly disturbed nature of the site.

Special-Status Wildlife Species

Cooper's hawk and yellow warbler were detected in the riparian habitat within the project area by ESA during the 2015 biological surveys. Yellow warbler and yellow-breasted chat were also observed in this area by Dudek during their 2015 surveys (Figure 5). Cooper's hawk is on CDFW's Watch List and yellow warbler is listed as both a Bird of Conservation Concern by USFWS and a Species of Special Concern by CDFW.

3.10 Critical Habitat

Under the FESA, to the extent feasible, the USFWS is required to designate critical habitat for endangered and threatened species. Critical habitat is defined as areas of land, water, and air space containing the physical and biological features essential for the survival and recovery of endangered and threatened species. This federally designated habitat includes sites for breeding and rearing, movement or migration, feeding, roosting, cover, and shelter. These habitat areas require special management and protection of existing resources, including water quality and quantity, host animals and plants, food availability, pollinators, sunlight, and specific soil types. Critical habitat designation includes all suitable habitat, occupied or not, essential to the survival and recovery of the species. The project area does not occur within any USFWS-designated critical habitat areas (USFWS 2015).

3.11 Wildlife Movement

Wildlife movement corridors or habitat linkages are linear habitat features that connect two large blocks of habitat that might otherwise be disconnected from one another. Effective wildlife movement is essential for dispersal, genetic exchange, migration, foraging, and breeding. Functional wildlife movement corridors are especially important in highly fragmented habitat, such as developed or agricultural areas. Wildlife movement corridors are generally used by terrestrial animals, although they may also be important for bird dispersal and an avenue for genetic exchange in plants. On a regional scale, movement corridors can include bird flyways,

such as wetland areas that provide essential habitat to be used as a stopover for several days during migration.

The project site lies within a densely urbanized area of Orange County. The project area may provide limited movement opportunities on a localized scale between open space lands to the east of Jamboree Road (golf course, parks, and natural open space), and natural open space lands to the west (i.e., Upper Newport Bay). This area is fairly constrained and does not function as a regional wildlife movement corridor or habitat linkage. However, the project site is located near the Upper Newport Bay, which is a recognized stopover location for migratory birds travelling along the Pacific Flyway, a significant avian migration route. Therefore, the project site could provide habitat for migrating birds.

4.0 REGULATORY FRAMEWORK

The following provides a general description of the applicable regulatory requirements for the project, including federal, state, and local policies and guidelines.

4.1 Federal

Endangered Species Act (USC, Title 16, § 1531 through 1543)

The FESA and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. In addition, the FESA defines species as threatened or endangered and provides regulatory protection for listed species. The FESA also provides a program for the conservation and recovery of threatened and endangered species as well as the conservation of designated critical habitat that USFWS determines is required for the survival and recovery of these listed species.

Section 7 of the FESA requires federal agencies, in consultation with and assistance from the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The USFWS and National Marine Fisheries Service (NMFS) share responsibilities for administering the FESA. Regulations governing interagency cooperation under Section 7 are found in CCR Title 50, Part 402. The opinion issued at the conclusion of consultation will include a statement authorizing "take" (to harass, harm, pursue, hunt, wound, kill, etc.) that may occur incidental to an otherwise legal activity.

Section 9 lists those actions that are prohibited under the FESA. Although take of a listed species is prohibited, it is allowed when it is incidental to an otherwise legal activity. Section 9 prohibits take of listed species of fish, wildlife, and plants without special exemption. The definition of "harm" includes significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns related to breeding, feeding, or shelter. "Harass" is defined as actions that create the likelihood of injury to listed species by disrupting normal behavioral patterns related to breeding, feeding, and shelter significantly.

Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an incidental take permit. Application procedures are found at 50 CFR 13 and 17 for species under the jurisdiction of USFWS and 50 CFR 217, 220, and 222 for species under the jurisdiction of NMFS.

Migratory Bird Treaty Act (16 USC 703 through 711)

The MBTA is the domestic law that affirms, or implements, a commitment by the U.S. to four international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. The MBTA makes it unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, or kill migratory birds. The law also applies to the removal of nests occupied by migratory birds during the breeding season. The MBTA makes it unlawful to take, pursue, molest, or disturb these species, their nests, or their eggs anywhere in the United States.

Federal Clean Water Act (33 USC 1251 through 1376)

The Corps regulates "discharge of dredged or fill material" into "waters" of the United States, which includes tidal waters, interstate waters, and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" (33 C.F.R. 328.3(a)), pursuant to provisions of Section 404 of the CWA.

The Corps takes jurisdiction within rivers and streams to the "ordinary high water mark (OHWM)," determined by erosion, the deposition of vegetation or debris, and changes in vegetation or soil characteristics. However, if there is no federal nexus to navigable waters, these waters are considered "isolated" and thus not subject to their jurisdiction.

The Corps and the Environmental Protection Agency (EPA) have issued a set of guidance documents detailing the process for determining CWA jurisdiction over waters of the United States following the Rapanos decision. The EPA and Corps issued a summary memorandum of the guidance for implementing the Supreme Court's decision in Rapanos that addresses the jurisdiction over waters of the United States under the CWA. The complete set of guidance documents, summarized as key points below, were used to collect relevant data for evaluation by the EPA and Corps to determine CWA Jurisdiction over the project and to complete the "significant nexus test" as detailed in the guidelines.

The significant nexus test includes consideration of hydrologic and ecologic factors. For circumstances such as those described in point (B) on the next page, the significant nexus test would take into account physical indicators of flow (evidence of an OHWM), if a hydrologic connection to a TNW exists, and if the aquatic functions of the water body have a significant effect (more than speculative or insubstantial) on the chemical, physical, and biological integrity of a TNW. The Corps and EPA will apply the significant nexus standard to assess the flow characteristics and functions of the tributary drainage to determine if it significantly affects the chemical, physical and biological integrity of the downstream TNW.

Rapanos Key Points Summary

(A) The Corps and EPA will assert jurisdiction over the following waters:

- TNWs.
- Wetlands adjacent to TNW.
- Non-navigable tributaries of TNWs that are relatively permanent.
- Where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months).
- Wetlands that directly abut such tributaries.

(B) The Corps and EPA will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a TNW:

- Non-navigable tributaries that are not relatively permanent.
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent.
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

(C) The Corps and EPA generally will not assert jurisdiction over the following features:

- Swales or erosion features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow).
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

4.2 State

California Endangered Species Act (California Fish and Game Code § 2050 et seq.)

The CESA establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under the CESA. For projects that would affect a listed species under both the CESA and the FESA, compliance with the FESA would satisfy the CESA if CDFW determines that the federal incidental take authorization is "consistent" with the CESA under California Fish and Game Code Section 2080.1. For projects that would result in take of a

species listed under the CESA only, the project operator would have to apply for a take permit under Section 2081(b).

California State Fish and Game Code § 1600 et seq.

Under these sections of the California Fish and Game Code, the project operator is required to notify CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Pursuant to the code, a "stream" is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that supports or has supported riparian vegetation is a stream and is subject to CDFW jurisdiction. Altered or artificial watercourses valuable to fish and wildlife are subject to CDFW jurisdiction. CDFW also has jurisdiction over dry washes that carry water during storm events.

Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement, which becomes part of the plans, specifications, and bid documents for the project.

California State Fish and Game Code §§ 2080 and 2081

Section 2080 of the California Fish and Game Code states that "No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act." Pursuant to Section 2081 of the code, CDFW may authorize individuals or public agencies to import, export, take, or possess state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or Memoranda of Understanding if the take is incidental to an otherwise lawful activity, impacts of the authorized take are minimized and fully mitigated, the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and the project operator ensures adequate funding to implement the measures required by CDFW, which makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

California State Fish and Game Code §§ 3503 and 3503.5

Under these sections of the California Fish and Game Code, the project operator is not allowed to conduct activities that would result in the taking, possessing, or destroying of any birds of prey; the taking or possessing of any migratory nongame bird as designated in the MBTA; the taking, possessing, or needlessly destroying of the nest or eggs of any raptors or nongame birds protected

by the MBTA; or the taking of any nongame bird pursuant to California Fish and Game Code Section 3800.

California Environmental Quality Act Guidelines, § 15380

Although threatened and endangered species are protected by specific federal and state statutes, State CEQA Guidelines § 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in CEQA primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not been listed by either USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agencies have an opportunity to designate the species as protected, if warranted. CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities do not at present have legal protection of any kind, CEQA calls for an assessment of whether any such resources would be affected, and requires findings of significance if there would be substantial losses. Natural communities listed by CNDDB as sensitive are considered by CDFW to be significant resources and fall under the State CEQA Guidelines for addressing impacts. Local planning documents such as General Plans often identify these resources as well.

Native Plant Protection Act (California Fish and Game Code §§ 1900 through 1913)

California's NPPA requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the NPPA prohibit the taking of listed plants from the wild and require notification of CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that would otherwise be destroyed. The project operator is required to conduct botanical inventories and consult with CDFW during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

California Coastal Commission

The CCC regulates activities found within wetlands in the coastal zone. The Coastal Act Section 30121 (California Coastal Act as of January 1, 2005) 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." Subsequent Statewide Interpretive guidelines has refined the definition based upon the USFWS definition (Cowardin et al. 1979), which is as follows: "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification wetlands

must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year." This definition is used as a guide for defining wetlands. The CCC can also rely on other information, advice, and judgment of other experts in determining jurisdiction.

State and Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB) and the RWQCB (together "Boards") are the principal State agencies with primary responsibility for the coordination and control of water quality. The Boards regulate activities pursuant to Section 401(a)(1) of the federal CWA as well as the Porter Cologne Water Quality Control Act (Porter-Cologne) (Water Code Section 13260). Section 401 of the CWA specifies that certification from the State is required for any applicant requesting a federal license or permit to conduct any activity including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable water at the point where the discharge originates or will originate. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

In the Porter-Cologne, the Legislature declared that the "State must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the State from degradation..." (California Water Code Section 13000). Porter-Cologne grants the Boards the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the State. It is important to note that enforcement of the State's water quality requirements is not solely the purview of the Boards and their staff. Other agencies [e.g., CDFW] have the ability to enforce certain water quality provisions in state law.

4.3 Local

City of Newport General Plan

The City of Newport General Plan, in part, includes provisions to control environmental impacts and enhance natural resources within the city. Specific goals include protecting water resources, maintaining water quality standards, and restoring and enhancing wetlands and wildlife habitats. Surveys and analyses with the delineation of all wetlands areas are required when the initial site survey indicates the presence for potential wetland indicators. Undeveloped areas supporting natural habitats that may be capable of supporting sensitive biological resources within the city are referred to as Environmental Study Areas. The project site is located within the Big Canyon Environmental Study Area. Environmental Study Areas, or portions of them, within the Coastal Zone that are shown, after more detailed study, to contain sensitive or rare species are referred to

as Environmentally Sensitive Habitat Areas (ESHAs), as defined by the California Coastal Act. ESHAs are areas in which "plant or animal life or their habitats are either rare or are especially valuable because of their special nature or role in an ecosystem that could easily be disturbed or degraded by human activities and developments." The Coastal Act requires that ESHAs be protected against any significant disruption of habitat values. Only uses dependent on those resources are allowed within ESHAs and adjacent development must be sited and designed to prevent impacts that would significantly degrade the ESHA and must be compatible with the continuance of the ESHA.

In addition, the General Plan calls out eelgrass (*Zostera marina*) as a species in which impacts should be avoided. Special-status species identified by CNDDB and CNPS, such as south western willow flycatcher and coastal California gnatcatcher, are also included in the plan, but no additional locally important species are suggested.

Orange County Natural Community Conservation Plan/Habitat Conservation Plan

The preparation of a comprehensive natural resources management conservation plan for Central Coastal Orange County was completed in 1996. The Orange County Central-Coastal NCCP/HCP and the associated Implementation Agreement covers thirteen cities. The purpose of the NCCP/HCP is to create a multi-species multi-habitat reserve system and implementation of a long-term management program that will protect primarily coastal sage scrub and the species that use this habitat. At the same time that it protects this habitat and species, the NCCP/HCP is also intended to allow for economical use of the lands that meet the people's needs. In July of 1996, the City became a signatory agency in the NCCP/HCP. As a signatory agency, the City is responsible for enforcing mitigation measures and other policies identified in the NCCP/HCP Implementation Agreement for properties located within the city limit that are part of the NCCP Subregional Plan. Currently, Big Canyon Nature Park, including the project site, is not included in the Orange County NCCP/HCP Plan; however, the City may petition to include this area in the future.

This page intentionally left blank

5.0 POTENTIAL IMPACTS

This section describes the potential impacts of the project on biological resources that may occur as a result of project implementation. Impacts to biological resources may include temporary, permanent, direct, and/or indirect affects, as defined below:

- **Direct impacts** are those that affect the biological resources such that those resources are not expected to recover to their pre-impacted state (e.g., permanent development of a site through grading and building of structures). Direct impacts may be considered temporary or permanent (e.g., the installation of a pipeline is considered a direct and temporary impact, whereas the construction of a building is considered a direct and permanent impact).
- **Indirect impacts** occur secondary to the project's direct impacts, such as changes in general plant composition due to loss of substrate or other factors that may affect resources, such as noise, dust, lighting, etc. Indirect impacts may be considered temporary or permanent, depending upon the situation. For example, the dust or noise levels associated with the construction of a new building is considered an indirect and temporary impact, whereas the support functions of a structure, such as the parking lot, would have indirect and permanent impacts such as lighting and stormwater runoff.
- **Permanent impacts** are impacts that result from a permanent loss of biological resources due to the persisting conversion of existing biological resources to another condition, such as paved road or permanent structure.
- **Temporary impacts** are affects that occur during a finite period of time, such as temporary nighttime construction noise, or that can be restored to original conditions, such as restoration of habitat within a construction staging area.

A project is generally considered to have a significant effect if it proposes or results in any of the conditions described in the significance thresholds discussed below (in italics), absent specific evidence to the contrary. Conversely, if a project does not propose or result in any of the following conditions, it would generally not be considered to have a significant effect on biological resources, absent specific evidence of such an effect. These significance thresholds are based on Appendix G of the State CEQA Guidelines.

5.1 Special-Status Species

5.1.1 Significance Thresholds

The project would have an adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans,

policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

5.1.2 Analysis of Project Effects

No plant or wildlife species listed as state or federally threatened, endangered, or candidate species was observed within the project area, and no USFWS-designated Critical Habitat occurs onsite. ***Therefore, the project would not affect state or federally listed species or USFWS Critical Habitat.***

No species covered by the Orange County Central-Coastal NCCP/HCP were identified in the project area; ***therefore, the project would not affect species covered by the Orange County Central-Coastal NCCP/HCP.***

Three California Species of Special Concern were observed within the riparian forest habitat onsite, including yellow warbler, yellow-breasted chat, and Cooper's hawk. These species, as well as other bird species nesting in the riparian or adjacent upland habitat or in the ornamental trees just outside of the project boundary could be negatively affected by the project through temporary loss of habitat during invasive species removal, floodplain grading, replanting, and construction of water quality, infrastructure and recreational facilities. Indirect impacts from construction (e.g., noise and increased activity), could also affect nesting bird species during the breeding season by disrupting breeding behavior, resulting in nest abandonment and loss of productivity. ***Impacts to special-status species would be less than significant with implementation of Mitigation Measures MM-BIO1 and MM-BIO2.***

5.2 Riparian Habitat or Sensitive Natural Community

5.2.1 Significance Thresholds

The project would have a substantial adverse effect on riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

5.2.2 Analysis of Project Effects

The proposed project will permanently impact a total of 1.42 acres from water quality and infrastructure components and proposed trails. A total of 2.03 acres will be temporarily impacted from the riparian habitat restoration component of the project. An additional 0.90 acres will be temporarily impacted from construction-related activities (**Figure 9)**.

SOURCE: ESA, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 9

Temporary and Permanent Impacts Summary

The permanent impacts to sensitive vegetation consist of 0.43 acre of southern riparian forest and 0.26 acre of coastal sage scrub (**Table 6**). Additional permanent impacts include 0.63 acre of non-native grassland, 0.08 acre of disturbed habitat, and 0.03 acre of ornamental land cover. The temporary impacts associated with the riparian habitat restoration component consist of primarily (1.77 acres) low-quality southern riparian forest, but also include 0.14 acre of non-native grassland, 0.06 acre of low-quality coastal sage scrub, 0.02 acre of disturbed habitat, and 0.03 acre of ornamental land cover (**Figure 10**). Restoration of this area will result in much higher quality native willow forest habitat. Note that some areas of the existing southern riparian forest are not considered jurisdictional by the Corps/RWQB and/or CDFW; therefore, refer to Table 7 for detailed impact acreages of jurisdictional resources. The temporary impacts associated with construction consist of 0.43 acre of non-native grassland, 0.26 acre of low-quality southern riparian forest, 0.18 acre of low-quality coastal sage scrub, and 0.03 are of disturbed habitat. These construction-related temporary impacts include the staging area adjacent to the existing access road on the southwestern portion of the project area, the staging area adjacent to Jamboree road (the 8-foot centerline of this area will become a permanent trail after infrastructure construction has been completed, but the surrounding slopes will be revegetated), and the slopes surrounding the bioretention cell. All of these areas will be restored to high-quality coastal sage scrub upon completion of construction. ***Therefore, within implementation of Mitigation Measure MM-BIO2, impacts to sensitive vegetation communities will be less than significant.***

TABLE 6
SUMMARY OF IMPACTS TO VEGETATION COMMUNITIES

	Impacts (Acres)			
Plant Communities/Land Cover Types	**Permanent**	**Temporary (Restoration)**	**Temporary (Construction)**	**Total Impacts**
Southern Riparian Forest (SRF)[1]	0.43	1.77	0.26	2.46
Coastal Sage Scrub (CSS)	0.26	0.06	0.18	0.50
Non-Native Grassland (NNG)	0.63	0.14	0.43	1.20
Disturbed (Existing Access Roads and Trails)	0.08	0.02	0.03	0.13
Ornamental (ORN)	0.03	0.03	0.00	0.06
Total Acreage of Impacts	**1.42**	**2.03**	**0.90**	**4.35**

[1] Corps/RWQCB/ and/or CDFW and/or CCC jurisdictional habitat

SOURCE: ESA, 2016

SOURCE: ESA, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 10

Permanent and Temporary Impacts to Biological Resources

5.3 Federal Wetlands

5.3.1 Significance Thresholds

The project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

5.3.2 Analysis of Project Effects

Avoidance

Based upon previous project planning and input from the resource agencies, infrastructure design measures have been implemented to avoid sensitive habitat and species to the extent practicable. Limitations to avoidance include the presence of two sewer lines that run across the existing riparian habitat and parallel to Jamboree Road. The location of the bioretention cell was placed to not impact future maintenance of either lines. The proposed maintenance road/hiking trail has been place outside the jurisdictional wetland limits and crossing of the creek will now occur over the proposed culvert extension, rather than through the middle of the creek, which was the original trail location identified in the previous planning effort.

Because of creek degradation, both the mainflow creek bed incision and the invasion of exotic species, temporary impacts to the habitat as a result of restoration implementation are unavoidable. The resulting restored habitat, however, will provide superior ecological benefits.

Permanent Impacts to Jurisdictional Waters & Wetlands

As a result of the water quality improvement and infrastructure components, the project would permanently impact Waters of the United States/State which are characterized as southern riparian forest habitat. Impacts to Waters of the Waters of the United States/State would result from the extension of the culvert into Big Canyon, installation of the stilling basin and rip-rap energy dissipater, the maintenance road and turnaround, and construction of the bioretention cell. **Table 7** and **Figure 11**, Permanent Impacts to Jurisdictional Areas, defines impact acreages per the regulating resource area. Note, CDFW riparian includes Corps/RWQCB acreage, and CCC wetlands include CDFW and Corps/RWQCB jurisdiction. Thus, maximum permanent jurisdictional impacts do not exceed 0.57 acre.

SOURCE: ESA, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 11

Permanent Impacts to Wetland Waters of the US/State

TABLE 7
PERMANENT IMPACTS TO JURISDICTIONAL AREAS

Habitat Types	Jurisdictional Area Impacts (acres)
Corps/RWQCB Wetlands	--
Corps/RWQCB Non-Wetlands	0.24
CDFW Riparian	0.44
CCC Wetland	0.57

SOURCE: ESA, 2015

Temporary Impacts to Jurisdictional Waters & Wetlands

Temporary impacts to jurisdictional areas will occur from implementation of the riparian habitat restoration component of the project (see Figure 9). This includes the floodplain restoration grading, construction of the vegetated soil lifts and willow brush matts, and exotic removal activities. Because of the extensive invasive species presence in both the understory and overstory vegetation, the majority of impacts are considered beneficial, in that they will result in improved riparian health. Note that if additional exotic species are found in areas during implementation, temporary disturbances areas may be slightly higher.

With implementation of Mitigation Measure MM BIO3, impacts to jurisdictional wetlands will be less than significant.

