

~~DRAFT~~ FINAL OPERATIONS AND MAINTENANCE PLAN

**LAGUNA NIGUEL WETLANDS OPERATION AND
MAINTENANCE ACTIVITIES PROJECT, LAGUNA
NIGUEL, CA**

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Acronyms and Abbreviations

AMSL	above mean sea level
BO	Biological Opinion
CDFW	California Department of Fish and Wildlife
City	City of Laguna Niguel
EPA	U.S. Environmental Protection Agency
ITP	Incidental Take Permit
NRCS	Natural Resource Conservation Service
O&M	operations and maintenance
Plan	operations and maintenance plan
project	Laguna Niguel Wetlands Operations and Maintenance Project
RWQCB	Regional Water Quality Control Board
SWPT	southern western pond turtle
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

Summary

This operations and maintenance (O&M) plan (Plan) has been prepared for the City of Laguna Niguel (City) as a systematic program for flood control maintenance in 13 wetland sites located throughout the Aliso Creek Watershed in the City of Laguna Niguel, within Orange County, California (Figure 1). This Plan is being prepared to support permits for routine maintenance activities for the 13 wetland sites. A majority of these wetland sites are previous restoration sites designed to improve water quality and help reestablish some of the historic habitat functions and values associated with riparian and wetland systems in southern California and in the Laguna Niguel area. Several federally listed species, such as southwestern willow flycatcher (*Empidonax traillii*), least Bell's vireo (*Vireo bellii pusillus*), and coastal California gnatcatcher (*Polioptila californica californica*), are endemic to and utilize the riparian systems present within the 13 wetland sites. Additionally, a probable observation of steelhead trout (federally listed as endangered) was observed by the California Department of Fish and Wildlife (CDFW) and National Marine Fisheries Service in March of 2019 in Aliso Creek, to which the wetland sites are tributary. These restoration projects were not only designed to provide water quality improvements, but to enhance habitat for these species and others.

This O&M Plan integrates management of the 13 wetland sites for both flood control and biological resources. This O&M Plan describes the 13 wetland sites, including their serviceable structures, and outlines the specific maintenance activities that are necessary to maintain flood control and biological functions for each of the 13 wetland sites. Specifically, the following goals are the primary purpose of this O&M Plan.

- Implement flood control and vector control for public safety.
- Maintain the integrity of the restored ecosystems.
- Manage the sites for the long-term stability, health, and sustainability of the Aliso Creek Watershed.

Chapter 1

Introduction

ICF has prepared this operation and maintenance (O&M) plan (Plan) for the Laguna Niguel Wetlands Operations and Maintenance Project (project). The City of Laguna Niguel (City) conducts operations and maintenance activities at stormwater facilities (referred to herein as maintenance facilities) associated with 13 wetland sites.

1.1 Purpose and Need

This O&M Plan details the routine maintenance and habitat management activities to be performed at the 13 wetland sites located throughout the Aliso Creek Watershed within the City, in Orange County, California. The 13 sites are shown on the general vicinity map (Appendix A, Figure 1). The O&M Plan was prepared as a guide for the City to manage and maintain the 13 wetland sites for long-term sustainability and public safety. It establishes routine maintenance activities that will be performed at the 13 wetland sites, compensatory mitigation requirements, and general reporting requirements. Specifically, the following goals are the primary purpose of this O&M Plan.

- Implement flood control and vector control for public safety.
- Maintain the integrity of the restored ecosystems.
- Manage the sites for the long-term stability, health, and sustainability of the Aliso Creek Watershed.

Maintenance activities will be conducted on a regular basis, which could permanently (no permanent loss) impact aquatic resources and species habitat protected by federal and state laws within the purview of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW). This Plan is being prepared to support programmatic permits for routine maintenance activities for the 13 wetland sites. While specific wetland sites are identified in this O&M Plan, it is meant to be a living document, giving the City the ability to add additional wetland/riparian restoration sites and/or maintenance facilities to the maintenance program as needed. Updates to this O&M Plan would generally occur every 5 years, when the associated programmatic permits are renewed and updated.

This O&M Plan and the associated Draft Biological Technical Report (ICF 2017a) will be used to support the regulatory process, so that the proposed project will be independently permitted by the appropriate regulatory agencies.

1.2 General Overview and History of Project Sites

The wetland sites identified in this O&M Plan are situated in a suburban environment. Residential development and open space influence the structure and functionality of these systems. Three projects are sited along the east and west sides of Alicia Parkway (Site 1 – West Alicia Wetland, Site 2 – East Alicia Treatment Wetland, and Site 3 – North Alicia Treatment Wetland). Four projects are

situated along a continuous stretch of Upper Sulphur Creek along Crown Valley Parkway (Site 5 – Crown Valley Enhancement Area/Sulphur Creek Park, Site 7 – Rancho Niguel Upper Sulphur, Site 8 – Crowne Royale Upper Sulphur, and Site 9 – Niguel Ridge Upper Sulphur). Four projects are situated in and around Crown Valley Park along Sulphur Creek (Site 4 – Crown Valley Park Wetland Creation/J03P01, Site 6 – Sulphur Creek Creation Area, Site 10 – USACE Restoration Area and Crown Valley Park restoration, and Site 11 – Sulphur Creek in Crown Valley Community Park). One site consists of four distinct wetland features surrounding La Paz Park (Site 12 – La Paz Park). These sites range in size from approximately 1 to 16 acres. Finally, one site (Site 13 – Salt Creek Corridor Habitat Restoration Area) is within the Salt Creek Watershed and includes the Salt Creek Mainstem and several unnamed tributaries to Salt Creek.

In 2001, the Aliso Creek watershed, including Sulphur Creek, was the subject of a feasibility study that included an assessment of stream functions throughout the watershed. As documented in the 2001 functional assessment of the Aliso Creek watershed, 86%, or 12.2 miles of the total 14.2 creek miles in the Sulphur Creek subbasin, were considered highly degraded as a result of human modifications. Of this total, 10.5 miles (74%) have been affected to the point that they provide no measurable functional output, and none of the remaining stream reaches function at a high level. Functional output is defined as a measurement of a wetland's hydrologic, biogeochemical, and biologic health via comparison or reference to a relatively fully functional or healthy wetland ecosystem in the same region. This dramatic reduction in wetland functional capacity on a watershed scale resulted in a number of significant resource-related concerns, including loss of riparian habitat, erosion and channel incision, poor water quality, flooding, and declines in populations of native fauna.

The Sulphur Creek Ecosystem Restoration Project (Sites 1 through 12) was designed with the goals of the 2001 study in mind, in particular to reestablish a stable, healthy, and sustainable watershed environment and to identify feasible management options to improve environmental conditions in the Aliso Creek watershed. The restoration project was not provided as compensatory mitigation for impacts on wetlands or riparian areas but was voluntarily undertaken to improve water quality and help reestablish some of the historic habitat functions and values associated with riparian and wetland systems in southern California and in the Laguna Niguel area. In addition, this project furthers the goals of the City's General Plan, i.e., "preservation and enhancement of the natural setting of the City" and "to strive and improve the City's existing environmental quality."

Several listed endangered species are endemic to riparian systems in this region. The federally listed endangered southwestern willow flycatcher (*Empidonax traillii*) has been sighted in the surrounding areas. Other listed endangered species include the least Bell's vireo (*Vireo bellii pusillus*) and coastal California gnatcatcher (*Polioptila californica californica*). This restoration project was designed to enhance habitat for these species and others, and was jointly funded by the City, State of California Department of Water Resources, and USACE.

The City applied for and received permits from CDFW (Streambed Alteration Agreement #1600-R5-2003-0156) and RWQCB Section 401 Water Quality Certification (WPN: 401 Certification # 03C-016 – Sulphur Creek Ecosystem Restoration Project and WPN: 401 Certification # 03C-093 – Sulphur Creek Ecosystem Restoration Disposal Site Project) to implement restoration activities at 12 of the wetland restoration sites. The 5-year monitoring of the 12 sites within Sulphur Creek Watershed was recently completed, and the resource agencies have approved all 12 sites as achieving their success criteria. No additional maintenance or monitoring is currently required by the resources

agencies as conditions to these permits, but the City wishes to continue maintenance to ensure these sites fulfill their intended flood control and ecological purposes.

In 2016, the City obtained permits from CDFW (Streambed Alteration Agreement #1600-2015-0098) and RWQCB (Section 401 Water Quality Certification [401 Certification # R9-2015-0098]) for the construction of the Crown Valley Park Wetland Creation Area J03P01, which occurs within Site 4. Compensatory mitigation required for implementation of this project included establishment of riparian habitat downstream of this project within Site 4. The mitigation for this project is currently underway.

1.3 Required Permits

To fulfill the purpose of this O&M Plan, new resource agency permits will need to be obtained for routine maintenance activities associated with this plan. Required permits include the following.

- USACE Clean Water Act Section 404 Permit.
- RWQCB Clean Water Act Section 401 Water Quality Certification and Porter-Cologne Act Waste Discharge Requirements.
- CDFW Section 1602 Streambed Alteration Agreement.
- USFWS Biological Opinion (BO) pursuant to Section 7 of the Endangered Species Act.

1.4 Responsible Parties

The land manager for all 13 wetland sites identified in this O&M Plan is the City. The land manager, and subsequent land managers upon transfer, will implement this O&M Plan, managing and monitoring the 13 sites described herein to preserve its habitat, functions, and values in accordance with the goals identified above. The land manager will be responsible for receiving any necessary permits to conduct long-term operations and maintenance activities identified in this plan.

Chapter 2

Property Descriptions

This section describes the existing conditions and biological environment in the project areas and how the proposed operation and maintenance activities may affect that environment and sensitive biological resources.

2.1 General Setting and Location

The 13 wetland sites are within the City of Laguna Niguel, Orange County, California (Appendix A, Figure 1). All sites occur within City maintained areas. Wetland sites either occur within City-owned property or the City retains a maintenance easement over them to allow for the proposed O&M activities. Figure 2 (Appendix A) shows each site on a topographic map. Each site is generally located within a suburban, heavily disturbed environment. Most adjacent land uses include residential and commercial developments, transportation services, roads, recreational facilities, and open space. As described in the *Laguna Niguel Wetlands Operations and Maintenance Activities Project, Laguna Niguel, CA Biological Technical Report*, ICF biologists conducted general biological surveys, focused species surveys, and a delineation of jurisdictional waters and wetlands in June and July 2016 (ICF 2017a).

2.1.1 Surrounding Land Uses

Land uses in the local vicinity of the Project areas include residential and commercial developments, undeveloped open space, schools, and recreational uses including pedestrian and bicycle trails, and parks. Several parks are in the vicinity, including Laguna Niguel Regional Park, Crown Valley Park, Salt Corridor Regional Park, and Aliso and Wood Canyons Wilderness Park.

2.1.2 Topography

The project study areas occur in either flat valleys or along steep slopes with an elevation ranging from roughly 150 feet above mean sea level (AMSL) at the northern end near Laguna Niguel Regional Park to approximately 600 feet AMSL at the southeastern end of Chapparosa Park (GoogleEarth 2016).

2.1.3 Hydrology

Sulphur Creek is a perennial tributary to Aliso Creek, fed by runoff from surrounding development, and is approximately 5 miles long. Downstream of the Sulphur Creek confluence, Aliso Creek flows approximately 5 miles to the Pacific Ocean where it empties at Aliso Beach County Park. Salt Creek is an intermittent coastal stream that flows out to the Pacific Ocean at Salt Creek County Beach.

2.1.4 Soils

NRCS has mapped the following soil series as occurring within the Project areas that support jurisdictional waters based on the SSURGO database (NRCS 2015a): Alo, Balcom, Botella, Calleguas, Copley, and Sorrento. A description of each soil series is provided in the subsections below.

No additional map units were found to occur within the Project areas according to the NRCS (NRCS 2016). None of the soil series that occur within the Project area are listed as hydric soils (Orange County and Part of Riverside County) (NRCS 2015b). Figure 3 depicts the soils locations within Project areas.

2.2 Site Descriptions

The following describes each of the 13 sites in detail, including unique history and adjacent land uses if different than the general description provided above, hydrology and topography, vegetation, and aquatic resources. As provided after the site descriptions, Table 1 reports the vegetation communities and land cover types and Table 2 reports the aquatic resources occurring as of the date of ICF's most recent site assessment (ICF 2017a) and jurisdictional delineation (ICF 2017b). All site figures are provided in Appendix A.

Aliso Creek is 20 kilometers north of the southernmost extremity of the Southern California Distinct Population Segment (DPS) range at San Mateo Creek. The wetland sites are tributary to Aliso Creek and occur within the range of the Southern California DPS; therefore, there is a potential for Southern California DPS to occur within all of the wetland sites.

2.2.1 West Alicia Wetland (Site 1)

Site 1 occurs on the west side of Alicia Parkway (Figure 3-1A through 3-1F). Site 1 consists of a 4.76-acre restored channel and is composed of six vegetation communities and other cover types (Table 1). Site 1 contains a tributary to Aliso Creek, a perennial drainage, that flows north through the site along Alicia Parkway for approximately 2,734 feet from a small concrete collection channel to a large concrete culvert, eventually flowing outside of the project area to an unnamed tributary to Aliso Creek. There are several small concrete outfalls that collect runoff from the surrounding hillside to the west and direct flow into this drainage as it proceeds northward. Site 1 supports 1.97 acres of wetlands within the project area. Approximately 4.89 acres of CDFW riparian is present along the channel and 0.02 acre of CDFW streambed was mapped along the concrete apron where the stream passes through the large concrete culvert (Table 2). Vegetation observed at this wetland site includes Mexican rush (*Juncus mexicanus*), chairmaker's club-rush (*Schoenoplectus americanus*), salt grass (*Distichlis spicata*), yerba mansa (*Anemopsis californica*), and mulefat (*Baccharis salicifolia*). Vegetation in the adjacent upland area included coyote brush (*Baccharis pilularis*), California rose (*Rosa californica*), and salt grass. No special-status species were observed during site surveys, and none are expected to occur within this site.

2.2.2 East Alicia Wetland (Site 2)

Site 2 occurs on the east side of Alicia Parkway, to the south of Kite Hill Drive (Figure 3-2A through 3-2B). This site totals 1.30 acres and is composed of four vegetation communities (Table 1). Site 2 supports 0.40 acre of wetland waters and 1.03 acres of CDFW riparian (Table 2). Surface water,

when present, appears to settle in a ponded area before flowing into a concrete stormwater collection ditch that transports flow to the north. Riparian vegetation around the wetland waters is dominated by club-rush and arroyo willow (*Salix lasiolepis*). Ice plant (*Carpobrotus edulis*), coyote brush, and arroyo willow are also present in upland areas surrounding the wetland. No special-status species were detected during site surveys, and none are expected to occur within this site.

2.2.3 North Alicia Wetland (Site 3)

Site 3 occurs on the east side of Alicia Parkway, to the north of Kite Hill Drive (Figure 3-3). This site is located on City property granted under an easement with the County of Orange and consists of a 0.60-acre network of six human-made retention basins linked by small over-flow channels. A small (approximately 4-foot-wide) concrete box culvert contributes water to the most upstream basin in the southeastern corner of the project area. At the downstream (northwestern) corner, a culvert receives water from Site 2 and flows toward an unnamed tributary to Aliso Creek. Site 3 supports one vegetation community (Table 1) and 0.25 acre of wetland waters and 0.64 acre of CDFW riparian (Table 2). The basins have riparian vegetation with a nearly closed canopy, dominated by arroyo willow and black willow. Herbaceous vegetation is dominated by club-rush. Adjacent upland habitat also has sandbar willow (*Salix exigua*), arroyo willow, and coyote brush. The closest known special-status species is the western mastiff bat (*Eumops perotis*) (CNDDDB 2017). No special-status species were detected during site surveys, and none are expected to occur within this site.

2.2.4 Crown Valley Park Wetland Creation Area/J03P01 (Site 4)

Site 4 occurs north of Crown Valley Parkway and adjacent to Crown Valley Community Park (Figure 3-4A through 3-4C). Site 4 is a 4.16-acre segment of Sulphur Creek, a perennial drainage, and is composed of four vegetation communities (Table 1). This tributary flows northeast for approximately 1,940 feet through the project site within the Crown Valley Community Park grounds to its confluence with Sulphur Creek. The wetland is bound on the southern edge by a large concrete culvert and concrete low flow channel, and on the northern edge by a pedestrian bridge that crosses the drainage. The drainage is also bisected by the Community Park Road dip crossing. The upstream portion of Site 4 consists of braided channels between the dip crossing and the upstream culvert. The channel widens at a shallow scour pool below the culvert. In the downstream portion of Site 4, between the Community Park Bridge and a pedestrian footbridge, the drainage is substantially confined by adjacent land use activities (playing fields and sidewalk). In total, Site 4 supports 1.08 acres of wetland waters, 0.49 acre (1,108 linear feet) of CDFW streambed, and 3.35 acres of CDFW riparian (Table 2).

Vegetation along the upstream portion of Site 4 is dominated by arroyo willow, and also included watercress (*Nasturtium officinale*) and small matted sandmat (*Euphorbia serpens*). Vegetation in the adjacent upland area includes arroyo willow, small matted sandmat, Bermuda grass (*Cynodon dactylo*), and tall flatsedge. At the time of the site visit all riparian vegetation had been removed. Remaining herbaceous vegetation includes Bermuda grass, tall flatsedge, and cattails.

This site is currently under construction under current permits issued by the resource agencies (SAA No. 1600-2015-0098-R5, WQC# R9-2015-0098:815677:dbradford). The existing Crown Valley Park Road dip crossing structure, grouted rock slopes, and grouted rock apron in the stream has been replaced with a 48-foot-wide dual arched culvert crossing, associated non-grouted rock rip-rap

blanket, and associated concrete grade control structures at the upstream and downstream ends of the rock rip-rap. The pedestrian boardwalk across the stream has also been moved and replaced. A sediment forebay, incorporating a trash boom, was constructed within the stream at the upstream end of the project and is equipped with a floating trash boom with a 36-inch underwater skirt. A maintenance access ramp will be constructed to facilitate routine trash and sediment removal. A treatment wetland has also been constructed and will be planted with emergent vegetation. The low flow channel will be maintained to enter this treatment wetland and then flow into the constructed meandering bioswales. This O&M plan includes the maintenance of these new structures.

2.2.5 Sulphur Creek Park Wetland Enhancement Area (Site 5)

Site 5 covers 2.41-acre and occurs on the north side of Crown Valley Parkway, just east of Central Park Drive (Figure 3-5). Site 5 has been restored from previous concrete channelization. Within the project area, Sulphur Creek is a small, approximately 4-foot-wide channel that flows southeast toward Crown Valley Community Park and is composed of three vegetation communities (Table 1). The site currently supports 0.56 acre of wetland waters and 0.02 acre of nonwetland waters. In addition, the site supports 1.35 acres of CDFW riparian and 0.04 acre of CDFW streambed (Table 2). Riparian vegetation throughout Site 5 is dominated by arroyo willow, and there is no herbaceous vegetation present as understory. No special-status species were detected during site surveys and none are expected to occur within this site.

2.2.6 Sulphur Creek Wetland Creation Area (Site 6)

Site 6 occurs north of Crown Valley Parkway and adjacent to Crown Valley Community Park, immediately south of the USACE Sulphur Creek Restoration Project (Figure 3-6). Site 6 is a high flow channel and associated braided channels of Sulphur Creek within the project site and is composed of three vegetation communities (Table 1). This is a restoration site and is a 0.71-acre drainage area that flows in a northern direction toward Aliso Creek. Site 6 supports 0.42 acre of wetland waters and 0.62 acres of CDFW riparian (Table 2). This portion of the Sulphur Creek drainage flows in a northern direction toward Aliso Creek. Riparian vegetation is dominated by arroyo willow, and herbaceous vegetation is dominated by club-rush. No special-status species were detected during site surveys, and none are expected to occur within this site.

2.2.7 Rancho Niguel Master Association Upper Sulphur Creek (Site 7)

Site 7 is an approximately 3,390-foot-long section of Sulphur Creek that runs between Crown Valley Parkway and an adjacent residential development within the project area, and is approximately bisected by Golden Lantern Street (Figure 3-7A through 3-7G). This 16.38-acre drainage supports six vegetation types (Table 1) and has been restored from previous concrete channelization. Within the project area, Sulphur Creek is a small, approximately 4-foot-wide channel that flows southeast. There are four large concrete box culverts through which the stream passes: at the northern edge of the project site, at the upstream and downstream ends of Golden Lantern Street crossing, and at the southern edge of the project site. Approximately 0.15 acre of non-wetland water, 3.51 acres of wetland waters, 0.38 acre of CDFW streambed, and 8.26 acres of CDFW riparian habitat is supported in Site 7 (Table 2). Riparian vegetation along Site 7 is dominated by arroyo willow, which formed a closed canopy and nearly excluded herbaceous vegetation.

2.2.8 Crowne Royale Homeowners Association Upper Sulphur Creek (Site 8)

Site 8 is an approximately 3.75-acre site that includes an approximately 1,500-foot-long section of Sulphur Creek that runs between Crown Valley Parkway and adjacent residential development within the project area (Figure 3-8A through 3-8B). Site 8 has been restored from previous concrete channelization to support wetland and riparian habitat, including four vegetation and land cover types (Table 1). Within the project site, Sulphur Creek is a small, approximately 4-foot-wide channel that flows southeast. At the northern end of the project area, there is a large concrete box culvert and concrete apron through which the stream passes inside a shallow low-flow channel as it exits under Nueva Vista Road. There is a concrete outfall and velocity dissipating structure within the channel near the intersection of Crown Valley Parkway and Adelanto Road. At the southern edge of the project area, the stream enters another large concrete box culvert as it passes under La Paz Road. Site 8 currently supports 0.03 acre of non-wetland waters, 0.88 acre of wetland waters, 2.17 acres of CDFW riparian along the stream, and 0.29 acre of CDFW streambed mapped where the stream flows through concrete culverts and bank protections (Table 2). Vegetation along Site 8 is dominated by yerba mansa, cattails, and salt grass. No special-status species were detected during site surveys and none are expected to occur within this site.

