APPENDIX C

BIOLOGICAL RESOURCES ASSESSMENT

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FINAL BIOLOGICAL TECHNICAL REPORT FOR THE PORTUGUESE BEND LANDSLIDE REMEDIATION PROJECT RANCHO PALOS VERDES, CALIFORNIA

Prepared for:

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SECTION 1.0 – INTRODUCTION

Chambers Group, Inc. (Chambers Group) was retained by the City of Rancho Palos Verdes (City) to conduct a literature review and reconnaissance-level survey for mitigation activities for the Portuguese Bend Landslide Remediation Project (Project). The survey identified vegetation communities, potential for the occurrence of sensitive species, or habitats that could support sensitive wildlife species. The information contained in this Biological Technical Report. is provided to inform project review under the California Environmental Quality Act (CEQA), the City's Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP), and other pertinent environmental review regulations.

1.1 PROJECT BACKGROUND

The Portuguese Bend Landslide, an ancient landslide complex, was reactivated in 1956 during the construction of an extension to Crenshaw Boulevard with the goal of extending the road down the south side of the Palos Verdes Hills to an intersection with Palos Verdes Drive South. Since the reactivation in 1956, the landslide has moved at various rates and has become one of the largest continuously active landslides in the United States. The land movement has resulted in significant infrastructure damage to homes, utilities, and roadways. The City and its citizens are seeking to minimize landslide movement to preserve infrastructures and open lands; preserve natural vegetation and recreational facilities within the Palos Verdes Nature Preserve; preserve the marine ecology, reduce soil erosion loses; and reduce health and safety concerns related to the integrity of the surrounding road system, sewer system and other infrastructure including residences.

1.2 PROJECT ELEMENTS

The proposed Project is intended to address movement in the existing landslide area by implementing a series of recommended geotechnical engineering solutions that will include relief of artesian pressure below landslide basal surface and minimize storm water infiltration into subsurface. Thus, the proposed improvements would include infilling surface fractures to reduce the infiltration of surface water into the ground, constructing surface swales and retention areas to collect, slow down, and divert surface water to the ocean, and installing a subsurface water extraction system (hydraugers) by means of directional drilling to alleviate artesian pressure and also lower groundwater levels within landslide mass. The implementation of these improvements will occur within discrete construction areas (hereby referred to as "Project impact areas"), which are contained within the larger Survey Area footprint (approximately 206.5 acres). These Project features are described in further detail below.

1.2.1 Surface Fracture Infilling

A surface fracture can be defined as a long, narrow crack opening observable at the ground surface. Surface fractures are induced by landslide movement and once formed can be extended and eroded by stormwater runoff. They can be hazardous to people living on or near the affected surfaces and damaging to property and infrastructure, as well as to the general public visiting the area and utilizing the trails in the Preserve. The existing surface fractures within the Survey Area are a few feet wide and some are as deep as 15 feet. These fractures collect stormwater runoff that discharges into the ground. The stormwater runoff enters the fractures where it percolates into the ground and becomes a part of the groundwater which exacerbates landslide movement. The surface fracture infilling will control stormwater runoff infiltrating the ground and will help solving one aspect of the landslide movement.

1.2.2 Surface Drains

The proposed Project considers installing new surface water improvements and refurbishing existing pipes to minimize soil erosion loss and stormwater ponding and infiltration that contributes to landslide movement. Surface water improvements will be installed, which include the following:

- Engineered swales: swales are designed to manage surface stormwater runoff and can be described as shallow channels with gently sloping slides. The proposed Project would install a network of engineered swales that extend south from Burma Road and traverse through the Survey Area. The engineered swales would convey surface runoff from the northern limits of the Survey Area, connecting to a new flow reduction area, and travel south underneath Palos Verdes Drive South to the Pacific Ocean. The surface swales (dimensions of swale feature average 2 feet to 10 feet at the bottom and a width of 14 feet to 26 feet at the top) would be designed to be visually complimentary to the surrounding setting of the Preserve and lined with context-sensitive vegetation instead of concrete. Erosion control measures, such as geocells and/or riprap will be implemented within swales. The designs will be consistent with restoration requirements outlined in the City's Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP) and other resource/regulatory review requirements.
- Flow reduction area: a flow reduction area is a detention basin that helps manage the flow of excess stormwater runoff. These areas allow large flows of water to enter but limit the outflow through a small opening. The proposed Project would install one permanent bentonite-lined flow detention basin that would be approximately 10 acres in size. It would be located approximately 250 feet north of Palos Verdes Drive South within the Survey Area and connect to the engineered surface swales. The flow reduction area would primarily prevent percolation but will release stormwater at a gradual rate slowing the flow and allowing fine particles of soil to settle within the flow reduction area resulting in sediment-free water to exit the flow reduction area, routing the water through an existing 60-inch pipe that runs under Palos Verdes Drive South, before conveying the water into the Pacific Ocean. It will be designed to use gravity flow only and no pumps are planned. It is anticipated that stormwater would accumulate in the detention basin only for a period of several hours or less than one day once rain stops. Due to its short duration, the additional weight would not have a substantial effect on landslide stability, however regular maintenance would be needed to remove fine soil particles.
- Underground pipes: installation, replacement, and refurbishment of underground piping to properly convey stormwater runoff will be required throughout the Survey Area. This includes installing a new durable 36-inch-diameter pipe located below Burma Road; replacing an existing and deteriorating 36-inch-diameter plastic pipe located south of Palos Verdes Drive South; and refurbishing an existing 60-inch-diameter pipe below Palos Verdes Drive South. The intent of this environmentally sensitive solution is to utilize the footprint of the existing pipes and adding pipes with the least impact on the affected areas.

1.2.3 Subsurface Drainage System

Groundwater extraction system of pipes, or "hydraugers", would be installed to alleviate artesian water pressure below the Portuguese Bend Landslide (PBL) which is believed to be the main contributor to landslides. The hydraugers will be installed sequentially, in fan-shaped patterns. They will extend within City-owned right-of-way or property. The ultimate size of hydraugers would depend on field conditions (groundwater yield); depending on site conditions, hydrauger length might reach up to 1,200 feet with a

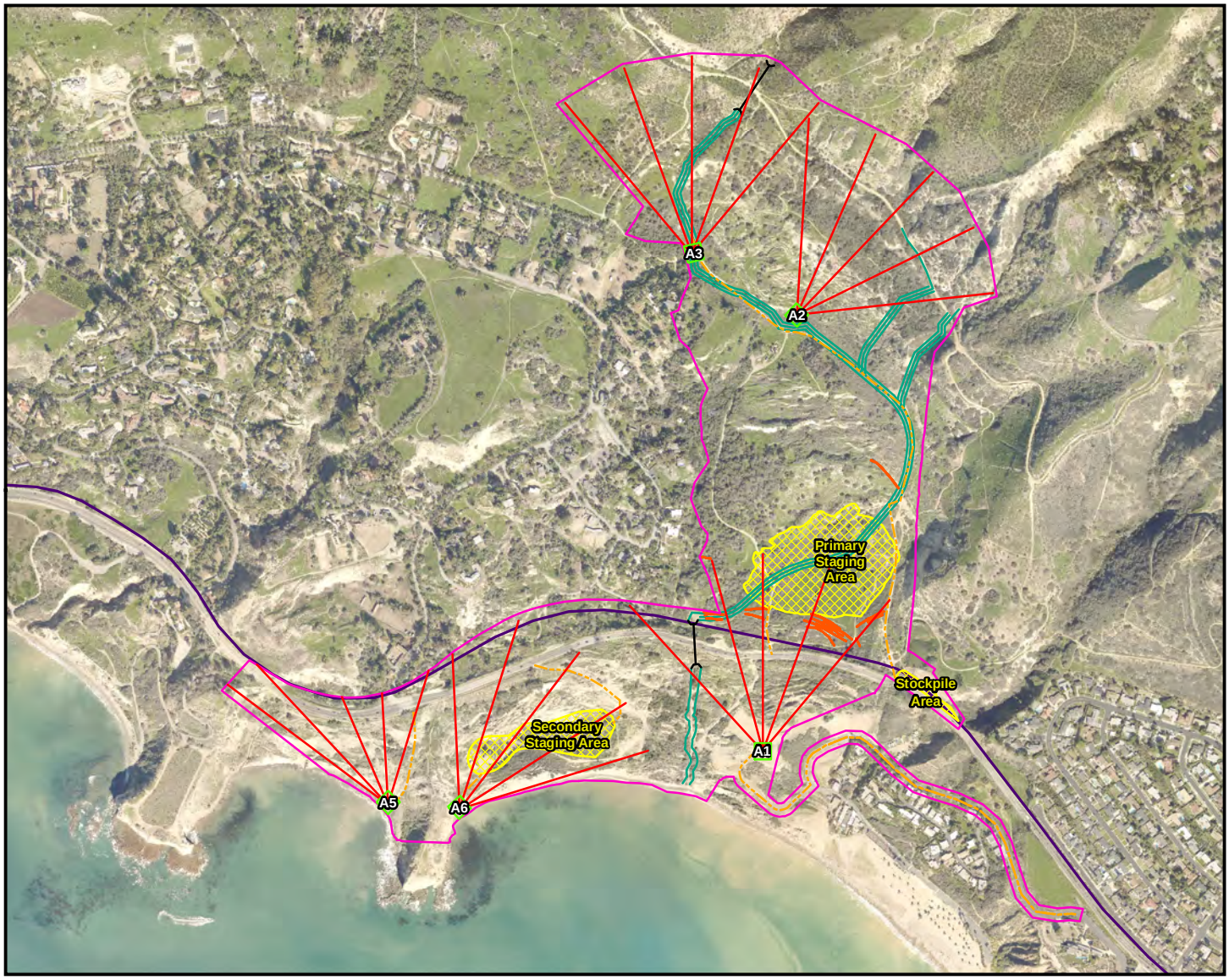
diameter of up to 6 inches. The hydrauger depth will vary, with deepest points reaching up to 400 feet below ground surface. The hydraugers rely on gravity to extract ground water.

Water collected through the array pipes would be emptied and collected into temporary water storage tanks stationed adjacent to the hydraugers. Collected water will be tested for water quality, including sedimentation and turbidity. Upon review of test results, it will be discharged to the ocean or used for other purposes within the preserve, as appropriate. It is anticipated that the number of temporary water storage tanks would range from a minimum of one tank and up to five tanks. Each water storage tank would be approximately 10 feet outer diameter by 13 feet height. The exact number and location of the temporary tanks will be determined during final design. Additionally, opportunities to physically screen the tanks, to construct underground the tanks, and/or, if water quality allows, for direct discharge of collected water will be explored prior to permit issuance.

1.3 PROJECT LOCATION

The Portuguese Bend Landslide Complex (PBLC) is located along the south section of the Palos Verdes Peninsula within the City of Rancho Palos Verdes (City). The PBLC is located within the U.S. Geological Survey (USGS) *San Pedro*, California 7.5-minute topographic quadrangle. The PBLC Survey Area is approximately 206.5 acres. The Survey Area includes approximately 124.05 acres of land located within the City-owned Palos Verdes Nature Preserve (Preserve) specifically within the Portuguese Bend (111.19 acres) and Abalone Cove (12.86 acres) Reserves, which are sub-areas of the approximate 1,500 acre Natural Communities Conservation Plan / Habitat Conservation Plan (NCCP/HCP). The Palos Verdes Peninsula Land Conservancy (PVPLC) is the Preserve Habitat Manager pursuant to the City Council-adopted NCCP/HCP and Management Agreement.

Surrounding the Survey Area are residential uses that include the Portuguese Bend Beach Club to the south, the Portuguese Bend Community Association to the west, and Seaview to the east. Directly north of the Project site is the Portuguese Bend Reserve followed by additional residential uses. The southern portion of the Survey Area can be accessed via Yacht Harbor Drive/Seawall Road, a private road within the Portuguese Bend Beach Club community. The Pacific Ocean is located to the south of the Survey Area. Several residences exist adjacent to the northwestern boundary of the Survey Area. All of these surrounding neighborhoods are affected by this landslide. One park is located within the Survey Area; the Abalone Cove Park/ Reserve, which is also designated as a State Ecological Preserve. The southern portion of the Survey Area is within the Coastal Zone. Maps of the Survey Area and the Portuguese Bend and Abalone Cove Reserves are provided in Figures 1 and 2, respectively.



Proposed Project Limit
Proposed Hydrauger Work Locations
Staging Area/Work Location
Proposed Hydrauger Arrays
Proposed Access Route
Coastal Zone Boundary
Proposed Culvert
Proposed Swale

All features are approximate

N

0 400 800 1,600

Feet

Figure 1
Portuguese Bend Landslide Mitigation
Project Location and Vicinity

Name: 21243 BIO Fig 1 Project Location and Vicinity.Mxd
Print Date: 12/6/2022, Author: pcarlos

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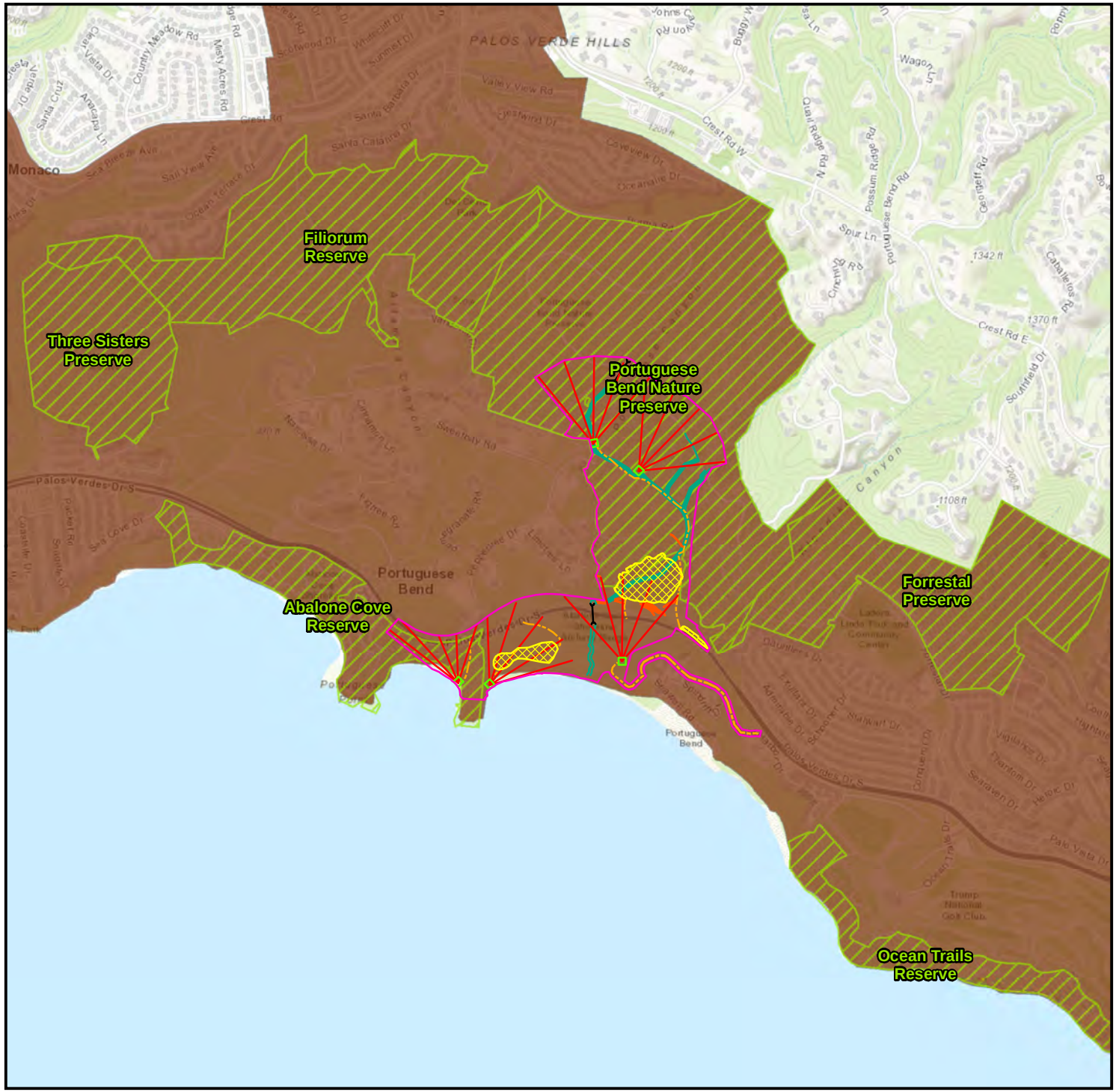

Figure 2

Portugese Bend Landslide Mitigation
Palos Verdes NCCP/HCP
Preserve Areas

- Proposed Project Limit
- Proposed Hydrauger Work Locations
- Staging Area/Work Location
- Proposed Hydrauger Arrays
- Approximate Surface Fracture Locations
- Proposed Access Route
- Proposed Culvert
- Proposed Swale
- Reserves/Preserves
- City of Rancho Palos Verdes NCCP/HCP

All features are approximate

N

0 1,000 2,000 4,000

Feet

Name: 21243 BIO Fig 2 Palos Verdes NCCP HCP Preserve Areas.Mxd
Print Date: 10/19/2022, Author: pcarlos

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SECTION 2.0 – METHODOLOGY

2.1 LITERATURE REVIEW

Prior to performing the field survey, existing documentation relevant to the Survey Area was reviewed in 2020 prior to the general reconnaissance survey and updated in 2022 prior to the jurisdictional delineation survey. The most recent records of the California Natural Diversity Database (CNDDB) managed by CDFW (CDFW 2022), the USFWS Critical Habitat Mapper (USFWS 2022), and the California Native Plant Society's Electronic Inventory (CNPSEI) of Rare and Endangered Vascular Plants of California (CNPS 2022) were reviewed for the following quadrangles containing and surrounding the Survey Area: *San Pedro, Redondo Beach, Long Beach,* and *Torrance*, California USGS 7.5-minute quadrangles. These databases contain records of reported occurrences of federally or state listed endangered or threatened species, California Species of Concern (SSC), or otherwise sensitive species or habitats that may occur within or in the immediate vicinity of the Survey Area. This report has been updated with the most current information as of August 2022.