5.4 Wildlife Movement and Nursery Sites

5.4.1 Significance Thresholds

The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

5.4.2 Analysis of Project Effects

The project could temporarily disrupt wildlife movement during construction of the infrastructure and water quality components as well as invasive species removal, floodplain grading, and planting in the riparian habitat restoration area. However, once the project is complete, the riparian habitat will provide higher functioning habitat that can provide cover and forage for migrating wildlife. The project is not expected to affect native wildlife nursery sites. ***With implementation of Mitigation Measure MM-BIO2, impacts to wildlife movement and nursery sites would be less than significant.***

5.5 Local Policies, Ordinances, and Adopted Plans

5.5.1 Significance Thresholds

The project would conflict with one or more local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and/or would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

5.5.2 Analysis of Project Effects

The project would not conflict with the protection of biological resources under the City of Newport Beach Municipal Code, or the City's proposed LCP Coastal Land Use Plan (2015 revised submittal). The proposed project, while not currently included in the Orange County Central-Coastal NCCP/HCP, will be designated to meet Plan standards. The highly degraded riparian channel, floodplain, and native vegetation will be restored to better functioning riparian habitat; restoration of adjacent coastal sage scrub areas will provide higher-quality upland habitat for wildlife and wetland buffer function; and the water quality facilities will greatly improve the hydrology and water quality of the creek. ***Therefore, the project will not conflict with the provisions of any local policies or ordinances protecting biological resources or any NCCP/HCPs.***

This page intentionally left blank

6.0 MITIGATION MEASURES

To ensure that the project does not significantly affect sensitive biological resources, the following mitigation measures are recommended.

MM-BIO1: Nesting Birds

Impacts to nesting birds will be avoided by conducting all grading and construction activities outside of the bird breeding season (February 15–August 31). If breeding season cannot be avoided, the following measures will be followed.

a. During the avian breeding season, a qualified Project Biologist shall conduct a preconstruction avian nesting survey no more than 10 days prior to vegetation disturbance or site clearing. If grading or other construction activity begins in the non-breeding season and proceeds continuously into the breeding season, no surveys shall be required. However, if there is a break of 10 days or more in grading or construction activities during the breeding season, a new nesting bird survey shall be conducted before these activities begin again.

b. The nest survey shall cover all reasonably potential nesting locations on and within 300 feet of the proposed construction activities areas.

c. If an active nest is found during an avian nest survey, a qualified Project Biologist shall implement a 300-foot minimum avoidance buffer for coastal California gnatcatcher, least Bell's vireo, and other passerine birds and a 500-foot minimum avoidance buffer for all raptor species. Buffer distances for other species will be determined by the Project Biologist based on the species and its breeding or nesting requirements. The nest site area shall not be disturbed until the nest becomes inactive or the young have fledged.

No other impacts to special-status species are anticipated, and therefore no additional mitigation is required.

MM-BIO2: Vegetation Communities

As described in Section 5, the project will impact a total of 2.46 acres of southern riparian forest, and 0.50 acre of coastal sage scrub. These vegetation communities are both highly disturbed from a heavy infestation of non-native plants and compacted, saline soils. These low-quality habitats will be restored to provide habitats with much greater ecological function than the current conditions. A total of 2.46 acres of southern riparian forest will be mitigated onsite through substantial habitat restoration (2.03 acres), willow riparian forest habitat creation (0.25 acre), and riparian habitat enhancement (0.64 acre), as shown in **Figure 12**. Impacts to coastal sage scrub will be mitigated onsite through restoration of 1.85 acres, which is 1.35 acres in excess of the required 1:1 ratio. Impacts to non-native grassland, disturbed areas, and ornamental vegetation do not require mitigation (**Table 8**).

SOURCE: ESA, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 12

Habitat Mitigation Areas for Impacts to Vegetation Communities

TABLE 8
MITIGATION FOR IMPACTS TO VEGETATION COMMUNITIES

Plant Communities and Land Cover Types	Impacts (Acres)[1]	Required Mitigation (1:1 ratio)	Actual Mitigation (Acres)	Excess (Acres)
Southern Riparian Forest (SRF)[2]	2.46	2.46	2.92[3]	+0.46
Coastal Sage Scrub (CSS)	0.50	0.50	1.85	+1.35
Non-Native Grassland (NNG)	1.20	0.00	0.00	0.00
Disturbed (Existing Roads & Trails)	0.13	0.00	0.00	0.00
Ornamental (ORN)	0.06	0.00	0.00	0.00
Total Acreage of Impacts	**4.35**	**2.96**	**4.53**	**+1.81**

[1] Includes permanent impacts, temporary impacts associated with habitat restoration component, and temporary impacts associated with construction of water quality facilities and infrastructure.

[2] Note that some portions of the existing southern riparian forest habitat are not considered jurisdictional by the Corps/RWQB and/or CDFW; therefore, refer to Table 5 for detailed impact acreages of jurisdictional resources.

[3] Includes 2.03 acres of substantial restoration, 0.25 acre of habitat creation, and 0.64 acre of habitat enhancement.

SOURCE: ESA, 2016

MM-BIO3 Jurisdictional Wetlands

As stated previously, the project has been designed to avoid and minimize impacts to jurisdictional resources and high-quality habitat to the extent practicable. To mitigate for unavoidable permanent impacts to Waters of the United States/State, both habitat creation and enhancement activities will be conducted onsite, as summarized in **Table 9** and shown in **Figure 13**.

TABLE 9
MITIGATION FOR PERMANENT IMPACTS TO JURISDICTIONAL AREAS

Habitat Types	Permanent Impacts (acres)	Mitigation for Jurisdictional Impacts
Corps/RWQCB Non-Wetlands/CDFW Riparian/CCC Wetland	0.24	0.25 acre of riparian forest habitat creation (1:1 mitigation ratio)[1]
CDFW Riparian only	0.19	0.64 acre of habitat enhancement (extensive invasive species removal)
CCC Wetland only	0.33	

[1] Fullfills Corps "no net loss" requirement.

SOURCE: ESA, 2015

To offset for permanent losses to 0.24 acre of non-wetland waters of the United States (Corps/RWQCB), 0.44 acre of CDFW and 0.57 acre of CCC jurisdictional wetlands, the creation of 0.25 acre of new habitat is proposed directly to the southwest of the proposed bioretention cell. This would satisfy the federal mandate for no net loss of wetlands by the Corps. The deficit acreage (0.19 acre for CDFW and 0.33 acre for CCC) would be satisfied through the removal of non-native vegetation in adjacent riparian and seed source areas (i.e., riparian habitat

SOURCE: ESA, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 13

Habitat Mitigation Areas for Impacts to Jurisdictional Resources

enhancement). This would include removal of the Brazilian peppertrees both east of Jamboree Road and on the north slopes of the canyon west of Jamboree Road that are the primary source of invasive seeds for Big Canyon. In addition, understory invasives not mapped by Dudek, including pampas grass, periwinkle, and English ivy, are prevalent throughout the project area. These species will be removed as part of the enhancement activities (Figure 7). Approximately 0.64 acre of invasive removal of the 1.07 acres available would be considered mitigation for unavoidable permanent impacts. Enhancement activities are distinguished from the restoration activities proposed (not mitigation) in that restoration will require grading and extensive soil remediation to achieve full habitat functioning, and enhancement areas will not.

Jurisdictional areas temporarily impacted as a result of construction of the water quality or infrastructure-related components of the project will be restored to native habitat at a 1:1 ratio. A full Habitat Restoration Plan describing the Big Canyon restoration as well as habitat mitigation activities will be submitted for review and approval as part of the environmental permitting process.

This page intentionally left blank

7.0 REFERENCES

American Ornithologists' Union (AOU). 2015. *Checklist of North American and Middle American Birds*. AOU website http://checklist.aou.org/taxa/.

Baldwin, et al. 2012. Jepson Manual: Vascular Plants of California; Second Edition. University of California Press.

California Herps (CalHerps). 2015. *A Guide to the Amphibians and Reptiles of California*. Accessed online at http://www.californiaherps.com/turtles/pages/a.marmorata.html/.

California Department of Fish and Wildlife (CDFW). 2015. California Natural Diversity Database (CNDDB) Rarefind 5. Electronic database, Sacramento, California. Accessed at: https://www.dfg .ca.gov/biogeodata/cnddb/mapsanddata.asp.

California Department of Fish and Game (CDFG). 2010. *List of Vegetation Alliances and Associations*. Vegetation Classification and Mapping Program. September 2009.

CDFG. 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. Sacramento, California. November 2009.

California Native Plant Society (CNPS). 2015. Inventory of Rare and Endangered Plants (online edition, v8-01a). Sacramento, CA. http://www.rareplants.cnps.org/.

City of Newport Beach. 2009. Local Coastal Program Coastal Land Use Plan. Adopted December 13, 2005; Amended by the California Coastal Commission February 5, 2009; adopted July 14, 2009.

Community Conservation International (CCI). 2004. *Big Canyon Creek Historic Tidal Wetlands Conceptual Restoration Plan, Upper Newport Bay, Orange County, California.*

County of Orange. 1996. *Natural Community Conservation Plan/Habitat Conservation Plan.*

County of Orange, Central & Coastal Subregion. Parts I & II, III, IV: Implementing Agreement, and V: Map Section (Figures 1 through 73). December 7.

Cowardin, L.M., V. Carter V., F.C. Golet, E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31.Washington, D.C.

Crother, B. 2015. Checklist of the Standard English and Scientific Names of Amphibians and Reptiles. Society for the Study of Amphibians and Reptiles. Accessed at https://ssarherps.org/publications/north-american-checklist/.

Dudek. 2015. *Biological Resources Inventory Report for the Big Canyon Nature Park Project, City of Newport Beach, Orange County, California*. Prepared for the Irvine Ranch Conservancy.

Environmental Laboratory. 1987. *U.S. Army Corps of Engineers Wetland Delineation Manual.* Prepared for the U.S. Army Corps of Engineers.

Gray, J. and D. Bramlet. 1992. *Habitat Classification System: Natural Resources Geographic Information System (GIS) Project*. Unpublished report prepared for the Orange County Environmental Management Agency, Santa Ana California.

Jones & Stokes Associates, Inc. 1993. *Methods used to survey the vegetation of Orange County parks and open space areas and The Irvine Company property. February 10, 1993*. Sacramento, California. Prepared for County of Orange, Environmental Management Agency, Environmental Planning Division, Santa Ana, California.

Orange County Public Works (OCPW). 2014. OC Watersheds. Accessed March 10, 2014, at http://ocwatersheds.com/.

Natural Resources Conservation Service (NRCS). 2015. Web Soil Survey. U.S. Department of Agriculture. Accessible online at: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm/.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California vegetation, 2nd edition. California Native Plant Society, Sacramento, CA.

SSURGO online database. 2015.

U.S. Army Corps of Engineers (USACE). 2008a. Arid West Supplement to the 1987 Wetlands Delineation Manual.

USACE 2008b. Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States.

U.S. Fish and Wildlife Service (USFWS). 1997. *Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Protocol*. Carlsbad, California. July 28, 1997.

USFWS. 2001. *Least Bell's Vireo Survey Guidelines*. Carlsbad, California. January 19, 2001.

USFWS. 2015a. Critical Habitat Portal. Accessible online at: http://ecos.fws.gov/crithab/.

USFWS. 2015b. Information for Planning and Conservation database. Accessible online at: https://ecos.fws.gov/ipac/.

Wilson, D.E., and D.M. Reeder. 2005. Mammal Species of the World: A Taxonomic and Geographic Reference. 3rd ed. Baltimore, Maryland: Johns Hopkins University Press.

WRA. 2007. Big Canyon Creek Restoration Project Phase II Feasibility Study, Final Report. Prepared for the City of Newport Beach. June.

APPENDIX A

Jurisdictional Delineation Report

This page intentionally left blank

BIG CANYON HABITAT RESTORATION & WATER QUALITY TREATMENT IMPROVEMENT PROJECT

Jurisdictional Delineation Report

Prepared for
City of Newport Beach

December 2015

ESA

BIG CANYON HABITAT RESTORATION & WATER QUALITY IMPROVEMENT PROJECT

Jurisdictional Delineation Report

Prepared for
City of Newport Beach

December 2015

550 West C Street
Suite 750
San Diego, CA 92101
619.719.4200
www.esassoc.com

Irvine

Los Angeles

Oakland

Orlando

Palm Springs

Petaluma

Portland

Sacramento

San Diego

San Francisco

Seattle

Tampa

Woodland Hills

120083

TABLE OF CONTENTS

Big Canyon Habitat Restoration & Water Quality Improvement Project Jurisdictional Delineation Report

1. Introduction and Purpose

Environmental Science Associates (ESA) conducted a jurisdictional delineation for the City of Newport Beach for the Upper Big Canyon Treatment Wetland and Restoration Project (Project). During wet weather, transportation-related pollutants (e.g., metals, nutrients, indicator bacteria, and organics) enter Big Canyon Creek from thoroughfares such as Jamboree Road. These pollutants impair water quality in the creek and contribute to other regulatory issues for the City, such as TMDLs for metals, toxins, nutrients, and indicator bacteria. In addition to the degraded water quality, the upper portion of the channel is modestly incised, and throughout the Project the riparian habitat is infested with invasive species that has degraded habitat values and functions.

The purpose of the Project is to improve water quality, stabilize the streambed and provide habitat improvement measures through the removal of non-native vegetation in the upper part of this riparian habitat.

The purpose of this jurisdictional delineation report is to identify regulated wetlands and waters of the United States and the State of California within the project boundaries.

1.1 Project Location

The Project is located in the in the City of Newport Beach, Orange County, California (Figure 1 and 2). The project encompasses sites both to the east and west of Jamboree Road, south of the intersection of Jamboree and Ford Roads in the City of Newport Beach, California. The floodplain restoration and habitat improvement measures occur within the upper portions of the Big Canyon Nature Park in Phase I of the project (Figure 3). Representative photographs of the Project site are provided in Appendix A.

2. Jurisdictional Authority

2.1 Waters of the U.S.

The U.S. Army Corps of Engineers (USACE) regulates "discharge of dredged or fill material" into "waters" of the United States, which includes tidal waters, interstate waters, and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" (33 C.F.R. 328.3(a)), pursuant to provisions of Section 404 of the CWA.

The ACOE takes jurisdiction within rivers and streams to the "ordinary high water mark (OHWM)," determined by erosion, the deposition of vegetation or debris, and changes in vegetation or soil characteristics. However, if there is no federal nexus to navigable waters, these waters are considered "isolated" and thus not subject to their jurisdiction.

The U.S. Army Corps of Engineers and the Environmental Protection Agency (EPA) have issued a set of guidance documents detailing the process for determining Clean Water Act (CWA) jurisdiction over waters of the U.S. following the Rapanos decision. The EPA and ACOE issued a summary memorandum of the guidance for implementing the Supreme Court's decision in Rapanos that addresses the jurisdiction over waters of the United States under the CWA. The complete set of guidance documents, summarized as key points below, were used to collect relevant data for evaluation by the EPA and the ACOE to determine CWA Jurisdiction over the Project and to complete the "significant nexus test" as detailed in the guidelines.

The significant nexus test includes consideration of hydrologic and ecologic factors. For circumstances such as those described in point (B) below, the significant nexus test would take into account physical indicators of flow (evidence of an ordinary high water mark [OHWM]), if a hydrologic connection to a Traditionally Navigable Water (TNW) exists, and if the aquatic functions of the water body have a significant effect (more than speculative or insubstantial) on the chemical, physical, and biological integrity of a TNW. The ACOE and EPA will apply the significant nexus standard to assess the flow characteristics and functions of the tributary drainage to determine if it significantly affects the chemical, physical and biological integrity of the downstream TNW.

Rapanos Key Points Summary

(A) The ACOE and EPA will assert jurisdiction over the following waters:

- TNWs.
- Wetlands adjacent to TNW.
- Non-navigable tributaries of TNWs that are relatively permanent.
- Where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months).
- Wetlands that directly abut such tributaries.

(B) The ACOE and EPA will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a TNW:

- Non-navigable tributaries that are not relatively permanent.
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent.
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

(C) The ACOE and EPA generally will not assert jurisdiction over the following features:

- Swales or erosion features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow).
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

2.2 Waters of the State

State Boards (SWRCB and RWQCB)

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) (together "Boards") are the principal State agencies with primary responsibility for the coordination and control of water quality. The Boards regulate activities pursuant to Section 401(a)(1) of the federal CWA as well as the Porter Cologne Water Quality Control Act (Porter-Cologne) (Water Code Section 13260). Section 401 of the CWA specifies that certification from the State is required for any applicant requesting a federal license or permit to conduct any activity including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable water at the point where the discharge originates or will originate. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

In the Porter-Cologne, the Legislature declared that the "State must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the State from degradation..." (California Water Code Section 13000). Porter-Cologne grants the Boards the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the State. It is important to note that enforcement of the State's water quality requirements is not solely the purview of the Boards and their staff. Other agencies [e.g., California Department of Fish and Wildlife (CDFW)] have the ability to enforce certain water quality provisions in state law.

California Department of Fish and Wildlife

Pursuant to Division 2, Chapter 6, Section 1602 of the Fish and Game Code, the California Department of Fish and Wildlife (CDFW) regulates all diversions, obstructions, or changes to the natural flow or bed, channel or bank of any river, stream, or lake which supports fish or wildlife. A notification of a Lake or Streambed Alteration Agreement must be submitted to CDFW for "any activity" that may substantially change the bed, channel, or bank of any river, stream or lake." In addition, CDFW has jurisdiction over riparian habitats and wetlands associated with watercourses. As defined by the California Fish and Game Code, "wetlands" means lands which may be covered periodically or permanently with shallow water and which include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, fens, and vernal pools (FGC Section 2785). Jurisdictional waters are delineated by the outer edge of riparian vegetation or at the top of the bank of a stream or lake, whichever is wider. CDFW jurisdiction does not include tidal areas or isolated resources. The CDFW reviews proposed actions, and if necessary, submits to the applicant a proposal that includes measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the applicant is the Lake or Streambed Alteration Agreement.

California Coastal Commission

The California Coastal Commission (CCC) regulates activities found within wetlands in the coastal zone. The Coastal Act Section 30121 (California Coastal Act as of January 1, 2005) 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". Subsequent Statewide Interpretive guidelines has refined the definition based upon the US Fish and Wildlife Service definition (Cowardin et al. 1979), which is as follows: "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year." This definition is used as a guide for defining wetlands. The Coastal Commission can also rely on other information, advice and judgment of other experts in determining jurisdiction.

3. Methods

3.1 Literature Review

Prior to field surveys, a desk top analysis was conducted to obtain contextual information relevant to the Project site plus a 100-foot buffer around the Project. ESA conducted a review of available background information pertaining to the Project, geography, and topography prior to conducting the jurisdictional delineation in March 2015. A site map was generated with available aerial photographs and potentially jurisdictional features were identified and marked with lines and global positioning system (GPS) coordinates to assist in field verification. Soil types mapped within the Project were consulted prior to field efforts to target areas with potentially hydric soils.

3.2 Field Surveys

ESA biologist Julie Fontaine conducted site visits on March 12 and 18, and December 18 of 2015, to evaluate potentially jurisdictional features within the Project. The limits of potential jurisdictional features were recorded in the field using aerial maps.

Federal Wetlands

The presence/absence of federal wetlands was determined through implementation of the methods described in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). The definition of growing season and the basis of determining and recording indicators for hydrophytic vegetation, hydric soils, and wetland hydrology was based on the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (Version 2.0)*, as well as the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE, 2008a; ACOE, 2008b). The 1987 ACOE Manual, Arid West Supplement, and Field Guide to the OHWM

were used for the analysis and evaluation of any normal circumstances, atypical situations, and problem areas, as needed.

Non-Wetland Waters of the U.S.

The ACOE-jurisdictional status of the Project was determined by in-field verification of the hydrological connection between the watercourse and downstream TNW (i.e. significant nexus test). Non-wetland waters of the U.S. were identified if the OHWM was clearly visible and passed the significant nexus test (to the Pacific Ocean), but one or more of the remaining ACOE wetland parameters were absent (i.e., hydrophytic vegetation or hydric soils). The OHWM of channels was determined based on observations of physical evidence that included direct observations of flow, scour marks, and drift lines of debris. The limits of non-wetland waters were confined to the ordinary limits of flow and excluded adjacent hillside areas that have eroded away due to failure of the culverts.

Waters of the State

California Department of Fish and Wildlife

CDFW-jurisdictional waters included riparian habitats associated with watercourses and were delineated by the dripline of riparian vegetation.

State Boards (SWRCB and RWQCB)

It is assumed for the purpose of this report that ACOE -jurisdictional areas are also under the jurisdiction of the Boards, and are subject to the CWA.

California Coastal Commission

It is assumed for the purpose of this report that CDFW-jurisdictional areas are also under the jurisdiction of the CCC.

4. Results and Conclusions

4.1 Literature Review and Field Survey Results

Upper Big Canyon Creek contains wetland and non-wetland waters of the US, and areas regulated by the State of California and the CCC. A total of nine data points were collected during the site investigation. Data sheets are included in Appendix B.

Soils

The U.S Department of Agriculture, Natural Resources Conservation Service (NRCS) maps Upper Big Canyon Creek and the surrounding area as Sorrento Loam and Tidal Flats (SSURGO online data base) (Figure 4). Tidal flats are a remnant map soil unit from prior to the time that the hydrology of the system was altered. The habitat is no longer tidally influenced but does retain the high salt content within the soil. Despite being altered, the soil exhibited hydric characteristics in the emergent marsh habitat. Areas containing predominantly Brazilian pepper tree (*Schinus*

terebinthifolius) did not exhibit hydric soil characteristics either in the Tidal Flats soils or the Sorrento loam soils. The Sorrento loam (Fine-loamy, mixed, superactive, thermic Calcic Haploxerolls) occurs on alluvial fans and floodplains, originating from sedimentary rocks. It is not a hydric soil.

Vegetation

The National Wetland Inventory (NWI) identifies two classes of wetlands to occur within the project boundaries: Freshwater Forested/Shrub Wetland and Freshwater Emergent Wetland (Figure 5).