2.2.9 Niguel Ridge Homeowners Association Upper Sulphur Creek (Site 9)

Site 9 is an approximately 2.20-acre site that is an approximately 1,786-foot-long section of Sulphur Creek that runs between Crown Valley Parkway and adjacent residential development within the project area (Figure 3-9A through 3-9C). This site has been restored from previous concrete channelization to support wetland and riparian habitat, and currently supports three vegetation and land cover types (Table 1). Within the project area, Sulphur Creek is a small, approximately 4-foot-wide channel that flows southeast. At the northern end of the project area, there is a large concrete box culvert and concrete apron through which the stream passes inside a shallow low-flow channel as it exits under La Paz Road. The wetland site is approximately bisected by La Plata Road, which crosses over the drainage, where the stream runs through a large concrete box culvert that is flanked on both sides by a concrete apron with a low-flow concrete channel. Site 9 currently supports 0.07 acre of non-wetland waters, 0.43 acre of wetland waters as well as 1.17 acres of CDFW riparian and 0.59 acre of CDFW streambed (Table 2). Riparian vegetation along Site 9 is dominated by arroyo willow. Herbaceous vegetation is dominated by alkali heath (*Frankenia salina*). No special-status species were detected during site surveys and none are expected to occur within this site.

2.2.10 USACE Sulphur Creek Restoration Project (Site 10)

Site 10 occurs north of Crown Valley Parkway directly downstream of the Sulphur Creek Wetland Creation Area site in Crown Valley Community Park (Figure 3-10A through 3-10D). Site 10 covers 7.16 acres and was restored from previous concrete channelization and currently supports six vegetation and land cover types (Table 1). In addition, this site supports 1.91 acres of wetland waters as well as 5.41 acres of CDFW riparian and 0.25 acre of CDFW streambed (Table 2). Riparian vegetation along Site 10 is dominated by arroyo willow and mulefat, and the riparian canopy was mostly closed above the stream. Herbaceous vegetation is dominated by yerba mansa. The larger

floodplain present in this area is approximately 100 feet wide. No special-status species were detected during site surveys and none are expected to occur within this site.

2.2.11 Sulphur Creek in Crown Valley Community Park (Site 11)

Site 11 is an approximately 555-foot-long section of Sulphur Creek totaling 0.83 acres (Figure 3-11). Within the project site, the drainage has been restored from previous concrete channelization and supports one vegetation community (Table 1). Within the project area, Sulphur Creek is a small, approximately 5-foot-wide channel that flows west. Site 11 currently supports 0.64 acre of wetland waters as well as 1.04 acres of CDFW riparian (Table 2).

Riparian vegetation along Site 11 is dominated by arroyo willow, and the riparian canopy is mostly closed above the stream. Herbaceous vegetation is dominated by a mix of garden celery (*Apium graveolens*), great plantain (*Plantago major*), white sweetclover (*Melilotus albus*), and alkali bulrush (*Bolboschoenus maritimus*). No special-status species were detected during site surveys and none are expected to occur within this site.

2.2.12 La Paz Park Wetlands (Site 12)

Site 12 consists of a 1.20-acre site supporting four vegetation and land cover types (Table 1). The site contains 3 drainage features including: an unnamed tributary to Sulphur Creek and two small side drainage channels (Figure 3-12). Within the project site, the unnamed tributary, is a small, approximately 6-foot-wide channel that flows west and is incised within steep banks. The stream exits a large concrete culvert with concrete slope protection as it passes under La Paz Road past the eastern end of the project area. A small drainage channel to the north of the unnamed tributary, has an active channel approximately 3 feet wide, is fed from a concrete outfall located at the eastern end, and drains to the unnamed tributary through a culvert on its western end. The second side drainage feature, located northwest of the unnamed tributary, is fed by two concrete outfall structures on its northern and western sides, and drains through a concrete culvert on the southern side to the unnamed tributary. In total, Site 12 supports 0.27 acre of wetland waters as well as 1.17 acre of CDFW riparian. Site 12 is dominated by black willow and blackberry (*Rubus ursinus*). The riparian canopy is mostly closed above the stream. No special-status species were detected during site surveys and none are expected to occur within this site.

2.2.13 Salt Creek Corridor Habitat Restoration Area (Site 13)

Site 13 includes Salt Creek Mainstem and six unnamed tributaries to Salt Creek. The portion of Salt Creek within Site 13 is a southward flowing perennial stream primarily fed by urban runoff from irrigation and support nine vegetation and land cover types (Table 1). It has a natural channel that runs between two large (greater than 20-foot-wide) concrete culverts that pass the stream under the Salt Creek Bike Trail and Niguel Road (Figures 3-13A through 3-13F). The channel is sharply incised with an approximately 4-foot drop separating the active channel from upland habitat. The six unnamed tributaries to Salt Creek Mainstem support ephemeral flows. The ephemeral channels are characterized as being steeply incised and dominated by upland grasses and coastal sage scrub species and in general lack hydrophytic vegetation. Site 13 supports 1.40 acres of non-wetland waters and 4.48 acres of wetland waters, as well as 9.88 acres of CDFW riparian and 2.43 acres of CDFW streambed (Table 2). Riparian vegetation within the Salt Creek Mainstem creates a mostly

closed canopy and is dominated by arroyo willow. The herbaceous layer of the wetland waters is dominated by cattails (*Typha domingensis*) and California bulrush (*Schoeneoplectus californicus*). Other native vegetation present outside of the OHWM includes goldenbush, salt grass, and alkali heath. Nonnative vegetation present at this site includes tree of heaven (*Ailanthus altissima*) and white sweetclover within the wetland waters, and bristly ox-tongue (*Helminthotheca echioides*) and European sea lavender (*Limonium duriusculum*) within upland habitat.

At the southern end of the reach, adjacent to the concrete culvert under Niguel Road, the channel widens at a large ponded area, and riparian vegetation is limited to cattails, without substantial canopy cover. One southwestern willow flycatcher was detected and two least Bell's vireo territories were identified during the 2016 focused surveys within Site 13 near (east of) the ball fields. The observed southwestern willow flycatcher is considered to be a migrant; there was only a single observation and indicating Site 13 supports suitable foraging and nesting habitat. Both least Bell's vireo territories were confirmed as paired with fledglings and were adjacent to one another.

Table 1. Vegetation Communities and Land Cover Types

Vegetation Communities and Land Cover Types	West Alicia Wetland (Site 1)	East Alicia Wetland (Site 2)	North Alicia Wetland (Site 3)	Crown Valley Park Wetland Creation Area (Site 4)	Sulphur Creek Park Wetland Enhancement Area (Site 5)	Sulphur Creek Wetland Creation Area (Site 6)	Rancho Niguel Upper Sulphur Creek (Site 7)	Crowne Royale Upper Sulphur Creek (Site 8)	Niguel Ridge Upper Sulphur Creek (Site 9)	USACE Sulphur Creek Restoration Project (Site 10)	Sulphur Creek in Crown Valley Community Park (Site 11)	La Paz Park Wetlands (Site 12)	Salt Creek Corridor Habitat Restoration Area (Site 13)	Total
Riparian and Wetlands														
American bulrush marsh	0.09	0.15	-	-	-	-	-	-	-	-	-	-	-	0.24
Arroyo willow thickets	-	-	-	1.57	1.44	-	3.50	2.14	1.22	-	-	-	2.15	12.03
Black willow thickets	1.83	-	0.60	-	-	-	6.19	-	-	1.56	0.83	0.82	6.94	18.78
California bulrush marsh	-	-	-	0.18	-	-	-	0.59	0.04	-	-	-	-	0.81
California sycamore woodlands	1.84	0.47	-	-	-	-	-	-	-	-	-	0.22	-	2.53
Cattail marshes	0.27	-	-	-	-	-	0.88	-	-	-	-	-	3.15	4.31
Fremont cottonwood forest	-	-	-	0.47	-	0.20	-	-	-	3.05	-	-	-	3.71
Mule's fat thickets	-	-	-	-	-	0.23	-	-	-	-	-	0.10	-	0.34
Salt grass flats	0.30	-	-	-	-	-	-	-	-	-	-	-	-	0.30
Total Riparian and Wetlands	4.33	0.62	0.60	2.22	1.44	0.43	10.57	2.73	1.26	4.61	0.83	1.15	12.24	43.04
Uplands														
California Annual Grassland	-	-	-	-	-	-	-	-	-	0.24	-	-	33.44	33.68
California brittle bush scrub	-	-	-	-	-	-	-	-	-	0.38	-	-	-	0.38

Vegetation Communities and Land Cover Types	West Alicia Wetland (Site 1)	East Alicia Wetland (Site 2)	North Alicia Wetland (Site 3)	Crown Valley Park Wetland Creation Area (Site 4)	Sulphur Creek Park Wetland Enhancement Area (Site 5)	Sulphur Creek Wetland Creation Area (Site 6)	Rancho Niguel Upper Sulphur Creek (Site 7)	Crowne Royale Upper Sulphur Creek (Site 8)	Niguel Ridge Upper Sulphur Creek (Site 9)	USACE Sulphur Creek Restoration Project (Site 10)	Sulphur Creek in Crown Valley Community Park (Site 11)	La Paz Park Wetlands (Site 12)	Salt Creek Corridor Habitat Restoration Area (Site 13)	Total
California sagebrush scrub	-	-	-	-	-	-	-	-	-	-	-	-	17.13	17.13
Coyote brush scrub	-	0.59	-	-	0.86	0.28	-	-	-	1.77	-	-	0.53	4.03
Eucalyptus groves	-	-	-	-	0.10	-	0.42	-	-	-	-	-	-	0.53
Lemonade berry scrub	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.35
Menzies's golden bush scrub	-	-	-	-	-	-	3.14	0.38	-	-	-	-	-	3.52
Pampas grass patches	-	-	-	-	-	-	-	-	-	-	-	-	0.20	0.20
Total Uplands	-	0.59	-	-	0.96	0.28	3.56	0.38	-	2.38	-	-	51.65	59.81
Other Land Cover Types														
Disturbed habitat	-	-	-	-	-	-	-	-	-	0.16	-	-	0.17	0.33
Urban/Developed	0.43	0.09	-	1.95	-	-	2.24	0.64	0.94	-	-	0.05	0.59	6.92
Total Other Land Cover Types	0.43	0.09	-	1.95	-	-	2.24	0.64	0.94	0.16	-	0.05	0.75	7.25
Total	4.76	1.30	0.60	4.16	2.41	0.71	16.38	3.75	2.20	7.16	0.83	1.20	64.64	110.10

Table 2. Waters of the U.S. and State within the Wetland Project Site

Feature	Linear Feet	USACE/RWQCB		CDFW	
		Non-wetland Waters (Acres)	Wetland Waters (Acres)	Streambed (Acres)	Riparian (Acres)
1 – West Wetland	2,734	–	1.965	0.017	4.885
2 – East Wetland	636	–	0.395	–	1.028
3 – North Wetland	326	–	0.253	–	0.635
4 – Crown Valley Park Wetland Creation Area/J03P01	1,940	–	1.075	0.489	3.352
5 – Sulphur Creek Park Wetland Enhancement Area	790	0.018	0.558	0.044	1.343
6 – Sulphur Creek Creation Area at Crown Valley	204	–	0.422	–	–0.621
7 – Rancho Niguel Upper Sulphur Creek	3,391	0.147	3.510	0.380	8.262
8 – Crown Royale Upper Sulphur Creek	1,527	0.032	0.884	0.288	2.174
9 – Niguel Ridge Upper Sulphur Creek	1,786	0.068	0.432	0.587	1.170
10 – USACE Sulphur Creek Restoration Area	1,791	–	1.913	0.248	5.412
11 – Sulphur Creek in Crown Valley Park	555	–	0.641	–	1.042
12 – La Paz Park Wetlands	748	–	0.269	–	1.167
13. Salt Creek Restoration Area	13,136	1.399	4.484	2.426	9.876
Total	29,564	1.664	16.802	4.478	40.962

Chapter 3

Project Description

The City plans to conduct routine O&M activities within 13 ~~City-owned~~ wetland sites located in the Sulphur Creek watershed; a portion of the Salt Creek Watershed, within Chapparosa Park; and in the new construction associated with the J03P01 channel within Crown Valley Regional Park (Figure 1 and Figure 2). The Project would include minor maintenance activities such as removing herbaceous vegetation and accumulated sediment around outfalls, risers, culverts, bridge crossings, establishing pilot channels to facilitate positive flow and maintain flood capacity (i.e., flowline maintenance), and trimming understory of riparian vegetation (i.e. below the tree canopy) to prevent obstruction of flow. This O&M Plan establishes objectives, describes specific operations and maintenance activities for each wetland site, identifies impacts, and identifies reporting requirements. In general, operations and maintenance activities will include the following.

1. **Vegetation Maintenance** – Storm drain outfalls, inlets, risers, and concrete or stone weirs will be cleared of all herbaceous vegetation. Additionally, a 3- to 30-foot radius surrounding the maintenance facility will be cleared, by hand or mechanized equipment, of herbaceous vegetation. Understory vegetation trimming may also be necessary to allow clearance for inspections and maintain hydraulic flow. Native plants and native vegetative detritus within wetland areas will be pruned, and trimmed, to alleviate encroachment of vegetation over or onto a public area such as a sidewalk or trail. Native vegetation may be removed only if determined to be a public safety hazard and will be limited to dying or unstable trees located near public sidewalks or trails. Damaged limbs occurring at locations where the public would be threatened if the limbs fall will be addressed, as will vegetative or detritus impediments to stream flow that could potentially cause flooding or seepage of water onto public areas. Combustible vegetative fuel buildup near fire-susceptible structures or developments will be managed, as well as vegetative blocking of signage visibility or access for County Vector Control or environmental research activities and encroachment into overhead utility lines or impeding required access to maintenance facilities, cleanouts, manholes or vaults. Debris from trimming of native vegetation will be cut and disposed of off-site.
2. **Sediment Maintenance** - Storm drain outfalls, inlets, risers, and concrete or stone weirs will be cleaned of accumulated sediment to maintain hydraulic flow. Where equipment access is available, equipment for sediment removal will include a mini-excavator, a bobcat loader, and a dewatering bin that will be used to stockpile the sediment. In areas where access is limited, hand tools (e.g. shovels and wheel barrels) will be used to remove accumulated sediment. Additionally, a 3- to 30-foot radius above and/or below the maintenance facilities will also be cleared of accumulated sediment. All sediment will be legally disposed of off-site.
3. **Flowline Maintenance** – Pilot low-flow channels will be maintained within 12 of the ~~City-owned~~ wetland sites (excludes Site 3. North Alicia Wetland) in order to maintain positive hydraulic flow. Pilot channels will be limited to 3 feet wide and run the length of the wetland site. Where equipment access is available, equipment for the establishment of the pilot channels will include a backhoe with extend-a-hoe, a vactor pump truck, and a dewatering bin. In areas where access is limited, hand tools (e.g. shovels and wheel barrels) will be used. The established pilot channels will be maintained (i.e., removal of herbaceous vegetation, accumulated vegetative

detritus, and sediment, tree/shrub understory trimming, trash and debris removal, and maintenance of access paths) on a biannual basis, typically in spring and fall.

4. Access Path Maintenance – All designated dirt paths for maintenance and vector control access will be maintained in a clean and safe condition. Access path maintenance includes pruning and trimming of adjacent and overhanging vegetation for a 6-foot vertical and 3-foot horizontal clearance, removal of any dead or damaged branches or limbs overhanging the access path, and path erosion repair. General tree pruning will be conducted on an as-needed basis and no more than once per year and with the intent of developing structurally sound trees with adequate vertical and horizontal clearance adjacent to public access ways. Tripping hazards such as rocks and exposed roots will be removed and holes will be filled with dirt or decomposed granite. No new access paths are proposed, only the maintenance of existing footpaths are proposed.
5. Nonnative Vegetation Removal - All nonnative vegetation will be removed and may require chemical application of herbicides in extreme circumstances. Only herbicides approved by the U.S. Environmental Protection Agency (EPA) as suitable near water sources, such as AquaMaster, would be used. All nonnative material will be cut and disposed of off-site. Nonnative vegetation removal will occur within the entirety of the wetland sites.
6. Trash and Debris Maintenance – All trash and debris will be removed by hand or by hand-held mechanized equipment from the entirety of the wetland sites and legally disposed of off-site. Trash and debris maintenance will occur quarterly in the wetland areas. Trash and debris removal in the wetland sites will be conducted once in spring, once in early fall prior to the first rain, and two times during the winter after significant rainstorms.
7. Rodent and Pest Control – Rodents and pests will be controlled only as necessary to limit excessive damage to native areas or adjacent ornamental landscaping. Rodents include gophers and ground squirrels and pests include but are not limited to, shot hole beetles, snails, sow bugs, aphids, caterpillars, etc., that could cause damage to any plants, shrubs, groundcover, trees, irrigation systems, facilities or cause erosion. All methods employed to perform rodent and pest control will conform to all federal, state and county environmental regulations. Only non-chemical practices are used for rodent control.

This section describes the specific routine maintenance activities to be conducted at each of the 13 wetland/restoration sites. A Maintenance Facility Summary Table which describes the activities and impacts associated with each maintenance facility is provided in Appendix B.

4.1 Routine Maintenance

4.1.1 West Alicia Wetland (Site 1)

On a biannual (twice per year) basis all sediment and herbaceous vegetation will be removed from the all structures within Site 1 as shown in Figures 3-1A through 3-1F). In addition to the structures, a 3-foot-wide low flow channel would be maintained through Site 1 in order to maintain positive hydraulic flow. Finally, overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. Debris from trimming of native vegetation may be cut up and left in place (outside of jurisdictional waters) or disposed of offsite. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will occur off of Alicia Parkway at the northern and southern most ends of the site.

4.1.2 East Alicia Wetland (Site 2)

On a biannual (twice per year) basis all sediment and herbaceous vegetation will be removed from all structures within Site 2 as shown in Figures 3-2A through 3-2B). Additionally, a 3-foot wide low flow channel will be maintained through Site 2 in order to maintain positive hydraulic flow. The low flow channel will be maintained on a biannual basis. Finally, overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. Debris from trimming of native vegetation may be cut up and left in place (outside of jurisdictional waters) or disposed of offsite. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will occur off of Alicia Parkway, on the northern bank of Site 2.

4.1.3 North Alicia Wetland (Site 3)

On a biannual (twice per year) basis all sediment and herbaceous vegetation will be removed from the structures and wetland basins within Site 3 as shown on Figure 3-3. All sediment and vegetation within the six human-made retention basins and over-flow channels will be removed on a biannual basis to maintain positive hydraulic flow. All vegetation will be removed by hand or hand-held mechanized equipment and sediment will be removed via a mini-excavator and a bobcat loader. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will occur off of Alicia Parkway, at the northern end of the site.

4.1.4 Crown Valley Park Wetland Creation Area/J03P01 (Site 4)

On a biannual (twice per year) basis all sediment and vegetation will be removed from all structures within Site 4 as shown in Figures 3-4A through 3-4C. Additionally, a 3-foot-wide low flow channel upstream of Community Park Road Bridge will be maintained through the upper half of Site 4 and flow into the treatment wetland. Downstream of Community Park Road Bridge, the low flow channel will then be directed into the bioswales before flowing back into the mainstem of Sulphur Creek. Both the recently constructed treatment wetland and bioswales will be maintained to construction designs specifications to ensure proper function.

Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. There are two access points to Site 4. One occurs off of Crown Valley Parkway, near Structure 4A and runs north paralleling the site. The second access point is off of Community Park Road Bridge near Structure 4C and runs north paralleling the site.

4.1.5 Sulphur Creek Park Wetland Enhancement Area (Site 5)

On a biannual (twice per year) basis all sediment and vegetation will be removed from the structures within Site 5 as shown on Figure 3-5. A 3-foot-wide low flow channel would be maintained through Site 5 to maintain positive hydraulic flow. Finally, overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will occur from Crown Valley Parkway and Central Park Drive, near Structure 5A.

4.1.6 Sulphur Creek Wetland Creation Area (Site 6)

There are no structures within Site 6 that require routine maintenance, however a 3-foot-wide high flow channel will be maintained through this site to provide hydrology to this restored wetland area as shown on Figure 3-6. The high-flow channel will be maintained on a biannual basis. Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow through the wetland site. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will occur from the footpath and bridge Structure 10C.

4.1.7 Rancho Niguel Upper Sulphur Creek (Site 7)

On a biannual (twice per year) basis all sediment and vegetation will be removed from all structures within Site 7 as shown in Figure 3-7A through 3-7G. A 3-foot-wide low-flow channel will be maintained through the site. Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will occur from two points. The southern and northern portions of Site 7 will be accessed from an improved trail off of Moulton Parkway, east of the intersection with Crown Valley Parkway.

4.1.8 Crowne Royale Upper Sulphur Creek (Site 8)

On a biannual (twice per year) basis all sediment and vegetation will be removed from all structures within Site 8 as shown on Figures 3-8A through 3-8B. A 3-foot-wide low flow channel will be maintained through Site 8. Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will be from the improved trail located to the east of Site 8.

4.1.9 Niguel Ridge Upper Sulphur Creek (Site 9)

On a biannual (twice per year) basis all sediment and vegetation will be removed from all structures within Site 9 as shown on Figures 3-9A through 3-9C. A 3-foot-wide low-flow channel will be maintained through the site. Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will be from an improved trail that runs parallel to and east of Site 9.

4.1.10 USACE Sulphur Creek Restoration Project (Site 10)

On a biannual (twice per year) basis all sediment and vegetation will be removed from all structures within Site 10 as shown in Figures 3-10A through 3-10D. A 3-foot-wide low flow channel maintained through the site. Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and to maintain hydraulic flow. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to Site 10 will occur from two points off of the improved trail located to the west of the site. The first is at the northernmost end of the site, near Structure 10A, and the second is near Structure 10B.

4.1.11 Sulphur Creek in Crown Valley Community Park (Site 11)

On a biannual (twice per year) basis all sediment and vegetation will be removed from all structures located within Site 11 as shown on Figures 3-11. A 3-foot-wide low flow channel will be maintained through the site as well as a 3-foot-wide high flow channel that flows into Site 6. Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will occur near Structure 11A, where the improved trail intersects with Crown Valley Parkway.

4.1.12 La Paz Park Wetlands (Site 12)

On a biannual (twice per year) basis all sediment and vegetation will be removed from all structures located within Site 12 as shown on Figure 3-12. A 3-foot-wide low flow channel will be maintained through the site. Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site

will be provided along an improved trail, around the south end of the baseball fields and off of La Paz Parkway.

4.1.13 Salt Creek Corridor Habitat Restoration Area (Site 13)

On a biannual (twice per year) basis all sediment and vegetation will be removed from all structures within Site 13 as shown on Figures 3-13A through 3-13F. Due to occupied least Bell's vireo habitat within the upstream portion of Salt Creek (Figures 3-13-A and 3-13B) native tree trimming will be limited in this area and only when deemed necessary in order to maintain positive flows. Finally, a 3-foot-wide low flow channel will be maintained through the site. Overhanging native vegetation will be trimmed on an as-needed basis to allow clearance for inspections and maintain hydraulic flow. The site in its entirety will be managed for nonnative vegetation and removal of nonnatives will occur on an as-needed basis. Access to the site will occur from the Salt Creek Bike Path, near Structures 13B and 13G.