2.2 SOILS

Before conducting the survey, soil maps for Los Angeles County were referenced online to determine the soil types found within the Survey Area. Soils were determined in accordance with categories set forth by the U.S. Department of Agriculture (USDA) Soil Conservation Service and by referencing the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2022).

2.3 JURISDICTIONAL WATERS

Chambers Group Biologists Paul Morrissey and Austin Burke conducted a delineation of potentially jurisdictional waters regulated by the United States Army Corps of Engineers (USACE), Los Angeles Regional Water Quality Control Board (LARWQCB), and CDFW for the Survey Area on August 16, 2022. The delineators also surveyed the proposed swale feature alignment, designed to manage surface stormwater runoff through shallow channels with gently sloping sides.

Pursuant to Section 404 of the Clean Water Act, USACE regulates the discharge of dredged and/or fill material into waters of the United States. The State of California (State) regulates discharge of material into waters of the State pursuant to Section 401 of the Clean Water Act and the California Porter-Cologne Water Quality Control Act (California Water Code, Division 7, §13000 et seq.). Pursuant to Division 2, Chapter 6, Sections 1600-1602 of the California Fish and Game Code, 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.

For the purpose of determining hydrologic connectivity to a Traditional Navigable Water (TNW), the most recent records of the USFWS National Wetlands Inventory (NWI; USFWS 2022) data, U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) blue-lined drainages, aerial imagery, and topographic maps were reviewed; and all features were inspected in the field on and off site for true connectivity. The NWI data prepared by USFWS utilize high altitude imagery which requires field inspections for verification. Potential USACE / LARWQCB / CDFW jurisdictional areas identified during the literature search and aerial image analysis were field checked for the presence of definable channels, soils, wetland vegetation, riparian habitat, and hydrology. Each drainage was examined in the field, and areas within channel banks were examined for signs of flow, terraces, drift deposits and other indicators that would determine the

location of the Ordinary High Water Mark (OHWM). Climate and flow frequency were considered when observing watermarks and drift lines. Data were collected using a combination of records entered into ESRI ArcGIS Collector© and hand-written field notes.

Potential wetland habitats were evaluated using the methodology set forth in the *1987 Corps of Engineers Wetlands Delineation Manual* (1987 Wetland Manual; USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (version 2.0)* (2008 Arid West Supplement; USACE 2008). The methods set forth in the 1987 Wetland Manual and the 2008 Arid West Supplement involve the delineation of wetlands based on the presence of three wetland parameters: a predominance of hydrophytic vegetation, wetland hydrology, and hydric soils. These wetland parameters are discussed in greater detail below.

Hydrophytic Vegetation

Hydrophytic vegetation is defined as "the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content" (USACE 1987). The potential wetland areas were surveyed by walking through the Survey Area and making observations of those areas exhibiting characteristics of jurisdictional wetlands.

Areas supporting plant life potentially indicative of wetlands were evaluated in the field according to current USACE wetland delineation procedures described in the 1987 Wetland Manual (USACE 1987) and the 2008 Arid West Supplement (USACE 2008). The dominant and subdominant plant species present in the sample pits of these potential wetland areas were identified and their wetland indicator status noted based on the current National Wetland Plant List--Arid West Region (Lichvar et al. 2016).

Hydric Soils

A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (USACE 1987). Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds (USACE 2008) due to periods of anaerobic conditions in the soil. The hydric soil criterion is considered satisfied at a location if soils in the area can be inferred to have a high groundwater table, evidence of prolonged soil saturation, or any indicators suggesting a long-term reducing environment in the upper 18 inches of the soil profile are present.

Potential hydric soils were investigated within the Survey Area. Sample soil pit locations were selected, and a hole was dug to a typical depth of 18 inches (unless prevented by some occluding material) or occasionally deeper to determine soil color, evidence of soil saturation, depth to shallow groundwater, and indicators of a reducing soil environment (e.g., redox concentrations or pore linings, gleyed soils, hydrogen sulfide odor). Soil matrix colors were classified using the Munsell Soil-Color Charts (Munsell Color 2009).

Wetland Hydrology

The presence of wetland hydrology indicators confirm that inundation or saturation has occurred on a site but may not provide information about the timing, duration, or frequency of the event. Hydrology features are generally the most ephemeral of the three wetland parameters (USACE 2008).

Hydrologic information for the site was obtained by reviewing USGS topographic maps and by directly observing hydrology indicators in the field. The wetland hydrology criterion is considered satisfied at a location if, based upon the conclusions inferred from the field observations, an area has a high probability of being periodically inundated or has soils saturated to the surface at some time during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (USACE 1987). If at least one primary indicator or at least two secondary indicators are found at a sample pit, the wetland hydrology criterion is considered satisfied.

2.4 COASTAL ZONE

When a project occurs in the Coastal Zone, project proponents must obtain a Coastal Development Permit from the California Coastal Commission (CCC) or a local agency with an approved Local Coastal Program (LCP). The primary criterion in reviewing a Coastal Development Permit (CDP) application is conformity with the Rancho Palos Verdes Coastal Specific Plan (or LCP).

The Survey Area is partially located within the City's LCP, and specifically within the Appealable Area and the Coastal Setback Line, as shown in the Rancho Palos Verdes LCP. While the LCP reflects unique characteristics of Rancho Palos Verdes, regional and statewide interests and concerns must also be addressed in conformity with California Coastal Act goals and policies.

Any Coastal Permit the City grants in an Appealable Area may be appealed to the California Coastal Commission. Any project in an Appealable Area that requires a CDP will also require a public hearing, either before the Planning Commission or the City's Hearings Officer, unless the primary permit is under the jurisdiction of the City Council, who then will conduct the public hearing. The Planning Commission or City Council must act on the CDP if the related primary application would require a public hearing per the Zoning Code. Additions located partially or completely within the coastal setback zone within an Appealable Area are not eligible for a Variance exemption. California Coastal Act (CCA) of 1976, as amended.

The act specifies basic goals for coastal conservation and development related to protection, enhancement, and restoration of coastal resources, giving priority to "coastal-dependent" uses and maximizing public access to California residents and visitors. The act defines the "coastal zone" of California, which generally extends 3.0 mi (4.8 km) out to sea and inland generally 1,000 yards ([yd], 914 m). It may be extended further inland in certain circumstances. It also is less than 1,000 yd (914 m) wide in some urban areas. The coastal zone boundary within the Survey Area follows Palos Verdes Drive and is shown in Figure 1.

Some applicable policies of the CCA that may be applicable to the Project activities are provided below.

CCA Policy 30251: Scenic and visual qualities

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.

CCA Section 30231 Biological productivity; water quality

The biological productivity and the quality of coastal water, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

CCA Section 30240: Environmentally sensitive habitat areas; adjacent developments

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat and recreation areas.

CCA Section 30244: **Archaeological or paleontological resources**

Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

CCA Section 30210: Development not to interfere with access

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for the people consistent with public safety needs and the need to protect public rights, rights of property owners, and natural resource areas from overuse.

CCA Section 30214: Implementation of public access policies; legislative intent

The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances of each case including, but not limited to, the following: "…(2) The capacity of the site to sustain use and at what level of intensity, (3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area…"

CCA Section 30221: Oceanfront land; protection for recreational use and development

Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

Within the Coastal Zone, permissible impacts and mitigation to Environmentally Sensitive Habitat Areas (ESHA), as defined in Appendix F of the NCCP/HCP, will not only be consistent with the NCCP/HCP, but will also be consistent with the City's most current LCP. Furthermore, any impacts to habitat or ESHAs located in the Coastal Zone will be mitigated within the Coastal Zone.

2.5 BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

Chambers Group Biologists Heather Franklin, Clark Austin, and Corey Jacobs conducted the general reconnaissance survey within the Survey Area to identify the potential for occurrence of sensitive species, vegetation communities, or habitats that could support sensitive wildlife species. The survey was conducted on foot throughout the Survey Area between 0800 and 1600 hours on August 5, 2020. Weather conditions during the survey included temperatures ranging from 64 to 74 degrees Fahrenheit, with cloud cover ranging from 30 to 100 percent, and no precipitation.

Chambers Group Biologists Paul Morrissey and Austin Burke conducted the jurisdictional delineation on August 16, 2022, between 0700 and 1500 hours. Weather conditions during the survey included temperatures ranging from 70 to 81 degrees Fahrenheit, with cloud cover ranging from 15 to 40 percent, and no precipitation. Photographs of the Survey Area were recorded to document existing conditions (Appendix A).

2.5.1 Vegetation

All plant species observed within the Survey Area were recorded. Vegetation communities within the Survey Area were identified, qualitatively described, and mapped onto a high-resolution imagery aerial photograph. Plant communities were determined in accordance with the *Manual of California Vegetation*, *Second Edition* (Sawyer et al. 2009) and then adapted to fit the Rancho Palos Verdes Natural Community Conservation Plan & Habitat Conservation Plan (NCCP/HCP) habitat classifications. Plant nomenclature follows that of *The Jepson Manual* (Baldwin et al. 2012). A comprehensive list of the plant species observed during the survey is provided in Appendix B.

2.5.2 Wildlife

All wildlife and wildlife signs observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (native vegetation, wildlife trails, etc.) or in habitats with the potential to support state and/or federally listed or otherwise sensitive species. Notes were made on the general habitat types, species observed, and the conditions of the Survey Area. A comprehensive list of the wildlife species observed during the survey is provided in Appendix C.

SECTION 3.0 – RESULTS

3.1 NATURAL COMMUNITY CONSERVATION PLAN & HABITAT CONSERVATION PLAN

The City of Rancho Palos Verdes (City) developed the NCCP/HCP to meet the requirements of the Endangered Species Act (ESA) and the NCCP Act[1]. The NCCP/HCP is a comprehensive habitat planning tool intended to provide effective, long-term conservation management of wildlife and natural communities, while continuing to allow compatible development in accordance with the City's General Plan. The PVPLC acts as the City's designated habitat manager for the NCCP/HCP.

The Survey Area is located within the designated boundaries of the NCCP/HCP. The NCCP/HCP identifies various land designations, including Lands Dedicated as Previous Mitigation, City-Owned Lands Dedicated to the Preserve, PVPLC-Owned Lands Dedicated to the Preserve, Other Private and Public Targeted Lands for Dedication to the Preserve, Reserve Areas, and Neutral Lands. Land designations applicable to the Survey Area include City-Owned Lands Dedicated to the Preserve and Neutral Lands.

City-Owned Lands Dedicated to the Preserve

Portuguese Bend (409.8 of the 425.9 acres covered by NCCP/HCP)

Using state, County, City, and private monies raised by the PVPLC, the City purchased this property in December 2005. About 2.88 acres of the 425.9-acre Portuguese Bend property are Existing Preserve Roads that do not provide habitat for Covered Species. Thus, 406.9 acres of the 409.8 acres dedicated to the Preserve will provide Covered Species habitat. The Survey Area occurs within approximately 111.19 acres of this Preserve.

Abalone Cove (65.2 acres of the 77 acres covered by NCCP/HCP)

The Abalone Cove property is owned by the City's successor agency to the Redevelopment Agency (RDA). The property was acquired by the former RDA from the County of Los Angeles in 1987. A portion of the property contains a State Ecological Reserve. Excluded from the Preserve are the Abalone Cove upper parking lot and adjacent picnic area, the lower parking lot and preschool/lifeguard area and 7.6 acres of rocky shoreline. The proposed Preserve area has been calculated as 65.2 acres using the City's orthographic maps. The Survey Area includes approximately 12.86 acres of this Preserve.

Neutral Lands

Although not a part of the Preserve, Neutral Lands are lands identified as having development constraints that add biological function (e.g., facilitate wildlife movement) and value to the Preserve. Approximately 1,696.7 acres of "Neutral Lands" exist outside the Preserve boundary. These Neutral Lands contain natural vegetation, predominantly CSS habitat. The Neutral Lands designation has been applied to privately owned properties in the City that contain development constraints due to existing City zoning code or other restrictions. The designation of these properties as Neutral Lands is not intended to prohibit

[1] The State of California adopted the NCCP Act (Fish and Game Code 2800 *et seq*.) in 1991. The City signed a Memorandum of Agreement with the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) in 1991, a NCCP Enrollment Agreement with CDFW in 1992, and a NCCP Planning Agreement with CDFW and USFWS for the Palos Verdes NCCP Subarea in 1996.

development on these properties but only to recognize the development constraints that already exist on these properties pursuant to the City's Municipal Code or other legal constraint. By definition, "Neutral Lands" are those areas that are considered to be extreme slopes (35 percent or greater slope - Open Space Hillside), are zoned Open Space Hazard, or contain deed restricted open space.

NCCP/HCP Covered Activities

The NCCP/HCP assumes incidental take coverage for 17 Covered City Projects and Activities (see Section 5.2 of the Final Rancho Palos Verdes NCCP/HCP (adopted on November 19, 2019). Although the Portuguese Bend Landslide Remediation Project is not listed as a specifically Covered City Project by name, dewatering wells in the vicinity of the Portuguese Bend landslide area, landslide abatement measures, and miscellaneous drainage repairs in landslide areas are specifically Covered Activities as detailed in Sections 5.2.2 through 5.2.4 of the NCCP/HCP. Landslide abatement activities covered within the Preserve include drainage pipes, repair of existing drainage systems, filling of fissures, re-contouring of slide debris, creation and maintenance of trails. The City's dedication and management to the Preserve of 1,123 acres, including the 499.9 acres of City Mitigation Lands, the management of 258.7 acres of Previous Mitigation Lands, and 20.7 acres of PVPLC lands, is intended to provide the necessary mitigation for CSS and grassland for Covered City and Miscellaneous Private Projects and Activities (both outside and inside the Preserve).

The City implements the NCCP/HCP through interim and permanent regulatory measures, including codes, ordinances, and policies contained in the City's General Plan and Municipal Code (Section 6.3 of the NCCP/HCP). The actions described ensure consistent implementation of this NCCP/HCP through City policy, private, and public project review and approval, and guidelines for operations and management of public lands. In addition, the City provides interim protection to habitat lands addressed in the Take Authorizations.

For any Covered Activity within the NCCP/HCP Preserve, on a vacant lot abutting the Preserve, or on a vacant lot outside the Preserve that supports coastal sage scrub, the City will amend the Site Plan Review Process (Municipal Code Section 17.70) to ensure that the provisions of the NCCP/HCP are incorporated. The Site Plan review process provides direct protection of the Preserve as any proposed construction on vacant lots abutting the Preserve will need to be consistent with the provisions of the NCCP/HCP. If not consistent, the proposed Covered Activity will have to be modified or denied by the City. If mitigation is required, it will be provided in accordance with Section 5.3.4 of the NCCP/HCP. Lots with coastal sage scrub that are not within or adjacent to the Preserve will mitigate impacts consistent with the NCCP/HCP (see Site Plan Review Process in Section 6 of NCCP/HCP).

Based on the NCCP/HCP, the Covered City Projects/Activities are proposed to occur inside and outside of the Preserve and are anticipated to impact a maximum of 303.7 acres of non-native grassland and 115.5 acres of CSS. Of these total impacts, it is estimated that 148.3 acres of the impacted non-native grassland (49 percent) and 60.0 acres of the impacted CSS (52 percent) will occur within the Preserve. Southern cactus scrub, saltbush scrub, and coastal bluff scrub are subsets of CSS, and no more than 5 acres of southern cactus scrub, 2 acres of coastal bluff scrub, and 2 acres of saltbush scrub could be lost within the Preserve associated with Covered City Projects/Activities. The City mitigates these impacts by dedicating City lands to the Preserve and providing restoration and management funding for the Preserve (see Section 8.0 of the NCCP/HCP). Of the 737 acres of CSS and associated vegetation communities within the Preserve, a maximum of 60.0 acres (less than 8 percent) could be impacted by Covered City Projects/Activities, leaving a minimum of 677 acres (92 percent) of CSS in the Preserve to be perpetually conserved. Of the 470.9 acres of grassland within the Preserve, a maximum of 148.3 acres (31 percent)

could be impacted by Covered City Projects/Activities in the Preserve, leaving a minimum of 322.6 acres. Impacts to specific vegetation communities within and outside of the Preserve are described in individual project descriptions (Section 5.2 of the NCCP/HCP).

Based on the Coastal Sage Scrub Conservation and Management Ordinance, the City is to amend its existing Coastal Sage Scrub Conservation and Management Ordinance (Municipal Code Chapter 17.41 et seq.) to ensure that the provisions of this NCCP/HCP are incorporated into said ordinance. More specifically, the ordinance allows CSS loss associated with the projects and activities covered by this NCCP/HCP and to incorporate the mitigation requirements discussed in Sections 5.3.3 and 5.3.4 of the NCCP/HCP.

No new development activities will be allowed in the Preserve, except for the public and private infrastructure projects identified in the City's NCCP/HCP; geological testing in support of compatible land uses, landslide monitoring, and any emergency actions associated with landslide abatement and remediation activities. Development adjacent to the Preserve, however, may indirectly affect the Preserve. These indirect impacts are addressed through the existing project review process and CEQA documentation, as required.