Freshwater Forested/Shrub Wetland

System: PALUSTRINE - The Palustrine System includes all non-tidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: 1. are less than 8 hectares (20 acres); 2. do not have an active wave-formed or bedrock shoreline feature; 3. have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin; 4. have a salinity due to ocean-derived salts of less than 0.5 ppt.

Subsystem Class: SCRUB-SHRUB: Includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.

Subclass C:WATER REGIME Seasonally Flooded: Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

Freshwater Emergent Wetland

System: PALUSTRINE - The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: 1. are less than 8 hectares (20 acres); 2. do not have an active wave-formed or bedrock shoreline feature; 3. have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin; 4. have a salinity due to ocean-derived salts of less than 0.5 ppt.

Subsystem Class: EMERGENT - Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.

Subclass C :WATER REGIME -Seasonally Flooded: Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in

most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

Based on the jurisdictional field delineation, Upper Big Canyon Creek supports hydrophytic vegetation including riparian forest and freshwater marsh habitat (Figure 6). The following plant communities and hydrophytic plants occur within jurisdictional areas:

Southern Riparian Forest

Southern riparian habitat occurs throughout the survey area. This habitat contains a mix of native and invasive species, with invasive species occupying as much as 70% of the habitat. Dominant native species include arroyo willow (*Salix lasiolepis*) [FACW] species, red willow (*Salix laevigata*) [FACW], black willow (*Salix goodingii*) [FACW] and mulefat (*Baccharis salicifolia*) [FACW]. The invasive Brazilian pepper tree [FAC] is found in thick groves throughout the habitat. Other invasive species noted include pampas grass (*Cortaderia selloana*) [FACU], English ivy (*Hedera helix*) [FACU] and periwinkle (*Vinca major*). This community meets the ACOE dominance test for hydrophytic vegetation. Areas east of Jamboree, although situated within waters of the US/State of California contain little or no native habitat, thus this area could classified as "Ornamental".

Freshwater Marsh

The survey area contains freshwater marsh habitat dominated by open water and emergent monocots approximately four to five feet tall. Mostly cattail (*Typha latifolia*) [OBL] and stinging nettle (*Urtica dioica*) [FACW] occupy this habitat type. Note that very small pockets of this habitat type occur along the low-flow drainages that meander throughout the canopy. Due to the miniscule size of these pockets they have not been called out separately from the Southern Willow Scrub habitat. This community meets the ACOE dominance test for hydrophytic vegetation.

Alkali Meadow

Small patches of alkali heath (*Frankenia salina*) [FACW] dominated meadow occur adjacent to the main freshwater marsh habitat on the northwest side of the survey area. Interspersed within the alkali heath are scattered pickleweed (*Salicornia* spp.) [OBL] individuals.

Hydrology

The reach of Upper Big Canyon Creek within the Project area receives hydrologic input from a combination of natural rainfall and urban runoff. The site contains slow moving water more than 14 days per year, and connects with the Pacific Ocean, a TNW, rendering it subject to the ACOE jurisdiction. A series of meandering, braided channels wander throughout the habitat area. Evidence of overbank flow was prevalent throughout the Project, thus extending the ACOE jurisdiction to the outer edges of habitat, and not confined to just the active low flow channel.

4.2 Results and Conclusions

Wetland & Non-Wetland Waters of the U.S.

Jurisdictional wetland and non-wetland waters of the US regulated by the ACOE are found within the survey area (Figure 7). Wetland Waters of the US occur in the emergent marsh, situated in the northwestern corner of the project. A total of 0.65 acre of wetlands occur in this area. Areas exhibiting an OHWM but do not meet all three wetland parameters are considered Non-Wetland Waters of the US, and total 4.0 acres within the survey area. Data forms are found in Appendix B.

Waters of the State

CDFW

Areas within CDFW jurisdiction refer to streambeds and associated riparian vegetation and wetlands. All areas under ACOE jurisdiction were also determined to be under the jurisdiction of the CDFW. In addition, riparian habitat that extends beyond the OHWM and contain riparian vegetation are also regulated by the CDFW (Figure 7). A total of 4.82 acres of CDFW jurisdictional areas occur within the survey area, which includes those subject to ACOE jurisdiction.

State Boards

All areas mapped as ACOE-jurisdictional areas fall within the Section 401 authority of the Boards. Approximately 4.65 acres of the wetland and non-wetland waters of the State are found within the survey area. See Figure 7.

CCC Wetlands

All areas mapped as CDFW jurisdictional areas are also mapped as CCC wetlands, according to their respective wetland definitions. In addition, a small area in the southeastern portion of the Project that contains isolated riparian habitat patch (0.13 acre) is also regulated by the CCC. A total of 4.95 acres of CCC regulated wetlands occur in the survey area. See Figure 7.

5. Supplemental Information

5.1 Directions to the Project

From Interstate 5 North, take the Jamboree exit and continue west on Jamboree. Turn right on San Joaquin Hills Road, then a right on Back Bay Drive. Park at the designated Big Canyon parking lot on left. The trail to access Big Canyon is across the street from the parking area.

5.2 Field Delineator Contact Information

Julie Fontaine
Environmental Science Associates
Biological Resources
550 West C Street, Suite 750
San Diego, CA 92101
(949) 246-3117
jfontaine@esassoc.com

6. References

Environmental Laboratory. 1987. *U.S. Army Corps of Engineers Wetland Delineation Manual.* Prepared for the U.S. Army Corps of Engineers.

Google, Inc. (Google Earth). 2014. Available at http://www.google.com/earth/index.html.

Hickman, James C. ed. 1993. *The Jepson Manual*. University of California Press, Berkeley and Los Angeles, California.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*, Department of Fish and Game, Sacramento.

National Resources Conservation Service (NRCS). 2012. About Hydric Soils. Accessed March 2012. http://www.ca.nrcs.usda.gov/mlra02/abouthyd.html

NRCS, 1992. Hydric Soils list of California.

Reed, P.B., Jr. National List of Plant Species That Occur in Wetlands, California (Region 0). U.S. Fish and Wildlife Service Biological Report 88(26.10). 1988. 135pp.

SSURGO online data base. 2015.

U.S. Army Corps of Engineers (ACOE). 2008a. *Arid West Supplement to the 1987 Wetlands Delineation Manual*.

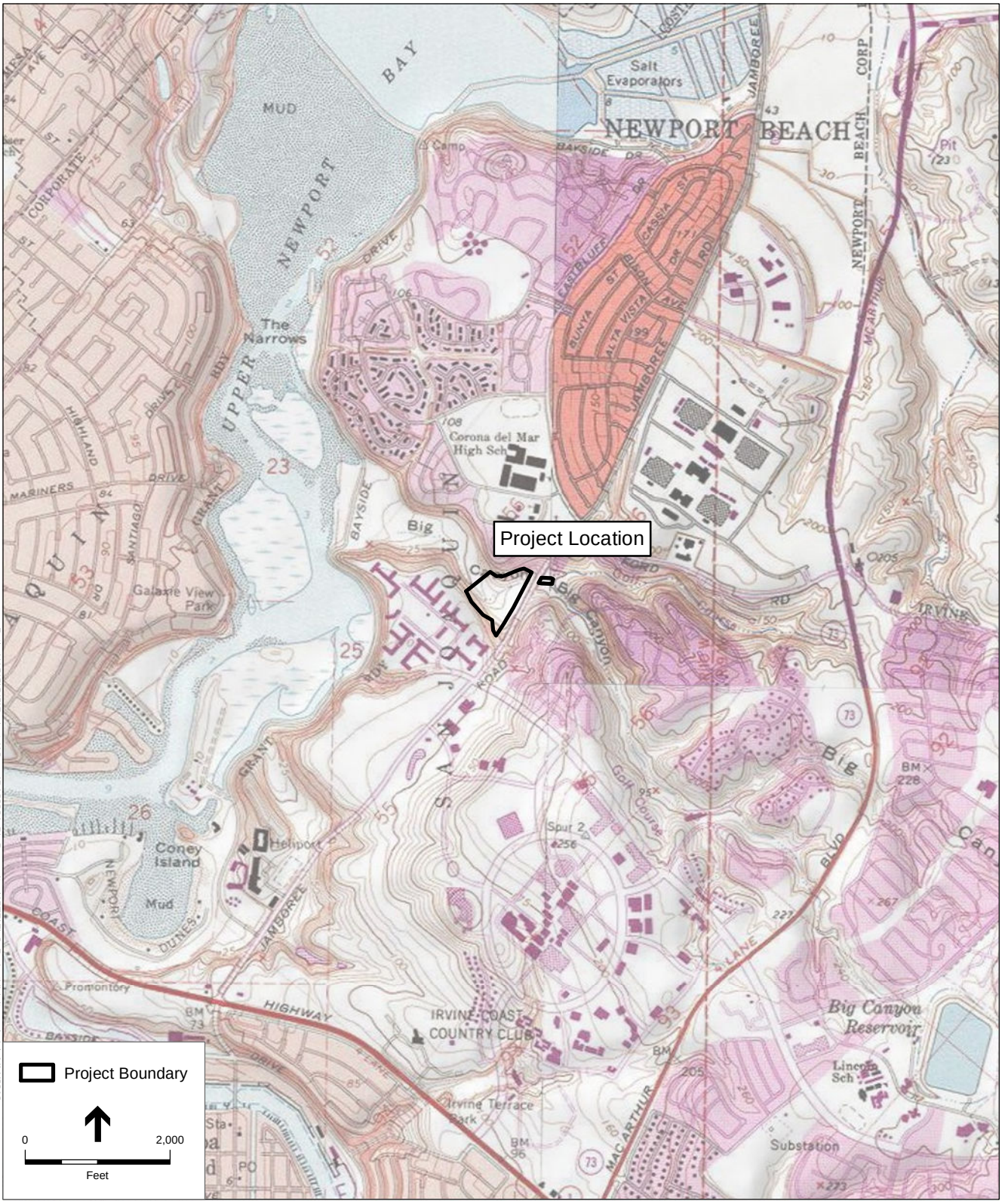
U.S. Army Corps of Engineers (ACOE). 2008b. *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*.

FIGURES

SOURCE: City of Newport Beach, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Jurisdictional Delineation Report. D130934

Figure 1
Regional Location



SOURCE: USGS 7.5' Topo Quad Newport Beach, 1977

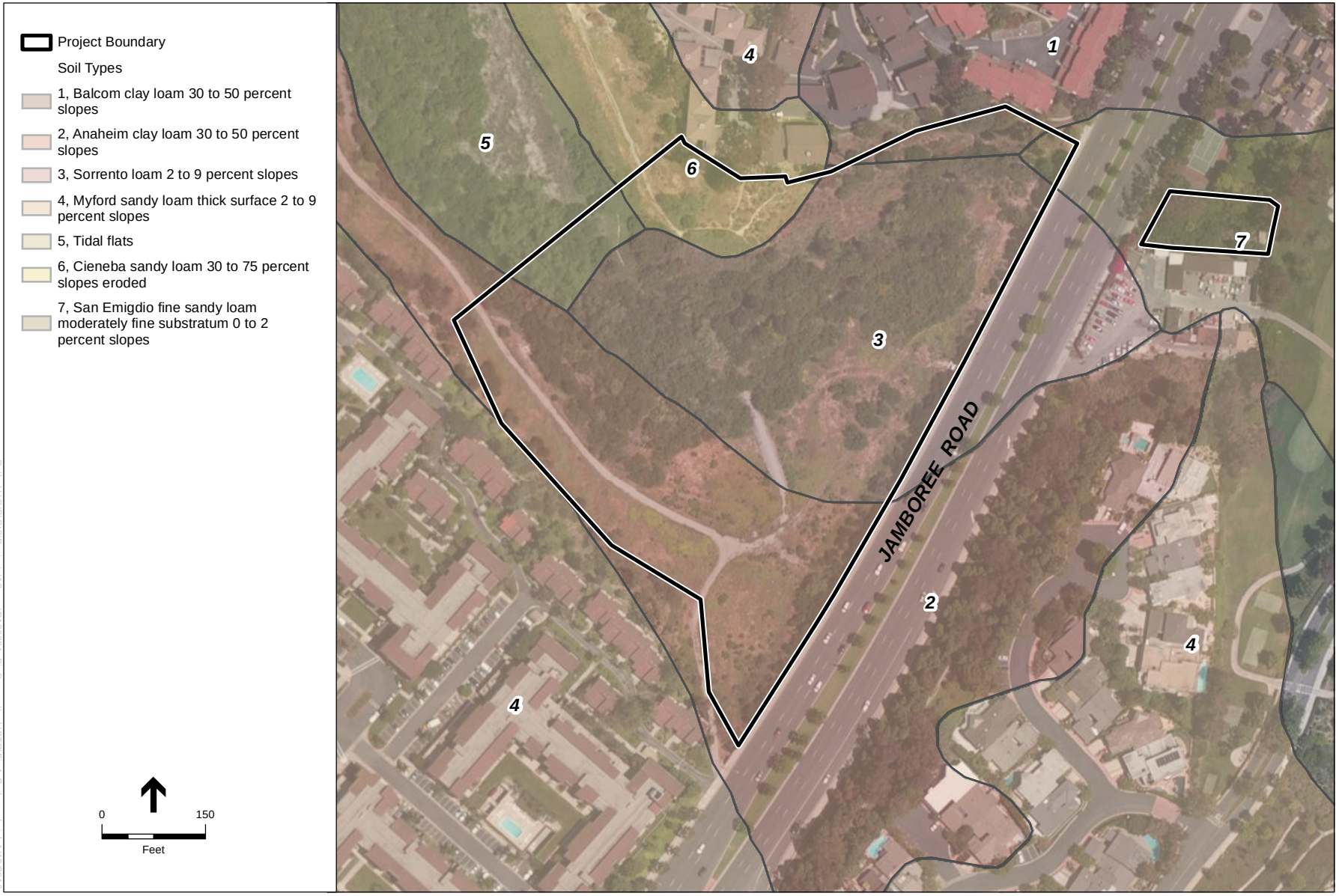
Big Canyon Restoration and Water Quality Improvement Project
Jurisdictional Delineation Report. D130934

Figure 2
Project Vicinity Map

SOURCE: ESA, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Jurisdictional Delineation Report. D130934

Figure 3
Project Aerial Map



SOURCE: City of Newport Beach; ESRI; SSURGO

Big Canyon Restoration and Water Quality Improvement Project
Jurisdictional Delineation Report. D130934

Figure 4
Soils

SOURCE: City of Newport Beach; USFWS; ESRI

Big Canyon Restoration and Water Quality Improvement Project
Jurisdictional Delineation Report. D130934

Figure 5

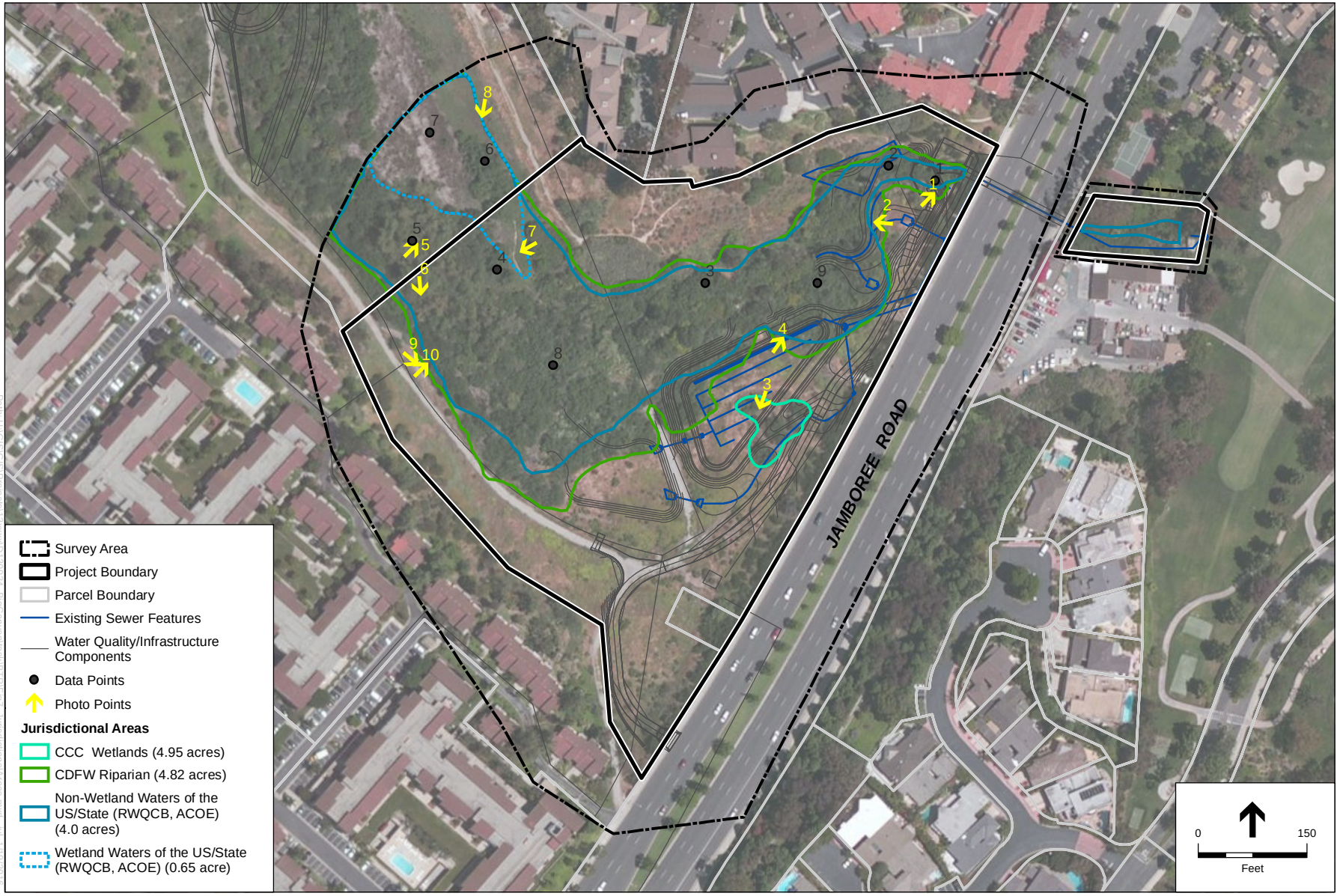
National Wetlands Inventory Map

SOURCE: ESA, ESRI; Dudek

Big Canyon Restoration and Water Quality Improvement Project
Jurisdictional Delineation Report. D130934

Figure 6

Vegetation Communities



SOURCE: City of Newport Beach, ESA, ESRI

Big Canyon Restoration and Water Quality Improvement Project
Jurisdictional Delineation Report. D130934

Figure 7

ACOE/RWQCB/CDFW/CCC Jurisdiction Map

APPENDIX A
Site Photographs

Photo 1. Upper Big Canyon Creek as it enters the Project area.

Photo 2. View of Upper Big Canyon Creek just downstream of culvert under Jamboree.

Photo 3. CCC wetlands - riparian area on southern part of Project.

Photo 4. Edge of riparian habitat on south side of Project.

Photo 5. Brazilian pepper tree dominated area near Data Point 5.

Photo 6. Typical interior shot of riparian habitat, with low-flow channel and frequent inundation over bank.

Photo 7. Habitat where Data Point 4 was taken

Photo 8. View of emergent marsh and riparian habitat and downstream terminus of Project, looking upstream.

Photo 9. Edge of riparian habitat.

Photo 10. View of Brazilian pepper tree infestation.

APPENDIX B
ACOE Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/18/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 1

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sorrento - Calic Haploxerolls NWI classification: PSSC

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

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

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

Remarks:

Criterion for hydric soil not met.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Schinus terebinthifolius	20	Y	FAC
2. Salix lasiolepis	35	Y	FACW
3.			
4.			
Total Cover:	55		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Cortaderia selloana	<5	N	FACU
2. Veronica spp.	<5	N	OBL
3. Typha latifolia	10	N	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	13		
Woody Vine Stratum			
1.			
2.			
Total Cover:	68		

% Bare Ground in Herb Stratum _____ % 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: 1 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X 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 X No _____

Remarks:

SOIL

Sampling Point: 1

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	Remarks
0-3	2.5 Y 4/2		10 YR 4/6	2	Conc	PL	sandy loam	few, fine
3-12	7.5 YR 2.5/1						sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Calcic horizon present. Criterion for hydric soil not met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X 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)

- X Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X 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 X No _____ Depth (inches): 4"

Water Table Present? Yes _____ No X Depth (inches): _____

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/12/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 2

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sorrento - Calic Haploxerolls NWI classification: PSSC

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

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

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

Remarks:

Criterion for hydric soil not met.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Schinus terebinthifolius	35	Y	FAC
2. Salix lasiolepis	30	Y	FACW
3.			
4.			
Total Cover:	65		
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:	65		

% Bare Ground in Herb Stratum _____ % 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: 1 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X 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 X No _____

Remarks:

SOIL

Sampling Point: 2

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	Remarks
0-2	2.5 Y 4/2		10 YR 4/6	2	Conc	PL	sandy loam	few, fine
2-14	7.5 YR 2.5/1						sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Calcic horizon present. Criterion for hydric soil not met.

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)

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

Field Observations:

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

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 5"

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/12/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 3

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sorrento - Calic Haploxerolls NWI classification: PSSC

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

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

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

Remarks:

Criterion for hydric soil not met.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Schinus terebinthifolius	85	Y	FAC
2.			
3.			
4.			
Total Cover:	85		
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:	85		

% Bare Ground in Herb Stratum _____ % 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: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species 85	x 3 =	255
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: 85 (A)		255 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X 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 X No _____

Remarks:

SOIL

Sampling Point: 3

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	Remarks
0-4	10 YR 3/3						sandy loam	
4-8	2.5 Y 5/6						sandy loam	
8-14	10 YR 2/2						sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Calcic horizon present. Criterion for hydric soil not met.