Chapter 5

Impacts and Avoidance and Minimization Measures

5.1 Aquatic Resource Impacts

Implementation of flood control maintenance would result in recurring transitory effects on vegetation communities from sediment, debris, and vegetation removal. These effects would be short-lived and minor, but would occur routinely. These recurring transitory effect areas would be within USACE, RWQCB, and CDFW jurisdiction. Impacts on delineated aquatic resources would total 3.14 acres of waters of the U.S. (including 2.79 acres of wetland waters of the U.S.) subject to regulation by USACE and RWQCB and a total of 6.47 acres of CDFW jurisdiction (including 3.77 acres of riparian habitat). For the purposes of this impact analysis, all areas subject to routine maintenance are considered to be permanently impacted; however, the routine maintenance will not change the designation of the area as a waters of the U.S. or State. Table 3 details the impact acreage proposed for each of the 13 wetland sites included in this O&M Plan. For a detailed discussion of direct, indirect, and cumulative effects of routine maintenance activities covered under this O&M Plan on jurisdictional resources refer to Sections 5.3 and 5.4 of the Biological Technical Report (ICF 2017a).

Table 3. Impacts on Waters of the U.S. and State within the Wetland Project Site

Wetland Site	USACE and RWQCB Jurisdiction		CDFW Jurisdiction	
	Non-wetland (acre)	Wetland (acre)	Streambed (acre)	Riparian (acre)
1 – West Alicia Wetland	–	0.23	0.02	0.25
2 – East Alicia Wetland	–	0.05	–	0.08
3 – North Alicia Wetland	–	0.27	–	0.27
4 – Crown Valley Park Wetland Creation Area/J03P01	–	0.28	0.47	0.79
5 – Sulphur Creek Park Wetland Enhancement Area	0.02	0.10	0.04	0.11
6 – Sulphur Creek Creation Area at Crown Valley	–	0.01	–	0.01
7 – Rancho Niguel Master Association Upper Sulphur Creek	0.05	0.47	0.34	0.65
8 – Crown Royale Homeowners Association Upper Sulphur Creek	0.03	0.15	0.29	0.21
9 – Niguel Ridge Homeowners Association Upper Sulphur Creek	0.07	0.17	0.59	0.22
10 – USACE Restoration Area	–	0.23	0.26	0.21
11 – Sulphur Creek in Crown Valley Park	–	0.09	–	0.11
12 – La Paz Park Wetlands	–	0.04	–	0.09
13 – Salt Creek Corridor Habitat Restoration Area	0.17	0.70	0.69	0.77
Total	0.34	2.79	2.70	3.77

5.2 Avoidance and Minimization Measures

The following applicable avoidance and minimization measures as described in the BTR will be instituted, when and where appropriate, during the maintenance activities to protect habitat and water quality.

MM-BIO-4. Access routes for maintenance activities associated with vegetation clearing, trimming, or sediment removal shall be confined to existing footpaths and access paths and shall be confined to the minimal amount of area necessary for maintenance activities and safe, reliable work. Development of new footpaths and access paths shall be limited to the maximum extent possible. All staging areas and footpaths and access paths shall be clearly delineated in the final plans.

MM-BIO-5. General tree pruning shall be conducted not more often than once per year between November and December and with the intent of developing structurally sound trees with adequate vertical and horizontal clearance adjacent to public access ways. Access path maintenance shall include pruning and trimming of adjacent and overhanging vegetation for a 6-foot vertical and 3-foot horizontal clearance, removal of any dead or damaged branches or limbs overhanging the access path, and path erosion repair.

MM-BIO-6. A Worker Environmental Awareness Plan shall be developed and implemented prior to the start of O&M activities.

MM-BIO-7. Environmental training shall be led annually by the qualified biologist(s) and will cover the sensitive resources found onsite, flagging/fencing of exclusion areas, permit requirements, and other environmental issues. All personnel overseeing maintenance activities within the wetland and riparian habitat shall receive instruction prior to initiation of maintenance activities, as to the sensitivity of the work environment and the limitation of activities outlined herein. The conditions of the regulatory permits and this supplemental information shall be reviewed by all personnel overseeing in these maintenance activities at a minimum of once per year.

MM-BIO-8. All personnel shall be prohibited from bringing domestic pets and firearms to the site.

MM-BIO-9. All maintenance activities associated with vegetation clearing, trimming, or sediment removal shall not be conducted during heavy rains to prevent unnecessary erosion, runoff, and sedimentation, and will not resume until conditions are suitable for the movement of equipment and materials.

MM-BIO-10. Daytime vehicle speeds shall be restricted to posted speed limits on existing paved roads and to 15 miles per hour on dirt access roads during the all phases of the Project.

MM-BIO-11. Trash and debris removal in the wetland areas shall be conducted quarterly. All trash and debris shall be removed by hand or by handheld mechanized equipment from the wetland sites and legally disposed of offsite.

MM-BIO-12. Rodents and pests will be controlled as necessary to limit excessive damage to native areas or adjacent ornamental landscaping. For rodents: Only non-chemical practices will be used for rodent control which incorporate Integrated Pest Management protocols such habitat reduction, exclusion, food reduction, trapping, and similar type methods. For shot hole beetles: The City proactively removes any infected trees that have the potential to conflict with pedestrians and vehicles, as well as down limbs that are determined to be a problem with clogging streambeds. The goal is to reduce the risk of harm from falling trees and limbs, as well as reduce the spread of shot

hole beetles. The City's website provides information to residents and contractors for the control of shot hole beetles. The website has a link to the University of California, Riverside's Eskalen Lab. City staff and contractors continually examine City-owned trees to assess their viability. Rodents and pests shall be controlled as necessary to limit excessive damage to native areas or adjacent ornamental landscaping. Rodents include gophers and ground squirrels and pests include but are not limited to, snails, sow bugs, aphids, caterpillars, etc., that could cause damage to any plants, shrubs, groundcover, trees, irrigation systems, facilities or cause erosion. All methods employed to perform rodent and pest control will conform to all federal, state and county environmental regulations.

MM-BIO-13. Necessary vegetation clearing and trimming shall occur primarily within the channel bottom and shall be limited to access paths along bank slopes to prevent the potential for erosion problems or trails.

MM-BIO-14: All maintenance activities associated with vegetation clearing, trimming, or sediment removal shall be conducted during nonbreeding season (typically September 15 through February 15) for avian species protected under the Migratory Bird Treaty Act. If maintenance activities must occur during the breeding season, then compliance with MM-BIO-18 would be required.

MM-BIO-15: When possible, the City shall use hand tools for manual vegetation clearing and sediment removal, and will only use heavy equipment when necessary.

MM-BIO-16. Vegetation clearing shall occur outside of the breeding seasons for habitat occupied by CAGN, LBV, SWFL, yellow warbler, and yellow-breasted chat and other avian species (e.g., CAGN, February 15 through August 15; LBV, March 15 through September 15). If vegetation clearing must occur during the CAGN, LBV or SWFL breeding season, a focused pre-activity nest survey shall be conducted work area and 300-foot buffer by the qualified biologist(s) during 3 separate visits (on separate days), with the final visit occurring not more than a minimum of 3 days prior to the start of O&M activities in any given area of the Project area. If no active nests are discovered, O&M activities may proceed. If active nests are observed that could be disturbed by O&M activities, these nests and a 300-foot buffer shall be avoided until the young have fledged and/or the monitor determines that no impacts are anticipated on the nesting birds or their young. The qualified biologist(s) shall be responsible for coordinating with USFWS and CDFW to determine if O&M activities could disturb an active nest and when nests are no longer active. If O&M activities ceases for 5 or more consecutive days during the nesting season, additional nesting bird surveys shall be required to ensure that new nesting locations have not been established.

MM-BIO-17. Noise monitoring shall be conducted if O&M activities are scheduled during the CAGN or LBV breeding season to determine if the O&M-related noise levels will exceed 60 A-weighted decibels (dBA) hourly equivalent sound level (Leq) within 300 feet of the noise source. If nesting CAGN or LBV are in the vicinity of the Project area and O&M activities are occurring during the breeding season, temporary noise attenuation barriers will be built to reduce O&M-related noise to below 60 dBA hourly Leq. The qualified biologist(s) will be responsible for ensuring that noise attenuation barriers are successful at reducing noise levels. Documentation of the noise monitoring results will be provided to USFWS, and CDFW within 45 days of completing the final noise monitoring event.

MM-BIO-18. Vegetation clearing will occur outside of the breeding season for other avian species protected under the Migratory Bird Treaty Act (e.g., February 15 through September 15). If vegetation clearing must occur during the general avian breeding season, a pre-activity nest survey

will be conducted within the O&M activity area and 300-foot buffer by the qualified biologist(s) 3 days prior to the start of O&M activities in any given area of the project area. If no active nests are discovered, maintenance activities may proceed. If active nests are observed that could be disturbed by maintenance activities, these nests and an appropriately sized buffer (typically a 300-foot buffer) will be avoided until the young have fledged and/or the monitor determines that no impacts are anticipated on the nesting birds or their young. If O&M activities ceases for 5 or more consecutive days during the nesting season, additional nesting bird surveys will be required to ensure that new nesting locations have not been established

MM-BIO-19. The established channels within jurisdictional waters shall be maintained (i.e., removal of vegetation, accumulated vegetative detritus, and sediment, tree/shrub trimming, trash and debris removal and maintenance of access paths) on a biannual basis, typically in spring and fall.

MM-BIO-20. Discharge of imported sediment into the wetland/riparian area shall not be permitted under any circumstances.

MM-BIO-21. All maintenance activities associated within in-water project activities (i.e., vegetation clearing or sediment removal) will be conducted outside of the steelhead juvenile migration window (March–May, or when habitat is inaccessible due to ephemeral flows or water temperatures exceed 25 degrees Centigrade).

MM-MIT-1. For unavoidable impacts on special-status species and any corresponding USFWS-designated Critical Habitats and sensitive vegetation communities, mitigation shall be provided by the following measures, in consultation with USFWS and CDFW: The preservation in perpetuity of all natural habitat areas within 11 of the wetland sites (excludes Sites 3 and 4, as Site 4 is a new mitigation site for Crown Valley Park Wetland Creation Area J03P01 [401 Certification: R9-2015-0098; 1602 Permit: 1600-2015-0098]) and therefore is already protected and Site 3 is a series of wetland treatment ponds that will be entirely maintained). A permanent protection mechanism (e.g. restrictive covenant) shall be placed upon the land and the City shall manage the land in perpetuity or transfer the land to an approved land manager. The City or subsequent land manager shall implement the O&M plan, managing and monitoring the 13 sites described herein to preserve the habitat, functions, and values in accordance with the goals identified in the O&M plan. The land manager shall be responsible for receiving any necessary permits to conduct long-term O&M activities identified in the plan. Activities to preserve the natural vegetation communities may include enhancement activities.

MM-MIT-2. Maintenance would not permanently remove habitat and would not change the designation of the area as a water of the U.S. or State. Mitigation for unavoidable impacts to the functions and services performed by the aquatic water resources jurisdictional to USACE, CDFW, or RWQCB shall be provided by the following measures, in consultation with USACE, CDFW, and/or RWQCB:

- The preservation in perpetuity of all natural habitat areas and streambeds within 11 of the wetland sites (excludes Sites 3 and 4, as Site 4 is a new mitigation site for Crown Valley Park Wetland Creation Area J03P01 [401 Certification: R9-2015-0098; 1602 Permit: 1600-2015-0098]) and therefore is already protected and Site 3 is a series of wetland treatment ponds that will be entirely maintained). A permanent protection mechanism (e.g., restrictive covenant) shall be placed upon the land and the City shall manage the land in perpetuity or transfer the land to an approved land manager. The City or subsequent land manager shall implement the O&M plan, managing and monitoring the wetland sites described herein to preserve the habitat,

functions, and values in accordance with the goals identified above. Activities to preserve the natural vegetation communities may include enhancement activities.

The rehabilitation and enhancement of up to 2.37 acres of wetland and riparian habitat located within Site 13, Salt Creek. The City shall preparing a Habitat Mitigation and Monitoring Plan (HMMP) to be submitted to the USACE, CDFW, and RWQCB for final approval. The HMMP will include the location and type of mitigation proposed as well as outline the maintenance and monitoring program proposed for the 5 Year maintenance and monitoring period. Maintenance areas would continue to provide most wetland functions at the current level; the maintenance work would restore the wetland sites' hydrology; habitat connectivity in the channel would be retained. Only a few functions, such as energy dissipation, nutrient cycling, particulate retention, and plant communities would be slightly degraded; other functions, including surface water storage and organic carbon export, would be improved. Minimization of maintenance needs would preserve vegetation to the extent feasible, maintain habitat connectivity, and improve habitat quality for sensitive species. After maintenance is performed, natural substrate and tree canopy cover would remain, and shrubby and herbaceous vegetation would recover and return; this would result in successional growth, which is advantageous for many species, including LBV (for the case of Site 13).

6.1 Maintenance Activity Notification

The City will submit a pre-maintenance notification to the resource agencies annually, detailing the current status of the wetland sites and the maintenance in accordance with this O&M Plan to be undertaken during the following maintenance year. The notification will also include the anticipated schedule and dates for work at each wetland site proposed for maintenance, minimization measures to be implemented, and biological monitor information.

6.2 Post-Maintenance Summary Report

At the end of the maintenance year (i.e., June 30), a post-maintenance summary will be prepared and submitted to the agencies documenting the activities and actual acreage of impacts that occurred under this O&M Plan for the year. A post-maintenance letter report will be provided 60 days after the conclusion of the maintenance year by the biological monitor and will substantially follow the form provided in Appendix C. The report will include dates of work, minimization measures implemented, incidental wildlife observations, any issues or concerns that need short- and/or long-term attention (e.g., weed control, sediment removal, vector control), any adaptive management or changes in the maintenance and monitoring program that appear warranted based on monitoring results to date, and before and after photographs. The report details and timing may be modified during the permitting process by the USACE, RWQCB, and/or CDFW.

Chapter 7

Conclusion

This O&M Plan is a systematic plan for continued flood channel maintenance within the 13 wetland sites that not only achieves successful flood control protection, but ensures sustainability of existing aquatic resources and downstream water quality are being met. This O&M Plan provides background information, the project description, a description of flood control maintenance activities within each wetland site, and monitoring requirements. The preventative maintenance detailed in this document defines a strategy that would help lessen the need to implement drastic maintenance actions, such as mass clearing and removal of sediment and vegetation under emergency situations, and prevent damage to public infrastructure such as bridges and roads. By limiting actions to the minimum necessary to maintain positive hydraulic flows through the wetland sites, the overall impact on the biological and ecological integrity of the watershed would be minimized while meeting the flood control and safety needs of the City.

Chapter 8

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Appendix A

Figures

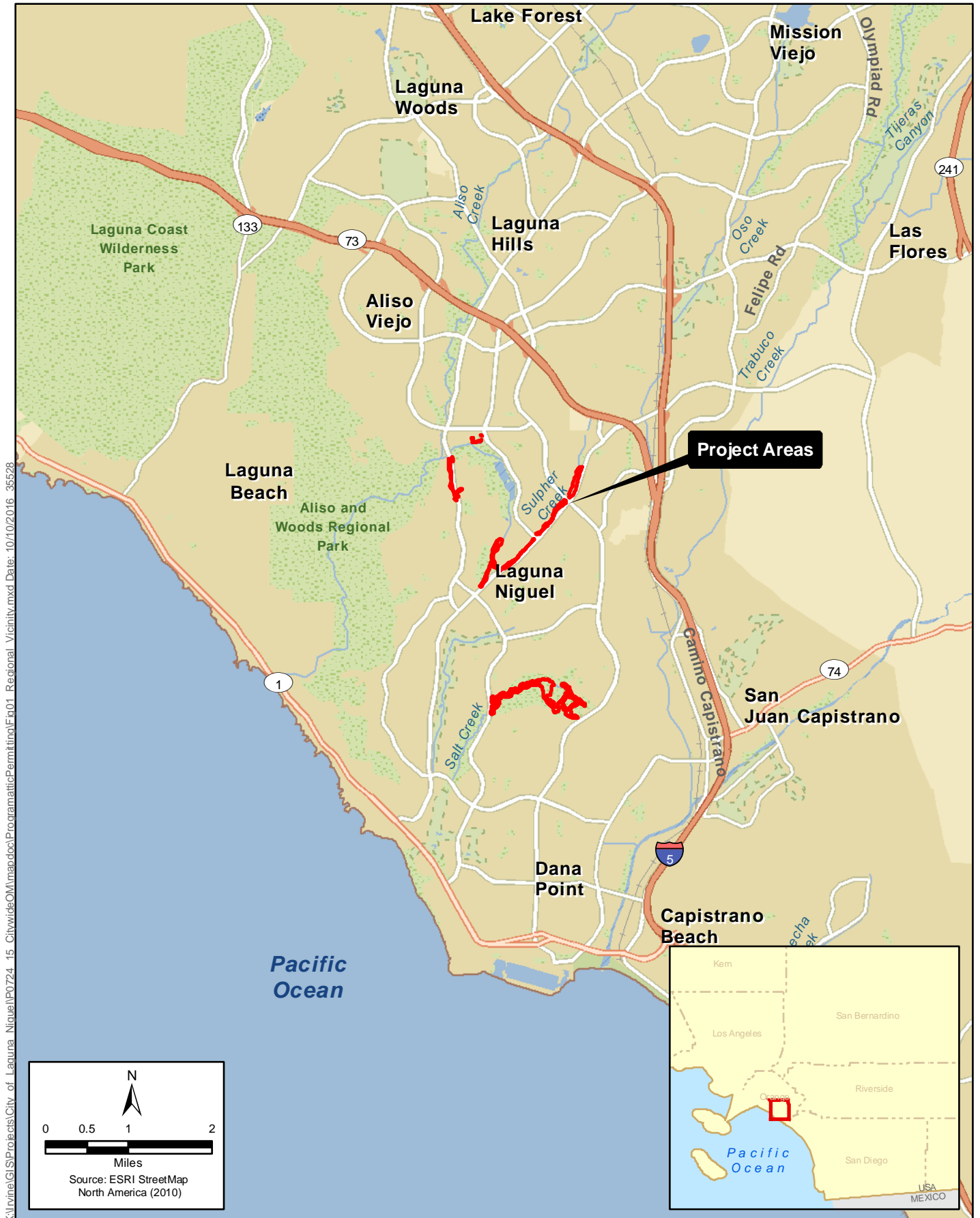


Figure 1
Vicinity Map
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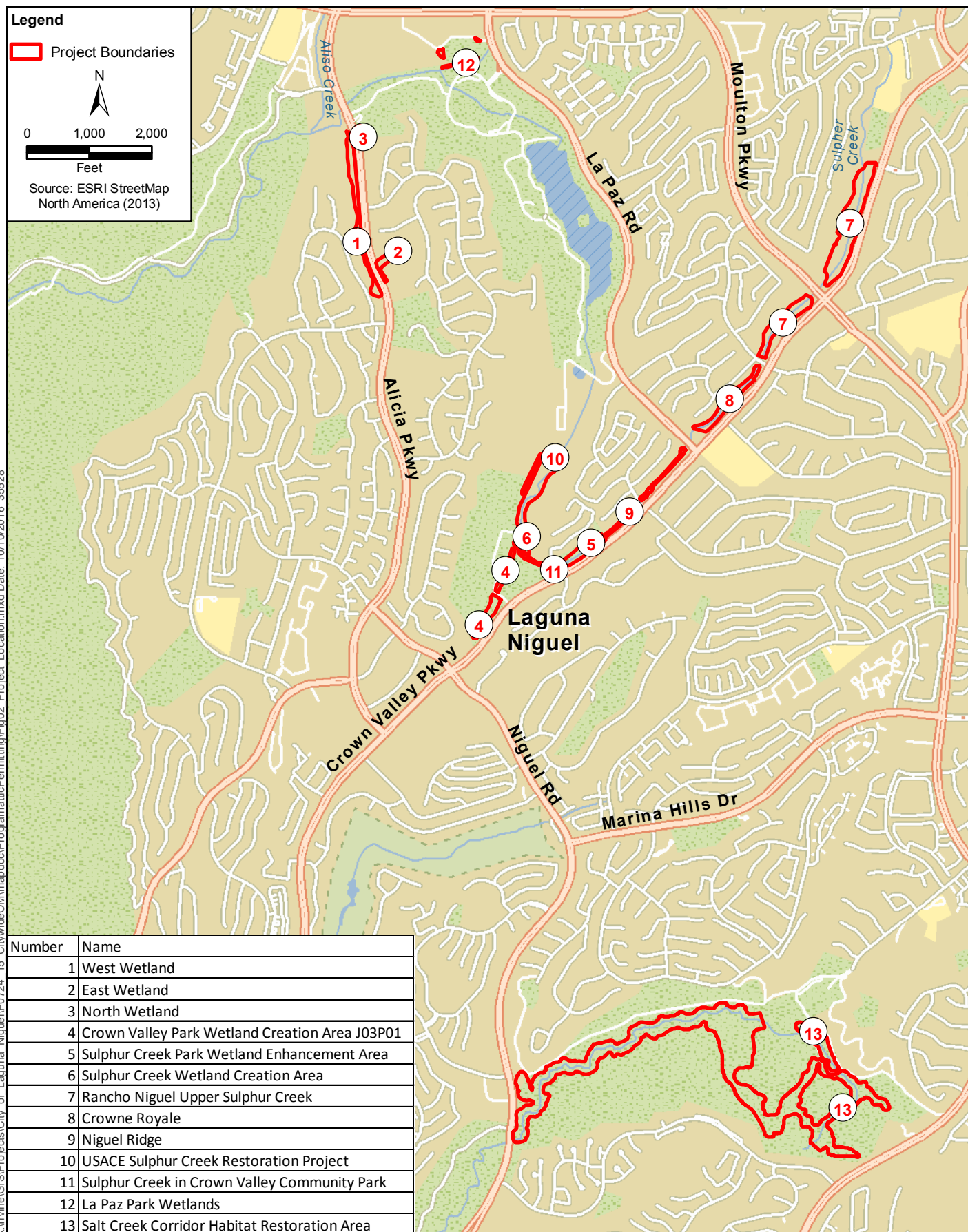