In accordance with Landslide Abatement Measures (Section 5.2.3 of the NCCP/HCP), areas of temporary CSS disturbance will be revegetated with CSS habitat within 60 days after completion of abatement activities. A plan for revegetation of CSS habitat of areas of temporary CSS disturbance will be completed as part of the CEQA review during the planning stage of landslide abatement measures. The plan will take into account all of the restoration guidelines incorporated in this NCCP/HCP (see Section 5.5 and Section 6.0 of the NCCP/HCP for details about the restoration plan). It is estimated that such landslide abatement measures will result in the combined loss of a maximum of 5.0 acres of CSS habitat and 15.0 acres of non-native grassland. It is estimated that two-thirds of the impacts will occur within the Preserve. Other Covered Projects within a Preserve include Dewatering Wells and Miscellaneous Drainage Repair in Landslide Areas. It is estimated that a maximum of 2.5 acres of CSS and 2.5 acres of non-native grassland will be impacted for the installation of dewatering wells (Section 5.2.2 of the NCCP/HCP), and a maximum of 10 acres of CSS and 15 acres of non-native grassland will be impacted for the repair of existing drainage systems within the Preserve.

The NCCP/HCP provides regional conservation of native wildlife diversity through preservation of sufficient habitat for comprehensive management for the following 10 Covered Species for which Incidental Take Authorization is provided through permits issued for the NCCP/HCP: Aphanisma (*Aphanisma blitoides*), south coast saltscale (*Atriplex pacifica*), Catalina crossosoma (*Crossosoma californicum*), island green dudleya (*Dudleya virens* ssp. *insularis*), Santa Catalina Island desert-thorn (*Lycium brevipes* var. *hassei*), woolly seablite (*Suaeda taxifolia*), Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*), El Segundo blue butterfly (*Euphilotes battoides allyni*), coastal California gnatcatcher (*Polioptila californica californica*), and cactus wren (*Campylorhynchus brunneicapillus*). The NCCP/HCP outlines habitat avoidance and minimization measures as well as standard operational procedures and mitigation measures for work occurring within participating landowners and preserves (Section 5.5 of NCCP/HCP).

3.2 SOILS

According to the results from the USDA NRCS Web Soil Survey (USDA 2022), the Survey Area is located in the Los Angeles County Southeastern Part, CA696 part of the soil map. Six soil types are known to occur within and/or adjacent to the site (Attachment 1, Figure 3 Soils Map) and are described below.

Haploxerepts soil 10 to 35 percent slopes, occurs throughout the majority of the Survey Area. The parent material is mixed slide deposits derived from calcareous shale. This is a well-drained soil with no frequency of ponding and is not hydric. The available water capacity is classified as moderate (approximately 8.3 inches) with a depth to the water table of more than 80 inches (USDA 2022).

Zaca-Ballast Complex, 10 to 50 percent slopes, occurs in the northwestern portion of the Survey Area. The parent material is Colluvium and/or slump block derived from calcareous shale. This is a well-drained soil with no frequency of ponding and is not hydric. The available water capacity is high (approximately 9.9 inches) with a depth to water table of more than 80 inches (USDA 2022).

Urban Land-Filiorum Complex, 2 to 9 percent slopes, occurs in the southeastern portion of the Survey Area. The parent material is discontinuous human-transported material over colluvium and/or residuum weathered from calcareous shale. This is a well-drained soil with no frequency of ponding and is not hydric. The available water capacity is high (approximately 9.6 inches) with a depth to water table of more than 80 inches (USDA 2022).

Urban Land-Dapplegray Complex, 5 to 20 percent slopes, terraced occurs in the southeastern portion of the Survey Area. The parent material is human-transported material consisting mostly of colluvium and/or residuum weathered from calcareous shale. This is a well-drained soil with no frequency of ponding and is not hydric. The available water capacity is moderate (approximately 8.4 inches) with a depth to water table of more than 80 inches (USDA 2022).

Urban Land-Dapplegray Complex, 20 to 55 percent slopes occurs in the northeastern portion of the Survey Area. The parent material is human-transported material consisting mostly of colluvium and/or residuum weathered from calcareous shale. This is a well-drained soil with no frequency of ponding and is not hydric. The available water capacity is moderate (approximately 8.4 inches) with a depth to water table of more than 80 inches (USDA 2022).

Beaches, rocky soils occur in the southern portion of the Survey Area along the Pacific Ocean. The parent material is beach sand with no hydric soil rating.

3.3 JURISDICTIONAL WATERS

The results of the field delineation are presented below. Figure 4 provides the watershed that the Survey Area and surrounding area are within. Figure 5 provides the Federal Emergency Management Area (FEMA) Flood Hazard Zones. Figure 6 provides jurisdictional waters potentially present in the Survey Area as provided by the USFWS NWI[2] and USGS NHD layers. Figure 7 provides the location of water features

[2] The NWI data prepared by USFWS utilize high altitude imagery which requires field inspections for verification.

delineated within the Survey Area following the field investigations. Site photographs are included in Attachment A.

3.3.1 Jurisdictional Waters Delineation Results

The Survey Area is located within the Frontal Santa Monica Bay-San Pedro Bay Watershed (Hydrological Unit Code (HUC) – 10; 1807010405, an area of approximately 74,377 acres (California Water Indicators Portal 2022) covering portions of Palos Verdes and Redondo Beach coastlines. The Survey Area is located in Portuguese Canyon, located between Altamira Canyon to the west and Klondike Canyon to the east. The headwater of Portuguese Canyon is located along Crest Road, approximately 3,400 feet north of the Survey Area. Surface water collects after rain events and flows southward down towards the northern portion of the Survey Area, along Burma Road. Based on the topography in the area, Burma Road is an active slide area, a band of ground at a slightly higher elevation, and alters the direct linear flow of water downstream.

A small portion of the northwestern area of the Survey Area is in a FEMA flood hazard Zone D (area of undetermined flood hazard), and a small portion of the southern boundary is designated as Zone VE (1 percent chance of flood hazard). No other areas are within FEMA flood hazard zones. Maps of these areas are provided in Figure 5.

Three NWI mapped bluelines and NHD streams occur within the Survey Area (Figure 6). Based on field observations, all three drainages are considered ephemeral drainages that support surface flows only during and immediately after rain events. No potential wetland areas were observed within the Survey Area.

Drainage Feature 1

Drainage Feature 1 enters the northern area just north of Burma Road, flows in a southward direction for approximately 1,530 feet through the upper portion of the Survey Area, then flows approximately 1,660 feet outside of the Survey Area along the western boundary, then back into the Survey Area through an existing culvert located north of Palos Verdes Drive South for approximately 1,140 feet and terminates in the Pacific Ocean. The lower portion of the drainage exhibits friable soils and many fracture areas. Therefore, the banks are not well defined, and the drainage appears to follow fractures and go sub-surface before it terminates along the rocky cliffs. This drainage is also identified as an ephemeral drainage in the NHD dataset. Vegetation within and on top of the banks of Drainage 1 primarily includes Exotic Woodland, Coastal Sage Scrub, Saltbush Scrub, Developed and Disturbed vegetation.

Drainage Feature 1 has a series of existing 3-foot corrugated plastic pipes and corrugated metal pipes (CMPs) that were installed in 1995 as part of the Grading and Drainage Improvement Project. These pipes appear to divert surface water of the existing drainage approximately 470 feet south of Burma Road, continue for approximately 765 feet in a southwest then southwardly direction along the western boundary of the Survey Area. At this point, the CMPs direct water away from the existing Drainage Feature 1 in southeastward direction towards the eastern boundary of the Survey Area, then southwest where it intersects with the existing Drainage Feature 1 and enters a culvert under Palos Verdes Drive South. The Drainage Feature 1 continues through an existing CMP and terminates on the cliffs above the beach of the Pacific Ocean. Based on the lack of definable banks in the lower portion of Drainage 1 (below Palos Verdes Drive South), the CMP appears to capture and direct the majority of the surface flows to the cliff edge where it terminates in the Pacific Ocean.

The proposed swale feature[3] will impact Drainage Feature 1 through the installation of the swale feature within the Survey Area, and by intercepting water away from the drainage feature near the northwestern portion of the Survey Area and directing the water through the proposed swale feature towards the proposed Flow Reduction Area (and Primary Staging Area) and back to Drainage Feature 1 near Palos Verdes Drive South.

Drainage Feature 2

Drainage Feature 2 enters the northern portion of the Survey Area approximately 985 feet to the east of Drainage Feature 1, just north of Burma Road. This feature flows south to southwestwardly for 380 linear feet before going subsurface approximately 70 feet north of Burma Road (active slide area). Burma Road is higher in elevation than the terminus of the drainage feature banks and contributes water to the active slide area below the surface of the ground. The feature does not continue south of Burma Road, as no surface hydrology was evident during the survey effort. The NWI dataset layer also identifies this as the drainage terminus. Vegetation within and on top of the banks of Drainage 2 is primarily Coastal Sage Scrub (Undifferentiated and Rhus Dominated) vegetation. No swale feature is proposed for this location and no impacts are anticipated for Drainage Feature 2.

Drainage Feature 3

Drainage Feature 3 enters the northern portion of the Survey Area approximately 885 feet to the east of Drainage Feature 2, at Burma Road. An existing CMP intercepts the drainage feature and directs flow southwardly for approximately 285 feet, where it exists at Peppertree Trail. The topography of this area at Peppertree Trail is relatively flat and water connects to the series of 3-foot CMPs that are not closed (cut and lay open to the air); the same system of CMPs that directs surface flow for Drainage Feature 1. At this location, the NWI is mapped along steep vertical wall, which is not possible[4]. The CMPs at this location direct the water southward along the trail into the Primary Staging Area (Flow Reduction Area) and follows the same existing CMPs as described for Drainage Feature 1. Vegetation within and on top of the banks of Drainage 3 include Exotic Woodland, Coastal Sage Scrub, Saltbush Scrub and Developed areas. Impacts to Drainage Feature 3 include installation of the proposed swale feature immediately north of Peppertree Trail. No water features other than the CMPs were observed below Peppertree Trail.

Additional Drainage

A fourth drainage feature to the east of the Survey Area that flows within Klondike Canyon does not enter the Survey Area. A proposed Stockpile Area at the southwestern portion of the Survey Area is located within a developed area (an existing parking area) and is on a bridged area high above the stream and NWI wetland area. The water flows below the developed area and is presumed to flow into a culvert (outside of the Survey Area) through the private residential community below. No impacts to this drainage or associated habitat are anticipated.

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[3] The proposed swale feature generally follows the existing CMP layout. However, the CMPs do not appear to function as intended (many portions are buried/covered and/or filled with sediment). Two proposed culverts (one located at Burma Road at the northwestern portion of the Survey Area and one located at Palos Verdes Drive in the southern area) are designed to manage runoff that is currently not controlled or causing erosion.

[4] The NWI database is prepared utilizing high altitude imagery. Accuracy of the data requires field surveys for confirmation of the actual locations/dimensions of drainage features and wetlands.

Proposed Swale Feature

The proposed swale feature includes one main feature that begins at the proposed culvert at the headwaters of Drainage Feature 1, flows approximately 1,000 feet through the existing drainage banks towards the proposed Hydrauger A3, where it diverts from the natural feature to the southeast, parallel to a trail for approximately 800 feet to Hydrauger A2. From Hydrauger A2, the swale flows southeast approximately 480 feet to the first swale tributary that begins at Burma Road and flows southward for approximately 680 feet until it connects to main swale feature. From this connection, the swale feature flows southeast for approximately 310 feet until it connects to a second swale tributary. This second tributary begins at Drainage Feature 3 at Burma Road and flows southward for approximately 685 feet until it connects to the main swale features. From here, the swale flows south and southwest for approximately 775 feet until it feeds into the proposed flow reduction area, continues for 900 feet through the basin, then continues southwestward for approximately 410 feet where it returns to Drainage Feature 1 and enters the proposed culvert (approximately 185 feet) at Palos Verdes Drive South, and continues south for approximately 1010 feet until it terminates near the Pacific Ocean. Based on the current design, the proposed swale feature averages 2 feet to 10 feet at the bottom and an average width of 14 feet to 26 feet at the top (20 feet average permanent impact area) with 10 feet of temporary impacts on either side of the feature (for a total average of 40 feet). Temporary work areas outside of the geocell limits of the proposed swale feature (but within construction disturbance limits) will be covered with biodegradable erosion control matting and hydroseeded with native vegetation after grading activities. Impacts to drainages are provided in Tables 3 through 5.

Groundwater

The purpose of the hydraugers is to alleviate artesian water pressure below the PBL. The hydraugers would be installed underground into the existing groundwater table.

Figure 4
Portugese Bend Landslide Mitigation
Soils

- Proposed Project Limit
- Proposed Hydrauger Work Locations
- Staging Area/Work Location
- Proposed Hydrauger Arrays
- Approximate Surface Fracture Locations
- Proposed Access Route
- Proposed Culvert
- Proposed Swale

Soils

- 1155 - Beaches, rocky
- 1168 - Haploxerepts, 10 to 35 percent slopes
- 1175 - Urban land-Filiorum complex, 2 to 9 percent slopes
- 1177 - Mollic Haploxeralfs, coastal-Topdeck-Urban land complex, 20 to 55 percent slopes
- 1178 - Oceanaire-Filiorum complex, 10 to 35 percent slopes
- 1179 - Zaca-Ballast complex, 10 to 50 percent slopes"|"Complex
- 1271 - Urban land-Dapplegray complex, 5 to 20 percent slopes, terraced
- 1273 - Dapplegray-Urban land-Lunada complex, 20 to 55 percent slopes
- 9996 - Rock outcrop, marine terrace escarpments
- W - Water

All features are approximate

N

0 400 800 1,600

Feet

Name: 21243 BIO Fig 3 Soils.Mxd
Print Date: 10/19/2022, Author: pcarlos

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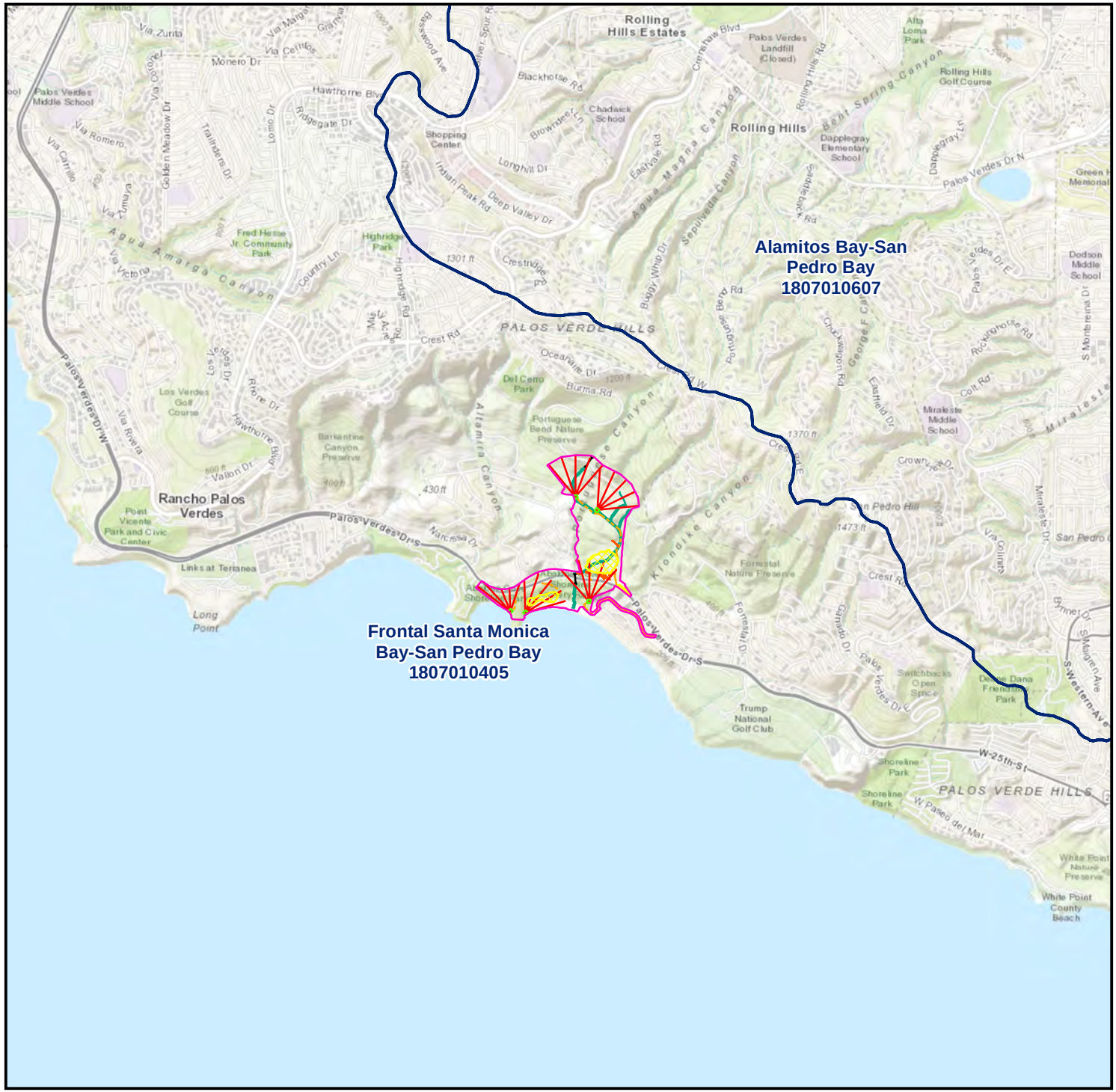

Figure 4
Portugese Bend Landslide Mitigation
Palos Verdes Peninsula Land
Watersheds