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)

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

Field Observations:

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

Water Table Present? Yes _____ No X Depth (inches): _____

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/12/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 4

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Tidal Flats - drained NWI classification: PSSC

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

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

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

Remarks:

Area is no longer tidally influenced - considered a drained hydric soil.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Schinus terebinthifolius	40	Y	FAC
2. Salix lasiolepsis	35	Y	FACW
3.			
4.			
Total Cover:	75		
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:	75		

% Bare Ground in Herb Stratum _____ % 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: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 35	x 2 =	70
FAC species 40	x 3 =	120
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: 75 (A)		190 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X 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 X No _____

Remarks:

SOIL

Sampling Point: 4

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	Remarks
0-3	10 YR 5/2						sandy clay loam	
3-14	10 YR 5/3	60	10 YR 5/8	few	conc	M	sandy loam	
3-14	10 YR 3/2	40	10 YR 2/1	few	conc	PL	sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Redoc does not have common or many distinct or prominent redox concentrations occurring as soft masses or pore lining. Tidal soil is no longer influenced by tidal action.

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)

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

Field Observations:

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

Water Table Present? Yes _____ No X Depth (inches): _____

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/12/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 5

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Tidal Flats - drained NWI classification: PSSC

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

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

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

Remarks:

Area is no longer tidally influenced - considered a drained hydric soil.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Schinus terebinthifolius	100	Y	FAC
2.			
3.			
4.			
Total Cover:	100		
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:	100		

% Bare Ground in Herb Stratum _____ % 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: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species 100	x 3 =	300
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: 100 (A)		300 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X 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 X No _____

Remarks:

SOIL

Sampling Point: 5

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	Remarks
0-3	10 YR 3/2						clay loam	
3-15	10 YR 5/1	100					sandy clay loam	

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

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

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

Indicators for Problematic Hydric Soils[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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Tidal soil is no longer influenced by tidal action.

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**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No X Depth (inches): _____

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/18/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 6

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Tidal Flats - drained NWI classification: PEMC

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

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

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

Remarks:

All 3 criterion met.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	70	Y	FACW
2.			
3.			
4.			
Total Cover:	70		
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:	70		

% Bare Ground in Herb Stratum _____ % 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: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species 70	x 2 =	140
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: 70 (A)		140 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X 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 X No _____

Remarks:

SOIL

Sampling Point: 6

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	Remarks
0-3	10 YR 4/2	100					sandy loam	
3-13	10 YR 4/2	100	5 YR 4/5	10%	C	PL	sandy clay loam	

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

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

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**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No X Depth (inches): _____

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/18/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 7

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Tidal Flats - drained NWI classification: PEMC

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

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

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

Remarks:

All 3 criterion met.

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. Frankenia salina	70	Y	FACW
2. Distichilis spicata	20	Y	FACW
3. Saliconia virginica	5	N	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	95		
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: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 90	x 2 =	180
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: 90 (A)		180 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X 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 X No _____

Remarks:

SOIL

Sampling Point: 7

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	Remarks
0-13	2.5 Y 5/2	100	2.5 YR 2/6	5%	Conc	PL	sandy clay loam	

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

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

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**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No X Depth (inches): _____

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/18/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 8

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sorrento Loam - Clacic Halopxerolls NWI classification: PSSC

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

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

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

Remarks:

Hydric soil criterion not met.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Schinus terebinthifolius	100	Y	FAC
2.			
3.			
4.			
Total Cover:	100		
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:	100		

% Bare Ground in Herb Stratum _____ % 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: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species 100	x 3 =	300
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: 100 (A)		300 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X 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 X No _____

Remarks:

SOIL

Sampling Point: 8

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	Remarks
0-3	10 YR 3/2						clay loam	
3-15	10 YR 5/1	100					sandy clay loam	

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

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

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

Indicators for Problematic Hydric Soils[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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Calcic horizon. No redox features noted.

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**)
X Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
X FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No X Depth (inches): _____

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Upper Big Canyon City/County: Newport Beach, OC Sampling Date: 3/18/15

Applicant/Owner: City of Newport Beach State: Ca Sampling Point: 9

Investigator(s): Julie Fontaine Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sorrento Loam - Clacic Halopxerolls NWI classification: PSSC

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

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

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

Remarks:

Hydric soil criterion not met.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Schinus terebinthifolius	30	Y	FAC
2. Salix lasiolepsis	45	Y	FACW
3.			
4.			
Total Cover:	75		
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:	75		

% Bare Ground in Herb Stratum _____ % 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: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 45	x 2 =	90
FAC species 30	x 3 =	90
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: 75 (A)		190 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X 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 X No _____

Remarks:

SOIL

Sampling Point: 9

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	Remarks
0-2	10 YR 3/2	100					clay loam	
3-14	10 YR 5/1	100					sandy clay loam	

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

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

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

Indicators for Problematic Hydric Soils[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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Calcic horizon. No redox features noted.

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

Field Observations:

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

Water Table Present? Yes _____ No X Depth (inches): _____

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Criterion for hydrology met.

APPENDIX B

Pre-Project Riverine CRAM Report

PRE-CONSTRUCTION RIVERINE CALIFORNIA RAPID ASSESSMENT METHOD (CRAM) REPORT

Big Canyon Habitat Restoration and Water Quality Improvement Project

December 30, 2015

Prepared for
City of Newport Beach
Public Works Department

Prepared by
Environmental Science Associates
San Diego, California

This page intentionally left blank

TABLE OF CONTENTS

BIG CANYON HABITAT RESTORATION & WATER QUALITY IMPROVEMENT PROJECT
Pre-Construction Riverine California Rapid Assessment Method (CRAM) Report

Contents

Appendices

List of Tables

List of Figures

This page intentionally left blank

1.0 Introduction

1.1 Project Overview

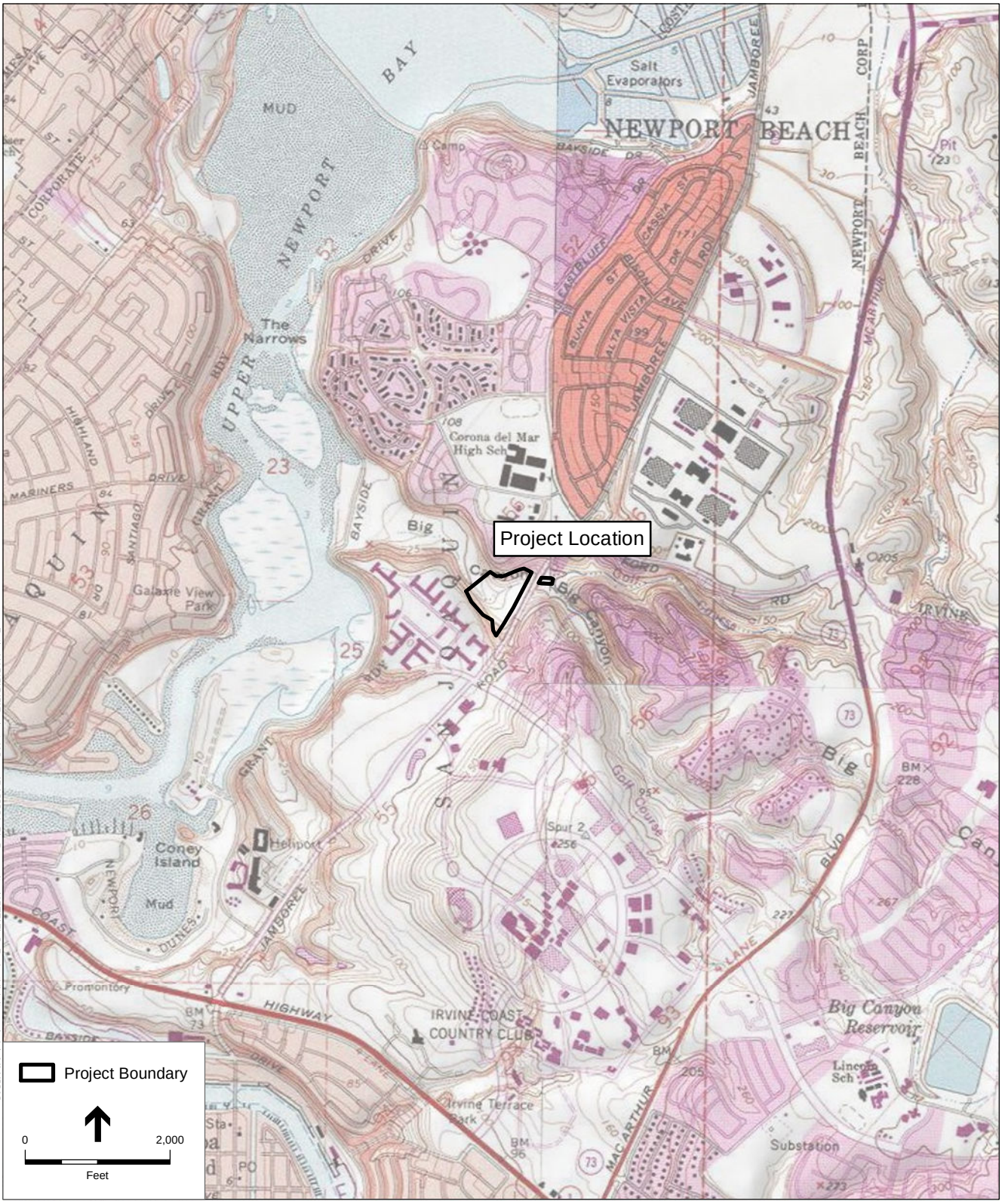
The Big Canyon Restoration and Water Quality Improvement Project (Project) is located in the City of Newport Beach, east of Newport Bay, adjacent to Jamboree Road (Figure 1). The Project is part of a larger proposed multi-phased Big Canyon Watershed Restoration and Coastal Adaption Project (Phases I and II) that has been planned for over a decade. This planned effort provides integrated-benefits that include water quality improvements in Big Canyon Creek, restoration of natural creek channels impacted by hydromodifcation, restoration of riparian and inland alkaline non-tidal marsh habitat, removal of non-native vegetation and replacement with native plantings, remediation of selenium-laden sediment within former fresh-water ponds, creation of new transitional habitat to allow for future adaption of coastal estuarine habitat due to sea level rise, reduction of favorable mosquito breeding habitat, and improvements and protection of public access within the natural areas of the Big Canyon Preserve, including coastal areas that will be subject to future inundation due to sea level rise.

These benefits will be realized through implementation of a phased program. Phase I, the current Project, includes the implementation of a creek and riparian habitat restoration, stormwater treatment wetland, dry weather flow diversions, culvert improvements, and trail planning in the upper portion of the Big Canyon Nature Preserve. Phase IIA is also part of the current Project and continues to build on the benefits to be achieved through Phase I. Phase IIA includes finalizing the riparian restoration to the west of the creek restoration.

Phase I and Phase IIA improvements are being planned in coordination with a Resource Management and Maintenance Plan (RRMP) being prepared by the Irvine Ranch Conservancy under contract with the City of Newport Beach for the Nature Park. The RRMP provides a framework for restoration and recreational improvements in the Nature Park that will be consistent with the requirements of the Natural Community Conservation Plan/Habitat Conservation Plan (NCCP) for the Central and Coastal sub-region of Orange County in the event the City elects to incorporate the Nature Park into the NCCP.

1.2 Purpose

The purpose of this report is to document the results of a riverine California Rapid Assessment Method (CRAM) assessment that was conducted to evaluate the pre-construction condition of Big Canyon Creek in the Project area. Comparing these results to post-construction CRAM data will illustrate the functional improvements of the riparian area resulting from the habitat restoration and water quality improvements onsite.



SOURCE: USGS 7.5' Topo Quad Newport Beach, 1977

Big Canyon Restoration and Water Quality Improvement Project
Biological Technical Report. D130934

Figure 2
Project Vicinity Map

1.3 CRAM Analysis Description

CRAM was developed by a consortium of local, state and federal agencies, wetland scientists, land managers and regulators as a means to monitor the conditions of wetlands in California. As described in the *California Rapid Assessment Method for Wetlands and Riparian Areas User's Manual, Version 6.1* (CWMW, 2013), the overall goal of CRAM is to "provide rapid, scientifically defensible, standardized, cost-effective assessments of the status and trends in the condition of wetlands and the performance of related policies, programs and projects throughout California."

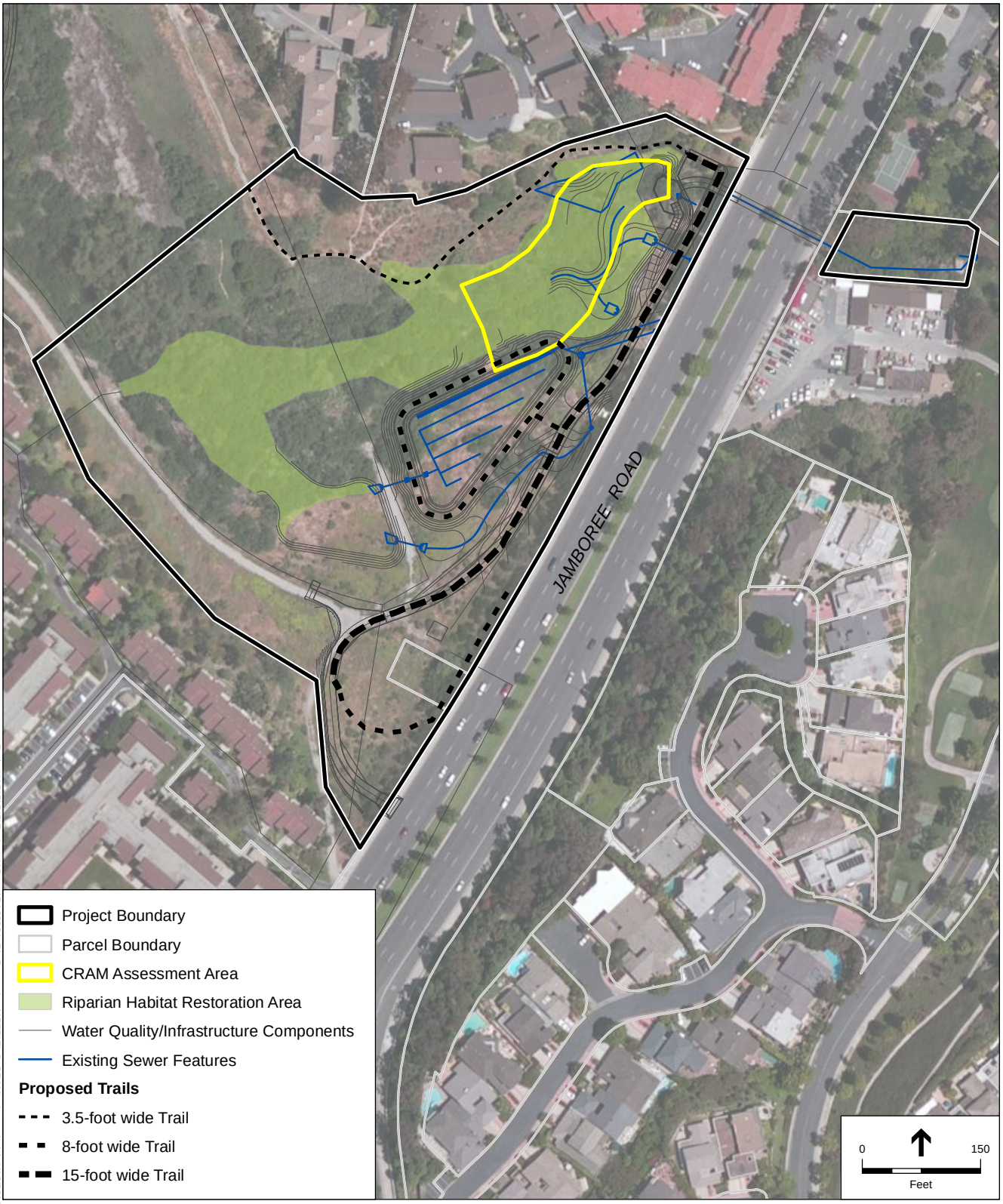
2.0 Methods

The CRAM assessment was conducted by ESA biologists Rosanne Humphrey (CRAM Practitioner) and Alanna Bennett on December 16, 2015 following the *Riverine Wetlands Field Book, Version 6.1* (CWMW, 2013). One Assessment Area (AA) was delineated west of Jamboree Road (Figure 2). The AA extends from approximately 25 meters downstream of the outflow, to 100 meters downstream, and encompasses the associated riparian vegetation along the Big Canyon Creek. The width of the AA varies from approximately 12 to 30 meters. Big Canyon Creek is a non-confined riverine wetland.

The following wetland attributes were assessed: Buffer and Landscape Context, Hydrology, Physical Structure and Biotic Structure. Each attribute is based on the values of individual metrics. A rating of A, B, C, or D was given for each metric pursuant to the *Riverine Wetlands Field Book*, and then converted to a numeric value (A=12, B=9, C=6, and D=3). These numeric values were then used to calculate attribute scores and overall CRAM scores.

3.0 Results and Discussion

As shown in Table 2, the overall CRAM score for the pre-construction AA was low (40). It is not uncommon to have low CRAM scores for riverine systems in southern California because CRAM has been calibrated for the entire state, including northern California, which has much higher rainfall, resulting in more developed riverine systems (e.g., more robust and diverse riparian vegetation, and greater landscape connectivity). When assessing CRAM scores, it is most informative to assess the attribute scores and metrics individually, as discussed below, as it allows for an examination of individual parameters that affect the overall condition of the wetland. Photographs of the AAs are included in Appendix A, and datasheets are included in Appendix B.



SOURCE: City of Newport Beach, ESRI

Big Canyon Restoration and Water Quality Improvement Project

Figure 2
California Rapid Assessment Method (CRAM) Assessment Area

TABLE 1. SUMMARY OF CRAM SCORES

Attributes and Metrics	Numeric Values
Buffer and Landscape Context	**38**
Stream Corridor Continuity	3
Buffer Submetrics	
% of AA with Buffer	12
Average Buffer Width	3
Buffer Condition	6
Hydrology	**50**
Water Source	6
Channel Stability	6
Hydrologic Connectivity	6
Physical Structure	**38**
Structural Patch Richness	3
Topographic Complexity	6
Biotic Structure	**44**
Plant Community Submetrics	4
No. of Plant Layers	6
No. of Co-dominants	3
Percent Invasion	3
Horizontal Interspersion	3
Vertical Biotic Structure	9
Overall AA Score	**42**

1. **Buffer and Landscape Context.** The Buffer and Landscape Context attribute scored quite low at 38. This attribute consists of stream corridor continuity, percent of AA with buffer, average buffer width, and buffer condition. Stream corridor continuity is a measure of the continuity of the stream corridor over a distance of 500 meters upstream and downstream of the AA. In addition to measuring the spatial association with other areas of aquatic resources and overall health of the riverine system, this metric takes into account the ability of wildlife to move into, out of, and along the stream corridor along the upstream and downstream portions. This metric scored quite low (3 points) because almost the entire extent of the area 500 meters upstream of the

AA consists of roadway or golf course, which are land covers that are excluded from buffers.

The percent of AA with buffer, average buffer width, and buffer condition metrics measure extent and function of the buffer, which consists of the areas adjoining the AA that are in a relatively undisturbed condition. The buffer provides an important protective function by trapping contaminants, holding the soil in place, providing habitat values, and enhancing water quality. The entire perimeter of the AA is protected by a buffer, as reflected in the high score for percent of AA with buffer (12 points); however, the width and condition of the buffer are limited, which reduces its protective function, as illustrated by the average buffer width and buffer condition scores (3 and 6 points, respectively).

2. **Hydrology.** The score for the Hydrology attribute was 50. Water source, channel stability, and hydrologic connectivity all scored a 6, which is the second lowest score possible. Water source evaluates the sources of water into and diverted out of the AA within 2 km of the upstream watershed, which affects the extent, duration, and frequency of the hydrological dynamics of a stream channel. Freshwater sources that affect the dry season conditions of the AA are primarily urban runoff, as the entire area upstream is developed. Channel stability is a measure of the level of equilibrium (i.e., the absence of aggradation or degradation) in the stream channel. Within the AA, the creek shows moderate signs of scour and undercutting. Hydrologic connectivity describes the ability of water to flow into or out of the wetland, or the wetland's ability of accommodate rising floodwaters without persistent changes in water level that can result in stress to wetland plants and animals. The metric is based on the entrenchment ratio, which was calculated to be 1.6.

3. **Physical Structure.** The score for the Physical Structure attribute was fairly low, at 38. This attribute is based on structural patch richness and topographic complexity. Structural patch richness evaluates the level of heterogeneity in the habitat by assessing the number of different patch types. Not surprisingly, this submetric scored quite low, which illustrates the affect of high disturbance within the project area. Topographic complexity evaluates the micro- and macro-topographic relief and variety of elevations due to physical and abiotic features and elevation gradients that affect moisture gradients or than influence the path of flowing water. Cross sections along Big Canyon Creek show a moderately low level of topographic complexity.

4. **Biotic Structure.** The score for the Biotic Structure attribute was 44. This attribute is based on plant community metrics (number of plant layers, number of co-dominants, and percent invasion by non-native species), horizontal interspersion, and vertical biotic

structure. Like physical structure, this attribute evaluates the heterogeneity of the habitat but rather than physical structure, it assesses the biological heterogeneity by looking at plant diversity, levels of interspersion of patch types (more edges along different patch types results in a more diverse habitat), and levels of vertical overlap between plant layers. The moderately low score of this attribute is due to the highly disturbed nature of the site and heavy infestation by non-native species.