Figure 2
Project Location
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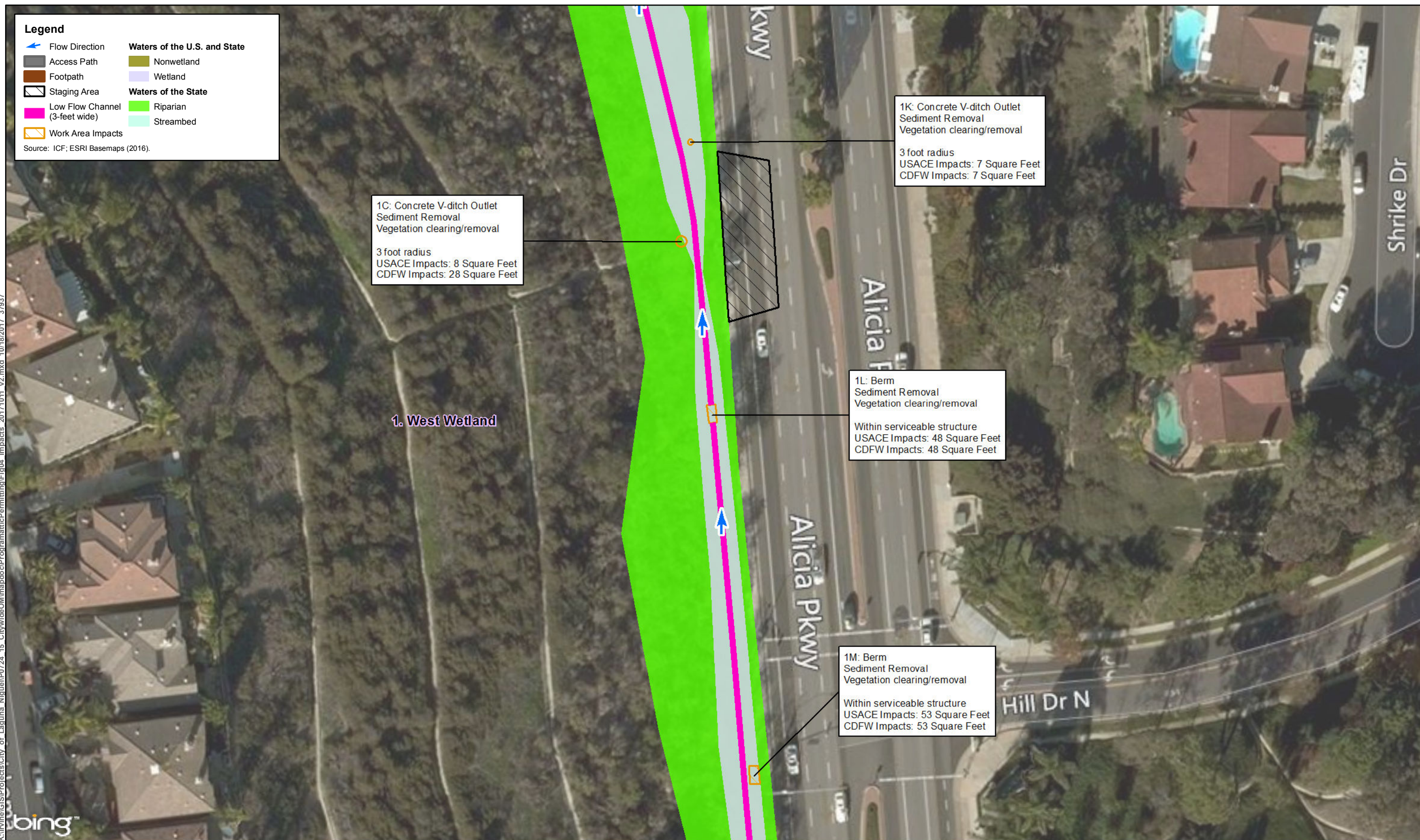
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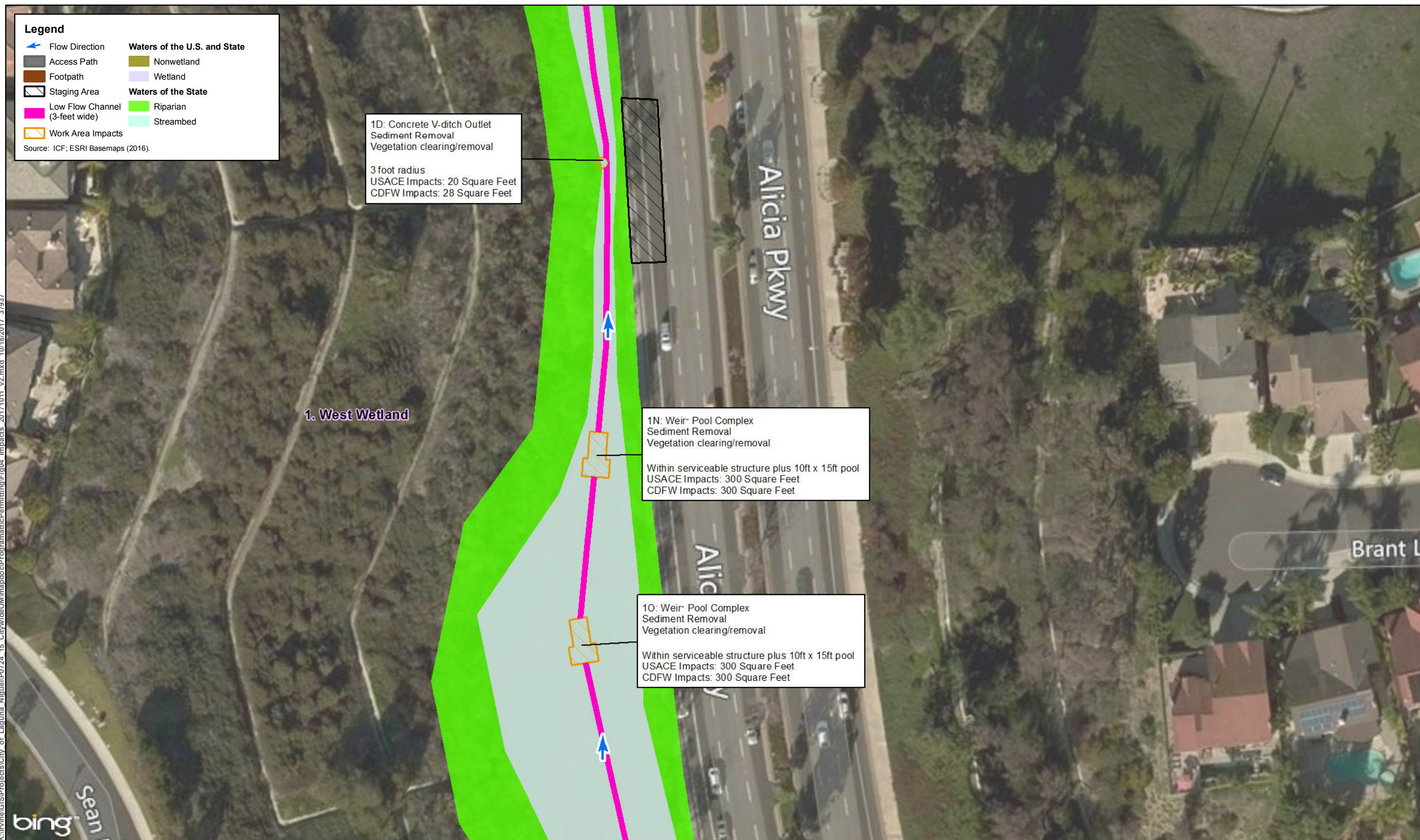
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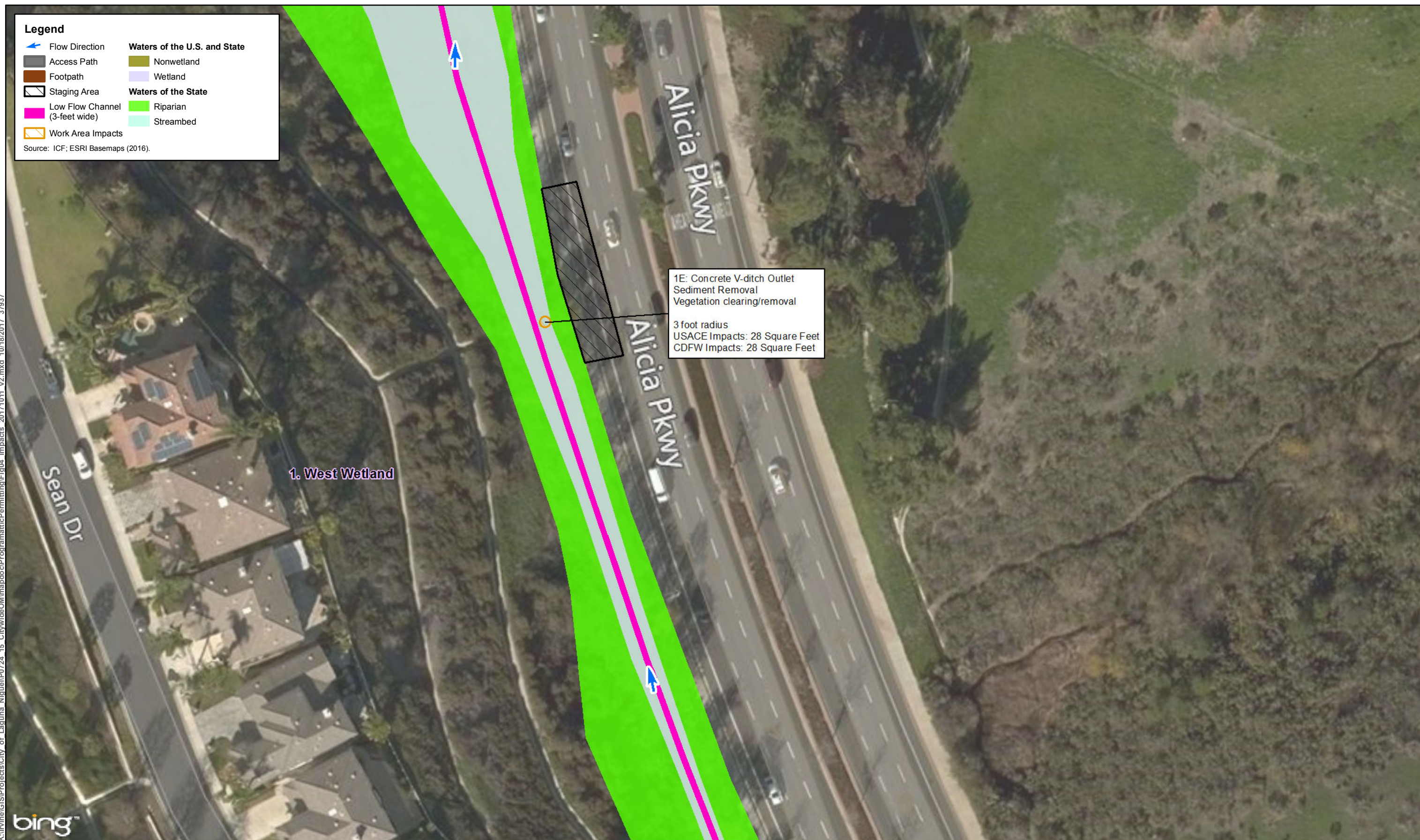
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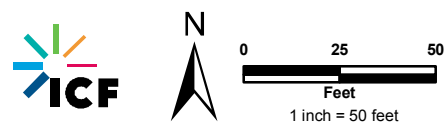
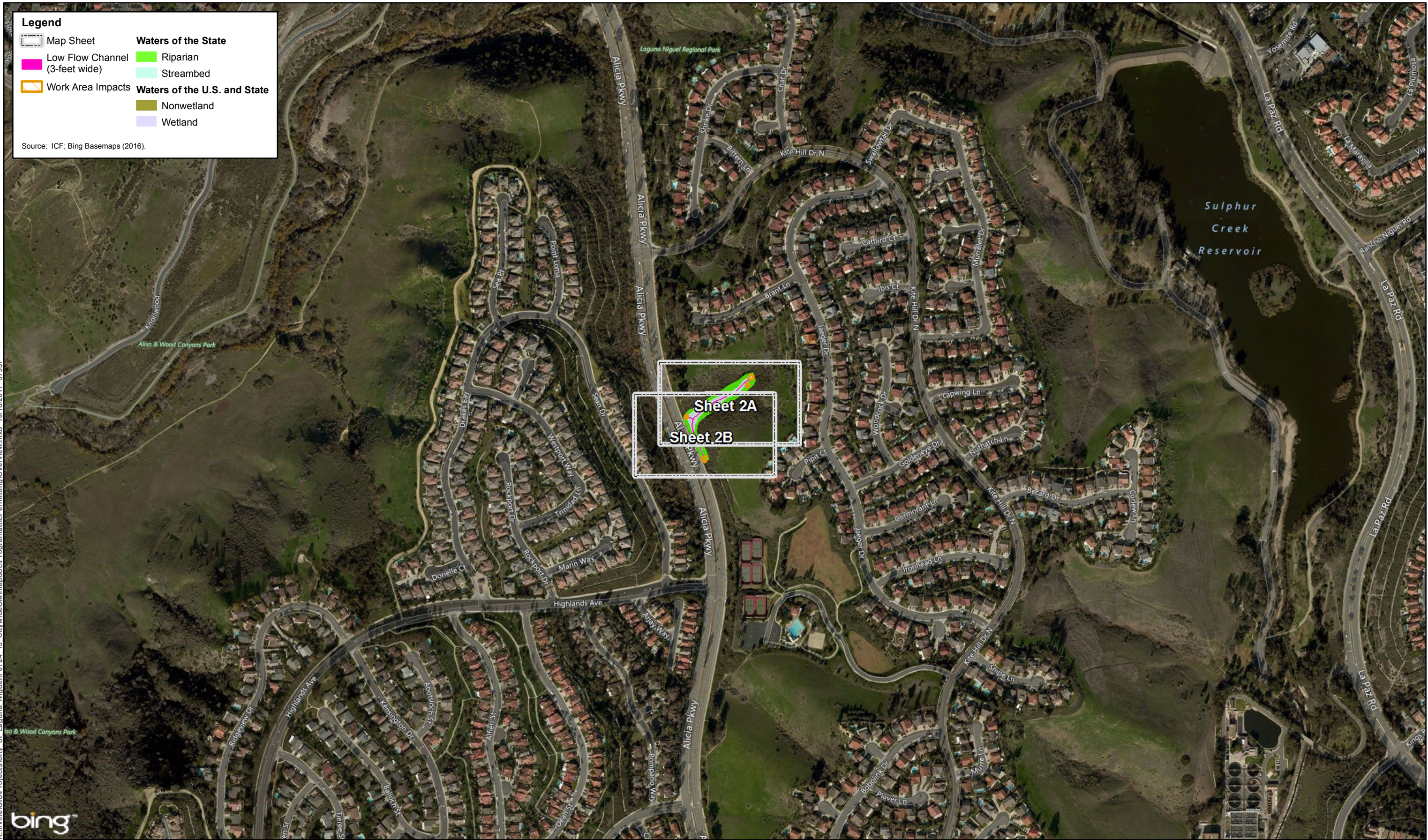


Figure 3-1F
1. West Wetland
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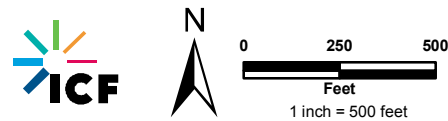
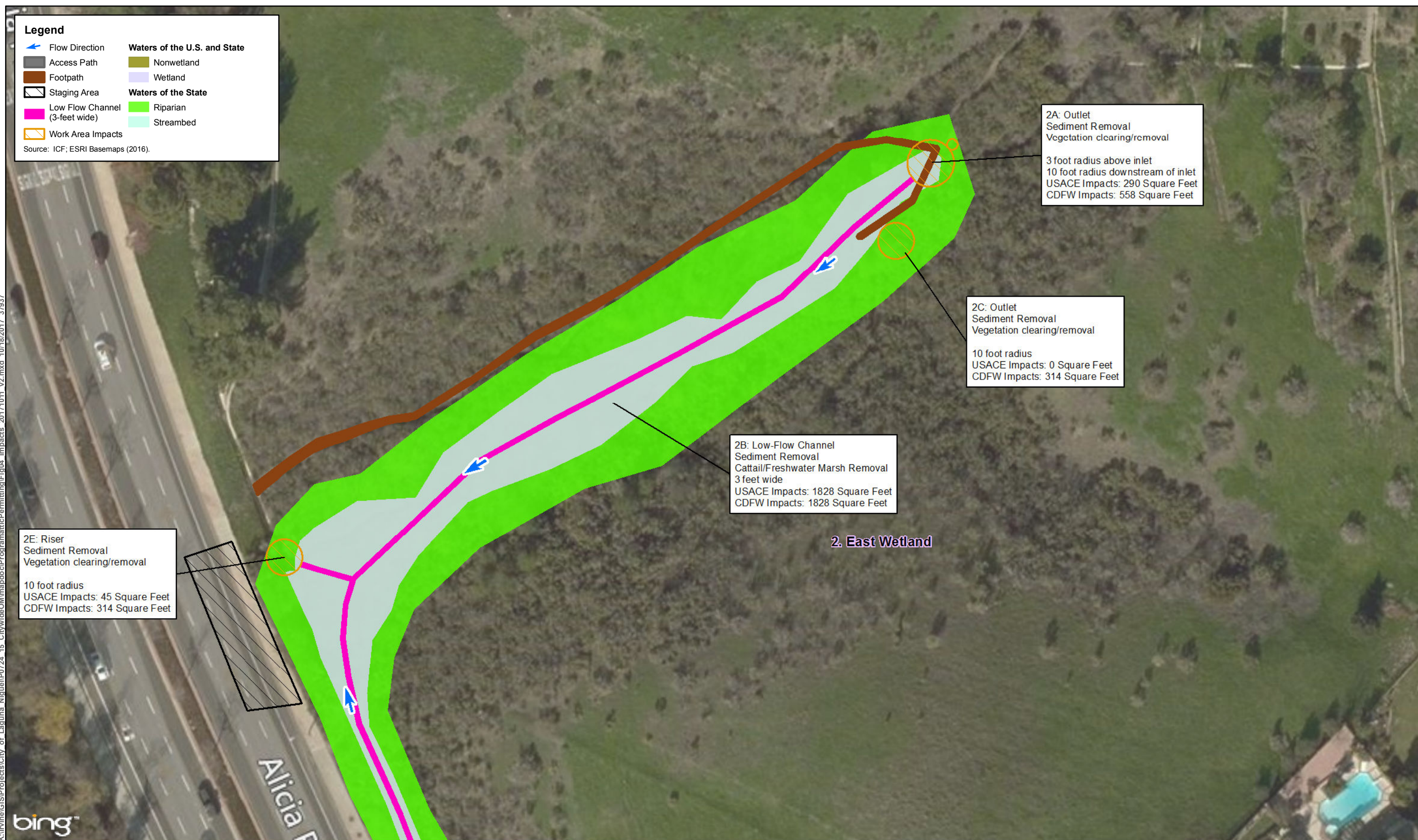
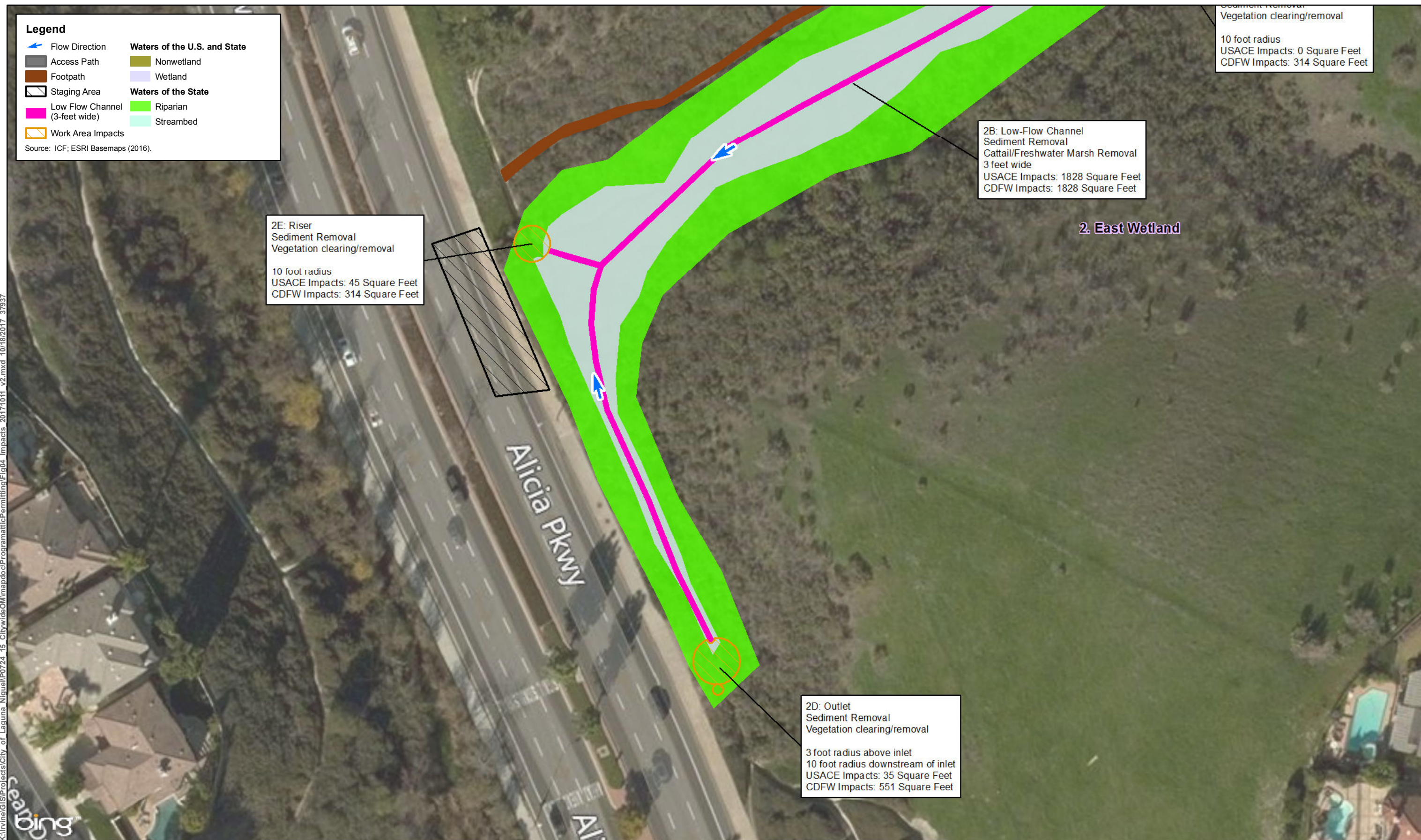


Figure 3-2 Overview
2. East Wetland
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Figure 3-4 Overview