- Proposed Project Limit
- Proposed Hydrauger Work Locations
- Staging Area/Work Location
- Proposed Hydrauger Arrays
- Approximate Surface Fracture Locations
- Proposed Access Route
- Proposed Culvert
- Proposed Swale
- Watershed (HUC-10)

All features are approximate

N

0 2,000 4,000 8,000

Feet

Name: 21243 BIO Fig 4 Watersheds.Mxd
Print Date: 10/19/2022, Author: pcarlos

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Figure 5
Portugese Bend Landslide Mitigation
FEMA Flood Hazard Zones

- Proposed Project Limit
- Proposed Hydrauger Work Locations
- Staging Area/Work Location
- Proposed Hydrauger Arrays
- Approximate Surface Fracture Locations
- Proposed Access Route
- Proposed Culvert
- Proposed Swale

FEMA Flood Hazard Zones

- Area of Undetermined Flood Hazard
- 1% Annual Chance Flood Hazard

All features are approximate
Alll work will occur outside of the mean high tide line

N

0 1,000 2,000 4,000

Feet

Name: 21243 BIO Fig 5 FEMA Flood Hazard Zones.Mxd
Print Date: 10/19/2022, Author: pcarlos

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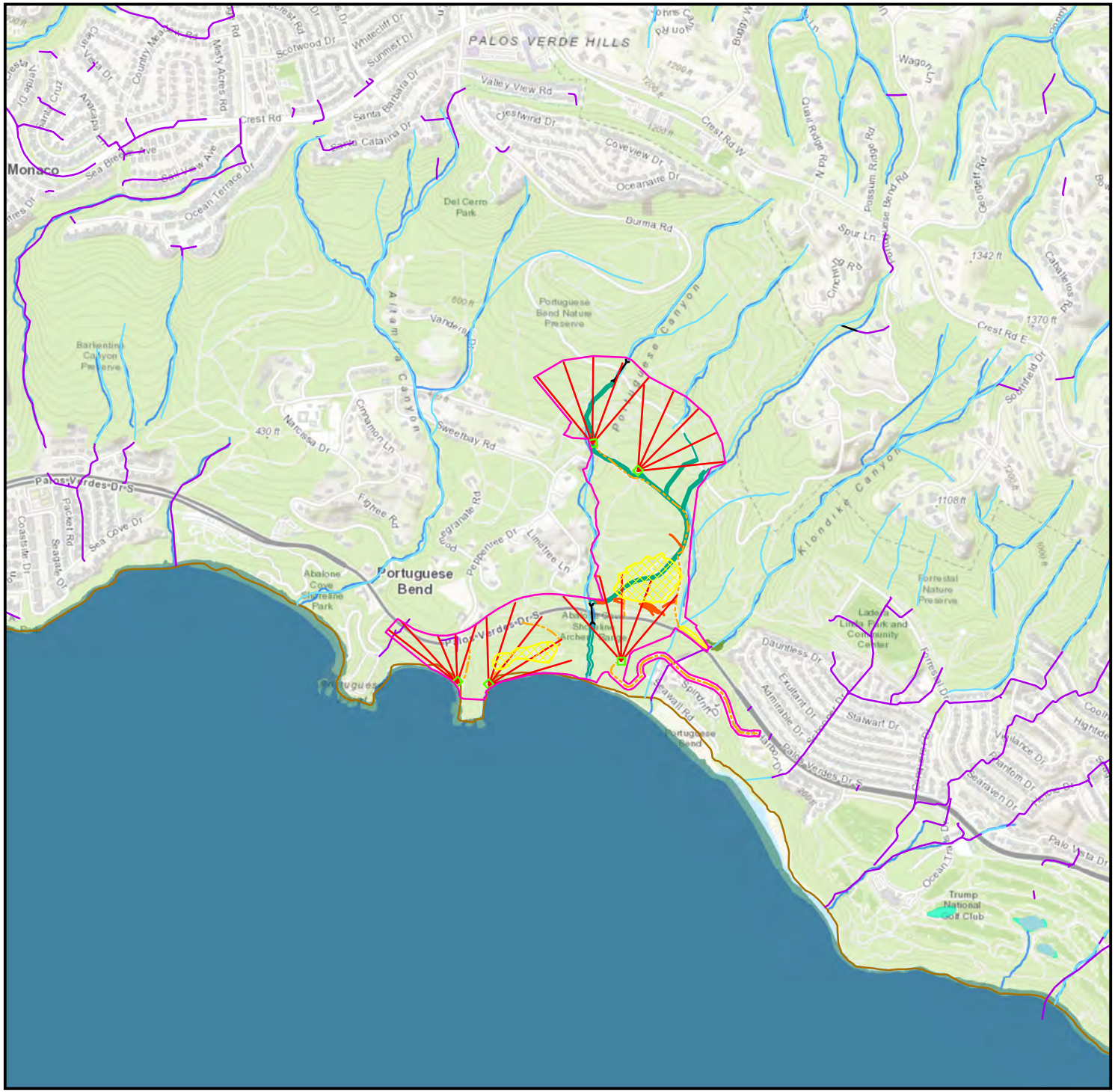

Figure 6

Portugese Bend Landslide Mitigation
NWI and NHD Waters Datasets

- Proposed Project Limit
- Proposed Hydrauger Work Locations
- Staging Area/Work Location
- Proposed Hydrauger Arrays
- Approximate Surface Fracture Locations
- Proposed Access Route
- Proposed Culvert
- Proposed Swale

NWI

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

NHD

- Coastline
- Connector
- Pipeline
- Stream/River

All features are approximate
Alll work will occur outside of the mean high tide line

N

0 1,000 2,000 4,000

Feet

Name: 21243 BIO Fig 6 NWI and NHD Waters Datasets.Mxd
Print Date: 10/21/2022, Author: pcarlos

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Figure 7

Portugese Bend Landslide Mitigation
Jurisdictional Delineation Results

- Proposed Project Limit
- Proposed Hydrauger Work Locations
- Staging Area/Work Location
- Proposed Hydrauger Array Location
- Proposed Access Route
- Proposed Culvert
- Proposed Swale
- Sheet Flow Drainage

Jurisdictional Delineation Results

- Culvert
- CMP
- Ordinary High Water Mark
- Bank to Bank

All features are approximate
Alll work will occur outside of the mean high tide line

N

0 400 800 1,600

Feet

Name: 21243 BIO Fig 7 Jurisdictional Delineation Results.Mxd
Print Date: 10/28/2022, Author: pcarlos

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3.4 VEGETATION COMMUNITIES

Five vegetation communities and two forms of bare ground/development were observed within the Survey Area. Saltbush Scrub, Coastal Sage Scrub (Undifferentiated), Coastal Sage Scrub (Rhus Dominated), Exotic Woodland and Disturbed Vegetation comprised the vegetation communities. Coastal Sage Scrub vegetation communities are considered sensitive. Sensitive habitats within the NCCP/HCP area are those that are considered rare in the region, support sensitive species of plants and animals, and/or are subject to regulatory protection. Non-native habitats including Exotic Woodland and Disturbed Vegetation are not considered sensitive.

Rocky Shore and Developed (Buildings, Ornamental Vegetation, and pavement) comprised the two forms of bare ground/development. A total of 206.48 acres of these communities collectively were identified within the Survey Area. A map showing the vegetation communities observed within the Survey Area is provided in Figure 8, and the communities are described in the following subsections, as defined by Sawyer et al. (2009).

3.4.1 Coastal Sage Scrub - Undifferentiated

Undifferentiated Coastal Sage Scrub is characterized by a highly plastic matrix of species dominance or codominance with a similar species composition throughout; this habitat is similar in composition to the Holland classification of Venturan Sagebrush Scrub (Holland 1986). This habitat is typically associated with low elevation coastal areas and consists of a mosaic of species dominance and abundance when examined on the fine scale; but retain a generally similar composition when viewed on a larger scale. This habitat is typically found on dry sites, such as steep, south-facing slopes or clay-rich soils that are slow to release stored water. Species abundance and composition within the habitat is largely dependent on abiotic factors as well as disturbance frequency and scale and presence of non-native invasive species in adjacent areas. Areas of low native shrub density are typically dominated by invasive non-native species and are typically associated with fringe habitat areas associated with trails and existing infrastructure. Root depth of species within this habitat are typically shallow and fibrous (McDonald and Hughes 1968) with some species, such as laurel sumac which is not dominate in the landscape, potentially exhibiting deeper root systems that range from six to thirteen meters deep (DeSouza, Silka, and Davis 1986; Canadel *et al*. 1996).

Undifferentiated Coastal Sage Scrub within the anticipated Project impact areas (Hydrauger A1, A2, A5, A6, swale feature, flow reduction area, lower and upper culvert, secondary staging area, proposed access route and surface fracture locations) is a sensitive vegetation community dominated by California sagebrush (*Artemisia californica*), big saltbush, coyote bush, lemonade berry (*Rhus integrifolia*), black mustard, short-pod mustard (*Hirschfeldia incana*), purple sage (*Salvia leucophylla*), bladderpod (*Peritoma arborea*), fennel (*Foeniculum vulgaris*), California brittlebush (*Encelia californica*), tocalote, and California buckwheat (*Eriogonum fasciculatum*). There are 114.07 acres of Undifferentiated Coastal Sage Scrub within the Survey Area. A total of 3.30 acres of this habitat is located within the anticipated Project permanent impact areas and 1.45 acres within the anticipated Project temporary impact areas.

3.4.2 Coastal Sage Scrub – Rhus Dominated

Rhus dominated Coastal Sage Scrub is similar to the Undifferentiated Coastal Sage Scrub described above; however, the dominant shrub species throughout this habitat is lemonade berry.

Rhus Dominated Coastal Sage Scrub is a sensitive vegetation community dominated by lemonade berry and California sagebrush, with big saltbush, coyote bush, black mustard, short-pod mustard, purple sage, bladderpod, fennel, California brittlebush, tocalote, and California buckwheat also present. There are 5.37 acres of Rhus Dominated Coastal Sage Scrub within the Survey Area. No impacts to this vegetation community are anticipated.

3.4.3 Saltbush Scrub

Saltbush scrub is typically characterized by sparse to moderately dense stands dominated by big saltbush (*Atriplex lentiformis*) less than 5 meters in height with an intermittent to open canopy. Plants are long-lived and resistant to salt, cold, and drought; they tolerate saline and alkaline soils, but they are not necessarily an indicator of these conditions (McDonald and Hughes 1967). The herbaceous layer is variable, with associated species being highly variable due to the wide geographic range of this alliance. Overall, shrublands in this alliance occur on lowland sites with elevation ranging from 0 ft. to 557 feet elevation. Dominant species within this habitat typically have shallow root systems that primarily subsist off surface water, with water subsurface water availability contributing to increased water uptake but not necessarily increased vegetative density or volume (McDonald and Hughes 1967). Saltbush Scrub is considered a subset of Coastal Sage Scrub habitat and is therefore considered a sensitive vegetation community.

Saltbush scrub is present within the anticipated Project impact areas (Hydrauger A2, swale feature, flow reduction area, lower culvert, proposed access route, and surface fracture locations). Big saltbush is dominant in the shrub canopy with coyote bush (*Baccharis pilularis*) present at lower cover. The herbaceous layer is variable with non-natives including black mustard (*Brassica nigra*), tocalote (*Centaurea melitensis*), telegraph weed (*Heterotheca grandiflora*), smilo grass (*Stipa miliacea*) dominating with isolated patches of native grasses including California melic (*Melica imperfecta*) scattered throughout. Saltbush scrub constitutes 13.58 acres of habitat within the Survey Area. A total of 4.92 acres of this habitat is located within the anticipated Project permanent impact areas and 0.43 acre within the anticipated Project temporary impact areas.

3.4.4 Exotic Woodland

Exotic woodland includes non-native trees and shrubs that were introduced into residential areas and have since dispersed to nearby natural areas. Within the Survey Area, these areas are characterized by groves of escaped or naturalized cultivars of Cyclops acacia (*Acacia cyclops*) that may be dominant or co-dominant with other non-native species. Exotic Woodland habitat is found in California in coastal canyons, washes, slopes, riparian areas, and roadsides, between 605 feet and 985 feet elevation. Exotic woodlands are generally drought tolerant and prefer moist to dry soils that are loamy or sandy in texture.

Exotic woodland is present within the anticipated Project impact areas (swale feature, upper culvert, Hydrauger A3, flow reduction area, and proposed access route) and is largely dominated by cyclops acacia, with some areas being co-dominated by cyclops acacia and Peruvian pepper tree (*Schinus mole*). Overall vegetation density is high, and when present, shrub cover consists largely of a mix of native species with isolated stands of coyote bush and lemonade berry. The herbaceous layer is dominated by annuals and non-natives including black mustard, tocalote, and wild oat (*Avena barbata*). There are 32.93 acres of exotic woodland within the Survey Area. A total of 2.88 acres of this habitat is located within the anticipated Project permanent impact areas and 0.75 acre within the anticipated Project temporary impact areas.

3.4.5 Disturbed Vegetation

Disturbed Vegetation refers to a typically non-native vegetation community that occurs in a heavily disturbed areas and characterized by weedy and ruderal species. It can be dominated by a variety of species in the mustard family, all of which are generally open-branched, tall (3-10 feet), aromatic, fast-growing, annuals or short-lived perennials that are generally non-native. Mustard species typically form dense colonies that overtop other plants with cover varying from open to continuous. All respond positively to regular frequent disturbance, whether it be fire, disking, intermittent flooding, or heavy grazing and often produce a large amount of seed annually that is retained within the seed bank. Disturbed vegetation can often increase fire fuel loads and fire intensity due to the buildup of typically annual vegetation, especially in areas already altered by non-native grass presence.

Disturbed vegetation within the anticipated Project impact areas (upper culvert, swale feature, Hydrauger A3, flow reduction area, stockpile area, and surface fracture locations) is dominated by black mustard with ruderal forbs and non-natives including common sowthistle (*Sonchus oleraceus*), tocalote, wild oat, ripgut brome (*Bromus diandrus*), and castor bean (*Ricinus communis*) present throughout the herbaceous layer. Emergent shrubs such as Australian saltbush (*Atriplex semibaccata*) are present at low cover. Disturbed vegetation is present within 11.40 acres of the Survey Area. A total of 4.02 acres of this habitat is located within the anticipated Project permanent impact areas and 0.03 acre within the anticipated Project temporary impact areas.

3.4.6 Development (Buildings, Ornamental Landscaping, roadways, hiking trails)

Developed areas are those areas that have been significantly altered from their natural state by humans and now display man-made structures such as houses, dirt roads, buildings, parks, and other maintained or landscaped areas. Developed areas are present within the Survey Area and consist primarily of residential housing and formally landscapes areas that are dominated by irrigated non-natives that provide an altered ecological functionality than habitat within the surrounding open space, as well as dirt access roads, trails, roadways and, other hardscapes.

Developed areas are located within the anticipated Project impact areas (upper culvert, swale feature, Hydrauger A2, A3, and A6, flow reduction area, secondary staging area, stockpile area, and surface fracture locations). There are 26.90 acres of developed land on the within the Survey Area. A total of 3.07 acres of this habitat is located within the anticipated Project permanent impact areas and 0.29 within the anticipated Project temporary impact areas.

3.4.7 Rocky Shore

Rocky Shore refers to areas at the base of cliffs that are characterized by lava flows, sedimentary bedding, and loose cobbles. Constant erosion from wind, waves, and rain prevents vegetation establishment. Typically, there is little soil available for plants to become established. This form of bare ground/development habitat is located within the Survey Area, primarily located within the southern portions of the Survey Area along the base of the bluff. This habitat type does not depict high or low tidal zones but designates rocky substrate for habitat value only.

Rocky Shore is within the anticipated Project impact area for Hydrauger A5 and A6 and the proposed swale feature. There are 2.22 acres of Rocky Shore within the Survey Area. A total of 0.17 acre of this habitat is located within the anticipated Project permanent impact area.

The total acreages of vegetation communities within the Survey Area are presented in Table 1 below. Anticipated Project impacts to vegetation communities are provided in Table 6.