4.0 Conclusions and Recommendations

The AA within the project area scored fairly low overall, and within each attribute. Some of these scores are reflective of the highly urbanized environment of the project area, which affects the volume and velocity of dry season and wet season flows, and the high levels of disturbance, which affect the physical and biological (i.e., level of infestation by non-native species) structure of Big Canyon Creek. Many of these environmental conditions, such as dense development, cannot be changed; however, the project proposes a number of components, including habitat restoration and water quality improvement, that are expected to greatly improve the function and habitat value of the stream channel, riparian habitat, and surrounding upland habitat. It is recommended that a CRAM assessment be conducted after the project is complete, especially after the restoration has become self-sustaining, to measure the functional improvement of the habitat within the project area.

5.0 References

California Wetlands Monitoring Workgroup (CWMW). 2013. *California Rapid Assessment Method Riverine Wetlands Field Book.* Version 6.1. January 2013.

This page intentionally left blank

Appendix A

Site Photographs

This page intentionally left blank.

Photo 1. Creek channel near northern portion of assessment area.

Photo 2. Creek channel near central portion of assessment area.

Photo 3. Creek channel near southern portion of assessment area.

Photo 4. Photo shows the lack of understory along the creek bank.

Appendix B

CRAM Datasheets

Basic Information Sheet: Riverine Wetlands
Datasheet revised 6/6/13; based on Fieldbook ver. 6.1

Assessment Area Name: **Date:** 12/16/15

Project Name: Big Canyon

Assessment Area ID#:

Project ID#:

Assessment Team Members for this AA

Rosanne Humphrey, Alanna Bennett

Average Bankfull Width

Length of AA: (10 times bankfull width, min 100 m, max 200m) 100 m

Datum: WGS84
Upstream Point Latitude: **Longitude:**
Downstream Point Latitude: **Longitude:**

Wetland Sub-type: Confined ☐ Non-Confined ☒

AA Category: ☒ Restoration ☐ Mitigation ☒ Impacted ☐ Ambient
☐ Reference ☐ Other

Did the river/stream have flowing water at the time of the assessment Yes ☒ No ☐ Stagnant, not flowing

What is the apparent hydrologic flow regime of the reach you are assessing:

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately after precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of waterhsed size and water source.

Definitions

☐ Perennial ☐ Ephemeral ☒ Intermittent

Photo identification numbers and descriptions

Photo ID	Description	Lat	Long	Datum
1	N, S, E, W - 15x			
2				
3				

Site Location Description and Comments:

(1) Western-most end. Standing water, closed canopy
(2) middle
(3) E end

Photo upstream of E edge upstr of culvert (plastic pipe above ground) - ↑ incision & broader water. E end ~~test~~ bdw culvert and this area

Area to be graded & restored

1. Draw AA (Tables 3.5 and 3.6), 100-200 meters long; minimum of 2 m wide

2. Measure average bankfull width

a. 2.1	b. 2.7	c. 3.4	Ave: 2.7

Take measurements for no. 11 at same time. Also sketch cross sections at each location, no. 13.

3. Determine if confined or not confined

4. Assess Stream Corridor Continuity (aquatic area abundance) - draw extention 500 meters upstream and downstream. Total amount of non-buffer land cover that interrupts the riparian corridor within 500 m up and downstream.

Upstream Segment	meters	Downst. Segment	meters
1	480	1	0
2		2	
3		3	
4		4	
5		5	
Total up	480 x2	Total down	

Landscape Connectivity
D

Upstream = Jamboree Rd, City facility, golf course. Both sides - almost entire upstream length

5. Draw Buffer - adjoining AA in natural/semi-natural state; not dedicated to uses that makes it unable to trap pollutants or otherwise protect AA from sress and disturbance. Draw 250 area around AA and draw in neutral and non-buffer areas. Measure is area around perimeter of AA. See Table 4.4 and 4.5

*Minimum 5 m wide and 5 m long. *Max width = 250 m

*Open water: open water area at least 30 m wide **adjacent** to AA is **NOT** buffer. It is neutral (ignore it)

*Open water areas >30m that have **buffer between it and AA IS** considered buffer

6. Percent AA with Buffer

A = Buffer 75-100% of AA perimeter; **B** = 50 - 74%; **C** = 25 - 49%; **D** = 0 - 24%

Percent AA with Buffer
A

100% w/ buffer

7. Average Buffer Width - Draw 8 lines in buffer areas from AA until line hits non-buffer or 250 m

Line	Buffer Width	Line	Buffer Width
1	37	5	44
2	44	6	30
3	24	7	28
4	22	8	32
Average Buffer Width			

A = 190-250 m
B = 130-189 m
C = 65-129 m
D=0-64 m

Ave Buffer Width
33 (D)

8. Assess buffer condition See Table

Soils very disturbed; ↑ human use; ≥ 50-75% non native species or bare.

Buffer Condition
C

9. Water Source - affect the extent, duration and frequency of saturated or ponded conditions within an AA. See Table

100% urban runoff

Water Source
D

10. Fill out channel stability worksheet. See Tables

Definite signs of incision, undercutting, sedimentation. Is it "severe"?

Channel Stability
B/C

Hard to say. Seems ~~not~~ to be more C than B.

Condition	Present	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	✓	□ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. □ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. no undergrowth, just weedy trees like Pepper tree □ There is leaf litter, thatch, or wrack in most pools (if pools are present). pools □ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. so so some signs with perennial vegetation. □ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). no channel bars. □ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA no pools □ The larger bed material supports abundant mosses or periphyton. no
Indicators of Active Degradation	✓ ✓	□ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. yes, not sure if deep but □ There are abundant bank slides or slumps. no □ The lower banks are uniformly scoured and not vegetated. □ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. □ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation.
Indicators of Active Aggradation	✓	□ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. no □ There are partially buried living tree trunks or shrubs along the banks. no □ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. no □ There are partially buried, or sediment-choked, culverts. maybe □ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. □ There are avulsion channels on the floodplain or adjacent valley floor.
OVERALL		□ Equilibrium □ Degradation □ Aggradation

11. Hydrologic connectivity - Entrenchment Ratio - measure bankfull width; measure depth; double the depth to get flood prone depth; from flood prone depth, measure flood prone width. Flood prone width divided by bankful width. Calculate average.

Bankfull width	2.1	2.7	3.4
Bankfull depth	~0.18	.7	.95
Floodprone depth = 2 x bankful depth	0.36	1.4	.7
Floodprone width	2.4	3.6	8.4
Ratio = FW ÷ BW	1.1	1.3	2.5
Average Ratio			1.6

Non-Confined	Confined
A = > 2.2	**A** = > 2.0
B = 1.9 - 2.2	**B** = 1.6 - 2.0
C = 1.5 - 1.8	**C** = 1.2 - 1.5
D = < 1.5	**D** = < 1.2

Hydro. Connectivity
C

12. Structural Patch Type - Fill out structural Patch worksheet

Number of Patches
5

Non-Confined	Confined
A = ≥12	**A** = ≥8
B = 9 - 11	**B** = 6 - 7
C = 6 - 8	**C** = 4 - 5
D = ≤ 5	**D** = ≤3

Structural Patch Type
D

① IIII

5 4

13. Topographic Complexity - sketch cross sections. See Tables and Figures

Topo Complexity
C

Notes:

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

STRUCTURAL PATCH TYPE (circle for presence)	Non-Confined	Confined
Minimum Patch Size	**3m²**	**3m²**
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	1
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (inst of broadly arcuate or mostly straight)		
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	17	12
No. Observed Patch Types (enter here and use in Table 14 below)	5	

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

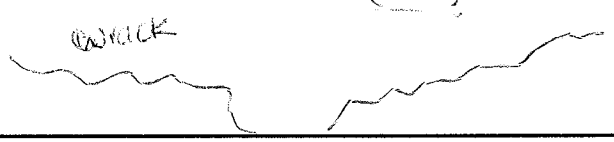
Profile 1

C

Generally looks like 1 bench w/ undulating surface. Some small areas of 2° bench.

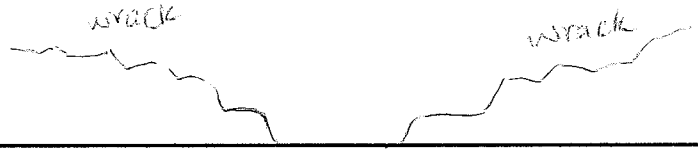
Profile 2

C



Profile 3

C



14. Plant Community Metrics - Identify plant layers, name plant species for each layer, determine if native or non-native

Foating or canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
none		none	
Medium (0.5-1.5m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**
none		B. pepper tree	X
		Salix lasiolepis	
Very Tall (>3.0 m)	**Invasive?**		
Pepper tree		**Total co-dom spp, all layers combined**	2
Salix lasiol		**Percent invasion**	50

No Layers:	2 (C)	**No. Co-dom species:**	2 (D)	**% Invasion**	1 (D) 50%	**Number / Letter**

Rating	No. Plant Layers	No. Co-Dom Spp	% Invasion
Non-Confined Riverine			
A	4 - 5	≥ 12	0-15%
B	3	9 - 11	16-30%
C	2	6 - 8	31-45%
D	0-1	0 - 5	46-100%
Confined Riverine			
A	4	≥11	0-15%
B	3	8 - 10	16-30%
C	2	5 - 7	31-45%
D	0-1	0 - 4	46-100%

Note difficult to ID trees due to season (most trees other than pepper trees have no or few leaves)

15. Horizontal Interspersion : Sketch; See Table — D

16. Vertical Biotic Structure: See Table — B

very uniform mix of Peppertree (~80%) and Salix (~20%) w/ scattered indiv Vinca or Ficus at margins. Almost no understory

17. Fill out stressor checklist

Notes

homogeneous mix of tall and very tall - both w/ same 2 species

Horizontal Interspersion Worksheet

Sketch the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and

	Assigned Zones 1. 2. 3. 4. 5. 6.

Worksheet for Wetland Disturbances and Conversions

Has a major disturbance occurred at this wetland?	NO
If yes, was it a flood, fire, landslide or other?	
If yes, then how severe is the disturbance?	
A) Likely to affect the site in the next 5 years B) Likely to affect site the next 3-5 years C) Likely to affect the site the next 1-2 years	
Has this wetland been converted from another type?	
If so, what was the previous type?	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect	
Point Source (PS) discharges (POTW, other non-stormwater discharge)	X	X	Selenium
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)	X	X	
Flow diversions or unnatural inflows	X	X	urban runoff
Dams (reservoirs, detention basins, recharge basins)	no		
Flow obstructions (culverts, paved stream crossings)	no		
Weir/drop structure, tide gates	no		
Dredged inlet/channel	no		
Engineered channel (riprap, armored channel bank, bed)	no		
Dike/levees	no		
Groundwater extraction			
Ditches (borrow, agricultural drainage, mosquito control, etc.)	no		
Actively managed hydrology	no		
Comments			

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect	
Filling or dumping of sediment or soils (N/A for restoration areas)	X	X	past fill from dredging?
Grading/ compaction (N/A for restoration areas)	X	X	
Plowing/Discing (N/A for restoration areas)	no		
Resource extraction (sediment, gravel, oil and/or gas)	no		
Vegetation management	no		
Excessive sediment or organic debris from watershed	X		
Excessive runoff from watershed	X	X	urban
Nutrient impaired (PS or Non-PS pollution) golf course upstream	X	X	
Heavy metal impaired (PS or Non-PS pollution)	X	X	Selenium
Pesticides or trace organics impaired (PS or Non-PS pollution)	unknown		
Bacteria and pathogens impaired (PS or Non-PS pollution)	unknown		
Trash or refuse	no		
Comments			

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect
Mowing, grazing, excessive herbivory (within AA)	no	
Excessive human visitation ~~recreation~~ incl. periodic encampments	yes	yes
Predation and habitat destruction by non-native vertebrates (e.g.,		
Virginia opossum and domestic predators, such as feral pets)	no	
Tree cutting/sapling removal	no	
Removal of woody debris	no	
Treatment of non-native and nuisance plant species	no	
Pesticide application or ~~vector control~~ —Not sure if implemented	unk	
Biological resource extraction or stocking (fisheries, aquaculture)	no	
Excessive organic debris in matrix (for vernal pools)	no	
Lack of vegetation management to conserve natural resources Area Consvd	~~X~~	~~X~~
Lack of treatment of invasive plants adjacent to AA or buffer	X	X
Comments		

mosquito breeding area

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Significant negative effect
Urban residential	✓	✓
Industrial/commercial	✓	✓
Military training/Air traffic		
Dams (or other major flow regulation or disruption)		
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries		
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor	✓	✓
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)	✓	✓
Passive recreation (bird-watching, hiking, etc.)	✓	
Active recreation (off-road vehicles, mountain biking, hunting, fishing)	✓	
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		

Project Name	Big Canyon Habitat Restoration and Water Quality Improvement Project
Date of Assessment	12/16/2015
Assessors	Rosanne Humphrey, Alanna Bennett
Wetland Class	Riverine
Wetland Subclass (conf/nonconf)	Non-confined

CRAM Raw Attribute and Metric Scores A = 12; B = 9; C = 6; D = 3

METRIC	Alpha	Numeric	Total	Comments
Buffer and Landscape Context				
Stream Corridor Continuity	D	3		
Buffer Metrics				
% of AA with Buffer	A	12		
Average Buffer Width	D	3		
Buffer Condition	C	6	Final Score = (raw score/24)x100	
Raw attribute score = D+[C x (A x B)½]½		**9.0**	38	
Hydrology				
Water Source	C	6		
Hydroperiod/Channel Stability	C	6		
Hydrologic Connectivity	C	6	Final Score = (raw score/36) x 100	
Raw attribute score = sum of scores		**18.0**	50	
Physical Structure				
Structural Patch Richnes	D	3		
Topographic Complexity	C	6	Final Score = (raw score/24)x100	
Raw attribute score = sum of scores		**9.0**	38	
Biotic Structure				
Plant Community Metrics				
PC: No. of plant layers	C	6		
PC: No. of codominants	D	3		
PC: Percent Invasion	D	3		
Plant Community = Average of submetrics A-C		**4**		
Horizontal Interspersion	D	3		
Vertical Biotic Structure	B	9	Final Score = (raw score/36) x 100	
Raw attribute score = sum of numeric scores		**16.0**	44	
Overall AA Score = Average of all scores				**42**

Additional Comments

This page intentionally left blank

APPENDIX C

Rare Plant Survey Report

This page intentionally left blank

ESA

550 West C Street
Suite 750
San Diego, CA 92101
619.719.4200 phone
619.719.4201 fax

www.esassoc.com

January 8, 2016

Bob Stein
City of Newport Beach
100 Civic Center Drive
Newport Beach, CA 92660

RE: Results of 2015 Rare Plant Survey for Big Canyon Habitat Restoration and Water Quality Improvement Project

Dear Bob:

The purpose of this letter is to document the results of the 2015 rare plant surveys within the Big Canyon Habitat Restoration and Water Quality Improvement Project (project) survey area. The survey area is located in the within the Big Canyon Watershed, which consists of approximately 1,062 acres that drain to the Upper Newport Bay Ecological Reserve in the City of Newport Beach. The 10-acre project site is located within the eastern portion of the 60-acre Big Canyon Nature Park, east of Upper Newport Bay, and adjacent to Jamboree Road (Figure 1). Surrounding land use consists residential development on the bluffs immediately north and south of the project site on the west side of Jamboree Road, and urban development and a golf course on the east side of Jamboree Road. Onsite land uses include passive recreation, such as hiking on the public trail and\or access road that run through the site, and maintenance activities associated with the storm drain facilities. Biological surveys were conducted within an area that included the area of potential direct impacts, plus a buffer to capture potential indirect impacts to biological resources.

Methods

A rare plant survey and vegetation mapping were conducted within the survey area on March 12, 2015 by ESA biologist Rosanne Humphrey. During the survey, the entire 10-acre project area plus a survey buffer of approximately 150 m downstream was walked in its entirety to ensure that all portions of the survey area were directly observed. Vegetation communities were characterized based on the presence of dominant plant species and delineated within the survey area. Vegetation community classification and descriptions were determined according to the Orange County Habitat Classification System (Jones and Stokes 1993, Gray and Bramlet 1992) to be consistent with the Orange County Central and Coastal sub-region NCCP and previous vegetation mapping (CCI 2004). The rare plant survey was consistent with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009), which includes documentation all plant species observed within each habitat type. Plant species were identified in the field following Baldwin, et al. (2012). All observed occurrences of sensitive plant species were photographed and mapped with a handheld

Global Positioning System (GPS) unit. After the plant survey was completed, the *Biological Resources Inventory Report for the Big Canyon Nature Park Project* (Dudek 2015) became available to ESA and was reviewed to ensure that no additional rare plants were observed within the project area.

Results

Throughout much of the survey area, the vegetation is highly disturbed; a dominance of non-native plant species intermixed with native plant species is characteristic of the survey area (**Attachment A**). No sensitive plant species were observed within the project area by ESA or Dudek during the 2015 rare plant surveys.

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

Rosanne Humphrey **January 8, 2016**
Senior Biologist

Attachments:

Figure 1. Vegetation Communities Map
Attachment A. References
Attachment B. Plant Species Observed during 2015 Survey

SOURCE: ESA, ESRI

Big Canyon Habitat Restoration and Water Quality Improvement Project. D130934

Figure 1

Vegetation Communities Map

Attachment A. References

Baldwin, et al. 2012. Jepson Manual: Vascular Plants of California; Second Edition. University of California Press.

California Department of Fish and Game (CDFG). 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. Sacramento, California. November 2009.

Community Conservation International (CCI). 2004. *Big Canyon Creek Historic Tidal Wetlands Conceptual Restoration Plan, Upper Newport Bay, Orange County, California.*

Dudek. 2015. *Biological Resources Inventory Report for the Big Canyon Nature Park Project, City of Newport Beach, Orange County, California*. Prepared for the Irvine Ranch Conservancy.

Gray, J. and D. Bramlet. 1992. *Habitat Classification System: Natural Resources Geographic Information System (GIS) Project*. Unpublished report prepared for the Orange County Environmental Management Agency, Santa Ana California.

Jones & Stokes Associates, Inc. 1993. *Methods used to survey the vegetation of Orange County parks and open space areas and The Irvine Company property. February 10, 1993.* Sacramento, California. Prepared for County of Orange, Environmental Management

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A Manual of California Vegetation, 2nd edition. California Native Plant Society, Sacramento, CA.

Attachment B. Plant Species Observed During the 2015 Rare Plant Survey

Scientific Name	Common Name
Agave americana*	Century Plant
Washingtonia robusta*	Mexican Fan Palm
Phoenix canariensis*	Canary Island Date Palm
Cyperus eragrostis	Tall Flatsedge
Schoenoplectus californicus	California Bulrush
Avena barbata*	Slender Oat
Bromus diandrus*	Ripgut Grass
Bromus madritensis ssp. rubens*	Foxtail Chess, Red Brome
Cortaderia selloana*	Pampas Grass
Crypsis schoenoides*	Prickle or Swamp Grass
Distichlis spicata	Saltgrass
Elymus condensatus	Giant Wild Rye
Festuca myuros*	Foxtail Fescue
Hordeum murinum*	Barley
Typha latifolia	Broad-leaf Cattail
Sambucus nigra ssp. caerulea	Blue Elderberry
Mesembryanthemum crystallinum*	Crystalline Iceplant
Mesembryanthemum nodiflorum*	Slender-leaf Iceplant
Tetragonia tetragonioides*	New Zealand Spinach
Malephora crocea*	Croceum iceplant
Schinus terebinthifolius*	Brazilian Pepper Tree
Rhus integrifolia	Lemonade Berry
Conium maculatum*	Common Poison Hemlock
Foeniculum vulgare*	Fennel
Apium graveolens*	Common Celery
Nerium oleander*	Oleander
Vinca major*	Greater Periwinkle
Hedera helix*	English Ivy
Ambrosia psilostachya	Western Ragweed
Artemisia californica	California Sagebrush
Artemisia douglasiana	Douglas Mugwort
Artemisia palmeri	San Diego Sagewort
Baccharis pilularis	Chaparral Broom, Coyote Brush

Scientific Name	Common Name
Baccharis salicina	Willow baccharis
Carduus pycnocephalus*	Italian Thistle
Cynara cardunculus*	Artichoke Thistle
Glebionis coronarium*	Garland Chrysanthemum
Helminthotheca echioides*	Prickly Ox Tongue
Osteospermum fruticosum*	Trailing African Daisy
Silybum marianum*	Milk Thistle
Sonchus asper*	Prickly Sow Thistle
Sonchus oleraceus*	Common Sow Thistle
Encelia californica	California Encelia
Logfia gallica*	Narrow-Leaf Cottonrose
Malacothrix saxatilis var. tenuifolia	Short-Leaved Cliff-Aster
Amsinckia menziesii	Rancher's Fireweed
Echium candicans*	Pride of Madera
Brassica nigra*	Black Mustard
Brassica rapa*	Turnip, Field Mustard
Descurainia pinnata	Alkali Western Tansy-Mustard
Hirschfeldia incana*	Shortpod Mustard
Lobularia maritima*	Sweet Alyssum
Raphanus sativus*	Wild Radish
Sisymbrium irio*	London Rocket
Sisymbrium orientale*	Hare's-Ear Cabbage
Brassica tournefortii*	Sahara Mustard
Salicornia pacifica	Pickleweed
Atriplex glauca*	Glaucous-leaved saltbush
Chenopodium album*	Lamb’s Quarters
Salsola tragus*	Russian Thistle
Extriplex californica	California Orach
Peritoma arborea	Bladderpod
Crassula connata	Pygmyweed
Euphorbia peplus*	Petty Spurge
Acacia longifolia*	Sydney Golden Wattle
Medicago polymorpha*	California Burclover
Melilotus indicus*	Indian Sweetclover
Frankenia salina	Alkali Heath

Scientific Name	Common Name
Erodium moshcatum*	White-Stem Filaree
Geranium carolinianum*	Carolina Geranium
Pholistoma racemosum	San Diego Fiesta Flower
Marrubium vulgare*	Horehound
Malva parviflora*	Cheeseweed
Eucalyptus spp.*	Gum Tree
Fraxinus uhdei*	Evergreen Ash
Plantago major*	Common Plantain
Platanus racemosa	Western Sycamore
Persicaria lapathifolia	Willow Smartweed, Willow Weed
Eriogonum fasciculatum	California Buckwheat
Rubus sp.	Blackberry
Galium aparine	Common Bedstraw
Salix lasiolepis	Arroyo Willow
Myoporum laetum*	Myoporum
Lycium californicum	Coast Desert-Thorn
Solanum americanum	White Nightshade
Tropaeolum majus*	Garden Nasturtium
Hesperocnide tenella	Western Nettle
Urtica dioica ssp. gracilis*	Stinging Nettle
Urtica urens*	Dwarf Nettle

*Non-native species

APPENDIX D

California Gnatcatcher Survey Report

This page intentionally left blank

ESA

550 West C Street
Suite 750
San Diego, CA 92101
619.719.4200 phone
619.719.4201 fax

www.esassoc.com

January, 8 2016

Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
U.S. Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

RE: Results of 2015 Coastal California Gnatcatcher Surveys for Big Canyon Habitat Restoration and Water Quality Improvement Project, Orange County, California

Dear Stacey:

The purpose of this letter is to document the results of the 2015 focused survey for coastal California gnatcatcher (*Polioptila californica californica*) within the Big Canyon Habitat Restoration and Water Quality Improvement Project (project) survey area. The survey area is located in the within the Big Canyon Watershed, which consists of approximately 1,062 acres that drain to the Upper Newport Bay Ecological Reserve in the City of Newport Beach. The 10-acre project site is located within the eastern portion of the 60-acre Big Canyon Nature Park, east of Upper Newport Bay, and adjacent to Jamboree Road (Figure 1). Surrounding land use consists residential development on the bluffs immediately north and south of the project site on the west side of Jamboree Road, and urban development and a golf course on the east side of Jamboree Road. Onsite land uses include passive recreation, such as hiking on the public trail and\or access road that run through the site, and maintenance activities associated with the storm drain facilities. Biological surveys were conducted within an area that included the area of potential direct impacts, plus a buffer to capture potential indirect impacts to biological resources.