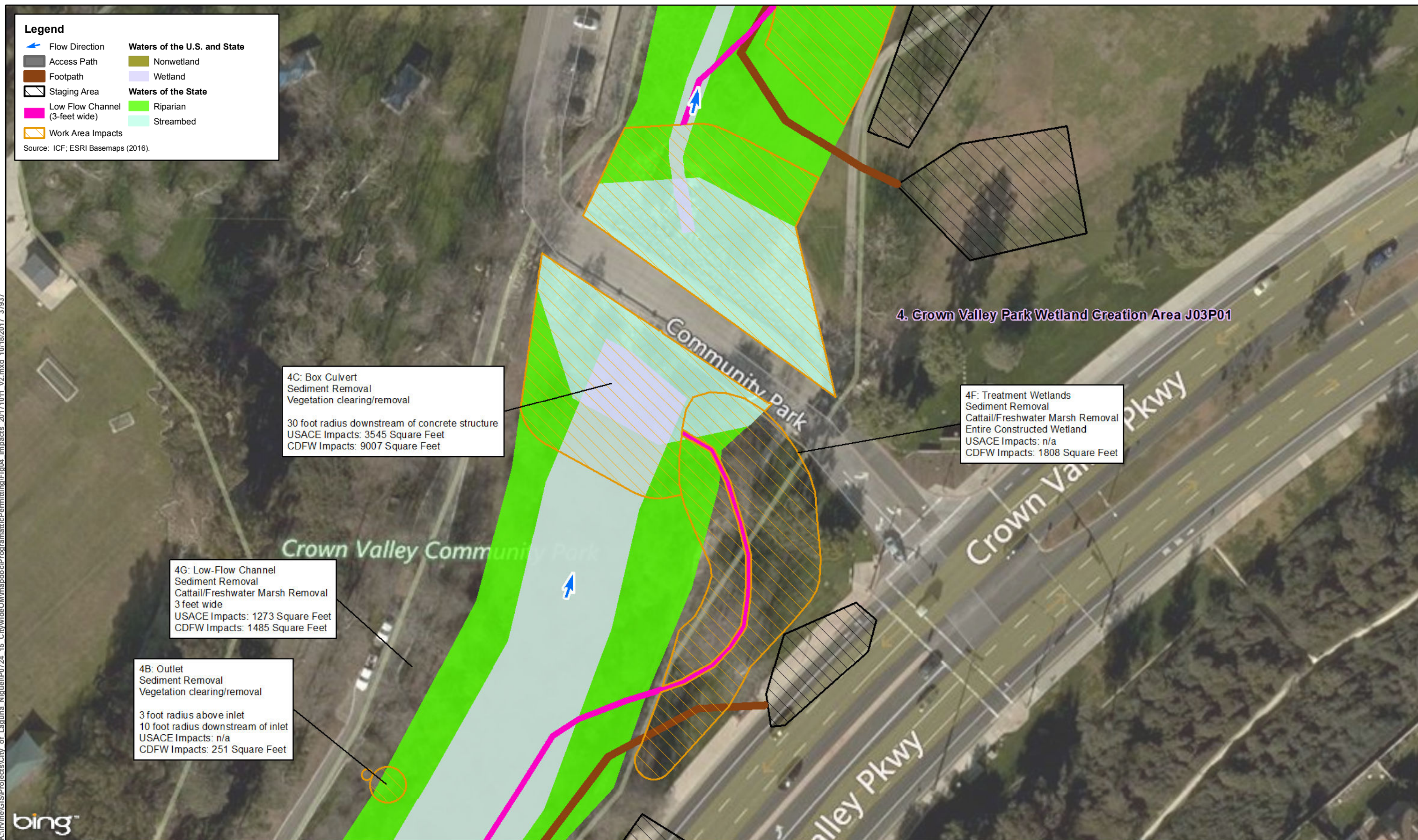
4. Crown Valley Park Wetland Creation Area J03P01
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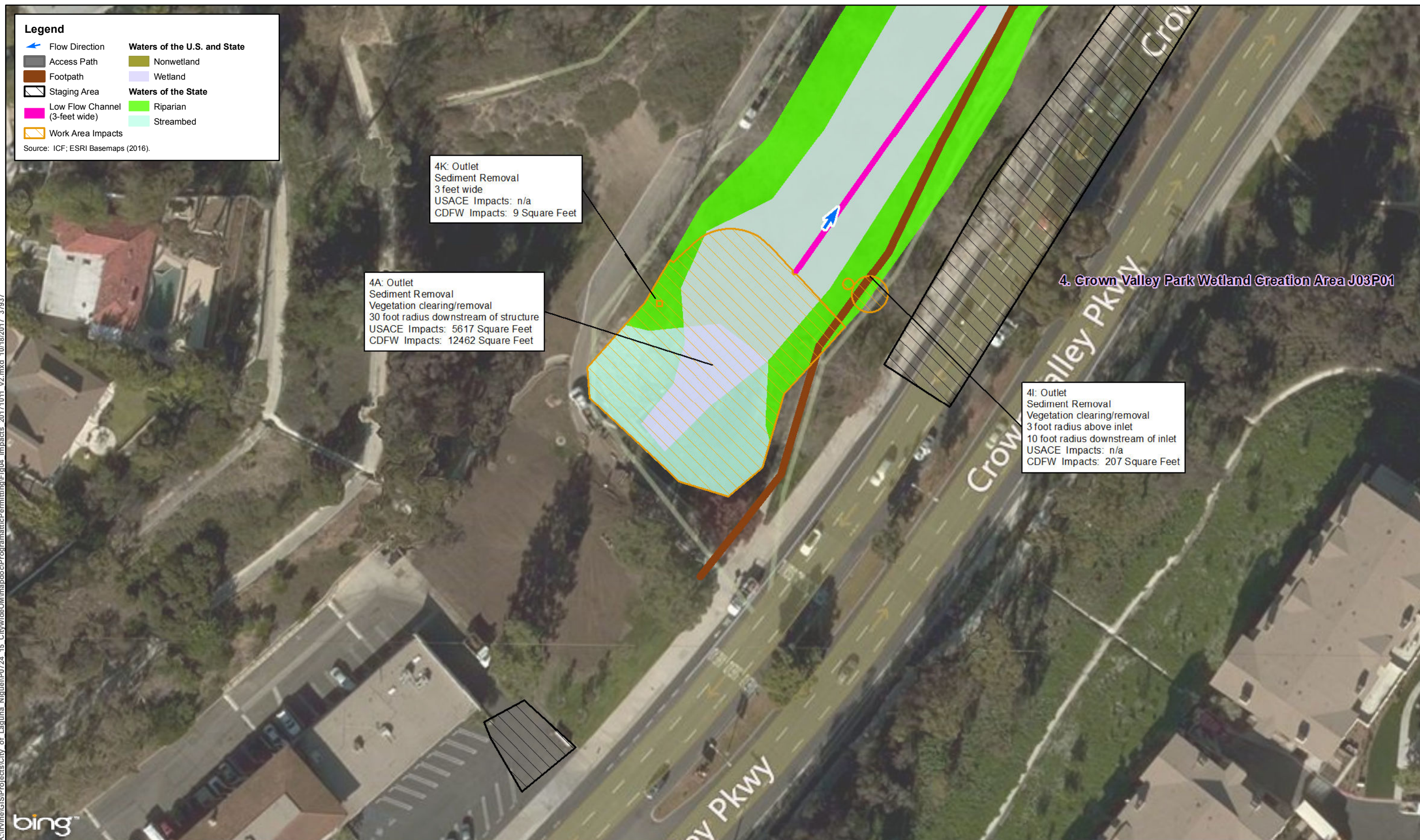


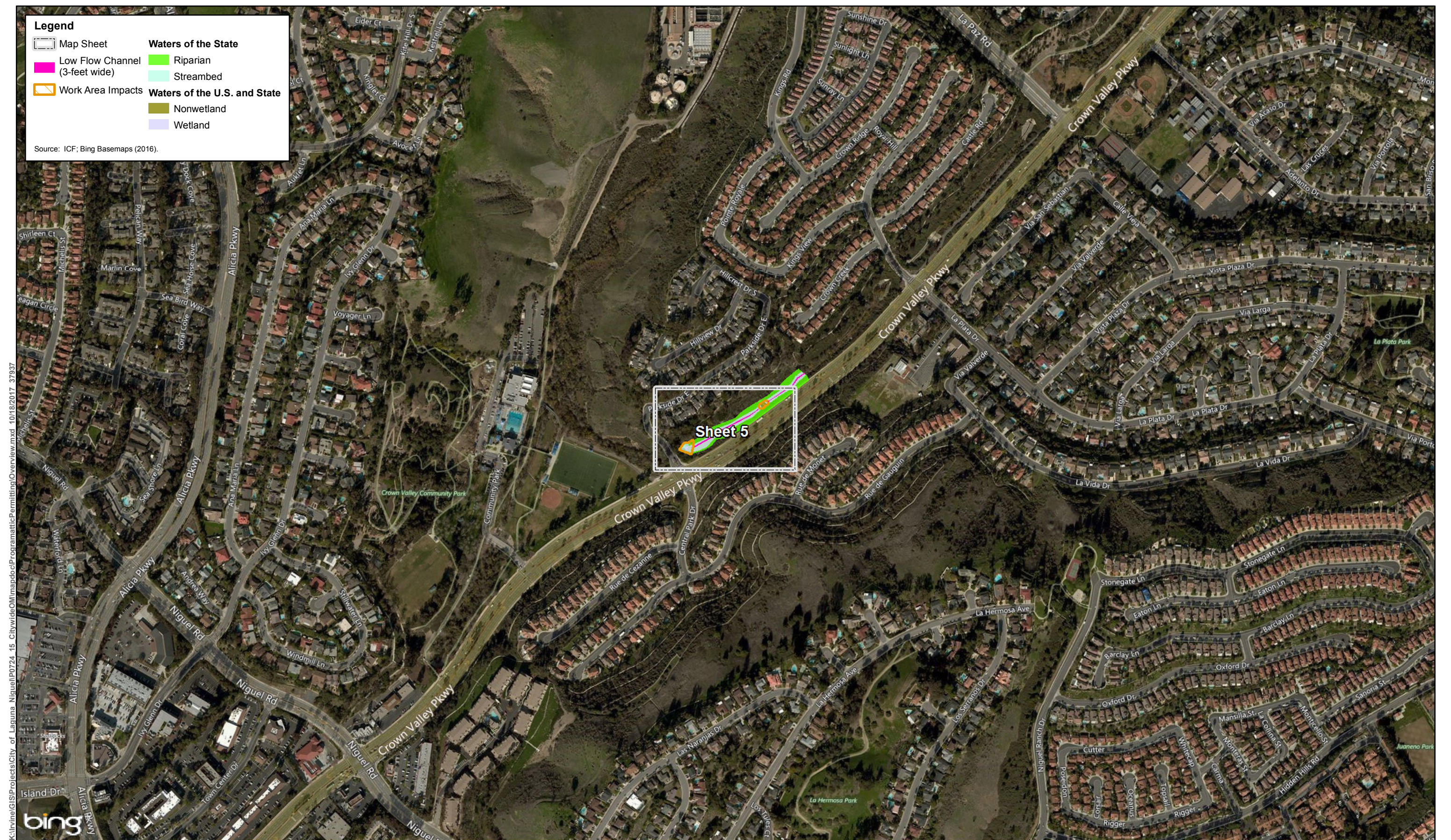
Figure 3-4A
4. Crown Valley Park Wetland Creation Area J03P01
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Figure 3-5 Overview
5. Sulphur Creek Park Wetland Enhancement Area
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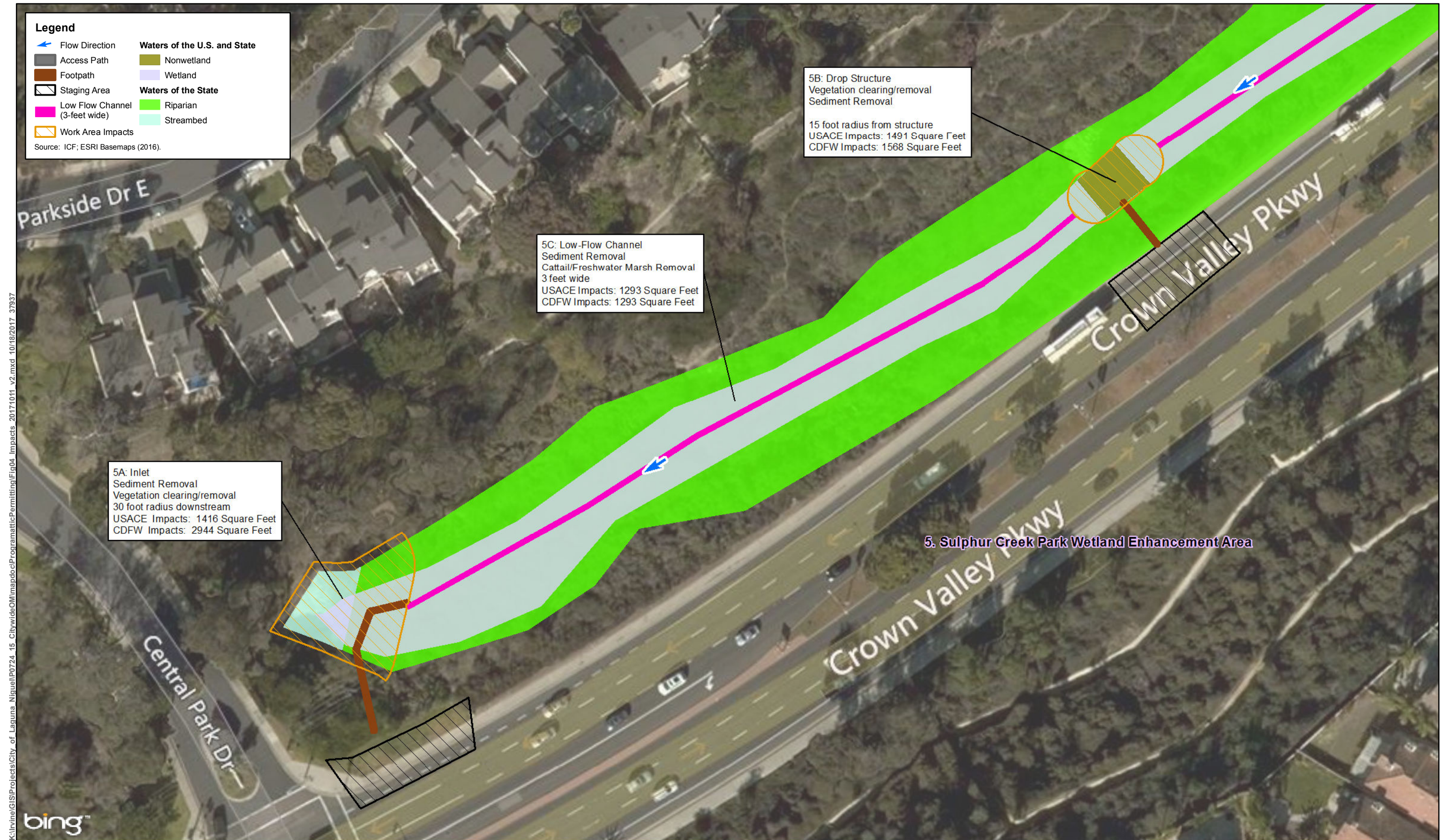
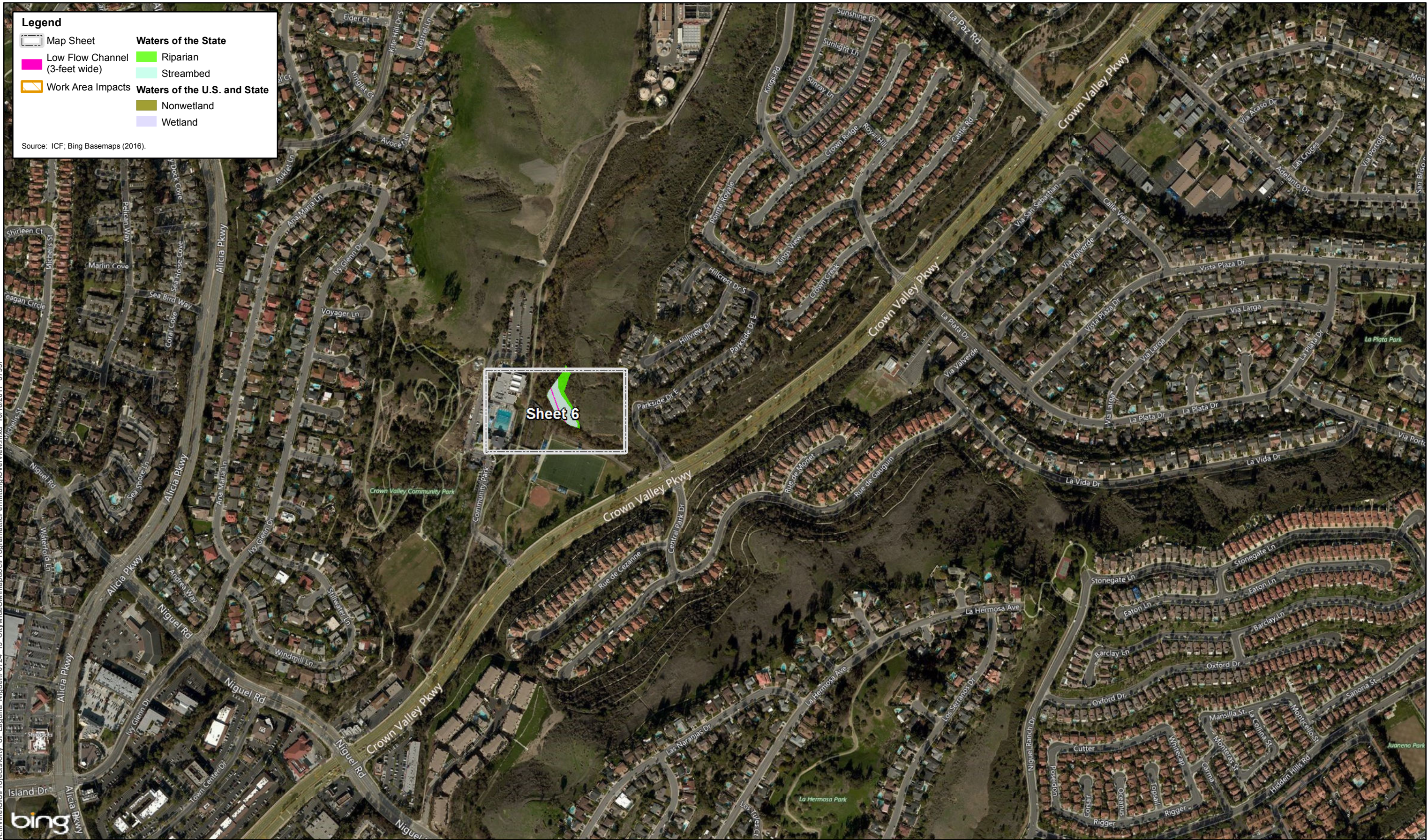


Figure 3-5
5. Sulphur Creek Park Wetland Enhancement Area
City of Laguna Niguel Programmatic Permitting