Table 1. Vegetation Communities within the Survey Area

Vegetation Communities Within Survey Area (in acres)	
Native Vegetation Communities	
Coastal Sage Scrub – Rhus Dominated	5.37
Coastal Sage Scrub – Undifferentiated	114.07
Saltbush Scrub	13.58
Total Acreage for Native Vegetation Communities	**133.02**
Non-native Vegetation Communities and Bare Ground/Development Areas	
Disturbed Vegetation	11.40
Exotic Woodland	32.93
Developed	26.90
Rocky Shore	2.22
Total Acreage for Non-native Vegetation Communities and Bare Ground/Development Areas	**73.45**
Total for all Vegetation Communities	**206.46***

* slight differences in total calculation due to rounding

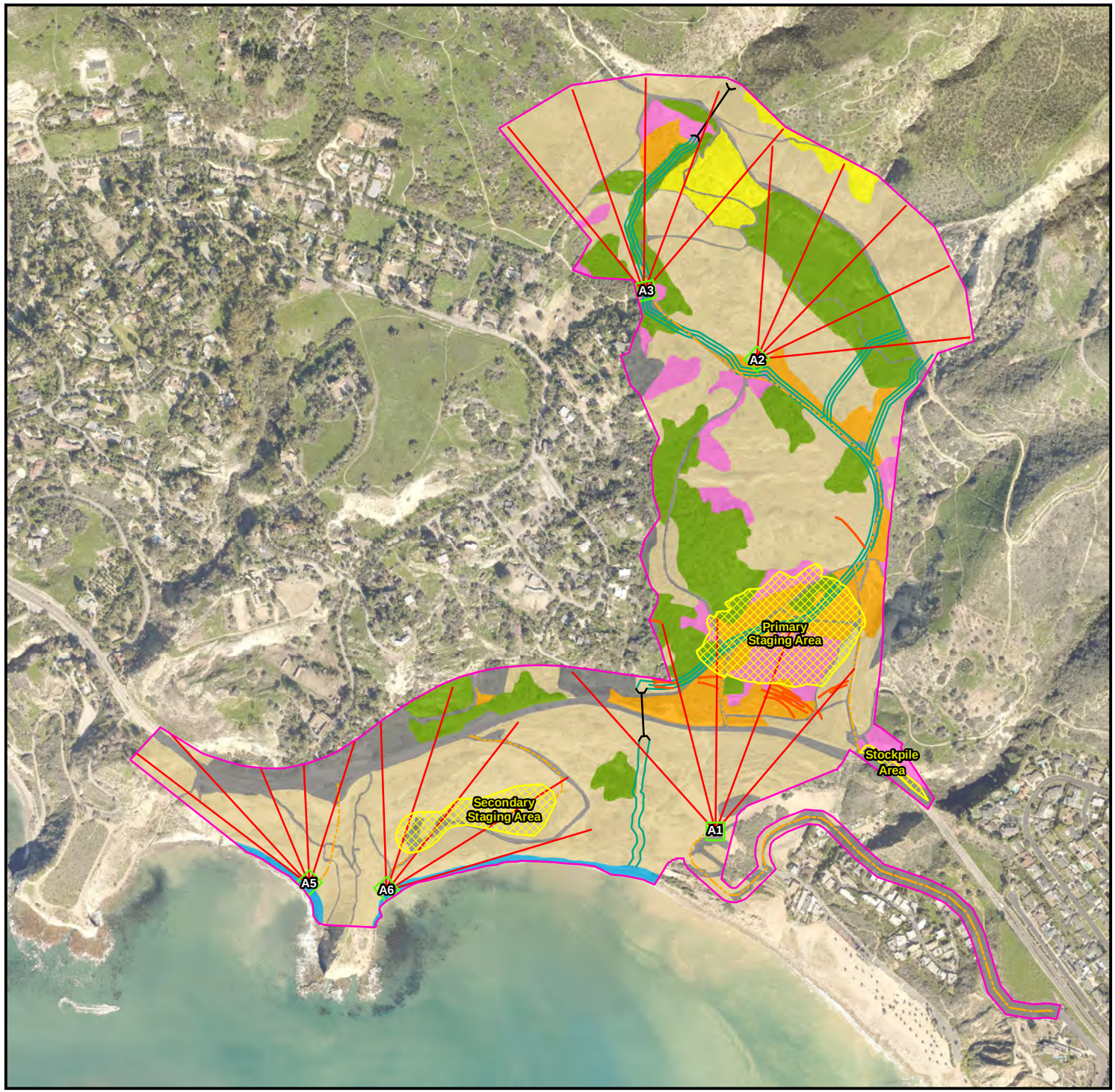

Figure 8
Portugese Bend Landslide Mitigation
Vegetation Communities

- Proposed Project Limit
- Proposed Hydrauger Work Locations
- Staging Area/Work Location
- Proposed Hydrauger Arrays
- Approximate Surface Fracture Locations
- Proposed Access Route
- Proposed Culvert
- Proposed Swale

Vegetation Communities

- Coastal Sage Scrub – Rhus Dominated
- Coastal Sage Scrub – Undifferentiated
- Saltbush Scrub
- Exotic Woodland
- Disturbed Vegetation
- Developed
- Rocky Shore

All features are approximate

N

0 400 800 1,600

Feet

Name: 21243 BIO Fig 8 Vegetation Communities.Mxd
Print Date: 11/21/2022, Author: pcarlos

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3.5 SENSITIVE SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Survey Area.

Rare Plant Rank (RPR)

List 1A = Plants presumed extinct in California.
List 1B = Plants rare and endangered in California and throughout their range.
List 2 = Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3 = Plants about which we need more information; a review list.
List 4 = Plants of limited distribution; a watch list.

RPR Extensions

0.1 = Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2 = Fairly endangered in California (20-80 percent occurrences threatened).
0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE = Federally listed; Endangered
FT = Federally listed; Threatened

State

ST = State listed; Threatened
SE = State listed; Endangered
RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
SSC = State Species of Special Concern

Local

NCCP/HCP = Rancho Palos Verdes Natural Community Conservation Plan

The following information was used to determine the significance of biological resources potentially occurring within the Survey Area. The criteria used to evaluate the potential for sensitive species to occur on the Survey Area are outlined in Table 2.

Table 2: Criteria for Evaluating Sensitive Species Potential for Occurrence (PFO)

PFO	CRITERIA
Absent:	Species is restricted to habitats or environmental conditions that do not occur within the Survey Area. Additionally, if the survey was conducted within the blooming period of the species and appropriate habitat was observed in the surrounding area but the species was not observed within the Project impact area, it was considered absent.
Low:	Historical records for this species do not exist within the immediate vicinity (approximately 5 miles) of the Survey Area, and/or habitats or environmental conditions needed to support the species are of poor quality.
Moderate:	Either a historical record exists of the species within the immediate vicinity of the Survey Area (approximately 3 miles) and marginal habitat exists on the Survey Area, or the habitat requirements or environmental conditions associated with the species occur within the Survey Area, but no historical records exist within 5 miles of the Survey Area.
High:	Both a historical record exists of the species within the Survey Area or its immediate vicinity (approximately 1 mile), and the habitat requirements and environmental conditions associated with the species occur within the Survey Area.
Present:	Species was detected within the Survey Area at the time of the survey.

* PFO: Potential for Occurrence

3.5.1 Special Status Plants

Current database searches (CDFW 2022; CNPSEI 2022) resulted in a list of 23 federally and/or state listed threatened and endangered or rare special status plant species that may potentially occur within the Survey Area and are listed below. After the literature review and the reconnaissance-level survey, it was determined that seven species were considered absent from the Survey Area, eight species have a low potential to occur, five species have a moderate potential to occur, and three species have a high potential to occur within the Survey Area. Factors used to determine the potential for occurrence included the quality of habitat, elevation, and the results of the reconnaissance survey. In addition, the location of prior CNDDB records of occurrence were used as additional data, but because the CNDDB is a positive-sighting database, this data was used only in support of the analysis from the previously identified factors.

The following seven plant species are considered **absent** from the Survey Area due to lack of suitable habitat:

- Horn's milk-vetch (*Astragalus hornii* var. *hornii*) – CRPR 1B.1
- southern tarplant (*Centromadia parryi* ssp. *australis*) – CRPR 1B.1
- salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*) – **FE**, **SE**, CRPR 1B.2
- Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*) – CRPR 1B.1
- mud nama (*Nama stenocarpa*) – CRPR 2B.2
- coast woolly-heads (*Nemacaulis denudata* var. *denudata*) – CRPR 1B.2
- estuary seablite (*Suaeda esteroa*) – CRPR 1B.2, NCCP/HCP

The analysis of the CNDDB search and field survey resulted in eight species with a **low** potential to occur on the Survey Area due to a lack of suitable habitat including soil conditions on the Survey Area, only poor-quality habitat being present within the Survey Area, and/or no historical populations being found within 5-miles of the Survey Area. The following species have a low potential to occur:

- Davidson's saltscale (*Atriplex serenana* var. *davidsonii*) – CRPR 1B.2
- smooth tarplant (*Centromadia pungens* subsp. *laevis*) – CRPR 1B.1
- Catalina crossosoma (*Crossosoma californicum*) – CRPR 1B.2, NCCP/HCP
- beach spectaclepod (*Dithyrea maritima*) – **ST**, CRPR 1B.1
- decumbent goldenbush (*Isocoma menziesii* var. *decumbens*) – CRPR 1B.2
- prostrate vernal pool navarretia (*Navarretia prostrata*) – CRPR 1B.1
- Lyon's pentachaeta (*Pentachaeta lyonii*) – **FE**, **SE**, CRPR 1B.1
- San Bernardino aster (*Symphyotrichum defoliatum*) – CRPR 1B.2

The analysis of the CNDDB search and field survey resulted in five species with a **moderate** potential to occur on the Survey Area. Coulter's saltbush (*Atriplex coulteri*), island green dudleya (*Dudleya virens* subsp. *insularis*), Parish's brittlescale (*Atriplex parishii*), mesa horkelia (*Horkelia cuneata* var. *puberula*), and Brand's star phacelia (*Phacelia stellaris*) have a moderate potential to occur and are described below:

Coulter's saltbush – CRPR 1B.2

This species is a perennial herb in the Chenopodiaceae family that blooms from March to October. This species occurs in coastal bluffs and coastal sage scrub habitats below 1,509 ft. elevation. The survey was conducted within the blooming period of this species and this species was not observed. However, focused special status plant surveys which require 100 percent coverage transects were not conducted; therefore, this species could occur within the Survey Area. Appropriate coastal scrub and coastal bluff habitat occurs within the Survey Area and CNDDB records indicate a historic population within five miles of the Survey Area. Therefore, there is a moderate potential for this species to occur within the Survey Area. This species is not a NCCP/HCP-covered species.

Island green dudleya – CRPR 1B.2, NCCP/HCP

This species is a perennial herb in the Crassulaceae family that blooms from April to June. This species occurs in coastal bluffs in the Palos Verdes Hills, Santa Catalina and San Nicolas Islands. The survey was conducted outside the blooming period of this species and this species was not observed. Appropriate coastal scrub and coastal bluff habitat occurs within the Survey Area and CNDDB records indicate a historic population within three miles of the Survey Area. Therefore, there is a moderate potential for this species to occur within the coastal bluffs of the Survey Area. This species is a NCCP/HCP-covered species.

Parish's brittlescale – CRPR 1B.1

This species is an annual herb in the Chenopodiaceae family that blooms from June to October. This species occurs in alkaline or clay soils, often within chenopod scrub, playas, vernal pools below 6,233 ft. elevation. The survey was conducted during the blooming period of this species and this species was not observed. However, focused special status plant surveys which require 100 percent coverage transects were not conducted; therefore, this species could occur within the Survey Area. There are appropriate soil conditions within the Survey Area and CNDDB records indicate a historic population within five miles of the Survey Area. Therefore, there is a moderate potential for this species to occur within the Survey Area. This species is not a NCCP/HCP-covered species.

mesa horkelia – CRPR 1B.1

This species is a perennial herb in the Rosaceae family that blooms from February to September. This species occurs in coastal scrub, maritime chaparral, and cismontane woodland below 2,657 ft. elevation. The survey was conducted during the blooming period of this species and this species was not observed. However, focused special status plant surveys which require 100 percent coverage transects were not conducted; therefore, this species could occur within the Survey Area. There is appropriate coastal scrub within the Survey Area and CNDDB records indicate a historic population within two miles of the Survey Area. Therefore, there is a moderate potential for this species to occur within the Survey Area. This species is not a NCCP/HCP-covered species.

Brand's star phacelia – CRPR 1B.1

This species is an annual herb in the Hydrophyllaceae family that blooms in March - June. This species occurs in coastal dunes and coastal scrub below 1,312 ft. elevation. The survey was conducted outside the blooming period of this species; however, there is appropriate coastal scrub habitat within the Survey Area and CNDDB records indicate a historic population within five miles of the Survey Area. Therefore, there is a moderate potential for this species to occur within the Survey Area. This species is not a NCCP/HCP-covered species.

The analysis of the CNDDB search and field survey resulted in three species with a **high** potential to occur on the Survey Area. Aphanisma (*Aphanisma blitoides*), south coast saltscale (*Atriplex pacifica*), and Santa Catalina Island desert-thorn (*Lycium brevipes* var. *hassei*) have a high potential to occur and are described below:

aphanisma – CRPR 1B.2, NCCP/HCP

This species is an annual herb in the Chenopodiaceae family that blooms from March to June. This species occurs in coastal bluffs and coastal sage scrub habitats below 656 ft. elevation. The survey was conducted outside the blooming period of this species; however, appropriate coastal bluff habitat occurs within the Survey Area and CNDDB records indicate a historic population, present as of 2015, within the boundaries of the Survey Area. Therefore, there is a high potential for this species to occur within the Survey Area. This species is a NCCP/HCP-covered species.

south coast saltscale – CRPR 1B.2, NCCP/HCP

This species is an annual herb in the Chenopodiaceae family that blooms from June to October. This species occurs in coastal bluff scrub, coastal scrub, and coastal dunes below 984 ft. elevation. The survey was conducted during the blooming period of this species and this species was not observed. However, focused special status plant surveys which require 100 percent coverage transects were not conducted; therefore, this species could occur within the Survey Area. There is appropriate coastal bluff scrub and coastal scrub habitat within the Survey Area and CNDDB records indicate a historic population, present as of 2009, within the boundaries of the Survey Area. Therefore, there is a high potential for this species to occur within the Survey Area. This species is a NCCP/HCP-covered species.

Santa Catalina Island desert-thorn – CRPR 3.1, NCCP/HCP

This species is a perennial deciduous shrub in the Solanaceae family that blooms in June (August). This species occurs in coastal bluff scrub and coastal scrub below 984 ft. elevation. The survey was conducted during the blooming period of this species and was not observed. However, focused special status plant surveys which require 100 percent coverage transects were not conducted; therefore, this species could occur within the Survey Area. There is appropriate coastal bluff scrub and coastal scrub habitat within the Survey Area and CNDDB records indicate a historic population within one mile of the Survey Area. Therefore, there is a high potential for this species to occur within the Survey Area. This species is a NCCP/HCP-covered species.

3.5.2 Sensitive Wildlife

A current database search (CDFW 2022) resulted in a list of 15 federally and/or state listed endangered or threatened, Species of Concern, or otherwise sensitive wildlife species that may potentially occur within the Survey Area and are listed below. After a literature review and the assessment of the various habitat types within the Survey Area, it was determined that nine sensitive wildlife species are considered absent from the Survey Area, two species have a low potential to occur, one species has a moderate potential to occur, two species have a high potential to occur, and one species is present within the Survey Area. Factors used to determine potential for occurrence included the quality of habitat and the location of prior CNDDB records of occurrence.

The following nine wildlife species are considered **absent** from the Survey Area due to lack of suitable habitat present on the Survey Area:

- big free-tailed pat (*Nyctinomops macrotis*) – SSC
- California least tern (*Sternula antillarum browni*) – **FE**, **SE**
- El Segundo blue butterfly (*Euphilotes battoides allyni*) – **FE**, NCCP/HCP
- Pacific pocket mouse (*Perognathus longimembris pacificus*) – **FE**, SSC
- pocketed free-tailed bat (*Nyctinomops femorosaccus*)- SSC
- Riverside fairy shrimp (*Streptocephalus woottoni*) – **FE**
- southern California legless lizard (*Anniella stebbinsi*) – SSC
- tricolored blackbird (*Agelaius tricolor*) – **ST**
- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) – **FT**, **SE**

The analysis of the CNDDB search and field survey resulted in two species with a **low** potential to occur on the Survey Area due to low quality habitat and are described below:

- bank swallow (*Riparia riparia*) – **ST**
- western spadefoot (*Spea hammondii*) – SSC

The analysis of the CNDDB search and field survey resulted in one species with a **moderate** potential to occur on the Survey Area. Coast horned lizard (*Phrynosoma blainvillii*) has a moderate potential to occur and is described below:

coast horned lizard – SSC

The coast horned lizard is an SSC that is found in many habitats, including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet in elevation. (Stebbins 2003). It inhabits sandy washes or areas with loose, fine, sandy soils for burying, and low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native ant species (Stebbins 2003).

The analysis of the CNDDB search and field survey resulted in two species with a **high** potential to occur on the Survey Area. Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*) and San Diego desert woodrat (*Neotoma lepida intermedia*) have a high potential to occur and are described below:

San Diego desert woodrat - SSC

The San Diego desert woodrat is an SSC that inhabits moderate to dense canopies in a variety of sagebrush scrub, chaparral and desert habitats, especially in rock outcrops, rocky cliffs, and slopes (Natureserve 2013). This species is often associated with large cactus patches within coastal sage scrub communities and it almost is invariably associated with prickly pear (*Opuntia* spp.). High quality habitat occurs within the sage scrub habitats throughout the Survey Area. In addition, this species has been recorded within the Survey Area. Therefore, the San Diego desert woodrat has a high potential to occur within the Survey Area. This species is not a NCCP/HCP-covered species.

Palos Verdes blue butterfly – **FE**, NCCP/HCP

The Palos Verdes blue butterfly is a federally listed endangered species and a NCCP/HCP-covered species. A few small populations of this butterfly can only be found on the Palos Verdes Peninsula. The blue butterfly is dependent on its host and food plant species the locoweed (*Astragalus trichopodus* var. *lonchus*) and deerweed (*Acmispon glaber*) (The Butterfly Conservation Initiative 2006). Its flight season occurs from late January to mid-April. High quality habitat for this species is present throughout the Survey Area. In addition, several occurrences of this species have been recorded within one mile of the Survey Area. Therefore, the Palos Verdes blue butterfly has a high potential to occur within the Survey Area. This species is covered under the NCCP/HCP.

One species, the coastal California gnatcatcher (*Polioptila californica californica*), was **present** within and directly adjacent to the Survey Area during the survey. In addition, this species has been recorded to nest within and surrounding the Survey Area.

coastal California gnatcatcher – FT, SSC, NCCP/HCP

The coastal California gnatcatcher is a federally threatened species and a California Species of Special Concern. It is a permanent resident of Diegan, Riversidian, and Venturan sage scrub sub-associations found from sea level to 2,500 feet in elevation. The species lives and breeds within California sagebrush dominant habitats and also occurs in mixed scrub habitats with lesser percentages of this favored shrub (Atwood and Bontrager 2001). During the survey several individuals were observed foraging throughout the higher quality sage scrub habitats within the Survey Area (Figure 9). This species is a NCCP/HCP-covered species.