Species Background

The coastal California gnatcatcher (CAGN) was listed as federally threatened in 1993 and is a state species of special concern. Federally designated critical habitat exists for the species, although not within the project area. CAGN is declining proportionately with the continued loss of coastal sage scrub habitat in the six southern California counties (San Bernardino, Ventura, Los Angeles, Orange, San Diego, and Riverside) located within the coastal plain.

Habitat preferences in Orange County consist of Diegan coastal sage scrub dominated by California sagebrush (*Artemisia californica*) and flat-topped buckwheat (*Eriogonum fasciculatum*), which are the primary plants used by CAGN when foraging for insects (ERCE 1990). The species inhabits coastal sage scrub vegetation below 2,500 feet elevation in Riverside County and generally below 1,000 feet elevation along the coastal slope in Orange County; it generally avoids steep slopes above 25 percent and dense, tall vegetation for nesting.

Methods

The purpose of CAGN surveys was to determine the presence or absence of CAGN in potentially suitable habitat within the survey area. Three protocol surveys for CAGN were performed according to the most recent USFWS survey protocol within all suitable habitats (i.e., Diegan coastal sage scrub) (USFWS 1997). Surveys were conducted on March 27, April 3, and April 17, 2015 by ESA biologists Dallas Pugh (TE-79192A-1) and Alanna Bennett. Consistent with the USFWS guidelines, these surveys were conducted between 6:00 a.m. and 12:00 p.m. during periods of mild weather.

Surveys were conducted within a total of 1.53 acres of Diegan coastal sage scrub (CSS) within the project area (Figure 2). The Diegan CSS habitat onsite consists of several small patches on the north and southeastern portions of the survey area. Several patches occur in a mosaic within the non-native grassland area west of Jamboree Road. These areas are highly disturbed, consisting of scattered individual sagebrush and a few coyote brush (*Baccharis pilularis*) shrubs with a dense understory of non-native forbs and grasses, such as mustards (*Brassica* spp. and *Hirschfeldia incana*), and brome grasses (*Bromus* spp.). Larger patches occur on the south-facing slopes below residential development on the north side. These areas are also highly disturbed, consisting of isolated sagebrush shrubs with patches of bare ground and slender leaf ice plant and crystalline ice plant (*Mesembryanthemum nodiflorum* and *M. crystallinum*), as well as a variety of non-native grasses and forbs, such as mustards, bromes, and sweet clovers (*Melilotus* spp).

Results

Table 1 includes the survey dates and weather conditions recorded during the surveys. If a bird was not observed or heard after several minutes, a recorded call was played.

TABLE 1
SURVEY DATES/SURVEY NUMBER/WEATHER CONDITIONS

Survey Number	Date	Personnel[1]	Time	Temperature (°F)	Wind Speed Average (mph)	Cloud Cover (%)	General Sky Condition
1	3/27/15	DP and AB	0900-1058	73-81	0-2	0	Clear and sunny
2	4/3/15	DP and AB	0850-1100	65-75	0-2	0	Clear and sunny
3	4/17/15	DP and AB	0915-1030	70-72	0	0	Clear and sunny

[1]DP = Dallas Pugh (TE-79192A-1); AB = Alanna Bennett

The biologists did not observe or detect CAGN. On April 3, 2015 and April 17, 2015, a single yellow warbler (*Dendroica petechia*; California Species of Special Concern) was detected within the riparian forest onsite. Attachment A includes a list of wildlife species detected or observed during the surveys.

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

Dallas Pugh **January 8, 2016**
Recovery Permit No.: TE-79192A-1

Alanna Bennett **January 8, 2016**

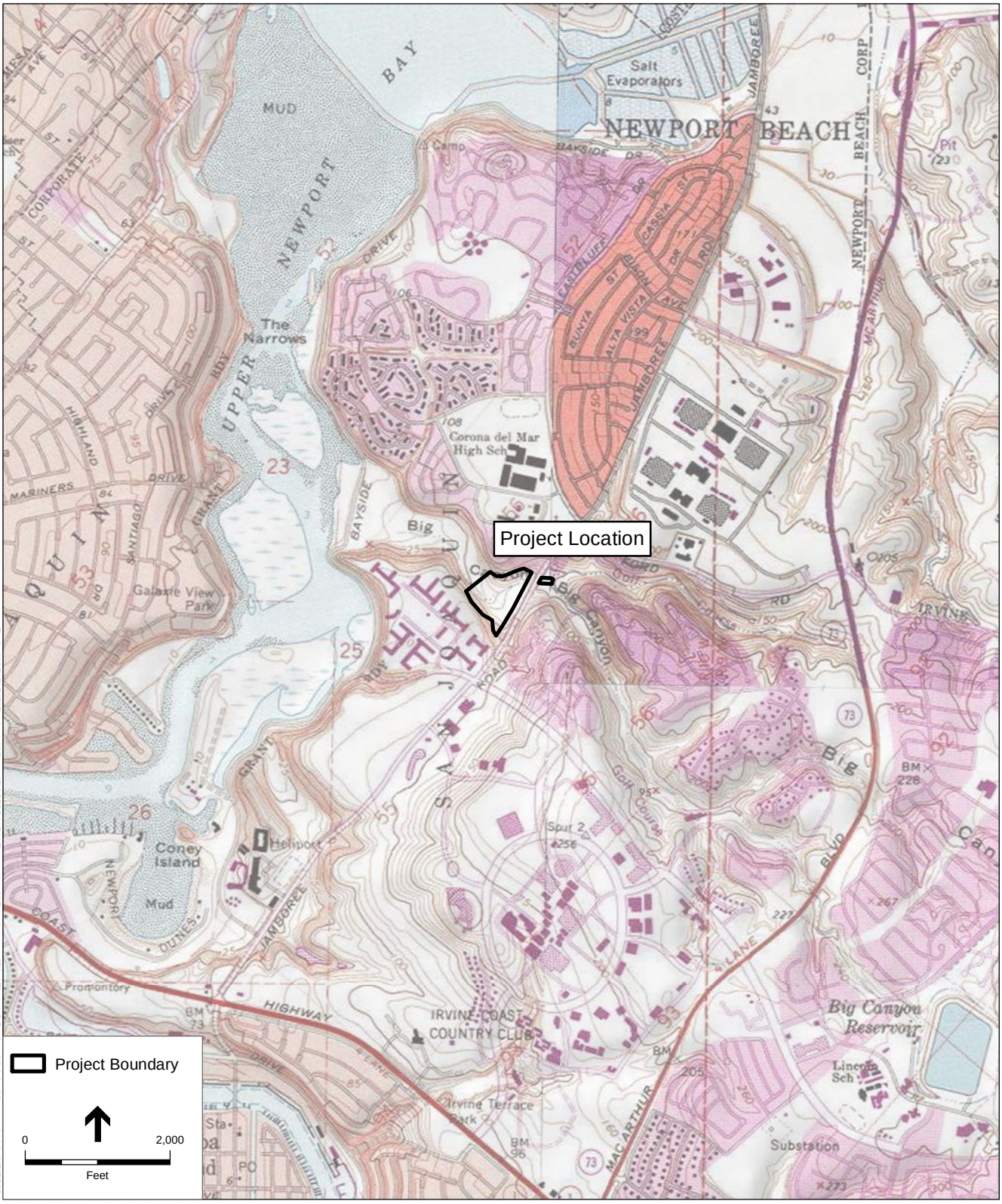
Attachments:

Figure 1. Vicinity Map
Figure 2. Vegetation Communities Map
Attachment A Bird Species Observed during 2015 Survey

References

ERC Environmental and Energy Services Co. (ERCE). 1990. *Phase 1 Report Amber Ridge California Gnatcatcher Study*. Prepared for Weingarten, Siegel, Fletcher Group, Inc. April. 30 pp.

U.S. Fish and Wildlife Service (USFWS), 1997. Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Guidelines, February 28, 1997.



SOURCE: USGS 7.5' Topo Quad Newport Beach, 1977

Big Canyon Habitat Restoration and Water Quality Improvement Project. D130934

Figure 1

Project Vicinity Map

SOURCE: ESA, ESRI

Big Canyon Habitat Restoration and Water Quality Improvement Project. D130934

Figure 2

Vegetation Communities Map

Attachment A
BIRD SPECIES OBSERVED DURING 2015 SURVEYS

Scientific Name	Common Name
VERTEBRATES	
Birds	
Anas platyrhynchos	Mallard
Zenaida macroura	Mourning Dove
Calypte anna	Anna's Hummingbird
Selasphorus sasin	Allen's Hummingbird
Picoides nuttallii	Nuttall's Woodpecker
Empidonax difficilis	Pacific-Slope Flycatcher
Sayornis nigricans	Black Phoebe
Myiarchus cinerascens	Ash-Throated Flycatcher
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Psaltriparus minimus	Bushtit
Regulus calendula	Ruby-Crowned Kinglet
Dendroica petechia[1]	Yellow Warbler
Geothlypis trichas	Common Yellowthroat
Pipilo maculatus	Spotted Towhee
Melospiza melodia	Song Sparrow
Carpodacus mexicanus	House Finch
Carduelis psaltria	Lesser Goldfinch
**Lonchura punctulata*	Nutmeg Mannikin

*=Non-native
[1] Status: SSC=California Species of Special Concern

APPENDIX E

Least Bell's Vireo Survey Report

This page intentionally left blank

ESA

550 West C Street
Suite 750
San Diego, CA 92101
619.719.4200 phone
619.719.4201 fax

www.esassoc.com

January, 8 2016

Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
U.S. Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

RE: Results of 2015 Least Bell's Vireo Surveys for Big Canyon Habitat Restoration and Water Quality Improvement Project, Orange County, California.

Dear Stacey:

The purpose of this letter is to document the results of the 2015 focused survey for least Bell's vireo (*Vireo bellii pusillus*) within the within the Big Canyon Habitat Restoration and Water Quality Improvement Project (project) survey area. The survey area is located in the within the Big Canyon Watershed, which consists of approximately 1,062 acres that drain to the Upper Newport Bay Ecological Reserve in the City of Newport Beach. The 10-acre project site is located within the eastern portion of the 60-acre Big Canyon Nature Park, east of Upper Newport Bay, and adjacent to Jamboree Road (Figure 1). Surrounding land use consists residential development on the bluffs immediately north and south of the project site on the west side of Jamboree Road, and urban development and a golf course on the east side of Jamboree Road. Onsite land uses include passive recreation, such as hiking on the public trail and\or access road that run through the site, and maintenance activities associated with the storm drain facilities. Biological surveys were conducted within an area that included the area of potential direct impacts, plus a buffer to capture potential indirect impacts to biological resources.

Methods

Least Bell's vireo (LBVI) is a state and federally-listed endangered species. The purpose of LBVI surveys was to determine the presence or absence of LBVI in potentially suitable habitat within the survey area. Three focused species surveys for LBVI were performed according to the most recent USFWS survey protocol within all suitable riparian habitats (USFWS 2001). The full eight surveys were not performed due to project scheduling constraints, and because it was anticipated that Dudek biological consultants would be conducting the full eight surveys for the entire Big Canyon Nature Preserve.

Surveys were conducted on March 27, April 3, and April 17, 2015 by ESA biologists Dallas Pugh and Alanna Bennett. Pursuant to the USFWS guidelines, these surveys were conducted between 6:00 a.m. and 11:00 a.m. during periods of mild weather.

Surveys were conducted within a total of 4 acres of southern riparian forest (Figure 2). Southern riparian forest occurs throughout most of the central and north-central region of the project area, following the streambed, as well as in a small, isolated patch near the east-central region of the project area. It is a closed-canopy forest dominated by a heavy infestation of Brazilian peppertree (*Schinus terebinthifolius*) and other non-native tree species. Arroyo willow (*Salix lasiolepis*) is dispersed throughout the habitat.

Results

Table 1 includes the survey dates and weather conditions recorded during the surveys.

TABLE 1
SURVEY DATES/SURVEY NUMBER/WEATHER CONDITIONS

Survey Number	Date	Personnel[1]	Time	Temperature (°F)	Wind Speed Average (mph)	Cloud Cover (%)	General Sky Condition
1	3/27/15	DP and AB	0900-1058	73-81	0-2	0	Clear and sunny
2	4/3/15	DP and AB	0850-1100	65-75	0-2	0	Clear and sunny
3	4/17/15	DP and AB	0915-1030	70-72	0	0	Clear and sunny

[1]DP = Dallas Pugh; AB = Alanna Bennett

The biologists did not observe or detect LBVI. On April 3, 2015 and April 17, 2015, a single yellow warbler (*Dendroica petechia*; California Species of Special Concern) was detected within the riparian forest onsite. Attachment A includes a list of wildlife species detected or observed during the surveys. Results were also negative for LBVI surveys performed by Dudek across the entire Big Canyon Nature Preserve (Dudek 2015).

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

Dallas Pugh **January 8, 2016**
Recovery Permit No.: TE-79192A-1

Alanna Bennett **January 8, 2016**

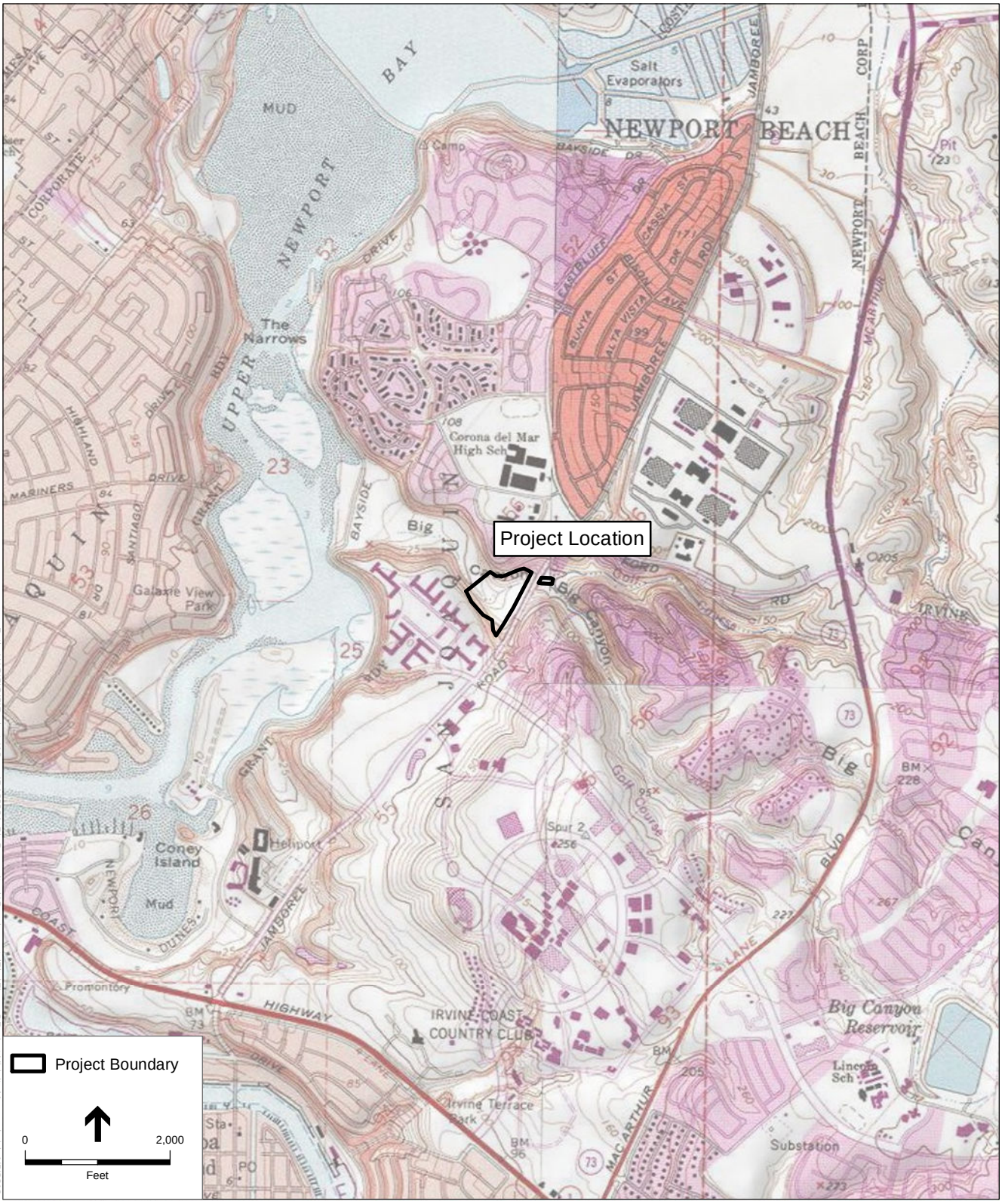
Attachments:

Figure 1. USGS Topographic Map
Figure 2. Vegetation Communities Map
Attachment A Bird Species Observed during 2015 Survey

References

Dudek. 2015. *Biological Resources Inventory Report for the Big Canyon Nature Park Project, City of Newport Beach, Orange County, California*. Prepared for the Irvine Ranch Conservancy.

U.S. Fish and Wildlife Service (USFWS). 2001. *Least Bell's Vireo Survey Guidelines*. Carlsbad, California. January 19, 2001.