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Figure 3-6 Overview
 6. Sulphur Creek Wetland Creation Area
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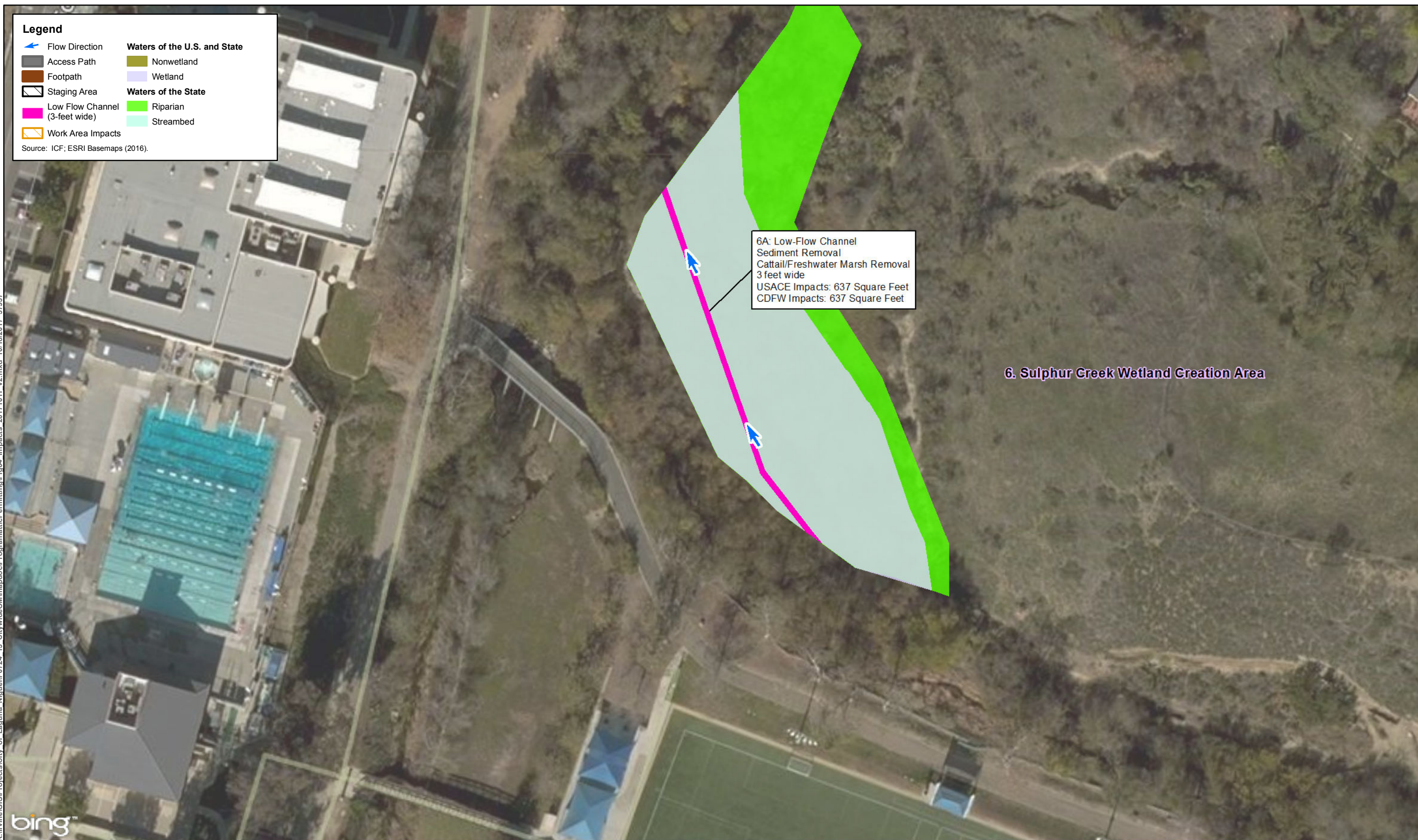
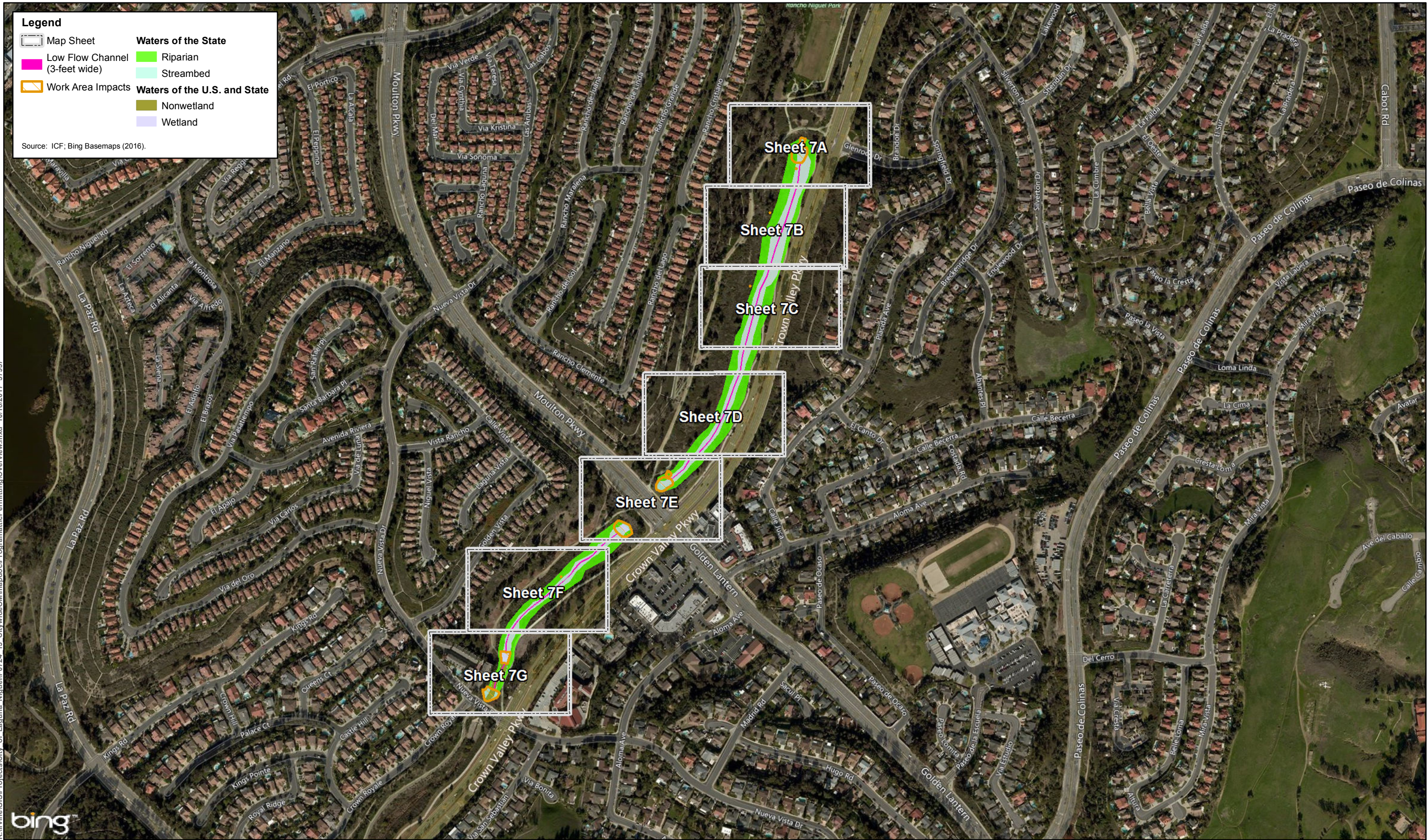


Figure 3-6
6. Sulphur Creek Wetland Creation Area
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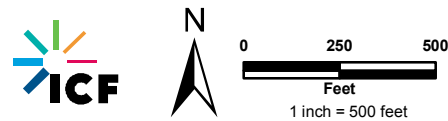
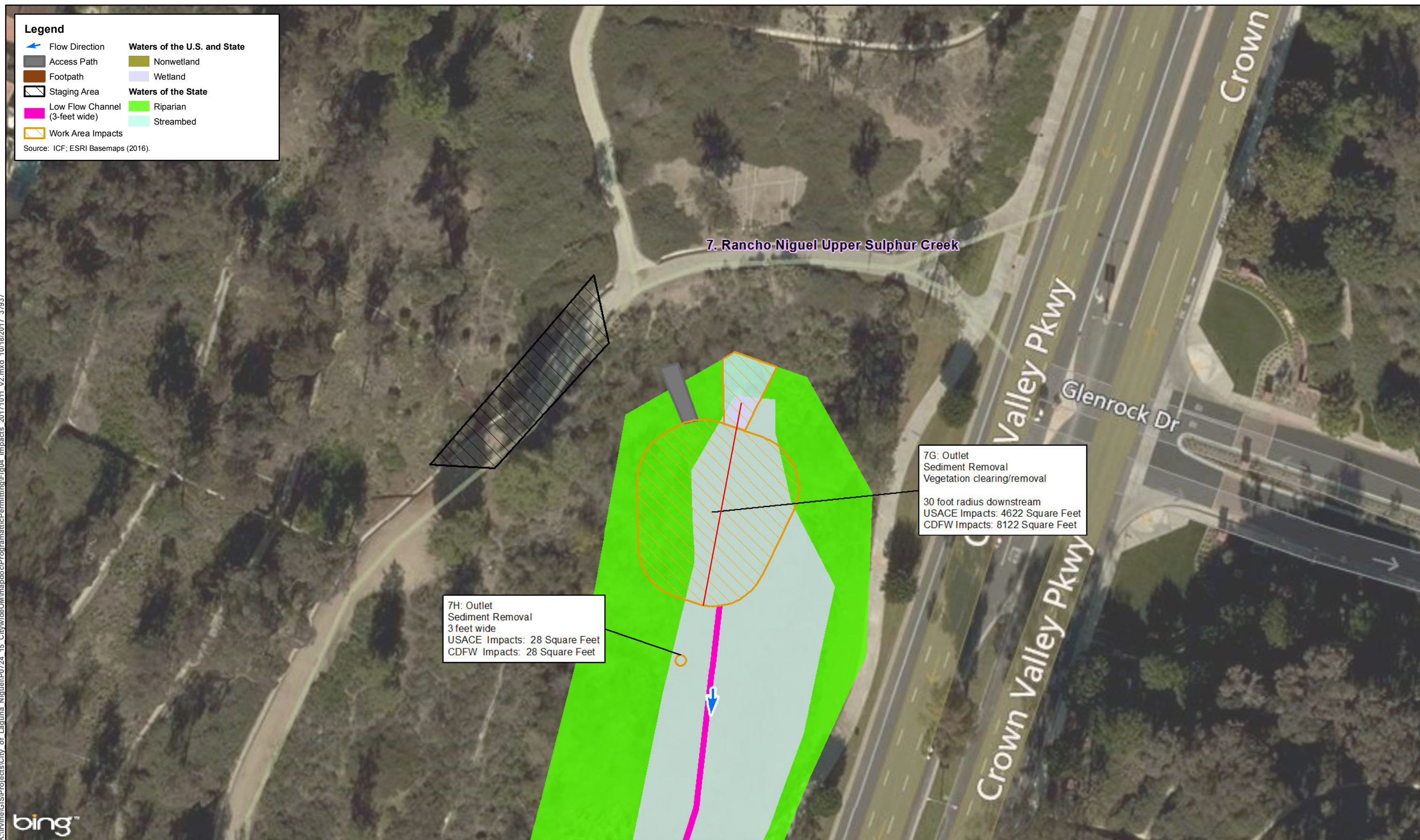


Figure 3-7 Overview
 7. Rancho Niguel Upper Sulphur Creek
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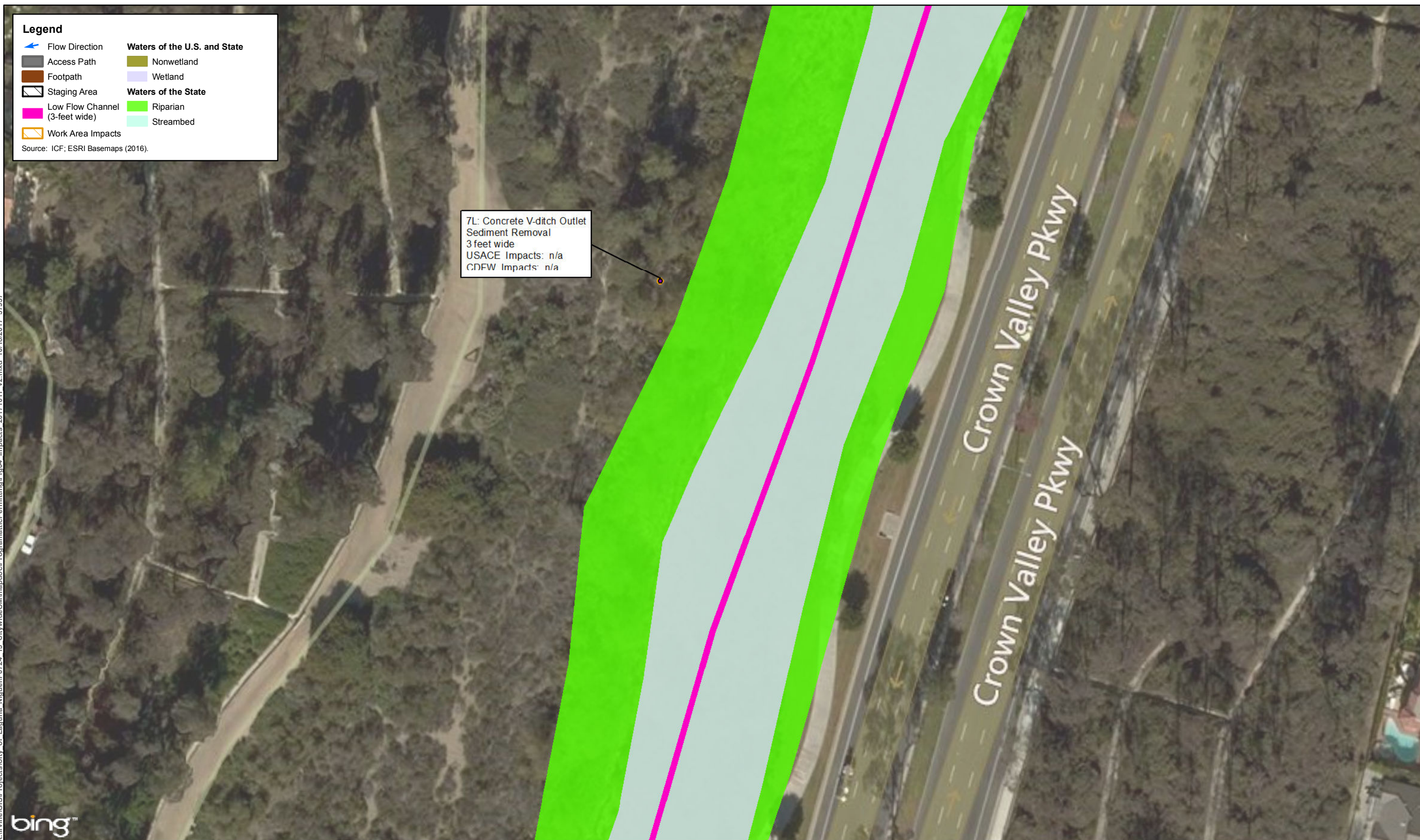
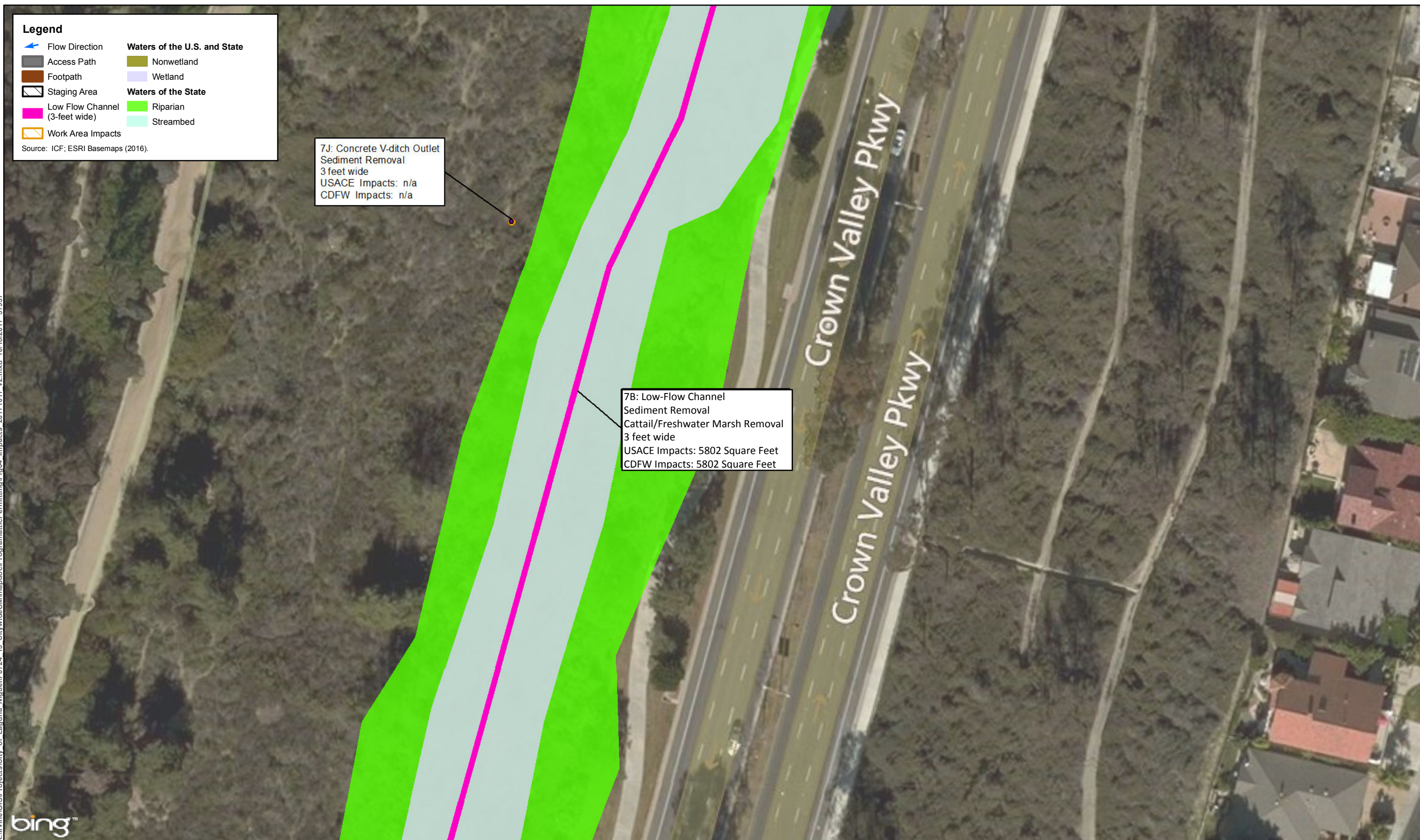


Figure 3-7B
7. Rancho Niguel Upper Sulphur Creek
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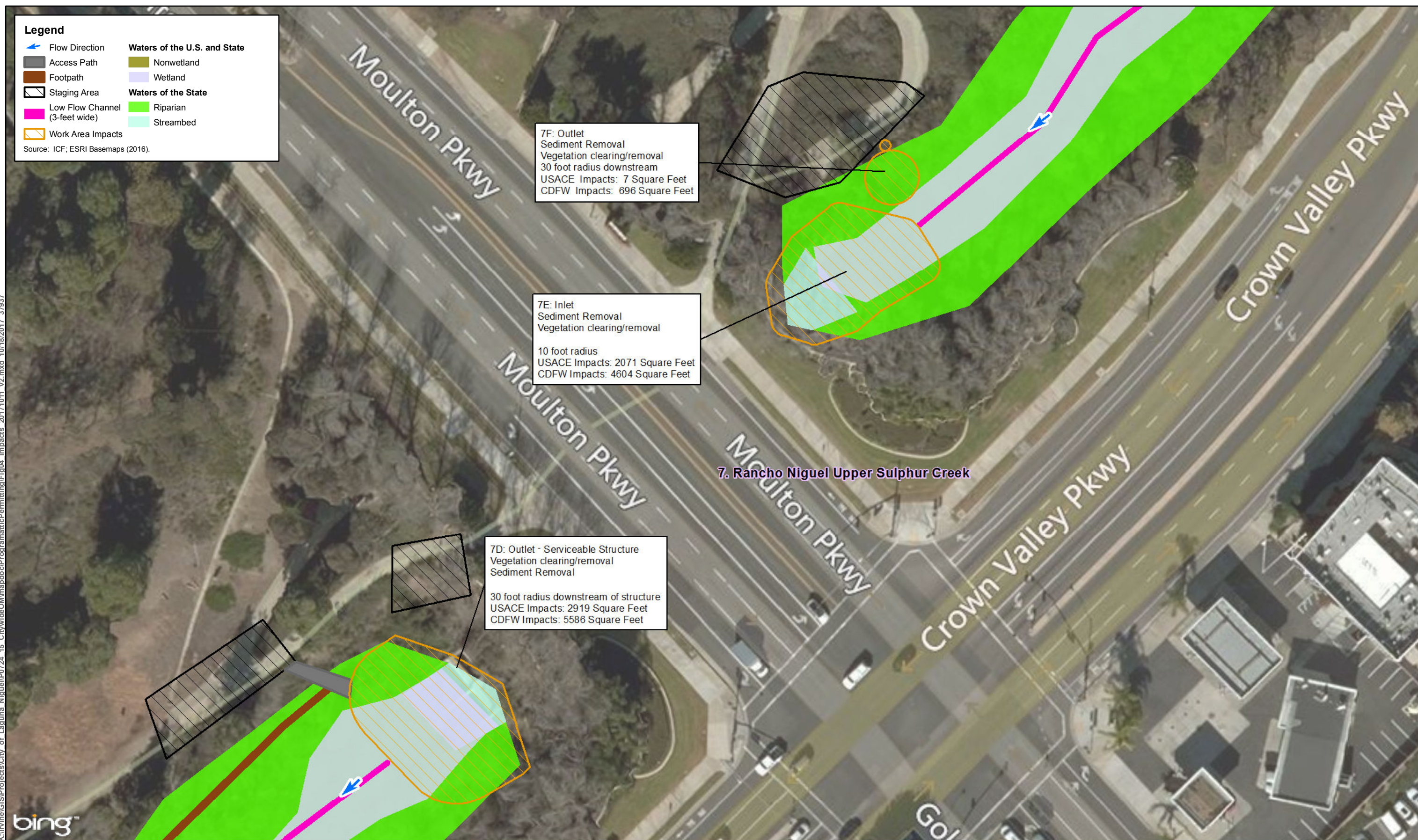
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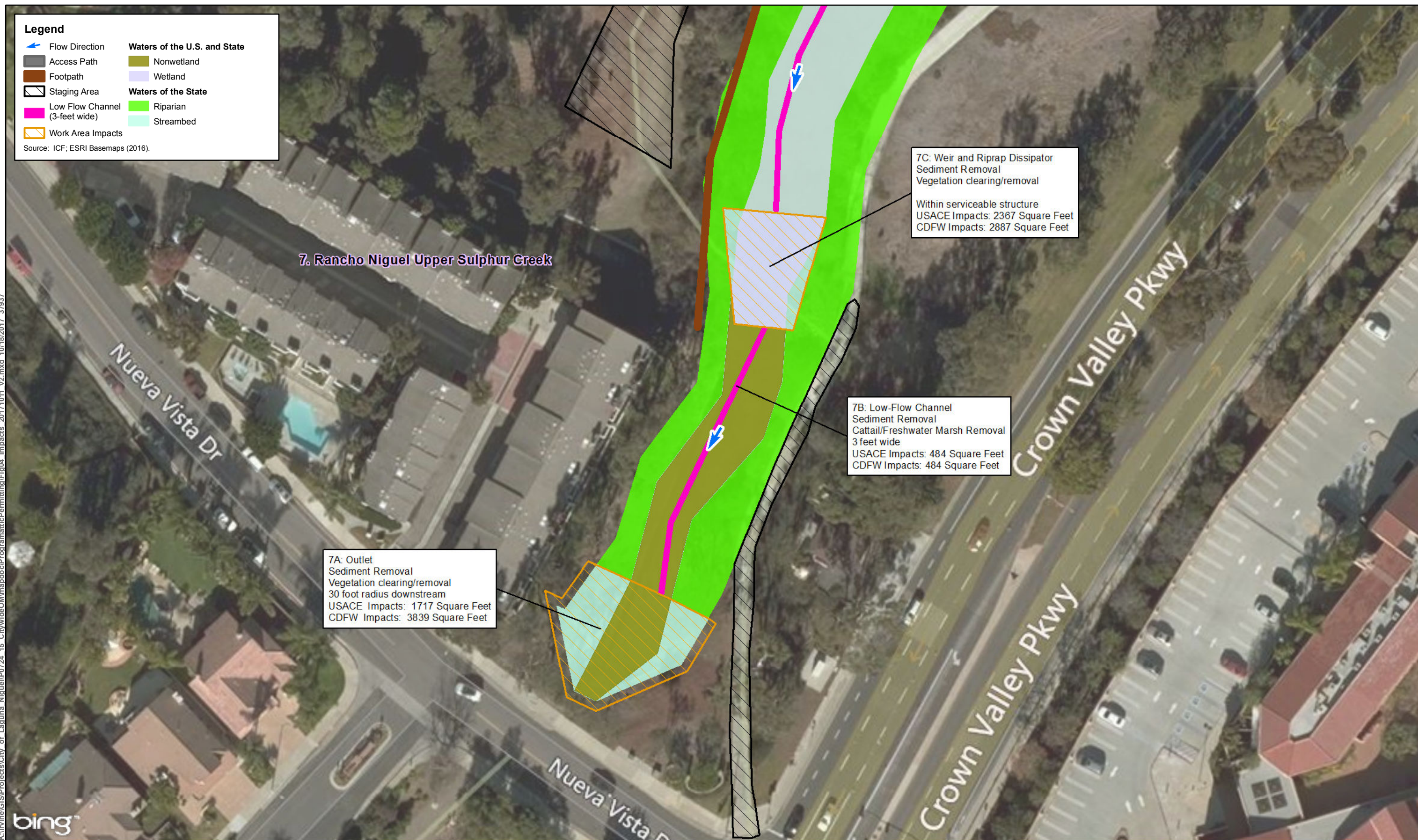
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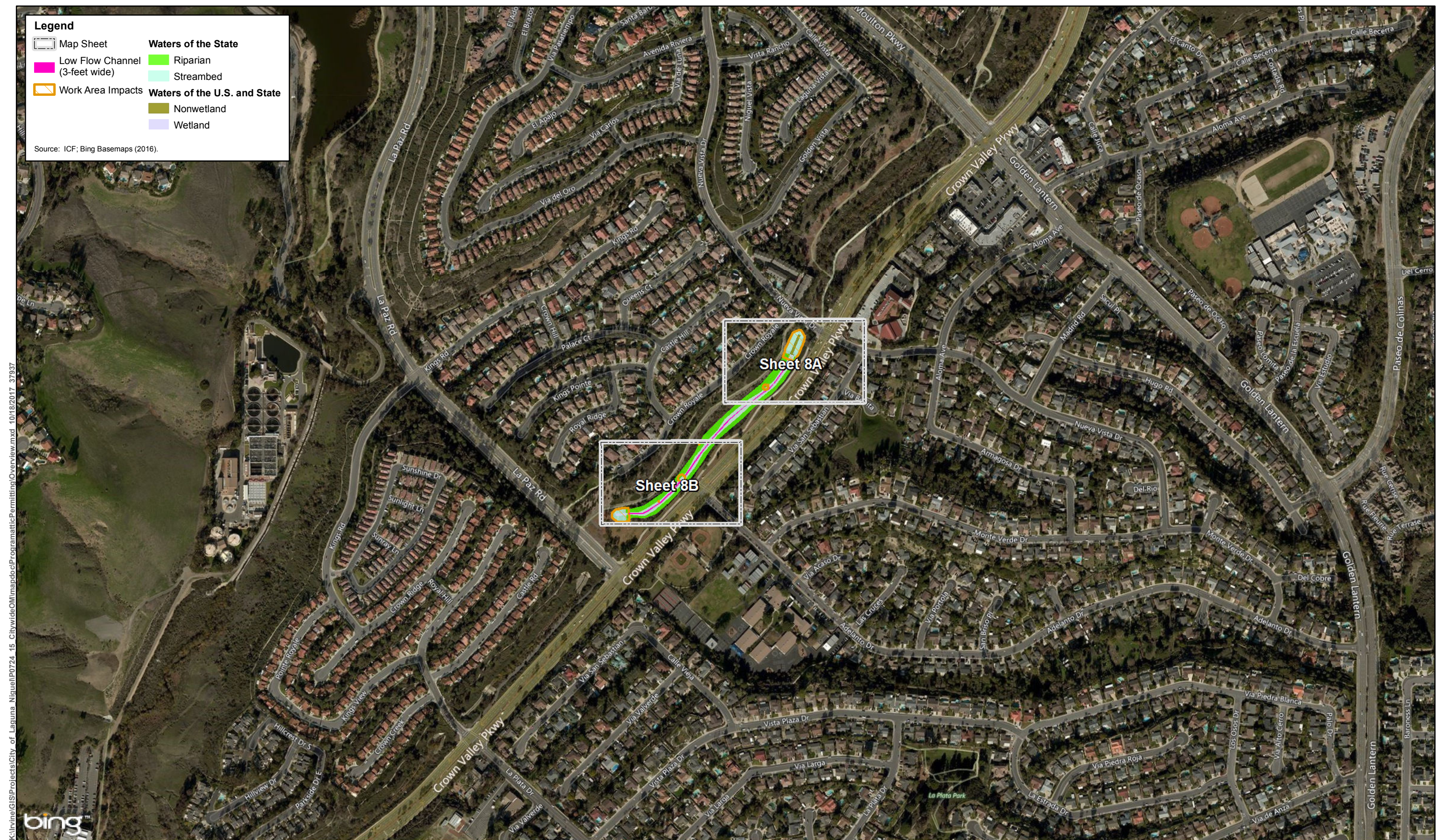