USFWS designated critical habitat for the coastal California gnatcatcher occurs within the majority of the Survey Area (Figure 9). Federally designated critical habitat for the coastal California gnatcatcher includes suitable Coastal Sage Scrub habitats and are formally protected and managed through the NCCP/HCP.

3.6 GENERAL PLANTS

No sensitive plant species were observed during the survey effort; however, focused special status plant surveys which require 100 percent coverage transects were not conducted. A complete list of plants observed is provided in Appendix B.

3.7 GENERAL WILDLIFE

A total of 20 wildlife species were observed during the survey. Wildlife species observed or detected during the site survey were characteristic of the existing Survey Area conditions. Several federally endangered coastal California gnatcatchers were observed foraging throughout the higher quality sage scrub habitats within the Survey Area (Figure 9). This is a NCCP/HCP-covered species. A complete list of wildlife observed is provided in Appendix C.

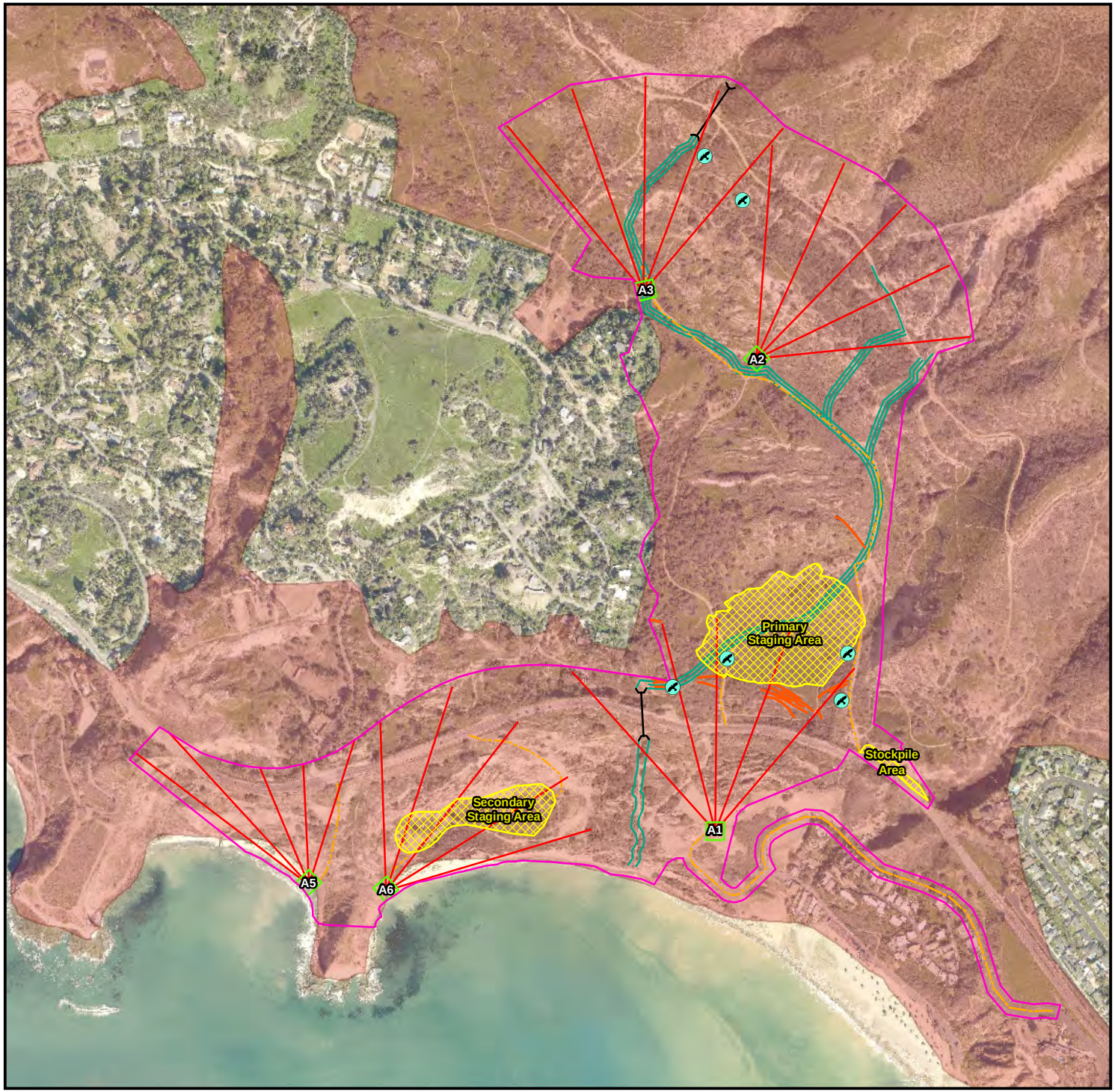

Figure 9

Portugese Bend Landslide Mitigation
Sensitive Species Occurrences and
USFWS Designated Critical Habitat

- Proposed Project Limit
- Proposed Hydrauger Work Locations
- Staging Area/Work Location
- Proposed Hydrauger Arrays
- Approximate Surface Fracture Locations
- Proposed Access Route
- Proposed Culvert
- Proposed Swale

Sensitive Species Occurrences

- Coastal California Gnatcatcher

USFWS Designated Critical Habitat

- Coastal California Gnatcatcher

All features are approximate

N

0 400 800 1,600

Feet

Name: 21243 BIO Fig 9 Sensitive Species Occurrences and USFWS Designated Critical Habitat.Mxd
Print Date: 12/29/2022, Author: pcarlos

CHAMBERS GROUP

SECTION 4.0 – CONCLUSIONS AND RECOMMENDATIONS

4.1 JURISDICTIONAL WATERS IMPACTS

A total of 3 ephemeral (upland vegetated) drainages were delineated within the Survey Area. In addition, upland vegetated swales, existing CMPs, culverts, and the proposed swale feature were also delineated. No vernal pools, wetland or riparian habitat was identified within the drainages within the Survey Area.

Drainage Feature 1 enters the northern portion of the Survey Area through a proposed culvert just north of Burma Road, flows in a southward direction for approximately 1,400 feet through the upper portion of the Survey Area, then flows approximately 835 feet outside of the Survey Area along the western boundary, then back into the Survey Area through a proposed culvert located north of Palos Verdes Drive South for approximately 1,180 feet and terminates in the Pacific Ocean. The culvert is designed to direct surface water under Palos Verdes Drive South and reconnect to the proposed swale feature that will terminate on the rocky cliffs above the rocky shore of the Pacific Ocean. The proposed swale feature will impact Drainage Feature 1 through the installation of the swale feature within the Survey Area, and by intercepting water away from the drainage feature near the northwestern portion of the Survey Area and directing the water through the proposed swale feature towards the proposed Flow Reduction Area (and Primary Staging Area) and back to Drainage Feature 1 near Palos Verdes Drive South.

No impacts are proposed for Drainage Feature 2.

Drainage Feature 3 enters the northern portion of the Survey Area approximately 885 feet to the east of Drainage Feature 2, at Burma Road. An existing CMP intercepts the drainage feature and directs flow southwardly for approximately 285 feet, where it exists at Peppertree Trail. The topography of this area at Peppertree Trail is relatively flat and water connects to the series of 3-foot CMPs. No water features other than the CMPs were observed below Peppertree Trail. The CMPs at this location direct the water southward along the trail into the proposed Primary Staging Area (Flow Reduction Area) 1. Impacts to Drainage Feature 3 include installation of the proposed swale feature immediately north of Peppertree Trail. Tables 3 through 5 represent proposed Project features that directly impact bank to bank and OHWM features of the ephemeral drainage features.

The current estimated diameter for the hydrauger diameter is 6 inches but may require a bore hole up to 12 inches in diameter for directional drilling underground for approximately 28,428 linear feet in total for all hydrauger proposed arrays. Assuming a 12-inch diameter subsurface disturbance to install the hydrauger arrays, the hydrauger arrays would include the following acreages: A1 (1.58 acres), A2 (1.58 acres), A3 (1.57 acres), A5 (1.19 acres), and A6 (1.50 acres) for a total of 7.42 acres or 323,215.2 square feet in total. Tables 3 through 5 represent anticipated impacts based on the current Project design. Proposed impacts are based on the proposed Project features and locations (see Figures 7 and 8), and the swale feature which includes an approximate 20 feet wide permanent impact area and a 20 feet wide temporary work area (10 feet area on either side of the permanent swale for a total of 20 feet). Areas outside of the geocell limits of the proposed swale feature (but within construction disturbance limits) will be covered with biodegradable erosion control matting and hydroseeded with native vegetation after grading activities.

Table 3. Anticipated Impacts to Jurisdictional Waters

	Drainage 1	Drainage 3	Total*
CDFW (acre)			
Permanent	0.22	0.01	**0.24**
Temporary	0.14	0.02	**0.17**
RWQCB (acre)			
Permanent	0.06	0.004	**7.48**
Temporary	0.02	0.006	**0.03**
USACE (acre)			
Permanent	0.06	0.004	**0.06**
Temporary	0.02	0.006	**0.03**

* slight differences in numbers due to rounding

Tables 4 and 5 below represents anticipated impacts to vegetation associated with Drainages 1 and 3.

Table 4. Anticipated Impacts to Vegetation Associated Drainage 1

	Coastal Sage Scrub – Undifferentiated	Developed	Exotic Woodland	Total*
CDFW (acre)				
Permanent	0	0.004	0.22	**0.22**
Temporary	0.02	0.001	0.12	**0.14**
RWQCB (acre)				
Permanent	0	0.001	0.05	**0.06**
Temporary	0.002		0.02	**0.02**
USACE (acre)				
Permanent	0	0.001	0.05	**0.06**
Temporary	0.002	0	0.02	**0.02**

* slight differences in numbers due to rounding

Table 5. Anticipated Impacts to Vegetation Associated Drainage 3

	Coastal Sage Scrub – Undifferentiated	Developed	Saltbush Scrub	Total*
CDFW (acre)				
Permanent	0.01	0.000	0.008	**0.01**
Temporary	0.01	0.003	0.01	**0.02**
RWQCB (acre)				
Permanent	0.001	0	0.003	**0.004**
Temporary	0.002	0.001	0.003	**0.006**
USACE (acre)				
Permanent	0.001	0	0.003	**0.004**
Temporary	0.002	0.001	0.003	**0.006**

*** slight differences in numbers due to rounding**

The delineated features terminate in the Pacific Ocean (a Traditionally Navigable Water). Therefore, the delineated features are assumed to be subject to regulation under Sections 404 and 401 of the CWA. In addition, impacts to streambed are subject to CDFW jurisdiction under Sections 1600-1616 of the CDFW Code. Therefore, the proposed Project results in impacts that would require authorization under the CWA Section 404, a CWA 401 Water Quality Certification, and a CDFW Streambed Alteration Agreement.

Impacts to waters under delineated CDFW jurisdiction include the installation of the proposed swale feature. This includes 10,310.83 sq. ft. or 0.24 acre of anticipated permanent impacts and 7,207.19 sq. ft. or 0.17 acre anticipated temporary impacts to waters under CDFW jurisdiction. Impacts to waters under USACE and LARWQCB jurisdiction also include the installation of the proposed swale feature. This includes 2,611.92 sq. ft. or 0.06 acre of anticipated permanent impacts and 1,124.60 sq. ft. or 0.03 acre anticipated temporary impacts to waters under USACE jurisdiction, and 325,827.12 sq. ft. or 7.48 acre of permanent impacts and 1,124.60 sq. ft. or 0.03 acre anticipated temporary impacts to waters under LARWQCB.

The agencies will review and verify the jurisdictional delineation, impact determinations, permit and mitigation requirements.

Intercepted Jurisdictional Waters

The proposed Project would install a network of engineered swales that extend south from Burma Road and traverse through the Survey Area. The proposed swale feature includes an approximate 20 feet wide permanent impact area and a 20 feet wide temporary work area (10 feet area on either side of the permanent swale for a total of 20 feet). The engineered swales would convey surface runoff from the northern limits of the Survey Area, connecting to a proposed Flow Reduction Area, and travel southwestward to a proposed culvert located underneath Palos Verdes Drive South to the Pacific Ocean. The surface swales would be designed to be visually complimentary to the surrounding setting of the Preserve. Erosion control measures, such as geocells and/or riprap will be implemented within swales.

Areas outside of the geocell limits of the proposed swale feature (but within construction disturbance limits) will be covered with biodegradable erosion control matting and hydroseeded with native vegetation after grading activities. The designs will be consistent with restoration requirements outlined in the City's Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP) and other resource/regulatory review requirements.

Ongoing degradation of drainages and habitat functions and values continues to exist within the Project. The landslide is causing damage to historically installed drainage systems and natural drainage features, which is resulting in severed drainage connections, erosion, loss of topsoil, and other damage to habitats within the landslide area. The Project is designed to address these issues by stabilizing and directing surface runoff, which will in turn enhance habitat functions and values, providing for more steady fluvial processes and ecological succession of habitats. The proposed swale feature increases the surface area and potential waters from 4,991 linear feet (0.34 acre) of existing CMPs to approximately 7,573 linear feet (7.41 acre). The network of swale features is designed to increase the carrying capacity of water in comparison to the existing CMPs. The proposed swale feature is also designed to have a prepared subgrade surface with a geotextile under geocell, topped with gravel infill/silt deposit that will be vegetated with native vegetation (hydroseed). In addition, the proposed flow reduction area is anticipated to be approximately 10 acres in size. With the installation of the proposed swales and the addition of the flow reduction area (net gain of function, value and jurisdictional area), no net loss of waters is anticipated for this Project.

The proposed swale intercepts water from the upper regions of Drainage Feature 1 and Drainage Feature 3. Drainage Feature 1 is a non-wetland, upland vegetated ephemeral drainage that is approximately 2 acres from the upper proposed culvert down to the Pacific Ocean. Drainage Feature 3 is a non-wetland, upland vegetated ephemeral drainage that is approximately 0.08 acre from the upper proposed culvert and surface flow terminates at Peppertree Trail. The majority of the existing CMPs within the Survey Area will be replaced with the engineered swale features, which would increase the overall open channel/streambed habitat within the Survey Area. The swale features are intended to provide the same functionality as the existing CMPs by conveying surface runoff from the northern limits of the Survey Area to the south towards the Pacific Ocean. Although there is a geotextile underlayer to the proposed swales, the swales will include a vegetated top layer, which may provide similar or increased habitat value compared to existing conditions.

In addition to the installation of the proposed swale feature, the agencies may consider the redirection of surface water away from Drainage 1 (from approximately the location of proposed hydrauger A3 to the proposed culvert at Palos Verdes Drive South) as an impact to jurisdictional waters. Approximately 1.5 acres (CDFW based on bank to bank estimates) and 0.16 acre (RWQCB and USACE based on ordinary high water mark estimates) exists within Drainage Feature 1 where water will be intercepted and redirected towards the proposed Flow Reduction Area. While the proposed swale feature would replace the streambed area and associated functions and values of the intercepted drainage, coordination with the agencies is recommended to determine final permitting and mitigation requirements associated with the redirection of water within Drainage Feature 1. Impacts to Drainage Feature 3 are provided above.

While habitat restoration activities may be counted towards various mitigation requirements that pertain to the Project, coverage under the NCCP/HCP does not satisfy permitting and mitigation requirements for impacts to jurisdictional aquatic resources that may be regulated under the Clean Water Act, Porter-Cologne Act, or California Fish and Game Code. For covered activities that are subject to California Fish and Game Code Section 1600 *et seq*., separate authorizations for impacts to jurisdictional streambed

habitat is required. USACE jurisdictional resources within the Survey Area include 2,611.92 sq. ft. or 0.06 acre of anticipated permanent impacts and 1,124.60 sq. ft. or 0.03 acre of temporary impacts of non-wetland waters (ephemeral waters) of the US and State and no riparian or wetland impacts. LARWQCB jurisdictional resources within the Survey Area include 325,827.12 sq. ft. or 7.48 acres of anticipated permanent impacts to surface and subsurface waters and 1,124.60 sq. ft. or 0.03 acre of temporary impacts of non-wetland waters (ephemeral waters) of the US and State.

A total of 10,310.83 sq. ft. or 0.24 acre of anticipated permanent impacts and 7,207.19 sq. ft. or 0.17 acre anticipated temporary impacts to CDFW jurisdictional resources occur within the Survey Area. This includes 247.66 sq. ft. (0.006 acre) for permanent impacts and 1,014.61 sq. ft. (0.02 acre) temporary impacts to Undifferentiated Coastal Sage Scrub, and 343.55 sq. ft. (0.006 acre) permanent impacts and 639.36 sq. ft. (0.015 acre) temporary impacts to Saltbush Scrub vegetation communities. A 401 Certification (RWQCB), 404 permit (USACE) and Streambed Alteration Agreement (CDFW) will be required for Project authorization. The southern portion of the Survey Area occurs within the coastal zone (i.e., seaward of Palos Verdes Drive) and may require a CDP, or exemption, with the City in compliance with the LCP. Impacts analyzed in this report are based on current designs and are subject to change once designs are final. Final temporary and permanent impacts shall be incorporated into the agency permit applications.