SOURCE: USGS 7.5' Topo Quad Newport Beach, 1977

Big Canyon Habitat Restoration and Water Quality Improvement Project. D130934

Figure 1

Project Vicinity Map

SOURCE: ESA, ESRI

Big Canyon Habitat Restoration and Water Quality Improvement Project. D130934

Figure 2

Vegetation Communities Map

Attachment A
BIRD SPECIES OBSERVED DURING 2015 SURVEYS

Scientific Name	Common Name
VERTEBRATES	
Birds	
Anas platyrhynchos	Mallard
Zenaida macroura	Mourning Dove
Calypte anna	Anna's Hummingbird
Selasphorus sasin	Allen's Hummingbird
Picoides nuttallii	Nuttall's Woodpecker
Empidonax difficilis	Pacific-Slope Flycatcher
Sayornis nigricans	Black Phoebe
Myiarchus cinerascens	Ash-Throated Flycatcher
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Psaltriparus minimus	Bushtit
Regulus calendula	Ruby-Crowned Kinglet
Dendroica petechia[1]	Yellow Warbler
Geothlypis trichas	Common Yellowthroat
Pipilo maculatus	Spotted Towhee
Melospiza melodia	Song Sparrow
Carpodacus mexicanus	House Finch
Carduelis psaltria	Lesser Goldfinch
**Lonchura punctulata*	Nutmeg Mannikin

*=Non-native
[1]Special Status: SSC=California Species of Special Concern

APPENDIX F

Plant and Wildlife Species Compendia

SPECIES COMPENDIUM

Plant Species Observed Onsite

Group and Family	Scientific Name	Common Name
ANGIOSPERMS-MONOCOTS		
Agavaceae - Agave Family	*Agave americana**	Century Plant
Araceae - Arum/Duckweed Family	*Washingtonia robusta**	Mexican Fan Palm
Arecaceae (Palmae) - Palm Family	*Phoenix canariensis**	Canary Island Date Palm
Cyperaceae - Sedge Family	*Cyperus eragrostis*	Tall Flatsedge
	Schoenoplectus californicus	California Bulrush
Poaceae - Grass Family	*Avena barbata**	Slender Oat
	*Bromus diandrus**	Ripgut Grass
	Bromus madritensis ssp. *rubens**	Foxtail Chess, Red Brome
	*Cortaderia selloana**	Selloa Pampas Grass
	*Crypsis schoenoides**	Pricke or Swamp Grass
	Distichlis spicata	Saltgrass
	Elymus condensatus	Giant Wild Rye
	*Festuca myuros**	Foxtail Fescue
	*Hordeum murinum**	Barley
Typhaceae - Cattail Family	*Typha latifolia*	Broad-leaf Cattail
ANGIOSPERMS-EUDICOTS		
Adoxaceae - Adoxa Family	*Sambucus nigra* ssp. *caerulea*	Blue Elderberry
Aizoaceae - Fig-Marigold Family	*Mesembryanthemum crystallinum**	Crystalline Iceplant
	*Mesembryanthemum nodiflorum**	Slender-leaf Iceplant
	*Tetragonia tetragonioides**	New Zealand Spinach

Group and Family	Scientific Name	Common Name
	*Malephora crocea**	Croceum iceplant
Anacardiaceae - Sumac or Cashew Family	*Schinus terebinthifolius**	Brazilian Pepper Tree
	Rhus integrifolia	Lemonade Berry
Apiaceae - Carrot Family	*Conium maculatum**	Common Poison Hemlock
	*Foeniculum vulgare**	Fennel
	*Apium graveolens**	Common Celery
Apocynaceae - Dogbane Family	*Nerium oleander**	Oleander
	*Vinca major**	Greater Periwinkle
Araliaceae - Ginseng Family	*Hedera helix**	English Ivy
Asteraceae - Sunflower Family	*Ambrosia psilostachya*	Western Ragweed
	Artemisia californica	California Sagebrush
	Artemisia douglasiana	Douglas Mugwort
	Artemisia dracunculus	Tarragon
	Baccharis pilularis	Chaparral Broom, Coyote Brush
	Baccharis salicifolia	Mule-Fat, Seep-Willow
	Baccharis salicina	Willow baccharis
	*Carduus pycnocephalus**	Italian Thistle
	*Cynara cardunculus**	Artichoke Thistle
	*Glebionis coronarium**	Garland Chrysanthemum
	*Helminthotheca echioides**	Prickly Ox Tongue
	*Osteospermum fruticosum**	Trailing African Daisy
	*Silybum marianum**	Milk Thistle
	*Sonchus asper**	Prickly Sow Thistle
	*Sonchus oleraceus**	Common Sow Thistle
	Encelia californica	California Encelia
	*Logfia gallica**	Narrow-Leaf Cottonrose

Group and Family	Scientific Name	Common Name
Boraginaceae - Borage Family	*Amsinckia menziesii*	Rancher's Fireweed
	*Echium candicans**	Pride of Madera
Brassicaceae - Mustard Family	*Brassica nigra**	Black Mustard
	*Brassica rapa**	Turnip, Field Mustard
	Descurainia pinnata	Alkali Western Tansy-Mustard
	*Hirschfeldia incana**	Shortpod Mustard
	*Lobularia maritima**	Sweet Alyssum
	*Raphanus sativus**	Wild Radish
	*Sisymbrium irio**	London Rocket
	*Sisymbrium orientale**	Hare's-Ear Cabbage
	*Brassica tournefortii**	Sahara Mustard
Chenopodiaceae - Goosefoot Family	*Atriplex glauca**	Glaucous-leaved saltbush
	*Chenopodium album**	Lamb’s Quarters
	Salicornia pacifica	Pickleweed
	*Salsola tragus**	Russian Thistle
Cleomaceae - Spiderflower Family	*Peritoma arborea*	Bladderpod
Crassulaceae - Stonecrop Family	*Crassula connata*	Pygmyweed
Euphorbiaceae - Spurge Family	*Euphorbia peplus**	Petty Spurge
Fabaceae - Legume Family	*Acacia longifolia**	Sydney Golden Wattle
	*Medicago polymorpha**	California Burclover
	*Melilotus indicus**	Indian Sweetclover
Frankeniaceae - Alkali Heath Family	*Frankenia salina*	Alkali Heath
Geraniaceae - Geranium Family	*Erodium cicutarium**	Red-Stem Filaree
	*Erodium moschatum**	White-Stem Filaree
	*Geranium carolinianum**	Carolina Geranium
Hydrophyllaceae - Waterleaf Family	*Pholistoma racemosum*	San Diego Fiesta Flower
Lamiaceae - Mint Family	*Marrubium vulgare**	Horehound
Malvaceae - Mallow Family	*Malva parviflora**	Cheeseweed

Group and Family	Scientific Name	Common Name
Myrtaceae - Myrtle Family	*Eucalyptus* spp.*	Gum Tree
Oleaceae - Olive Family	*Fraxinus uhdei**	Shamel Ash
Plantaginaceae - Plantago Family	*Plantago major**	Common Plantain
Platanaceae - Sycamore Family	*Platanus racemosa*	Western Sycamore
Polygonaceae - Buckwheat Family	*Persicaria lapathifolia*	Willow Smartweed, Willow Weed
	Eriogonum fasciculatum	California Buckwheat
Rosaceae - Rose Family	*Rubus* sp.	Blackberry
Rubiaceae - Madder or Coffee Family	*Galium aparine*	Common Bedstraw
Salicaceae - Willow Family	*Salix lasiolepis*	Arroyo Willow
Scrophulariaceae - Figwort Family	*Myoporum laetum**	Myoporum
Solanaceae - Nightshade Family	*Lycium californicum*	Coast Desert-Thorn
	Solanum americanum	White Nightshade
Tropaeolaceae - Nasturtium Family	*Tropaeolum majus**	Garden Nasturtium
Urticaceae - Nettle Family	*Hesperocnide tenella*	Western Nettle
	*Urtica dioica ssp. gracilis**	Stinging Nettle
	*Urtica urens**	Dwarf Nettle

*Non-native species

Wildlife Species Observed Onsite

Order	Family	Scientific Name	Common Name
Doves and Sandgrouse: Order Columbiformes			
	Family Columbidae (Doves and Pigeons)		
		Zenaida macroura	Mourning Dove
Ducks, Geese: Order Anseriformes			
	Family Anatidae (Ducks)		
		Anas platyrhynchos	Mallard
Raptors: Order Falconiformes			
	Family Accipitridae (Hawks, Kites, and Eagles)		
		Accipiter cooperii	Cooper's Hawk
Songbirds: Order Passeriformes			
	Family Aegithalidae (Long-tailed Tits)		
		Psaltriparus minimus	Bushtit
	Family Corvidae (Jays and Crows)		
		Corvus brachyrhynchos	American Crow
	Family Emberizidae, Subfamily Emberizinae (New World Sparrows and Relatives)		
		Passerella (*Melospiza*) *melodia*	Song Sparrow
		Pipilo crissalis	California Towhee
		Pipilo maculatus	Spotted Towhee
	Family Emberizidae, Subfamily Parulinae (New World Warblers)		
		Dendroica coronata	Yellow-Rumped Warbler

	Dendroica petechia	Yellow Warbler
	Geothlypis trichas	Yellowthroat
Family Fringillidae (Finches)		
	Carduelis psaltria	Lesser Goldfinch
	Carpodacus mexicanus	House Finch
	Spinus tristis	American Goldfinch
Family Passeridae (Old World Sparrows)		
	Passer domesticus	House Sparrow
Family Regulidae (Kinglets)		
	Regulus calendula	Ruby-Crowned Kinglet
Family Tyrannidae (Tyrant Flycatchers)		
	Empidonax difficilis	Pacific-slope Flycatcher
	Myiarchus cinerascens	Ash-throated Flycatcher
	Sayornis nigricans	Black Phoebe
Swifts and Hummingbirds: Order Apodiformes		
Family Trochilidae (Hummingbirds)		
	Calypte anna	Anna's Hummingbird
	Selasphorus sasin	Allen's Hummingbird
Woodpeckers and Relatives: Order Piciformes		
Family Picidae (Woodpeckers, Piculets, and Wrynecks)		
	Colaptes auratus	Northern Flicker
	Picoides nuttallii	Nuttall's Woodpecker

This page intentionally left blank

APPENDIX G

Potentially Occurring Species

This page intentionally left blank

SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR ONSITE

Species	Status[1] Federal/State, CRPR/County	Habitat Requirements	Potential to Occur
Red sand-verbena (*Abronia maritima*)	--/4.2/Not covered	Annual herb found in sandy soils within coastal dunes. Blooming period from January - September. Occurs at elevations of 0 – 100 m.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Chaparral sand-verbena (Abr*onia villosa* var. *aurita*)	--/1B.1/Not covered	Found in sandy areas, chaparral, desert dunes, and coastal scrub habitats from 75 – 1600 m elevation. Blooming period is January – September.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
Aphanisma (*Aphanisma blitodes*)	--/1B.2/Not covered	Annual herb found in coastal bluff scrub, costal dunes, and coastal scrub; sandy soils. Blooming period is March – June and found at elevations from 1 - 305 m.	**Low.** Very limited, low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
San Diego sagewort *(Artemisia palmeri*)	--/4.2/Not covered	Perennial deciduous herb found in chaparral, coastal scrub, riparian forest, riparian scrub, and riparian woodland; sandy, mesic soils at 15 – 915 m elevation. Blooming period is February – September.	**Moderate.** Suitable but limited habitat is present onsite or within the immediate vicinity.
Braunton's milk-vetch (*Astragalus brauntonii*)	FE/1B.1/Not covered	Perennial herb found in recently burned or disturbed areas usually within sandstone with carbonate layers. Habitats include chaparral, coastal scrub, and valley and foothill grassland. Blooming period is August – January; occurs at 4 – 640 m elevation.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Required substrates are not present.
Coulter's saltbush (*Atriplex coulteri*)	--/1B.2/Not covered	Found on alkaline or clay substrate within coastal bluff scrub, coastal dune, coastal scrub and valley and foothill grassland habitats. Blooming period is March – October. Occurs at elevations from 3 - 460 m.	**High.** Suitable habitat is present on-site or within the immediate vicinity. One previously recorded occurrence was identified near the mouth of San Diego Creek.
South Coast saltscale (*Atriplex pacifica*)	--/1B.2/Not covered	Found within chenopod scrub, coastal bluff and coastal scrub habitats. Blooming period is March – October. Occurs at elevations up to 140 m.	**High.** Suitable habitat is present on-site or within the immediate vicinity.
Parish's brittescale (*Atriplex parishii*)	--/1B.1/Not covered	Found in alkali meadows, vernal pools, playas and chenopod scrub. Associated with alkaline soils. Blooming period is June – October. Occurs at 25 – 1900 m elevation.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
Davidson's saltscale (*Atriplex serenana* var. *davidsonii*)	--/1B.2/Not covered	Found on alkaline substrate within coastal bluff scrub and coastal scrub habitats. Blooming period is from April – October and occurs at elevations from 10 - 200 m.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Malibu baccharis (*Baccharis malibuensis*)	--/1B.1/Not covered	Perennial deciduous shrub found in chaparral, cismontane woodland, coastal scrub, and riparian woodland. Blooms in August and occurs at 150 – 305 m elevation.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity. Elevation constraints further limit suitability.
Thread-leaved brodiaea (*Brodiaea filifolia*)	FT/SE, 1B.1/Not covered	Found on clay substrate within chaparral, cismontane woodland, coastal scrub, and valley and foothill habitats. Microhabitats for the species include playas and vernal pools. Blooming period is March – June and occurs at elevations from 25 - 1120 m.	**Unlikely.** Required soils are not present on-site or within the immediate vicinity; suitable habitat is limited.
Brewer's calandrinia (*Calandrinia breweri*)	--/4.2/Not covered	Annual herb occurs in chaparral and coastal scrub; often found in disturbed or burned areas in sandy or loamy soils. Blooming period is March – June and occurs at elevations from 10 – 1220 m.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
Catalina mariposa lily (*Calochortus catalinae*)	--/4.2/Covered	Occurs in heavy soils in chaparral, cismontane woodland, coastal scrub and valley and foothill grassland below 700 m. When occurring on slopes, it is usually associated with coastal scrub vegetation. Blooming period is February – June.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.

Species	Status[1] Federal/State, CRPR/County	Habitat Requirements	Potential to Occur
Plummer's mariposa lily (*Calochortus plummerae*)	--/4.2/Not covered	Found in coastal scrub, chaparral, valley and foothill grasslands, cismontane woodlands and lower montane coniferous forests; occurs on rocky or sandy soils, usually of alluvial or granitic material; common after fire. Blooming period is May – July; occurs at elevations of 100 – 1700 m.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Intermediate mariposa lily (*Calochortus weedii* var. *intermedius*)	--/1B.2/Covered	Found in coastal scrub, chaparral, and valley and foothill grassland on dry, rocky open slopes and rock outcrops. Blooming period is May – July and occurs at elevations of 120 - 850 m.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity. Elevation constraints further limit suitability.
Lewis' evening primrose (*Camissoniopsis lewisii*)	--/3/Not covered	Annual herb found in sandy or clay soils in cismontane woodlands, valley and foothill grasslands, coastal dunes, and coastal scrub. Blooming period is March – June and occurs at elevations of 0 - 300 m.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Southern tarplant (*Centromadia parryi* ssp. *australis*)	--/1B.1/Not covered	Found in the margins of marshes and swamps, vernally mesic valley and foothill grasslands, and vernal pool habitats. This species is commonly found in disturbed areas, in relatively close proximity to a seasonal or perennial water source. Blooming period is May – November; occurs at elevations up to 425 m.	**High.** Ideal habitat is present on-site or within the immediate vicinity. Three occurrences have previously been reported adjacent to Peters Canyon Channel and San Diego Creek.
Orcutt's pincushion (*Chaenactis glabriuscula* var. *orcuttiana*)	--/1B.1/Not covered	Found in coastal bluff scrub and coastal dunes, on sandy sites at elevations of 3 -100 m. Blooming period is January – August.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
Salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*	FE/SE, 1B.2/Not covered	Found within coastal dune, salt marsh, and swamp habitats, at elevations up to1400 m. Blooming period is May – October.	**Low.** Very limited, low quality habitat is present on-site or within the immediate vicinity.
San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)	FC/SE, 1B.1/Not covered	Annual herb found within sandy coastal scrub and valley and foothill grassland. Blooming period is April – July; occurs at 150 – 1220 m elevation.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Elevation constraints further limit suitability.
Long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*)	--/1B.2/Not covered	Annual herb found in chaparral, coastal scrub, meadows, valley and foothill grassland in gabbroic clay soils from 30 – 1530 m elevation. Blooming period is April – July.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Seaside cistanthe (*Cistanthe maritima*)	--/4.2/Not covered	Annual herb found in coastal bluff scrub, coastal scrub, and valley and foothill grassland in sandy soils. Blooming period is February – August; occurs at 5 – 300 m elevation.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	--/1B.2/Not covered	Perennial evergreen shrub found in chaparral and cismontane woodland. Blooming period is April – June and is found at elevations of 30 – 790 m.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Small-flowered morning-glory (*Convolvulus simulans*)	--/4.2/Not covered	Annual herb found in clay, serpentine seeps in chaparral, coastal scrub, and valley and foothill grassland. Occurs from 30 – 700 m in elevation and blooming period is March – July.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Paniculate tarplant (*Deinandra paniculata*)	--/4.2/Not covered	Annual herb found in coastal scrub, valley and foothill grassland, and vernal pools from 25 – 940 m elevation. Blooming period is April – November.	**Low.** Low quality habitat is present on-site or within the immediate vicinity.
Western dichondra (*Dichondra occidentalis*)	--/4.2/Covered	Perennial rhizomatous herb in chaparral, cismontane woodlands, coastal scrub, and valley and foothill grasslands. Occurring at 20 – 500 m elevation. Blooming period is January – July.	**Low.** Low quality habitat is present on-site or within the immediate vicinity.

Species	Status[1] Federal/State, CRPR/County	Habitat Requirements	Potential to Occur
Slender-horned spineflower (*Dodecahema leptoceras*)	FE/SE, 1B.1/Not covered	Sandy soils of alluvial origin in chaparral, cismontane woodland, alluvial fan coastal scrub maintained by infrequent flooding. Occurs at elevations of 200 – 760 m. Blooming period is April – June.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity. Elevation constraints further limit suitability.
Many-stemmed dudleya (*Dudleya multicaulis*)	--/1B.2/Not covered	Found on clay substrate within chaparral, coastal scrub and valley and grassland habitats. Blooming period is April – July; occurs at elevations from 15 - 790 m.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
Laguna Beach dudleya (D*udleya stolonifera*)	FT/ST, 1B.1/Covered	Found on rocky substrate within chaparral, cismontane woodland, coastal scrub and valley and grassland habitats at elevations from10 to 260 m. Blooming period is May - July.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
Small spikerush (*Eleocharis parvula*)	--/--/4.3/Not covered	Perennial herb found in marshes and swamps at 1 – 3,020 m. Blooming period is April – September.	**Moderate.** Limited habitat is present on-site or within the immediate vicinity.
Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*)	FE/SE, 1B.1/Not covered	Perennial herb found in chaparral or coastal scrub habitats (alluvial fans); sandy or gravelly soil. Blooming period is April – September; occurs at elevations from 90 – 610 m.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
San Diego button-celery (*Eryngium aristulatum var. parishii*)	FE/SE, 1B.1/Not covered	Found in vernal pools, coastal scrub, valley and foothill grassland. San Diego mesa hardpan and claypan vernal pools and southern interior basal flow vernal pools, usually surrounded by scrub at elevations of 15-620 m.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Cliff spurge (*Euphorbia misera*)	--/2B.2/Covered	Perennial shrub found in coastal bluff scrub, coastal scrub, and Mojavean desert scrub; rocky soils. Blooming period is December – October and occurs at elevations of 10 – 500 m.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Palmer's grapplinghook (*Harpagonella palmeri*)	--/4.2/Covered	Annual herb found in chaparral, coastal scrub, and valley and foothill grassland; clay soils at 20 – 955 m elevation. Blooming period is March - May.	**Low.** Low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Los Angeles sunflower (*Helianthus nuttallii* var. *parishii*)	--/1A/Not covered	Perennial rhizomatous herb occurs in coastal salt and freshwater marshes and swamps. Blooming period is August – October and occurs at 10 – 1675 m elevation.	**Unlikely.** Very limited habitat is present on-site or within the immediate vicinity. Species has not been observed since 1937.
Tecate cypress (*Hesperocyparis forbesii*)	--/1B.1/Covered	Occurs within closed-cone coniferous forest or chaparral. Primarily on north-facing slopes; groves often associated with chaparral; clay or gabbro soils at 80-1500 m elevation.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
Gowen cypress (*Hesperocyparis goveniana*)	FT/1B.2/Not covered	Perennial evergreen tree found in closed-cone coniferous forest and maritime chaparral. Occurs at elevations of 30 – 300 m.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Vernal barley (*Hordeum intercedens*)	--/3.2/Not covered	Annual herb found in coastal dunes, coastal scrub, valley and foothill grassland (saline flats and depressions) and vernal pools. Occurs from 5 – 1000 m elevation; blooming period is March – June.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)	--/1B.1/Not covered	Perennial herb found in chaparral, cismontane woodland and coastal scrub habitats; found in gravelly or sandy sites from 70 – 810 m elevation. Blooming period is February - September.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Decumbent goldenbush (*Isocoma menziesii* var. *decumbens*)	--/1B.2/Not covered	Perennial shrub that occurs in chaparral and coastal scrub; sandy soils (often within disturbed areas). Blooming period is April – November and occurs at 10 – 135 m elevation.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.

Species	Status[1] Federal/State, CRPR/County	Habitat Requirements	Potential to Occur
Southern Cal. black walnut (*Juglans californica*)	--/4.2/Not covered	Perennial deciduous tree found in chaparral, cismontane woodland, and coastal scrub (alluvial) at elevations of 50 – 900 m. Blooming period is March – August.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	--/4.2/Not covered	Perennial rhizomatous herb found in coastal dunes (mesic), meadows and seeps (alkaline seeps), and marshes and swamps (coastal salt). Occurs from 3 – 900 m elevation; blooming period is March – June.	**High.** Suitable habitat is present on-site or within the immediate vicinity. This species has been observed in the immediate vicinity of the Project.
Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*)	--/1B.1/Not covered	Found in wetland habitats. Microhabitats include playas and vernal pools at elevations up to 1220 m. Blooming period is February - June .	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity. Required soils are not present.
Heart-leaved pitcher sage (*Lepechinia cardiophylla*)	--/1B.2/Covered	Perennial shrub occurring within closed-cone coniferous forests, chaparral, and cismontane woodland at 520 – 1370 m elevation. Blooming period is April – July.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity. Elevation constraints further limit suitability.
Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)	--/4.3/Not covered	Found within chaparral and coastal scrub habitats at elevations up to 885 m. Blooming period is January – July.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Oscillated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)	--/4.2/Not covered	Occurs in openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland at 30 - 1800 m in elevation. Blooming period is March – August.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
California box-thorn (*Lycium californicum*)	--/4.2/Not covered	Perennial shrub found in coastal bluff scrub and coastal scrub at 5 – 150 m elevation. Blooming period is December – August.	**High.** Suitable habitat is present on-site or within the immediate vicinity. This species has been observed in the immediate vicinity of the Project.
Cliff malacothrix (*Malocothrix saxatillis* var. *saxatillis*)	--/4.2/Not covered	Perennial rhizomatous herb found in coastal bluff scrub and coastal scrub at 3 – 200 m elevation. Blooming period is March – September.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*)	--/4.2/Not covered	Annual herb found in cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools; clay soils. Occurs at elevations of 15 – 1070 m; blooming period is March – May.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
Intermediate monardella (*Monardella hypoleuca* ssp. *intermedia*)	--/1B.3/Not covered	Perennial rhizomatous herb occurs in chaparral, cismontane woodland, and lower montane coniferous forest (sometimes). Often in steep, brushy areas at elevations of 400 -1250 m. Blooming period is April – September.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity. Elevation constraints further limit suitability.
Mud nama (*Nama stenocarpum*)	--/2B.2/Not covered	Found along freshwater lake margins, riverbanks, marshes and swamps. Blooming period is January – July; occurs at elevations from 5 -500 m.	**Low.** Very limited habitat is present on-site or within the immediate vicinity.
Gambel's water cress (*Nasturtium gambelii*)	FE/ST, 1B.1/Not covered	Perennial rhizomatous herb found in marshes and swamps (freshwater or brackish). Blooming period is April – October; found at elevations of 5 - 330 m.	**Low.** Very limited habitat is present on-site or within the immediate vicinity.
Prostrate navarretia (*Navarretia prostrata*)	--/1B.1/Not covered	Annual herb associated with coastal scrub, valley and foothill grassland, vernal pools from 15 – 1210 m elevation. Blooming period is from April – July.	**Low.** Low quality habitat is present on-site or within the immediate vicinity.
Coast woolly-heads (*Nemacaulis denudata* var. *denudata*)	--/1B.2/Not covered	Annual herb found in coastal dunes. Blooming period lasts from April – September and occurs up to 100 m elevation.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.