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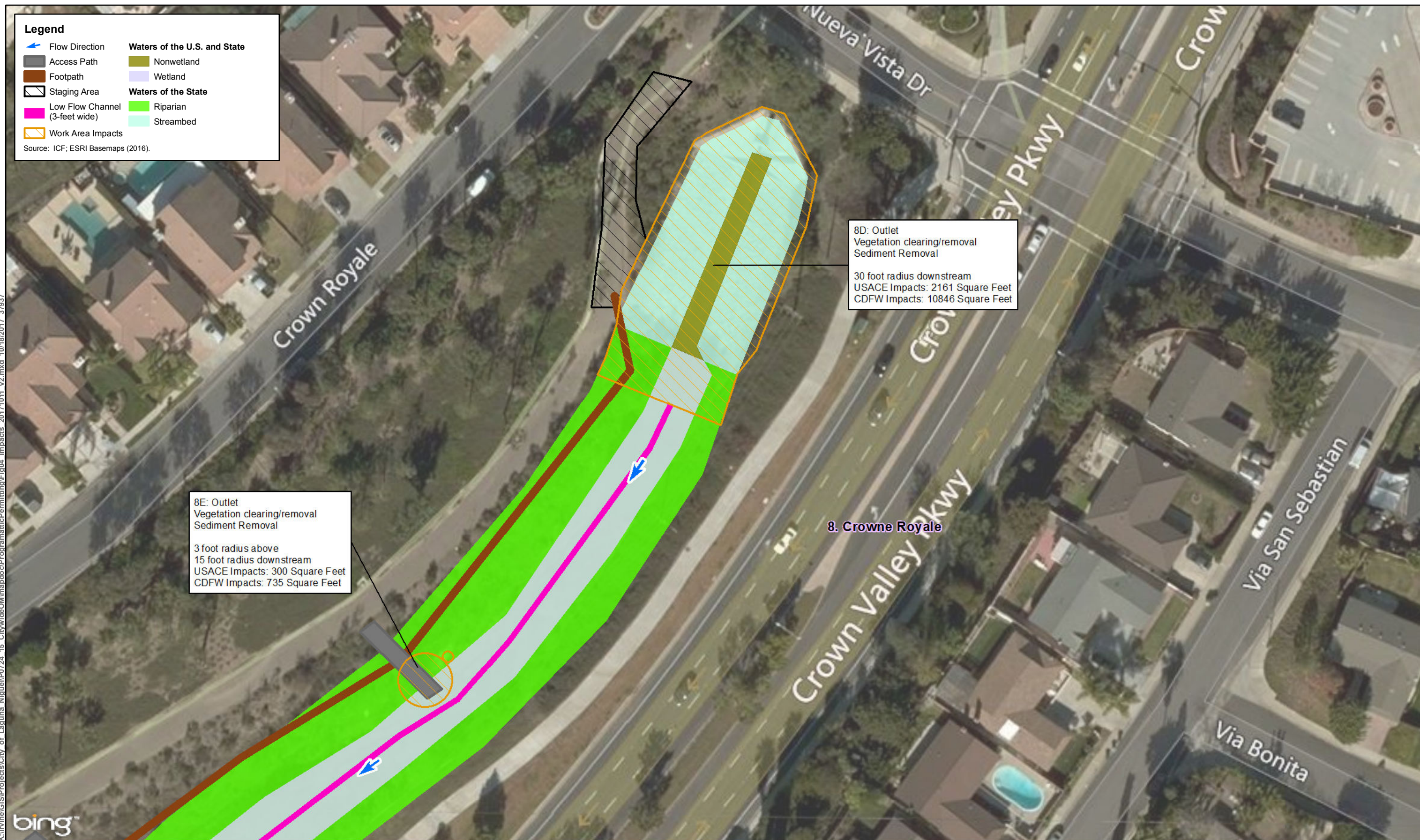


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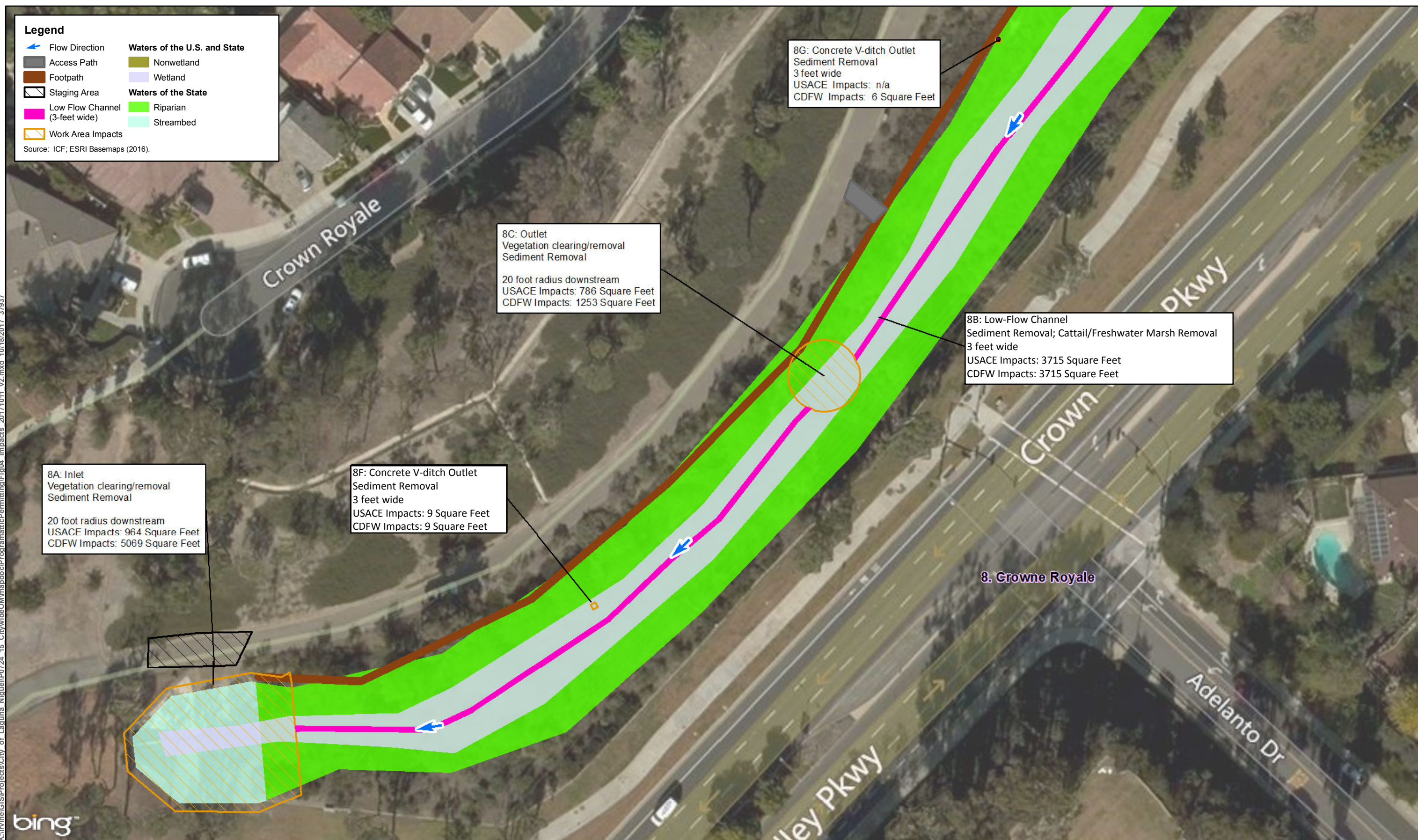


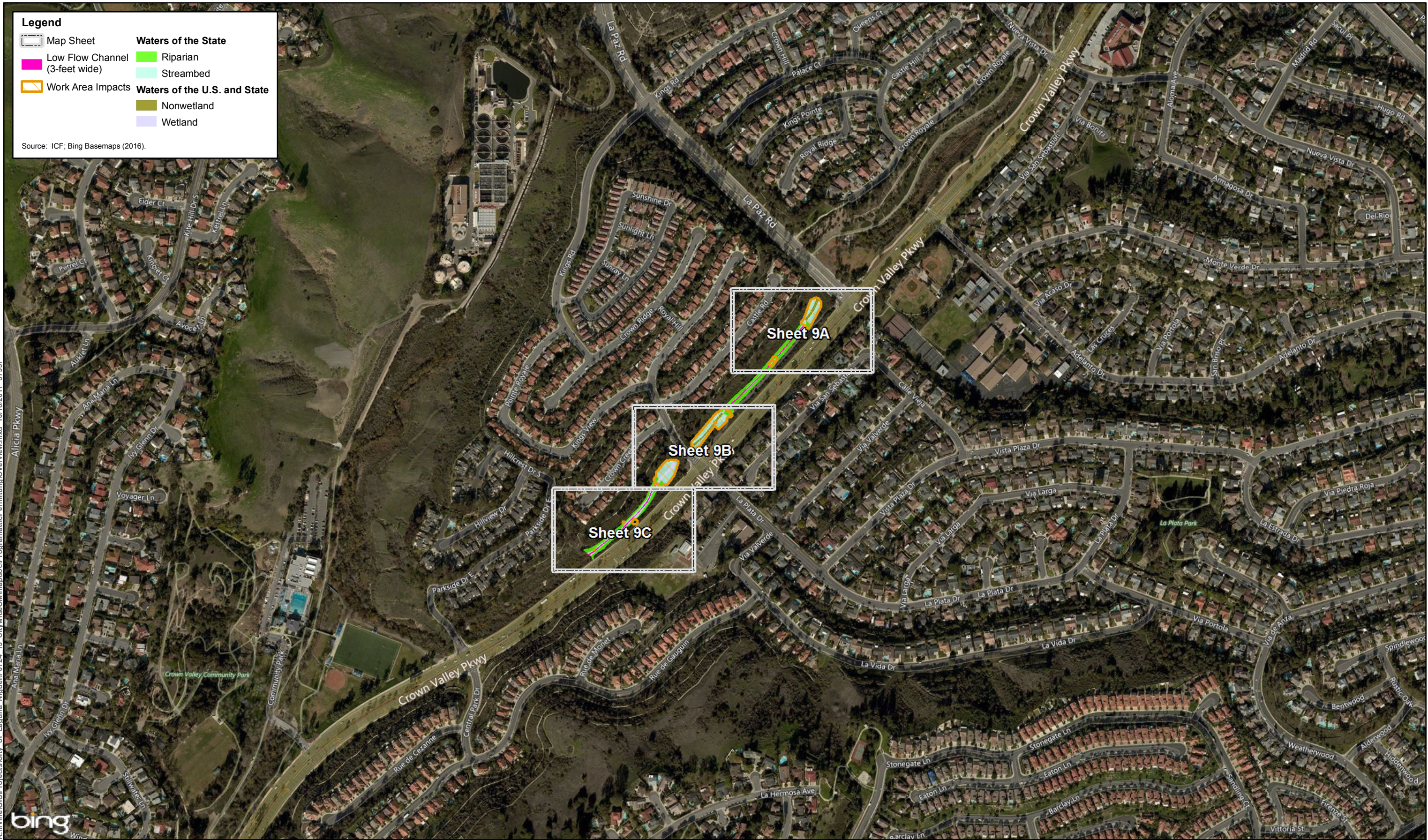


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Figure 3-9 Overview
9. Niguel Ridge
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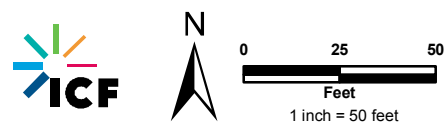


Figure 3-9A
9. Niguel Ridge
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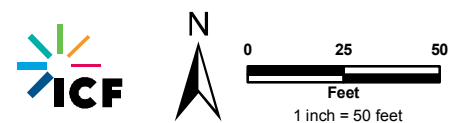


Figure 3-9B
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Figure 3-10 Overview
 10. USACE Sulphur Creek Restoration Project
 City of Laguna Niguel Programmatic Permitting

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Figure 3-10C
10. USACE Sulphur Creek Restoration Project
City of Laguna Niguel Programmatic Permitting

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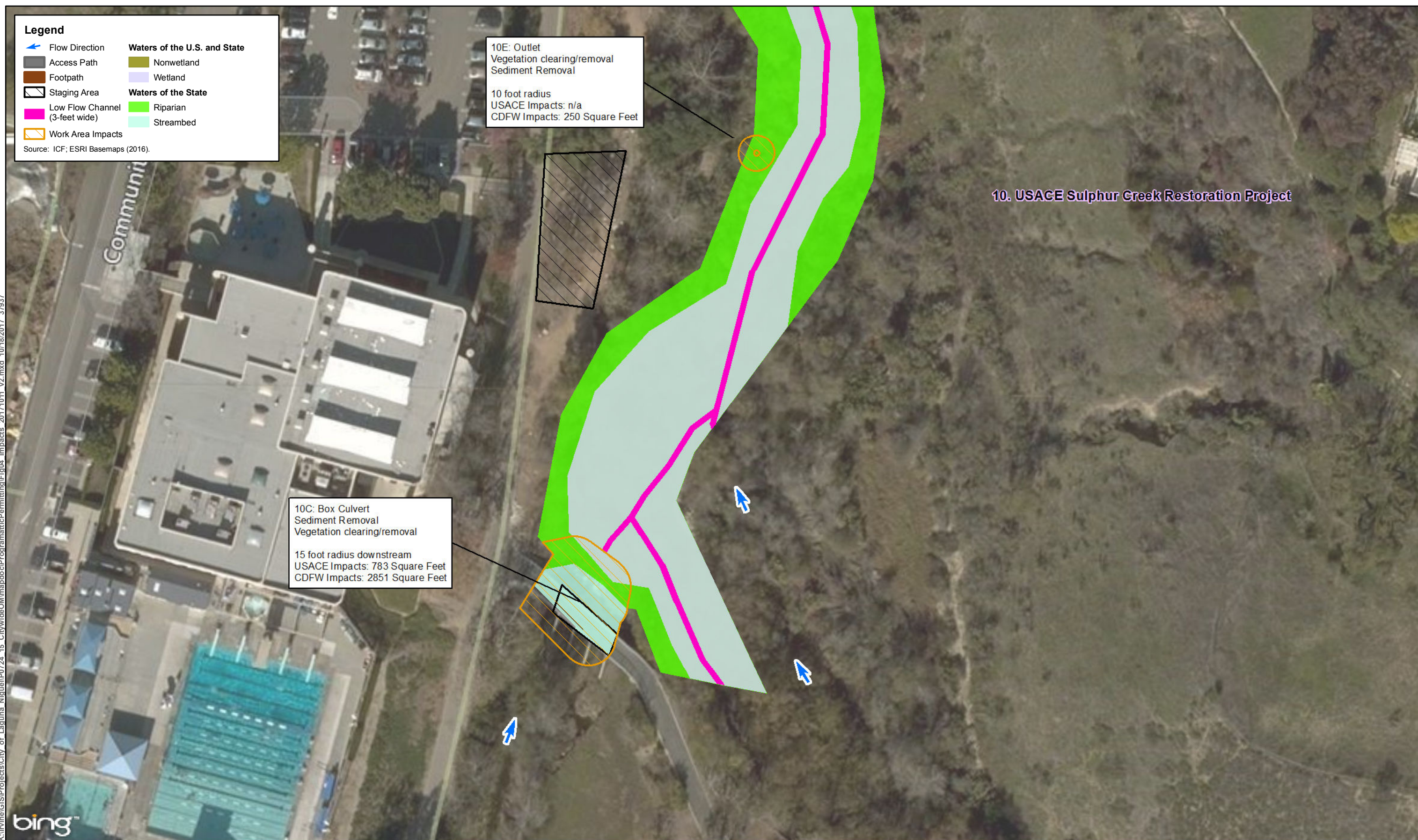
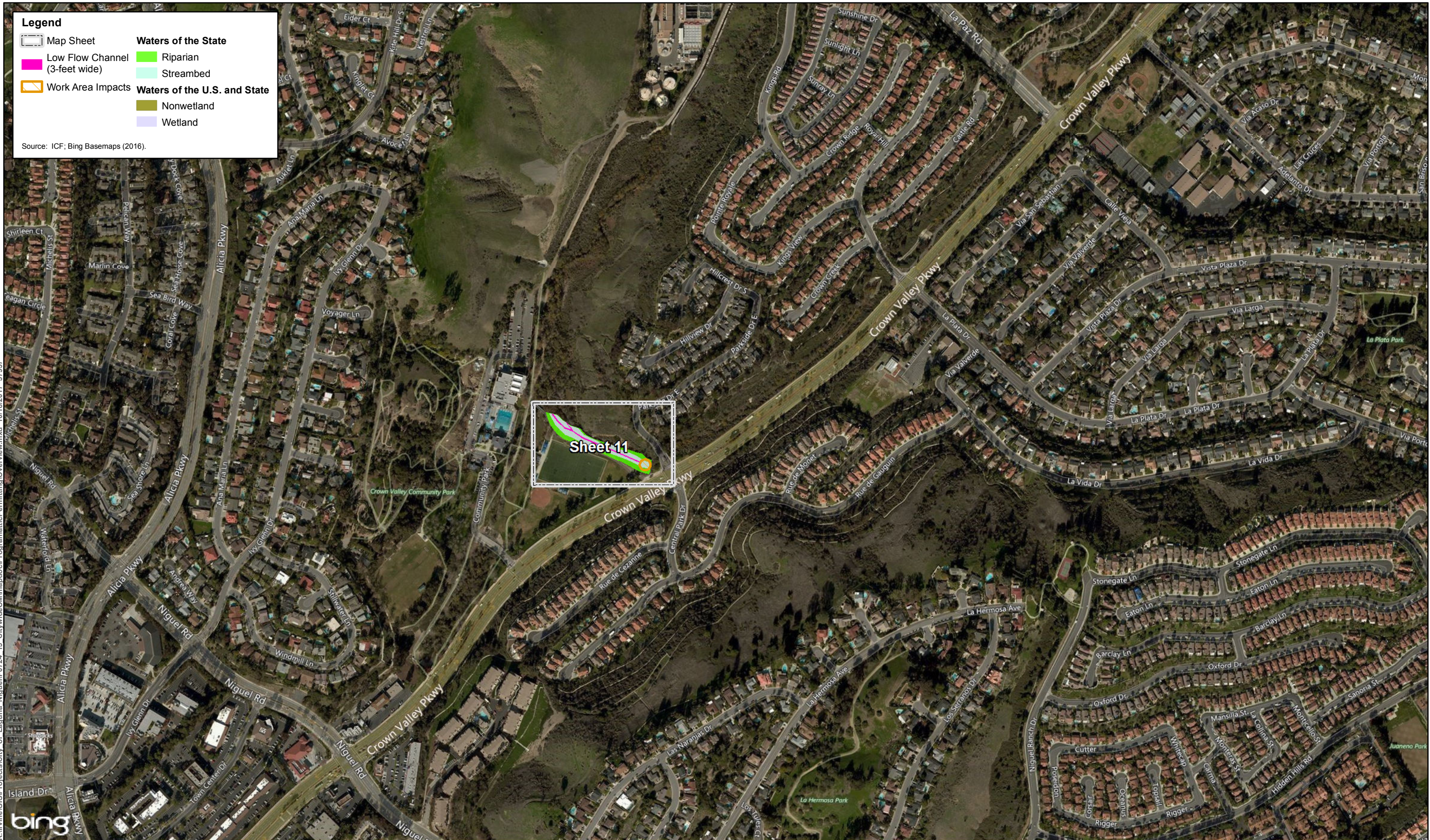