In order to minimize potential impacts to drainage features, native vegetation communities and sensitive species with the potential to occur within the Survey Area, the following mitigation measures outlined in the NCCP/HCP should be implemented prior to and during construction activities:

- The City and/or responsible Project applicants will be responsible for ensuring that an Erosion Control Plan is developed and implemented for any Covered Projects and Activities in the Preserve or abutting the Preserve that might result in erosion as determined by the City. Potential erosion control measures include siltation fencing, straw bales, sandbags, etc.

- When stockpiling topsoil in the Preserve or on vacant lots abutting the Preserve, it will be placed only in areas that minimize the damage to habitat. If fill or topsoil is imported into the Preserve, the fill will be clean and free of foreign debris and non-native plant material.

- Construction staging areas will be located at least 15 meters (50 feet) away from the Preserve boundary and natural drainages. No fueling zones will extend a minimum distance of 15 meters (50 feet) from all drainages and away from the Preserve boundary.

- The construction footprint will be clearly defined with flagging and/or fencing and will be removed upon completion.

- Temporary impacts to native vegetation will be restored with native vegetation appropriate to the physical condition of the site within 60 days of the completion of construction.

- All Project landscaping, erosion control and revegetation efforts within the Preserve shall use locally collected native vegetation/landscaping to the extent practicable and avoid those species listed on the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory (see Section 5.6.4 and Appendix D of the Plan). All Project landscaping, erosion control and revegetation efforts on vacant land abutting the Preserve are permitted to use non-native plants but shall be prohibited from using those species listed on the California Invasive Plant Council's (Cal-IPC) Invasive Plant

Inventory (see Section 5.6.4 and Appendix D of the NCCP/HCP). This requirement shall be incorporated as enforceable conditions in all City permits, operations, and authorizations to proceed with work.

- BMPs including erosion control measures, such as weed-free straw wattles should be in place during the construction of the swale features and low flow reduction areas to avoid downstream sedimentation.

- Prior to the start of construction activities, an environmental education program will be provided for all Project personnel. The education program will include the following: (1) the potential presence of covered species and their habitats, (2) the requirements and boundaries of the Project, (3) the importance of complying with avoidance and minimization measures, (4) environmentally responsible construction practices, (5) identification of sensitive resource areas in the field, and (6) problem reporting and resolution methods.

- When accessing the Preserve, authorized vehicle operators must take measures to avoid and minimize, to the maximum extent possible, environmental damage, including damage to habitat and Covered Species. Existing Preserve Roads or trails that accommodate authorized vehicles in the Preserve should be used wherever practical, while minimizing authorized vehicles trips overall within the Preserve. Any unavoidable access routes outside existing trails that can accommodate authorized vehicles or construction areas should be clearly marked. Any new recreational trails, trails that can accommodate authorized vehicles, and utility corridors will be located in areas that avoid/minimize impacts to Covered Species, habitat fragmentation and edge effects. The width of construction corridors and easements will be minimized.

- Crushing of vegetation is preferred to grubbing in areas of temporary impacts. By leaving the subgrade root system intact vegetation should resprout following the disturbance. If construction related vehicles need to pivot within a temporary impact area, steel plates should be placed over the vegetation to prevent unintended ground/root disturbance and removed promptly when the work activity has been completed or a significant time period will elapse between construction activities (e.g., 2 weeks).

- Any biologist used for the implementation of this NCCP/HCP, including implementing these measures, will be subject to the Wildlife Agencies' review and approval. The City will submit the biologist's name, address, telephone number, résumé, and three references (i.e., the names and contact information of people familiar with the relevant qualifications of the proposed biologist) at least 10 working days prior to initiating work. If the Wildlife Agencies do not respond within this 10-day period, the City will assume that the biologists are approved.

- Vegetation clearing activities should be conducted outside the bird breeding season (defined in the NCCP/HCP as February 15 through August 31) and the flight season of the Palo Verdes blue butterfly (late January through early May) to minimize overall impact to listed species, nesting habitat, host plants, and/or nectar sources.

- Additional protection measures for the protection of jurisdictional waters may be identified in the 401/404/1600 permits. Additional mitigation may be required by the agencies.

4.2 VEGETATION IMPACTS

Three native vegetation communities, two non-native vegetation communities, and two forms of bare ground/development were observed within the Survey Area: Coastal Sage Scrub (Undifferentiated), Coastal Sage Scrub (Rhus Dominated), and Saltbush Scrub comprising the native vegetation communities and are considered sensitive under the NCCP/HCP; Exotic Woodland, and Disturbed Vegetation comprising the non-native vegetation communities; and Rocky Shore and Developed (Buildings, Ornamental Vegetation, and pavement) comprising the two forms of bare ground/development. The three native vegetation communities, Saltbush Scrub, Undifferentiated Coastal Sage Scrub and Rhus Dominated Coastal Sage Scrub are considered sensitive habitats in the NCCP/HCP area. Impacts analyzed in this report are based on current designs and are subject to change once designs are final.

Total permanent impacts to native vegetation communities are approximately 8.22 acres. Total temporary impacts to native vegetation communities are approximately 1.88 acres. Total permanent impacts to non-native vegetation communities and bare ground/development areas are 10.14 acres. Total temporary impacts to non-native vegetation communities and bare ground/development are approximately 1.07 acres.

Undifferentiated Coastal Sage Scrub is present within the anticipated Project impact areas (Hydrauger A1, A2, A5, A6, swale feature, flow reduction area, lower and upper culvert, secondary staging area, proposed access route and surface fracture locations). Approximately 3.30 acres for permanent impacts and 1.45 acres for temporary impacts of this community are anticipated for this Project.

No impacts to Rhus Dominated Coastal Sage Scrub are anticipated.

Saltbush scrub is present within the anticipated Project impact areas (Hydrauger A2, swale feature, flow reduction area, lower culvert, proposed access route, and surface fracture locations). Approximately 4.92 acres for permanent impacts and 0.43 acre for temporary impacts of this community are anticipated for this Project.

Approximately 4.02 acres for permanent impacts and 0.03 acre for temporary impacts of Disturbed Vegetation are anticipated for this Project.

Approximately 3.07 acres for permanent impacts and 0.29 acre for temporary impacts of Developed areas are anticipated for this Project.

Approximately 2.88 acres for permanent impacts and 0.75 acre for temporary impacts of Exotic Vegetation are anticipated for this Project.

Approximately 0.17 acre for permanent impacts of Rocky Shore areas is anticipated for this Project.

Total vegetation impacts are provided in Table 6 and represent permanent impacts to vegetation with the Survey Area for proposed Project features.

Table 6. Anticipated Vegetation Community Permanent Impacts

Vegetation Community	Flow Reduction Area (ac.)	Access Route (ac.)	Hydraugers (ac.)	Swale Feature (ac.)	Total Impacts (ac.)
Native Vegetation Communities					
Saltbush Scrub	**3.97**	**0.05**	**0.08**	**0.82**	**4.92**
Undifferentiated Coastal Sage Scrub	**0.37**	**0.31**	**0.56**	**2.06**	**3.30**
Rhus Dominated Coastal Sage Scrub	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
*Native Vegetation Impact Totals**	**4.34**	**0.36**	**0.64**	**2.88**	**8.22**
Non-native Vegetation and Bare Ground/Development Areas					
Exotic Vegetation	**1.29**	**0.03**	**0.08**	**1.48**	**2.88**
Disturbed Vegetation	**3.87**	**0.01**	**0.09**	**0.05**	**4.02**
Developed	**0.75**	**1.51**	**0.17**	**0.64**	**3.07**
Rocky Shore	**0**	**0**	**0.17**	**0**	**0.17**
*Non-native and Other Vegetation Total Impacts**	**5.91**	**1.55**	**0.51**	**2.17**	**10.14**
Total Impacts*	10.25	1.91	1.15	5.05	18.36

* slight differences in numbers due to rounding

Temporary vegetation impacts associated with the swale feature are provided in Table 7.

Table 7. Anticipated Vegetation Community Temporary Impacts for Swale Feature

Vegetation Community	Temporary Impacts (acre) for Swale Feature
Native Communities	
Coastal Sage Scrub – Undifferentiated	1.45
Saltbush Scrub	0.43
Total for Native Communities = 1.88 acres	
Non-native Vegetation and Bare Ground/Development Areas	
Developed	0.29
Disturbed Vegetation	0.03
Exotic Woodland	0.75
Rocky Shore	0
Total for Non-native Vegetation and Bare Ground/Development Areas = 1.07 acres	

Based on the Project design and impact analysis, approximately 3.30 acres of Undifferentiated Coastal Sage Scrub and 4.92 acres of Saltbush Scrub for a total of 8.22 acres of permanent impacts are anticipated for this Project. Project-related permanent impacts to coastal sage scrub communities are covered under the NCCP/HCP. The City mitigated for covered project impacts to these habitats by establishment of the NCCP/HCP Preserve. The total acreage that will be permanently impacted under each covered activity are within the City's remaining take allowances defined by the NCCP/HCP.

Approximately 1.45 acres of Undifferentiated Coastal Sage Scrub and 0.43 acre of Saltbush Scrub for a total of 1.88 acres of temporary impacts are anticipated for this Project. A Project-specific restoration program will be prepared for temporary impacts to Coastal Sage Scrub and Saltbush Scrub according to the guidelines provided in Section 5.5 of the NCCP/HCP.

Approximately 0.17 acre of impacts to Rocky Shore are anticipated based on Project design and the location of hydraugers A5 and A6. Based on the proximity of the hydraugers to the shoreline, the siting of the hydraugers will be designed to avoid seawater intrusion to the groundwater supply.

The southern portion of the Project site is located within the coastal zone. Impacts to the Pacific Ocean are not anticipated for the placement of hydrauger equipment and the proposed swale feature. The Project impact areas are designed to take place outside of the mean high tide limits and within the City's LCP jurisdiction. The LCP states a coastal development permit may be required for Project authorization for any development within the coastal zone. If applicable, the Project may qualify for an Exclusion. Project types and/or conditions subject to be Excluded include:

A. Minor public works projects.
B. Necessary utility connections.
C. Categories added by the California Coastal Commission.
D. Improvements, repairs or maintenance to existing structures or facilities, unless they would result in:

1. A risk of adverse environmental effects, such as:
    a. Significant alteration of landforms, including the removal or placement of vegetation.
    b. Expansion or construction of water wells or septic systems.
    c. Projects where a previous Coastal Permit approval required a new Coastal Permit for future expansions or additions.
2. An adverse effect on public access.
3. A change in use which is contrary to the Coastal Specific Plan.

E. Additions to existing single-family residences and accessory structures in an Appealable Area (see attached map) which do not exceed the former structure in floor area or height by more than 10%, or do not require a Variance. Additions located partially or completely within the coastal setback zone shall not be eligible for this exemption.

The Rancho Palos Verdes NCCP/HCP identifies landslide abatement measures occurring within the preserve as a covered activity. Therefore, any impacts to native habitat should be minimized for following the requirements stated in the NCCP/HCP (Section 5.5 of NCCP/HCP). In order to minimize potential impacts to native habitat within the Survey Area, the following avoidance and minimization measures outlined in the NCCP/HCP should be implemented prior to and during construction activities:

- The construction footprint will be clearly defined with flagging and/or fencing and will be removed upon completion.

- Construction staging areas will be located at least 15 meters (50 feet) away from the Preserve boundary and natural drainages. No fueling zones will extend a minimum distance of 15 meters (50 feet) from all drainages and away from the Preserve boundary.

- Dust generated by the construction vehicles for Covered Projects and Activities on non-paved trails that accommodate authorized vehicles within the Preserve or on vacant lots abutting the Preserve will be minimized using a speed limit restriction to 10 miles per hour (mph) and, where appropriate, watering unpaved surfaces.

- When stockpiling topsoil in the Preserve or on vacant lots abutting the Preserve, it will be placed only in areas that minimize the damage to habitat. If fill or topsoil is imported into the Preserve, the fill will be clean and free of foreign debris and non-native plant material.

- Prior to the start of construction activities, an environmental education program will be provided for all Project personnel. The education program will include the following: (1) the potential presence of covered species and their habitats, (2) the requirements and boundaries of the Project, (3) the importance of complying with avoidance and minimization measures, (4) environmentally responsible construction practices, (5) identification of sensitive resource areas in the field, and (6) problem reporting and resolution methods.

- All Project landscaping, erosion control and revegetation efforts within the Preserve shall use locally collected native vegetation/landscaping to the extent practicable and avoid those species listed on the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory (see Section 5.6.4 and Appendix D of the Plan). All Project landscaping, erosion control and revegetation efforts on vacant land abutting the Preserve are permitted to use non-native plants but shall be prohibited from using those species listed on the California Invasive Plant Council's (Cal-IPC) Invasive Plant

Inventory (see Section 5.6.4 and Appendix D of the NCCP/HCP). This requirement shall be incorporated as enforceable conditions in all City permits, operations, and authorizations to proceed with work.

- Crushing of vegetation is preferred to grubbing in areas of temporary impacts. By leaving the subgrade root system intact vegetation should resprout following the disturbance. If construction related vehicles need to pivot within a temporary impact area, steel plates should be placed over the vegetation to prevent unintended ground/root disturbance and removed promptly when the work activity has been completed or a significant time period will elapse between construction activities (e.g., 2 weeks).

- Approximately 3.30 acres of Undifferentiated Coastal Sage Scrub and 4.92 acres of Saltbush Scrub for a total of 8.22 acres of permanent impacts are anticipated for this Project. In accordance with the NCCP/HCP, permanent impacts to Coastal Sage Scrub communities are within the take allowances set forth for this covered activity. Approximately 1.45 acres of Undifferentiated Coastal Sage Scrub and 0.43 acre of Saltbush Scrub for a total of 1.88 acres of temporary impacts are anticipated for this Project. A Project-specific restoration program will be prepared for Coastal Sage Scrub and Saltbush Scrub according to the guidelines provided in Section 5.5 of the NCCP/HCP. Temporary impacts to native vegetation will be restored with native vegetation appropriate to the physical condition of the site within 60 days of the completion of construction.

4.3 SPECIAL STATUS PLANTS

Of the 23 federally and/or state listed threatened and endangered or rare special status plant species identified in the literature review, it was determined that seven species were considered absent from the Survey Area, eight had a low potential to occur, five had a moderate potential to occur, and three species had a high potential to occur within the Survey Area. Impacts analyzed in this report are based on current designs and are subject to change once designs are final.

Beach spectacled pod, Catalina crossosoma, decumbent goldenbush, Davidson's saltscale, Lyon's pentachaeta, prostrate vernal pool navarretia, San Bernardino aster, and smooth tarplant have a low potential to occur within the Survey Area. Only unsuitable and/or poor-quality habitat for these species occurs within the Survey Area, and no occurrences of these species have been documented within 4 miles of the Survey Area. No impacts are anticipated to the above listed species are anticipated.

Brand's star phacelia has a moderate potential to occur in the proposed Project impact areas for Hydrauger A5 and A6, within the Coastal Sage Scrub habitat. Coulter's saltbush and mesa horkelia have a moderate potential to occur in the proposed Project impact areas for Hydrauger A1, A2, A5, A6, swale feature, flow reduction area, lower culvert, and surface fracture locations within Saltbush Scrub and Coastal Sage Scrub habitats. Island green dudleya has a moderate potential to occur in the proposed Project impact areas for Hydrauger A5 and A6, within Coastal Sage Scrub habitat found along the coastal bluffs. Parish's brittlescale has a moderate potential to occur in the proposed Project impact areas for Hydrauger A2, swale feature, flow reduction area, lower culvert, and surface fracture locations.

Aphanisma, south coast saltscale, and Santa Catalina Island desert-thorn have a high potential to occur in the proposed Project impact areas for Hydrauger A1, A2, A5, A6, swale feature, flow reduction area, lower culvert, and surface fracture locations within Saltbush Scrub and Coastal Sage Scrub habitats.

The Rancho Palos Verdes NCCP/HCP identifies landslide abatement measures occurring within the preserve as a covered activity. Therefore, any impacts to native habitat or covered species occupied habitat should be minimized for following the requirements stated in the NCCP/HCP (Section 5.5 of NCCP/HCP). In order to minimize potential impacts to sensitive species with the potential to occur within the Survey Area, the following avoidance and minimization measures outlined in the NCCP/HCP should be implemented prior to and during construction activities:

- The construction footprint will be clearly defined with flagging and/or fencing and will be removed upon completion.

- Dust generated by the construction vehicles for Covered Projects and Activities on non-paved trails that accommodate authorized vehicles within the Preserve or on vacant lots abutting the Preserve will be minimized using a speed limit restriction to 10 miles per hour (mph) and, where appropriate, watering unpaved surfaces.

- Any temporary safety or security night lighting for Covered Projects and Activities in the Preserve or on vacant lots abutting the Preserve will be selectively placed, shielded, and directed away from all native vegetative communities.

- Prior to the start of construction activities, an environmental education program will be provided for all Project personnel. The education program will include the following: (1) the potential presence of covered species and their habitats, (2) the requirements and boundaries of the Project, (3) the importance of complying with avoidance and minimization measures, (4) environmentally responsible construction practices, (5) identification of sensitive resource areas in the field, and (6) problem reporting and resolution methods.

- All Project landscaping, erosion control and revegetation efforts within the Preserve shall use locally collected native vegetation/landscaping to the extent practicable and avoid those species listed on the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory (see Section 5.6.4 and Appendix D of the Plan). All Project landscaping, erosion control and revegetation efforts on vacant land abutting the Preserve are permitted to use non-native plants but shall be prohibited from using those species listed on the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory (see Section 5.6.4 and Appendix D of the NCCP/HCP). This requirement shall be incorporated as enforceable conditions in all City permits, operations, and authorizations to proceed with work.