Species	Status[1] Federal/State, CRPR/County	Habitat Requirements	Potential to Occur
Chaparral Nolina (*Nolina cismontana*)	--/--/1B.2/Not covered	Found in chaparral and coastal scrub primarily on sandstone and shale substrates, also known from gabbro, at elevations of 140-1275 m. Blooming period is March – July.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity. Elevation constraints further limit suitability.
California beardtongue (*Penstemon californicus*)	--/1B.2/Not covered	Perennial herb found in chaparral, lower montane coniferous forest, and pinyon and juniper woodlands; sandy soil. Blooming period is May – August; occurs at 1170 – 2300 m elevation.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity. Elevation constraints further limit suitability.
Allen's pentachaeta (*Pentachaeta aurea* ssp. *allenii*)	--/--/1B.1/Not covered	Annual herb found in coastal scrub openings and valley and foothill grasslands. Blooming period is March – June; occurs at 75 – 520 m elevation.	**Low.** Low quality habitat is present on-site or within the immediate vicinity.
S. coast branching phacelia (*Phacelia ramosissima* var. *austrolitoralis*)	--/3.2/Not covered	Perennial herb found in chaparral, coastal dunes, coastal scrub, and coastal saltwater marshes and swamps; sandy, sometimes rocky, soil. Blooming period is March – August and grows at elevations of 5 – 300 m.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
Woolly chaparral-pea (*Pickeringia montana* var. *tomentosa*)	--/4.3/Not covered	Evergreen shrub found in gabbroic, granitic and clay soils within chaparral habitats at 0 – 1700 m elevation. Blooming period is May – August.	**Unlikely.** Suitable habitat and soils are not present on-site or within the immediate vicinity.
Fish's milkwort (*Polygala cornuta var. fishiae*)	--/2B.2/Not covered	Perennial deciduous shrub found in chaparral, cismontane woodland, and riparian woodland. Occurs from 100 – 1000 m elevation; blooming period is May – August.	**Low.** Limited habitat is present on-site or within the immediate vicinity.
White rabbit-tobacco (*Pseudognaphalium leucocephalum*)	--/2B.2/Not covered	Found within riparian woodland, coastal scrub and chaparral habitats. Blooming period is August - November and occurs at elevations up to 1400 m.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
Nuttall's scrub oak (*Quercus dumosa*)	--/1B.1/Covered	Perennial evergreen shrub found in close-cone coniferous forest, chaparral, and coastal sage scrub; sandy, clay loam soil. Blooming period is February – August and occurs at 15 – 400 m elevation.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Coulter's matilija poppy (*Romneya coulteri*)	--/4.2/Covered	Perennial rhizomatous herb that occurs in chaparral and coastal scrub, often prevalent after a fire. Found at elevations of 20 – 1200 m. Blooming period is March – July.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Sanford's arrowhead (*Sagittaria sanfordii*)	--/1B.2/Not covered	Perennial rhizomatous herb that occurs in marshes and swamps (assorted shallow freshwater). Occurs at elevations up to 650 m. Blooming period is May – November.	**Low.** Limited habitat is present on-site or within the immediate vicinity.
Chaparral ragwort (*Senecio aphanactis*)	--/2B.2/Not covered	Annual herb found in chaparral, cismontane woodland, and coastal scrub; soil is sometimes alkaline. Blooming period is January – April and occurs at 15 – 800 m elevation.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Salt spring checkerbloom (*Sidalcea neomexicana*)	--/2B.2/Not covered	Perennial herb found in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas; alkaline, mesic soils. Blooming period is March – June and occurs at 15 to 1530 m elevation.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Estuary seablite (*Suaeda esteroa*)	--/1B.2/Not covered	Perennial herb found in coastal salt marshes and swamps. Blooming period runs May – January. Occurs at sea level (up to 5 m elevation).	**Low.** Limited, low quality habitat is present on-site. Known to occur in nearby salt marsh near Back Bay Drive.

Species	Status[1] Federal/State, CRPR/County	Habitat Requirements	Potential to Occur
San Bernardino aster (*Symphyotrichum defoliatum*)	--/1B.2/Not covered	Perennial rhizomatous herb found near ditches, streams, and springs in cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, and valley and foothill grassland. Occurs from 2 – 2040 m elevation; blooming period occurs July – November.	**Low.** Limited habitat is present on-site or within the immediate vicinity.
Big-leaved crownbeard (*Verbesina dissita*)	--/1B.2/Not covered	Found within chaparral and coastal scrub habitats. Blooming period is April - July and occurs at elevations from 145 - 205 m.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity. Elevation constraints further limit suitability.

[1] Description of status codes:

FE = Listed as endangered under the FESA

FT = Listed as threatened under the FESA

SE = Listed as endangered under the CESA

ST= Listed as threatened under the CESA

CRPR = California Rare Plant Rank (CNPS, 2014)

CRPR 1B.1 = Seriously threatened in California and elsewhere

CRPR 1B.2 = Fairly threatened in California and elsewhere

CRPR 1B.3 = Not very threatened in California and elsewhere

CRPR 2B.2 = Fairly threatened in California, but more common elsewhere

CRPR 4.2 = Fairly threatened in California, placed on a watch-list due to limited distribution throughout its range

CRPR 4.3 = Plant of limited distribution, not very threatened in California

Covered = Covered under the Orange County NCCP/HCP

Not covered = Not covered under the Orange County NCCP/HCP

SENSITIVE WILDLIFE SPECIES WITH POTENTIAL TO OCCUR ONSITE

Species	Status[1] Federal/State/County	Habitat Requirements	Potential to Occur
CRUSTACEANS			
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	FE/--/Covered	Known to occur in areas of swales/earth slump basins in grassland, chaparral and coastal sage scrub. Inhabit seasonally wet pools filled by winter/spring rains. Hatch in warm water later in the season.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Riverside fairy shrimp (*Streptocephalus woottoni*)	FE/--/Covered	Known to occur in areas of swales/earth slump basins in grassland, chaparral and coastal sage scrub. Inhabit seasonally wet pools filled by winter/spring rains. Hatch in warm water later in the season.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
FISH			
Santa Ana sucker (*Catostomus santaanae*)	FT/SC/Not covered	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, & algae.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Tidewater goby (*Eucyclogobius newberryi*)	FE/SC/Not covered	Found in shallow brackish water habitats, lagoons and lower stream reaches. Require fairly still but not stagnant water & high oxygen levels.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Arroyo chub (*Gila orcuttii*)	--/SC/Not covered	Prefers slow water stream sections with muddy or sandy bottoms. Feeds on aquatic vegetation, insects, and associated invertebrates.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Santa Ana speckled dace (*Rhinichthys osculus*)	--/SC/Not covered	Requires permanent flowing streams with summer water temps of 17-20 C. Usually inhabits shallow cobble and gravel riffles.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity. May be extirpated from the Los Angeles River system.
AMPHIBIANS			
Arroyo toad (*Anaxyrus californicus*)	FE/SC/Covered	Perennial flowing rivers, streams, and creeks with sandy banks and slow flowing shallow gravel lined pools lined with riparian vegetation such as willow, cottonwoods and sycamores.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Northern leopard frog (*Lithobates pipiens*)	--/SC/Not covered	Near permanent or semi-permanent water in a variety of habitats. Highly aquatic species. Shoreline cover, submerged and emergent aquatic vegetation are important habitat characteristics.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
Western spadefoot (*Spea hammondii*)	--/SC/Not covered	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rain pools or shallow temporary pools, which do not contain bullfrogs, fish, or crayfish are necessary for breeding.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Coast Range newt (*Taricha torosa*)	--/SC/Not covered	Known to occur in cismontane forest or valley and foothill grassland habitats. Microhabitats include moist areas, commonly near drainages and seeps.	**Low.** Low quality habitat is present on-site or within the immediate vicinity.

REPTILES			
Orange-throated whiptail (*Aspidoscelis hyperythra*)	--/SC/Covered	Species requires intact habitat within chaparral, cismontane woodland and coastal scrub plant communities. Prefers washes & other sandy areas with patches of brush & rocks. Perennial plants necessary for its major food-termites.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Coast whiptail (*Aspidoscelis tigris stejnegeri*)	--/--/Covered	Found in deserts and semi-arid areas with sparse vegetation; also found in woodland and riparian areas.	**Low.** Limited habitat is present on-site or within the immediate vicinity.
Rosy boa (*Charina trivirgata*)	--/--/Covered	Found in desert and chaparral, from the coast to the Mojave and Colorado deserts, prefers moderate to dense vegetation and rocky cover.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Red-diamond rattlesnake (*Crotalus ruber*)	--/SC/Covered	Known to occur in chaparral, Mojavean desert scrub and Sonoran desert scrub communities. Occurs in rocky areas & dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Western pond turtle (*Emys marmorata*)	--/SC/Not covered	Known to occur in slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter.	**Moderate.** Suitable but low quality habitat is present on-site or within the immediate vicinity.
Coast horned lizard (*Phrynosoma blainvillii*)	--/SC/Covered	Known to occur in sandy washes with within chaparral or coastal scrub habitat. Requires loose soil for burial and abundant supply of harvester ants.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Coast patch-nosed snake (*Salvadora hexalepis virgultea*)	--/SC/Not covered	Occur in coastal scrub in coastal Southern California. Require small mammal burrows for refuge and overwintering sites.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Two-striped garter snake (*Thamnophis hammondii*)	--/SC/Not covered	Habitat includes marsh and swamp, riparian scrub, riparian woodland, and wetland. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	**Moderate.** Suitable but low quality habitat is present on-site or within the immediate vicinity.
BIRDS			
Cooper's hawk (*Accipiter cooperii*)	--/WL/Not covered	Found in riparian areas, and open woodlands, chiefly of open, interrupted or marginal type. Nests in riparian growths of deciduous trees and live oak woodlands.	**Present.** This species was observed on-site during 2015 biological surveys.
Sharp-shinned hawk (*Accipiter striatus*)	--/WL/Covered	Ponderosa pine, black oak, riparian deciduous, mixed conifer & Jeffrey pine habitats. Prefers riparian areas. This species does not nest in coastal California.	**High.** Suitable foraging habitat is present on-site or within the immediate vicinity. Observed within Project vicinity during 2003 surveys.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	--/WL/Covered	Known to frequent relatively steep, often rocky hillsides with grass and forb species. Resident in southern California coastal sage scrub and mixed chaparral.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Grasshopper sparrow (*Ammodramus savannarum*)	--/SC/Not covered	Known to occur in dense grasslands on rolling hills, lowland plains, in valleys & on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs & scattered shrubs.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Great blue heron (*Ardea herodias*)	--/--/Not covered	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity. However, nesting habitat is very limited; not expected to nest in Project vicinity.

Long-eared owl (*Asio otus*)	--/SC/Not covered	Riparian bottomlands grown to tall willows & cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	**Low.** Limited, fragmented habitat is present on-site or within the immediate vicinity.
Burrowing owl (*Athene cunicularia*)	BCC/SC/Not covered	Known to occur within open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. A subterranean nester dependent upon burrowing mammals, particularly the California ground squirrel.	**Low.** Low quality habitat is present on-site or within the immediate vicinity.
Ferruginous hawk (*Buteo regalis*)	BCC/SC/Not covered	Found in open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon-juniper habitats. Also documented in dry and irrigated croplands. This species does not nest in Southern California.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Swainson's hawk (Buteo swainsoni)	BCC/ST/Not covered	Breed in desert, shrub steppe, agricultural, and grassland habitats. Nests in a variety of tree species in existing riparian forests, remnant riparian trees, shade trees at residences and alongside roads, planted windbreaks, and solitary upland oaks. Typically do not nest in large continuous patches of woodland other than along edges next to open habitats. This species does not nest in coastal California.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
Coastal cactus wren (*Campylorhynchus brunneicapillus cousei*)	BCC/SC/Covered	Known to occur in coastal scrub habitats; requires stands of prickly pear or cholla cactus for nesting and roosting.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Vaux's swift (*Chaetura vauxi*)	--/SC/Not covered	Redwood, Douglas-fir, and other coniferous forests. Nests in large hollow trees & snags. Often nests in flocks. Forages over most terrains & habitats but shows a preference for foraging over rivers and lakes.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Western snowy plover (*Charadrius alexandrinus nivosus*)	FT, BCC/SC/Not covered	Will nest beside or near tidal waters, and includes all nesting colonies on the mainland coast, peninsulas, offshore islands, adjacent bays and estuaries	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Northern harrier (*Circus cyaneus*)	--/SC/Covered	Coastal salt & fresh-water marsh. Nest & forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity. Observed within Project vicinity during 2003 surveys. However, nesting habitat is very limited and low quality; not expected to nest in Project vicinity.
White-tailed kite (*Elanus leucurus*)	--/FP/Not covered	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity. Observed within Project vicinity during 2003 surveys.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/SE/Covered	Breeds in dense willow-dominated riparian habitat near open water.	**Low.** Suitable habitat is not present on-site or within the immediate vicinity.
California horned lark (*Eremophila alpestris actia*)	--/WL/Not covered	Known to occur within the vicinity of marine intertidal and splash zone communities, short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats, and seeps.	**Low.** Limited habitat is present on-site or within the immediate vicinity.

Merlin (*Falco columbarius*)	--/WL/Not covered	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees or windbreaks are required for roosting in open country.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity. Observed within Project vicinity during 2003 surveys. However, nesting habitat is very limited; not expected to nest in Project vicinity.
Bald eagle (*Haliaeetus leucephalus*)	DE, BCC/SE, FP/Not covered	Found along open shore, lake margins, and rivers for both nesting and wintering, usually nests within 1 mile of water. Nests in large, old-growth, or dominant live tree w/open branches, especially ponderosa pine.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Yellow-breasted chat (*Icteria virens*)	--/SC/Not covered	Known to occur within riparian forest, scrub and woodland habitats.	**High.** Suitable habitat is present on-site or within the immediate vicinity.
Least bittern (Ixobrychus exilis)	BCC/SC/Not covered	Colonial nester in marshlands and borders of ponds and reservoirs which provide ample cover. Nests usually placed low in tules, over water.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
Loggerhead shrike (*Lanius ludovicianus*)	BCC/SC/Not covered	Broken woodlands, savannah, pinyon-juniper, Joshua tree, & riparian woodlands, and desert oases, scrub & washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
California black rail (*Laterallus jamaicensis coturniculus*)	BCC/ST, FP/Not covered	Known to occur in brackish and freshwater marshes. Inhabits riparian thickets of willow & other brushy tangles near watercourses. Needs water depths of about 1 inch that do not fluctuate during the year & dense vegetation for nesting habitat.	**Low.** Very limited habitat is present on-site or within the immediate vicinity.
Osprey (*Pandion haliaetus*)	--/WL/Not covered	Ocean shore, bays, fresh-water lakes, and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	**High.** Suitable habitat is present on-site or within the immediate vicinity. Observed within Project vicinity during 2003 surveys. Nesting could occur in the area.
Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)	--/SE/Not covered	Inhabits coastal salt marshes. Nests in pickleweed on and about margins of tidal flats.	**Low.** Very limited habitat is present on-site or within the immediate vicinity.
California brown pelican (*Pelecanus occidentalis californicus*)	--/FP/Not covered	Colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Coastal California gnatcatcher (*Polioptila californica californica*	FT/SC/covered	Species is an obligate, permanent resident of coastal sage scrub in southern California. Low, coastal sage scrub in arid washes, on mesas and slopes.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Light-footed clapper rail (*Rallus longirostris levipes*)	FE/SE, FP/Not covered	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on molluscs and crustaceans.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Bank swallow (*Riparia riparia*)	--/ST/Not covered	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.

Yellow warbler (*Setophaga petechia*)	BCC/SC/Not covered	Riparian plant associations in close proximity to water. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	**Present.** This species was observed on-site during 2015 biological surveys.
California least tern (*Sternula antillarum browni*)	FE/SE, FP/Not covered	Known to occur in alkali playas and coastal dune and beach habitats. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Least Bell's vireo (*Vireo bellii pusillus*)	FE/SE/Covered	Known to occur in riparian forest, scrub, and woodland habitats. Nests primarily in willow, baccharis, or mesquite habitats.	**High.** Suitable habitat is present on-site or within the immediate vicinity.
MAMMALS			
Southern California saltmarsh shrew (*Sorex ornatus salicornicus*)	--/SC/Not covered	Known to occur in salt marsh habitat within Southern California. Requires dense vegetation and woody debris for cover.	**Moderate.** Suitable but limited habitat is present on-site or within the immediate vicinity.
Pallid bat (*Antrozous pallidus*)	--/SC/Not covered	Known to occur in a wide variety of habitats including deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting; particularly associated with buildings and bridges.	**High.** Suitable habitat is present on-site or within the immediate vicinity.
Mexican long-tongued bat (*Choeronycteris mexicana*)	--/SC/Not covered	Typically restricted to pinyon-juniper woodland, riparian scrub and Sonoran thorn woodland habitats. Roosts in relatively well-lit caves, and in and around buildings.	**Low.** Limited habitat is present on-site or within the immediate vicinity.
Spotted bat (*Euderma maculatum*)	--/SC/Not covered	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests. Feeds over water and along washes. Feeds almost entirely on moths. Needs rock crevices in cliffs or caves for roosting.	**Low.** Very limited foraging habitat is on-site or within the immediate vanity. Roosting habitat not present on-site.
Western mastiff bat (*Eumops perotis californicus*)	--/SC/Not covered	Known to occur throughout California and occupies a wide variety of habitats including grasslands, shrublands, cismontane woodland's; most common in open, dry habitats with rocky areas for roosting.	**Low.** Suitable but limited foraging habitat is present on-site or within the immediate vicinity. Roosting habitat not present on-site
Hoary bat (*Lasiurus cinerus*)	--/--/Not covered	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	**High.** Suitable habitat is present on-site or within the immediate vicinity.
Yuma myotis (*Myotis yumanensis*)	--/--/Not covered	This species is typically associated with a nearby water source. Maternity colonies are found in buildings, under bridges, and in mines and caves.	**High.** Suitable habitat is present on-site or within the immediate vicinity.
Big free-tailed bat (*Nyctinomops macrotis*)	--/SC/Not covered	Inhabit low-lying, arid areas with high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
Dulzura pocket mouse (*Chaetodipus californicus femoralis*)	--/SC/Not covered	Variety of habitats including coastal scrub, chaparral, and grassland. Attracted to grass-chaparral edges.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
San Diego desert woodrat (*Neotoma lepida lepida*)	--/SC/Not covered	Known to occur in coastal scrub. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops & rocky cliffs & slopes.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.

Southern grasshopper mouse (*Onychomys torridus ramona*)	--/SC/Not covered	Found in chenopod scrub. Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)	--/SC/Not covered	Lower elevation grasslands & coastal sage communities. Open ground with fine sandy soils. May not dig extensive burrows, hiding under weeds & dead leaves instead.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
Pacific pocket mouse (*Perognathus longimembris pacificus*)	FE/SC/Covered	Known to occur in coastal scrub habitats. Seems to prefer soils of fine alluvial sands of coastal plains.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	--/SC/Not covered	Intermediate canopy stages of coastal sage scrub habitats, open shrub herbaceous and tree herbaceous edges.	**Low.** Limited, low quality habitat is present on-site or within the immediate vicinity.
American badger (T*axidea taxus*)	--/SC/Not covered	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils & open, uncultivated ground.	**Unlikely.** Suitable habitat is not present on-site or within the immediate vicinity.

[1] Description of status codes:

FE = Listed as endangered under the FESA

DE = Delisted under the FESA

FT = Listed as threatened under the FESA

BCC = Bird of Conservation Concern

WL = Watch listed

SE = Listed as endangered under the CESA

SC = Species of Special Concern

FP = Listed as fully protected under CDFW code

Covered = Covered under the County of Orange NCCP/HCP

Not covered = Not covered under the County of Orange NCCP/HCP