- Any biologist used for the implementation of this NCCP/HCP, including implementing these measures, will be subject to the Wildlife Agencies' review and approval. The City will submit the biologist's name, address, telephone number, résumé, and three references (i.e., the names and contact information of people familiar with the relevant qualifications of the proposed biologist) at least 10 working days prior to initiating work. If the Wildlife Agencies do not respond within this 10-day period, the City will assume that the biologists are approved.

- Vegetation clearing activities should be conducted outside the bird breeding season (defined in the NCCP/HCP as February 15 – August 31) and the flight season of the Palo Verdes blue butterfly (late January through early May) to minimize overall impact to listed species, nesting habitat, host plants, and/or nectar sources.

- A focused plant survey should be conducted within the final Project impact areas for the following species: aphanisma, Brand's star phacelia, Coulter's saltbush, mesa horkelia, Parish's brittlescale, Santa Catalina Island desert-thorn, and south coast saltscale. Surveys should be conducted in May/June to capture the appropriate blooming periods for these species. If an existing population will be impacted by Covered Projects/Activities, the Project applicant will engage the PVPLC (Preserve Habitat Manager) and work with the Wildlife Agencies to prepare and implement a habitat restoration plan in accordance with the Habitat Restoration Plan in Section 5.5 of the NCCP/HCP, to be approved by the City and Wildlife Agencies that will ensure no net loss of listed species within the population. A limited number of populations can be impacted unless additional populations are located or successfully established in advance of the impact, and the City, PVPLC and Wildlife Agencies, through annual coordination meetings, document that the status of the species in the Preserve is stable and adequately conserved.

- If a covered (Plant) Species, cacti, or succulent is located within a temporary or permanent impact area, a succulent relocation plan will be developed and reproductive material, a series of cuttings, or the plant itself may be relocated to an adjacent or suitable location within the Preserve, in coordination with the Wildlife Agencies.

- If seed collection for an impacted sensitive species or for native plant re-establishment is required, specified plant and seed palettes provided in Tables 8-1 through 8-3 of the NCCP/HCP will be used. These seed mixes should be modified by PVPLC or their restoration biologist to make them more site-specific and correspond to site specific restoration goals. Transplantation of appropriate salvaged plants, in coordination with the Wildlife Agencies and the PVPLC (Preserve Habitat Manager), from impacted sites (e.g., cacti) is encouraged to be incorporated into the restoration design.

4.4 SENSITIVE WILDLIFE

Of the 15 sensitive wildlife species identified in the literature review, it was determined that nine sensitive wildlife species were considered absent from the Survey Area, two had a low potential to occur, one had a moderate potential to occur, two species had a high potential to occur, and one was present within the Survey Area.

Bank swallow and western spadefoot have low potential to occur within the Survey Area. Low quality habitat for these species occurs within the Survey Area and no occurrences have been documented within the Survey Area. Therefore, no impacts to these species are anticipated as a result of Project activities.

Coast horned lizard is considered to have a moderate potential to occur within the Survey Area. Palos Verdes blue butterfly and San Diego desert woodrat are considered to have a high potential to occur, and coastal California gnatcatcher was present within the Survey Area within Coastal Sage Scrub habitats during the survey.

Based on the Project design and impact analysis, approximately 2.13 acres of Undifferentiated Coastal Sage Scrub and 4.6 acres of Saltbush Scrub permanent impacts areas are located within USFWS designated critical habitat for the coastal California gnatcatcher (Figure 9). These permanent impact areas are included within the approximate 3.30 acres of Undifferentiated Coastal Sage Scrub and 4.92 acres of Saltbush Scrub for a total of 8.22 acres of permanent impacts anticipated for this Project. Project-related permanent impacts to coastal sage scrub communities are covered under the NCCP/HCP. The City

mitigated for covered project impacts to these habitats by establishment of the NCCP/HCP Preserve. The total acreage that will be permanently impacted under each covered activity are within the City's remaining take allowances defined by the NCCP/HCP.

Based on the Project design and impact analysis, approximately 1.45 acres of Undifferentiated Coastal Sage Scrub and 0.43 acre of Saltbush Scrub temporary impacts areas are located within USFWS designated critical habitat for the coastal California gnatcatcher. These temporary impact areas are included within the approximate 1.45 acres of Undifferentiated Coastal Sage Scrub and 0.43 acre of Saltbush Scrub for a total of 1.88 acres of temporary impacts anticipated for this Project.

The Rancho Palos Verdes NCCP/HCP identifies landslide abatement measures occurring within the preserve as a Covered Activity. Therefore, any impacts to native habitat or Covered Species occupied habitat should be mitigated for following the requirements stated in the NCCP/HCP. In order to minimize potential impacts to sensitive species with the potential to occur within the Survey Area, the following avoidance and minimization measures outlined in the NCCP/HCP should be implemented prior to and during construction activities:

- The construction footprint will be clearly defined with flagging and/or fencing and will be removed upon completion.

- Prior to the start of construction activities, an environmental education program will be provided for all Project personnel. The education program will include the following: (1) the potential presence of covered species and their habitats, (2) the requirements and boundaries of the Project, (3) the importance of complying with avoidance and minimization measures, (4) environmentally responsible construction practices, (5) identification of sensitive resource areas in the field, and (6) problem reporting and resolution methods.

- Any biologist used for the implementation of this NCCP/HCP, including implementing these measures, will be subject to the Wildlife Agencies' review and approval. The City will submit the biologist's name, address, telephone number, résumé, and three references (i.e., the names and contact information of people familiar with the relevant qualifications of the proposed biologist) at least 10 working days prior to initiating work. If the Wildlife Agencies do not respond within this 10-day period, the City will assume that the biologists are approved.

- Preconstruction surveys will be conducted for the Palos Verdes blue butterfly (PVB) host plant in all suitable habitat within the proposed Project impact areas. If host plants are identified, a 5- foot buffer around host plants will be avoided if feasible. If avoidance of host plants is not feasible, focused PVB surveys will be conducted. If PVB is discovered during surveys, the PVPLC in coordination with the Wildlife Agencies will be provided the opportunity to relocate any and all larvae, pupae, or adults. Occupied PVB host plants will be avoided when possible. Occupied habitat will be defined as host plants, including a 5-foot buffer, within a 50-foot buffer around any PVB observation.

- If construction activities must occur in California gnatcatcher habitat during breeding season (February 15-August 31), a preconstruction survey will be conducted to determine nesting activity. Survey results will be submitted to the Wildlife Agencies for review. If nesting activity is detected, all construction activity must occur outside of a 300-foot buffer surrounding each nest.

Reductions in the nest buffer may be possible depending on site-specific factors, in coordination with the Wildlife Agencies. All nests will be monitored by a qualified biologist.

- For bird species that are not state or federally listed or a covered species identified in the NCCP/HCP, if vegetation clearing must occur during the bird breeding season (February 15 through August 31), a pre-construction nest survey will be conducted and a 100-foot avoidance buffer/barrier zone will be placed around all active nests (i.e., active nests with eggs or chicks) until the nestlings fledge or the nest fails.

- A preconstruction survey for raptors will be conducted within suitable habitat during breeding season (January 31 through September 30) no later than four days prior to the start of construction. If nesting raptors are present, a 500-foot avoidance buffer should be placed around the nest and the nest will be monitored until the nest fledges. If requested, the 500-foot buffer may be reduced if site conditions are evaluated by a qualified biologist.

- A preconstruction survey for coast horned lizard will be conducted prior to and during the first days of grading activities. The City, the PLPVC (Preserve Habitat Manager) and the Wildlife Agencies shall be notified of all findings and relocation efforts at least ten working days after grading has occurred. Any relocation efforts shall also be reported in the Annual Report.

- Approximately 3.30 acres of Undifferentiated Coastal Sage Scrub and 4.92 acres of Saltbush Scrub and for a total of 8.22 acres of permanent impacts are anticipated for this Project. This includes approximately 2.13 acres of Undifferentiated Coastal Sage Scrub and 4.6 acres of Saltbush Scrub permanent impacts areas located within USFWS designated critical habitat for the coastal California gnatcatcher. Project-related permanent impacts to coastal sage scrub communities are covered under the NCCP/HCP. The City mitigated for covered project impacts to these habitats by establishment of the NCCP/HCP Preserve.

In accordance with the NCCP/HCP, permanent impacts to Coastal Sage Scrub communities are within the take allowances set forth for project-related covered activities. Approximately 1.45 acres of Undifferentiated Coastal Sage Scrub and 0.43 acre of Saltbush Scrub for a total of 1.88 acres of temporary impacts are anticipated for this Project. This includes approximately 1.45 acres of Undifferentiated Coastal Sage Scrub and 0.43 acre of Saltbush Scrub temporary impacts areas located within USFWS designated critical habitat for the coastal California gnatcatcher. A project-specific restoration program will be prepared for temporary impacts to coastal sage scrub communities according to the guidelines provided in Section 5.5 of the NCCP/HCP.

SECTION 5.0 – REFERENCES

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APPENDIX A – SITE PHOTOGRAPHS

ATTACHMENT A – SITE PHOTOGRAPHS

Photo 1. Photo taken facing west depicting a view of Hydrauger A3 location from the northwestern most part of the project. Photo taken August 5, 2020.

Photo 2. Photo taken facing northeast depicting Hydrauger A2 location at the northeastern most part of the project. Photo taken August 5, 2020.

Photo 3. Photo taken facing North depicting Hydrauger A1 location at the southeastern most part of the project. Photo taken August 16, 2022.

Photo 4. Photo taken facing southwest depicting the Hydrauger A6 location at the southernmost part of the project. Photo taken August 5, 2020.

Photo 5. Photo taken facing west depicting the Hydrauger A5 location at the southwestern most part of the project. Photo taken August 5, 2020.

Photo 6. Photo taken facing south depicting culvert installation for swale near the northwestern boundary within Drainage Feature 1 and Burma Road. Photo taken August 16, 2022.

Photo 7. Photo taken facing southwest depicting the upper area of Drainage Feature 1 where the swale feature is proposed. Photo taken August 16, 2022.

Photo 8. Photo taken facing north at Drainage Feature 3. A CMP is in the middle background of the photo. Photo taken August 16, 2022.

Photo 9. Photo taken facing north at Drainage Feature 1 just north of Palos Verdes Drive North where the proposed culvert captures water from Drainage Feature 1 and the proposed swale feature. Photo taken August 16, 2022.

Photo 10. Photo taken facing northwest depicting a fracture 10ft deep and 3ft wide. Multiple fractures running parallel from east to west just south of the catch basin. Photo taken August 5, 2020.

Photo 11. Photo taken facing west depicting fracture East of catch basin. Photo taken August 5, 2020.

Photo 12. Photo taken facing northeast depicting catch basin from the southwestern most part. Photo taken August 5, 2020.

Photo 13. Photo taken facing north from Palos Verde Drive depicting the catch basin from the south. Photo taken August 5, 2020.

Photo 14. Photo taken facing southwest depicting a fracture on southeast end of the catch basin. Fracture is 15 feet deep by 3ft wide. Photo taken August 5, 2020.

Photo 15. Photo taken facing southwest depicting another fracture to the south of the fracture in photo 9. 5-10 feet deep by 3feet wide. Photo taken August 5, 2020.

Photo 16. Photo taken facing northwest depicting the catch basin from the east end. Photo taken August 5, 2020.

Photo 17. Photo taken facing southwest depicting the catch basin from the east end. Photo taken August 5, 2020.

Photo 18. Photo taken facing southwest depicting the catch basin from the northeastern most end. Photo taken August 5, 2020.

Photo 19. Photo taken facing north depicting a culvert that has been crushed from land movement. Photo taken August 5, 2020.

Photo 20. Photo taken facing south overlooking the project site. Photo taken August 5, 2020.

Photo 21. Photo taken facing southwest overlooking the project site at the northeast bluff. Photo taken August 5, 2020.

Photo 22. Photo taken facing north depicting a culvert that exists at the top of Drainage Feature 3 near the northeastern area of the project site. Photo taken August 16, 2022.

Photo 23. Photo taken facing southwest depicting the alignment of a portion of the proposed swale feature through the low flow reduction area. Photo taken August 16, 2022.

Photo 24. Photo taken facing north looking at the location where the existing CMP exits on the cliffs above the rocky shore, same location as proposed terminus of swale feature. Photo taken August 16, 2022.

Photo 25. Photo taken facing southwest looking at a CMP located below Palos Verdes Drive South. Photo taken August 16, 2022.

Photo 26. Photo taken facing southwest looking at Drainage Feature 1 outside of the Project boundary. A CMP is located in the center of the drainage surrounded by Exotic Woodland vegetation. Photo taken August 16, 2022.

Photo 27. Photo taken facing west looking at the Stockpile Area at the southeastern area of the project site. No wetland exists at this location. Photo taken August 16, 2022.

APPENDIX B – PLANT SPECIES LIST

APPENDIX B – PLANT SPECIES OBSERVED

Scientific Name	Common Name
ANGIOSPERMS (EUDICOTS)	
AIZOACEAE	**FIG-MARIGOLD FAMILY**
*Carpobrotus edulis**	freeway iceplant
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**
Rhus integrifolia	lemonadeberry
*Schinus molle**	Peruvian pepper tree
*Schinus terebinthifolius**	Brazilian pepper tree
APIACEAE	**CARROT FAMILY**
*Foeniculum vulgare**	fennel
ASTERACEAE	**SUNFLOWER FAMILY**
Artemisia californica	California sagebrush
Baccharis pilularis	coyote brush
*Centaurea melitensis**	tocalote
Encelia californica	California bush sunflower
Heterotheca grandiflora	telegraph weed
*Sonchus oleraceus**	common sow thistle
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica nigra**	black mustard
*Hirschfeldia incana**	shortpod mustard
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex lentiformis	big saltbush
*Atriplex semibaccata**	Australian saltbush
*Salsola tragus**	Russian thistle
CLEOMACEAE	**SPIDERFLOWER FAMILY**
Peritoma arborea	bladderpod
EUPHORBIACEAE	**SPURGE FAMILY**
*Ricinus communis**	castor-bean
FABACEAE	**LEGUME FAMILY**
*Melilotus indicus**	Indian sweetclover
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	red-stemmed filaree
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	horehound
Salvia leucophylla	purple sage
MALVACEAE	**MALLOW FAMILY**
*Malva parviflora**	cheeseweed
MYRTACEAE	**MYRTLE FAMILY**
*Eucalyptus camaldulensis**	red gum
*Eucalyptus globulus**	blue gum

Scientific Name	Common Name
Eucalyptus sp.*	gum tree
POLYGONACEAE	**BUCKWHEAT FAMILY**
Eriogonum fasciculatum	California buckwheat
SIMAROUBACEAE	**QUASSIA FAMILY**
*Ailanthus altissima**	tree of heaven
TROPAEOLACEAE	**NASTURTIUM FAMILY**
*Tropaeolum majus**	garden nasturtium
ANGIOSPERMS (MONOCOTS)	
ARECACEAE	**PALM FAMILY**
*Phoenix canariensis**	Canary Island date palm
POACEAE	**GRASS FAMILY**
*Avena barbata**	slender wild oat
*Avena fatua**	wild oat
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
Hordeum murinum subsp. *glaucum**	glaucous barley
Melica imperfecta	coast range melic
*Pennisetum setaceum**	fountain grass
Stipa miliacea var. *miliacea**	smilo grass

*Non-Native Species, +Ornamental, Unlikely to be Invasive

APPENDIX C – WILDLIFE SPECIES LIST

APPENDIX C – WILDLIFE SPECIES LIST

Scientific Name	Common Name
CLASS REPTILIA	**REPTILES**
PHRYNOSOMATIDAE	**ZEBRA-TAILED, EARLESS, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS**
Sceloporus occidentalis	western fence lizard
ANGUIDAE	**ALLIGATOR LIZARDS**
Elgaria multicarinata multicarinata	California alligator lizard
CLASS AVES	**BIRDS**
CATHARTIDAE	**NEW WORLD VULTURES**
Cathartes aura	turkey vulture
ACCIPITRIDAE	**HAWKS, KITES, EAGLES**
Buteo jamaicensis	red-tailed hawk
FALCONIDAE	**FALCONS**
Falco mexicanus	prairie falcon
APODIDAE	**SWIFTS**
Aeronautes saxatalis	white-throated swift
TROCHILIDAE	**HUMMINGBIRDS**
Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
TYRANNIDAE	**TYRANT FLYCATCHERS**
Myiarchus cinerascens	ash-throated flycatcher
Sayornis nigricans	black phoebe
Tyrannus vociferans	Cassin's kingbird
HIRUNDINIDAE	**SWALLOWS**
Hirundo rustica	barn swallow
CORVIDAE	**JAYS & CROWS**
Aphelocoma californica	western scrub-jay
AEGITHALIDAE	**BUSHTITS**
Psaltriparus minimus	bushtit
TROGLODYTIDAE	**WRENS**
Thryomanes bewickii	Bewick's wren
SYLVIIDAE	**OLD WORLD WARBLERS**
Chamaea fasciata	wrentit
POLIOPTILIDAE	**GNATCATCHERS**
Polioptila caerulea	blue-gray gnatcatcher
Polioptila californica	California gnatcatcher
MIMIDAE	**MOCKINGBIRDS, THRASHERS**
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
EMBERIZIDAE	**EMBERIZIDS**

Melospiza melodia	song sparrow
Melozone crissalis	California towhee
Pipilo maculatus	spotted towhee
FRINGILLIDAE	**FINCHES**
Spinus psaltria	lesser goldfinch
Carpodacus mexicanus	house finch
CLASS MAMMALIA	**MAMMALS**
SCIURIDAE	**SQUIRRELS**
Spermophilus beecheyi	California ground squirrel
MEPHITIDAE	**SKUNKS**
Mephitis mephitis	striped skunk