Figure 3-10D
10. USACE Sulphur Creek Restoration Project
City of Laguna Niguel Programmatic Permitting



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Figure 3-11 Overview
11. Sulphur Creek in Crown Valley Community Park
City of Laguna Niguel Programmatic Permitting

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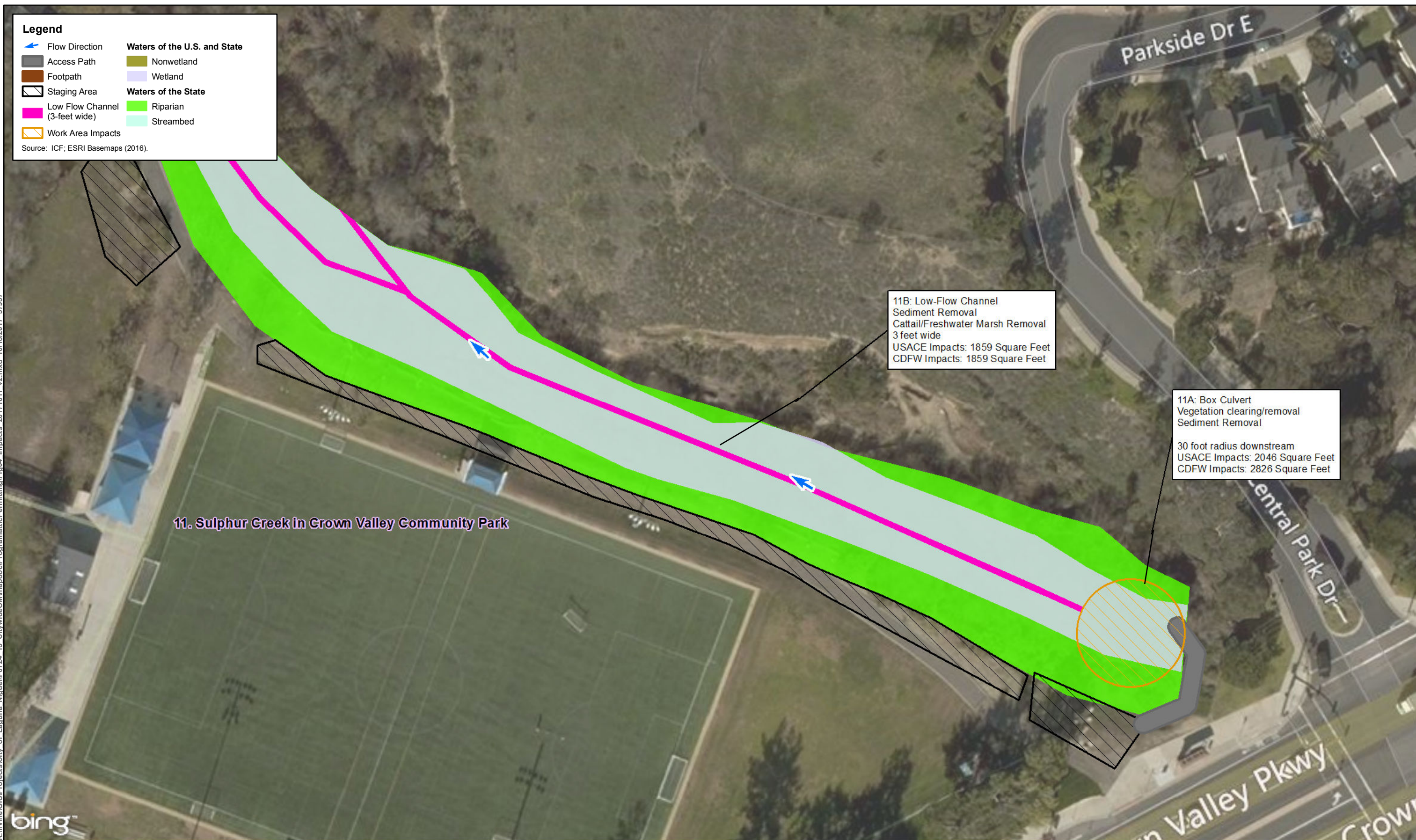
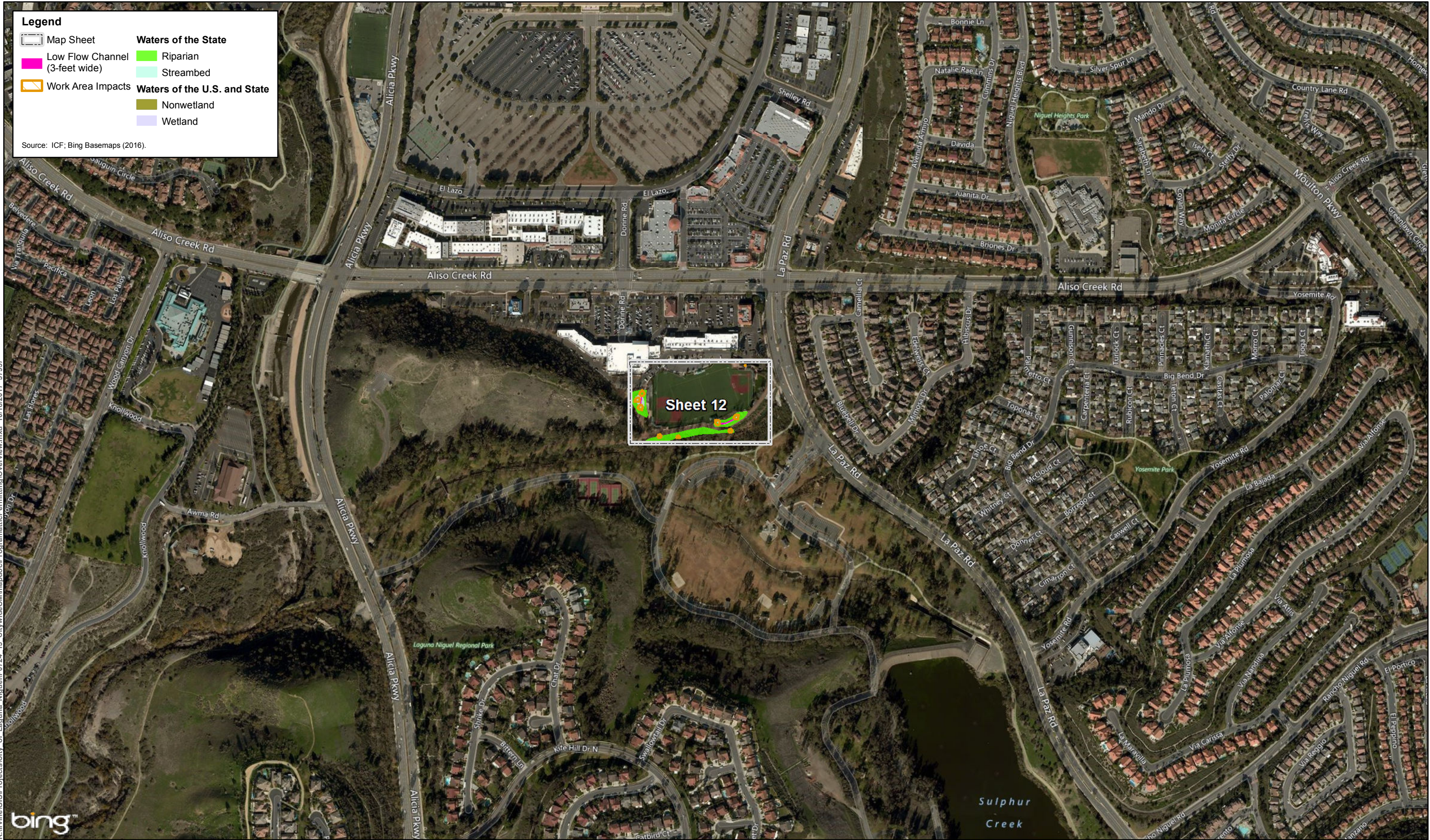


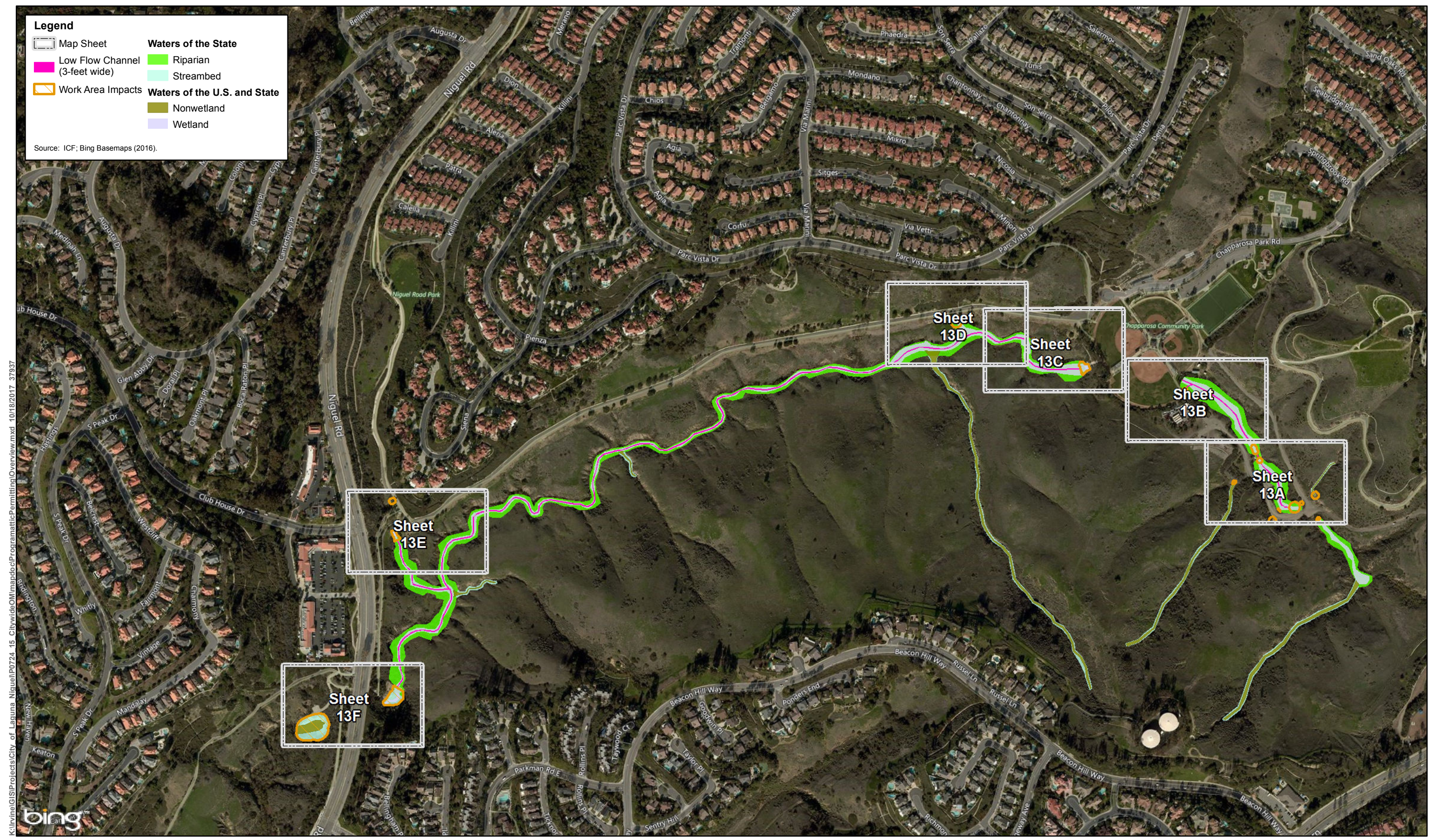
Figure 3-11
11. Sulphur Creek in Crown Valley Community Park
City of Laguna Niguel Programmatic Permitting



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Figure 3-12 Overview
12. La Paz Park Wetlands
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Figure 3-13 Overview
 13. Salt Creek Restoration Area
 City of Laguna Niguel Programmatic Permitting

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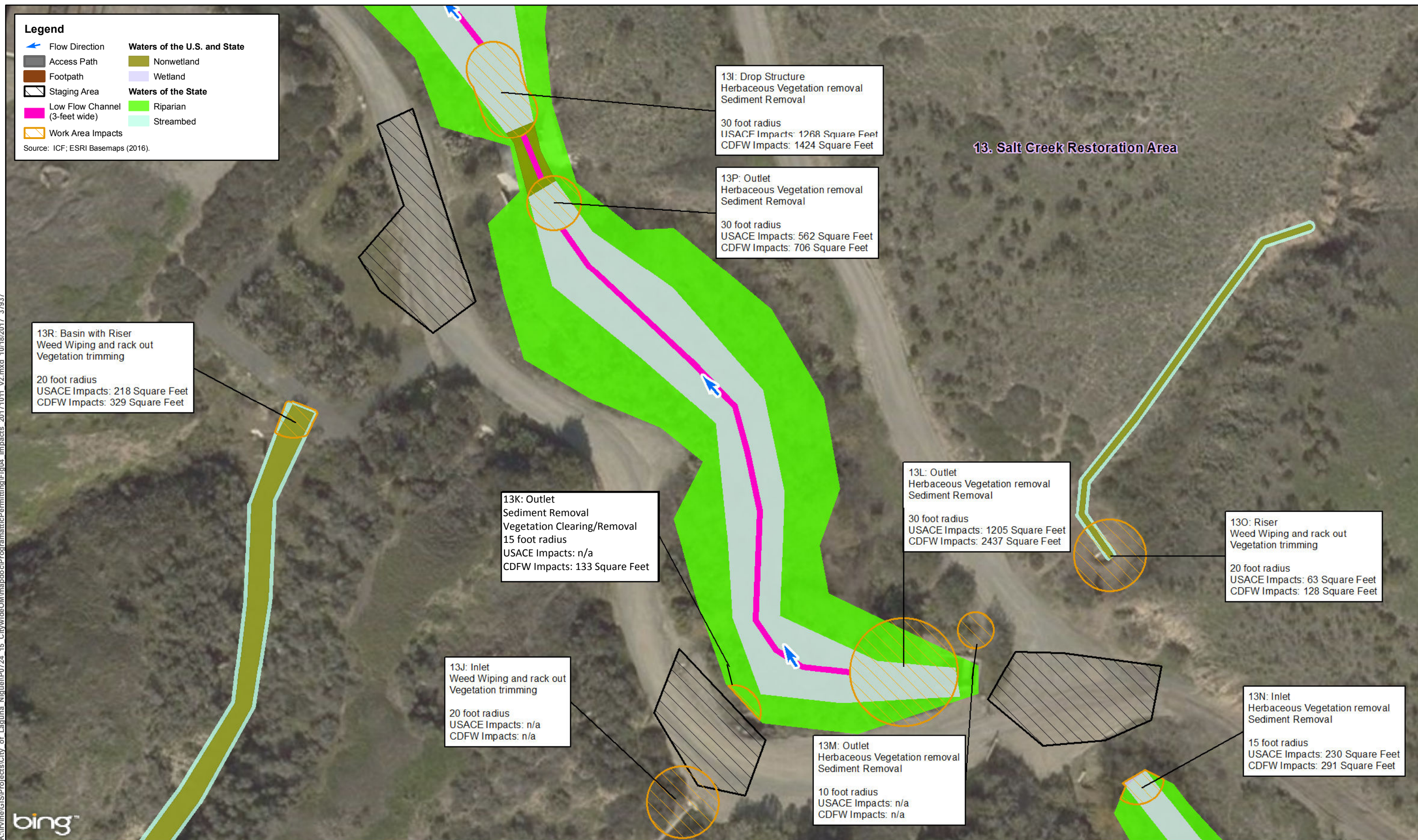
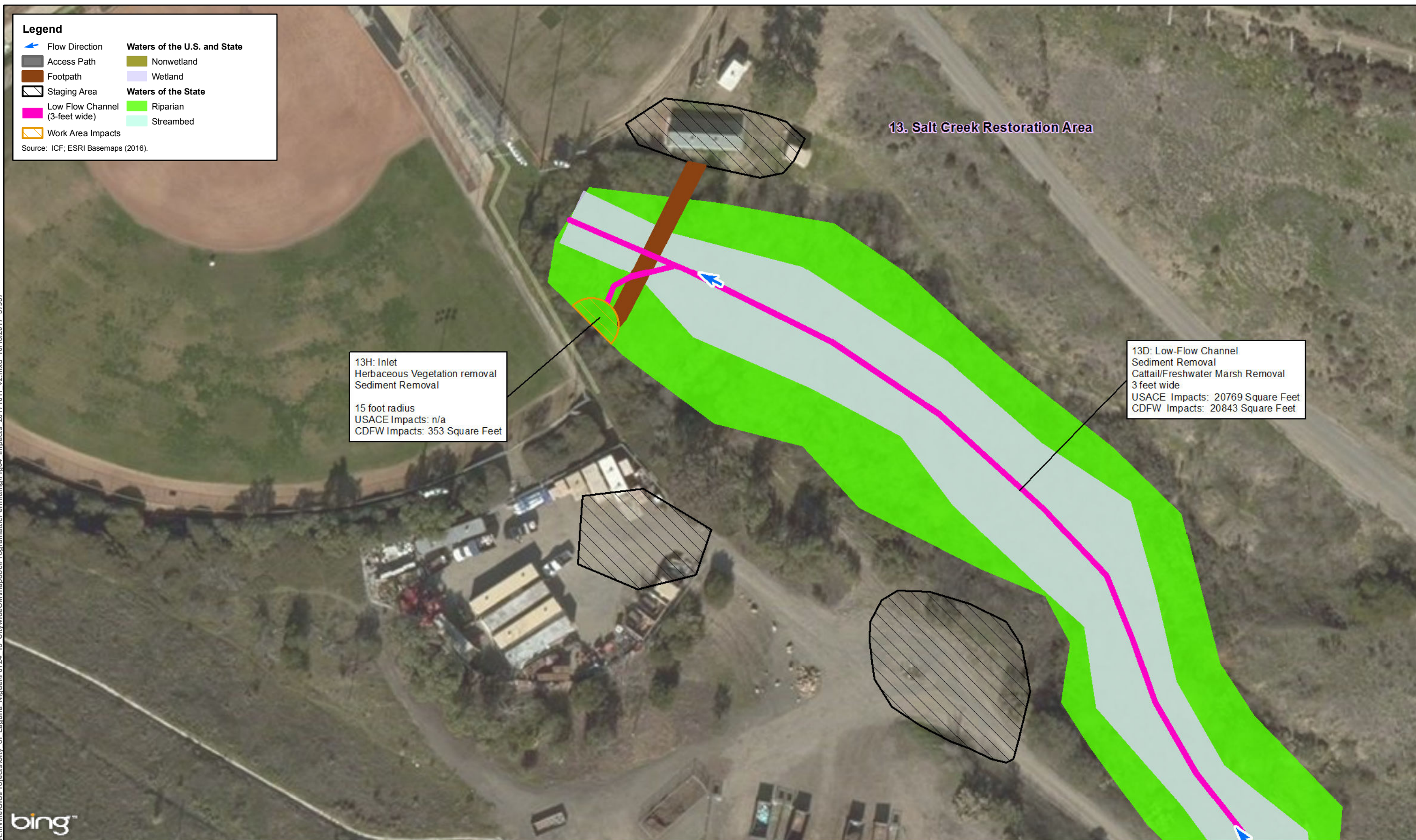


Figure 3-13A
13. Salt Creek Restoration Area
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Figure 3-13B
13. Salt Creek Restoration Area
City of Laguna Niguel Programmatic Permitting



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Figure 3-13C
13. Salt Creek Restoration Area
City of Laguna Niguel Programmatic Permitting

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Appendix B

Maintenance Summary Table

Station ID	Facility Type	Wetland Project Area	Map Sheet	Latitude	Longitude	Waterbody	Maintenance Activities	Frequency	Impact Dimensions	Waters of the U.S. (USACE/RWQCB)			CDFW Jurisdiction	
										Linear Feet	Wetland (Square Feet)	Non-Wetland (Square Feet)	CDFW Streambed	CDFW Riparian
1A	Inlet	1. West Wetland	Figure 4-1A	33.549952	-117.717216	Tributary to Aliso Creek	Vegetation clearing/removal Sediment Removal	biannually	20 foot by 20 foot Area	10	290	-	748	290
1B	Low-Flow Channel	1. West Wetland	Figure 4-1A	33.546409	-117.716440	Tributary to Aliso Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	2470	7412	-	-	7412
1C	Concrete V-ditch Outlet	1. West Wetland	Figure 4-1C	33.547560	-117.716671	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius	5	8	-	-	28
1D	Concrete V-ditch Outlet	1. West Wetland	Figure 4-1D	33.546393	-117.716499	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius	6	20	-	-	28
1E	Concrete V-ditch Outlet	1. West Wetland	Figure 4-1E	33.544896	-117.716242	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius	6	28	-	-	28
1F	Concrete V-ditch Outlet	1. West Wetland	Figure 4-1F	33.543903	-117.715782	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius	6	26	-	-	28
1G	Weir- Pool Complex	1. West Wetland	Figure 4-1F	33.543418	-117.715600	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure plus 10ft x 15ft pool	25	300	-	-	300
1H	Outlet	1. West Wetland	Figure 4-1F	33.543028	-117.715372	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	20 foot radius	32	673	-	-	1254
1I	Weir- Pool Complex	1. West Wetland	Figure 4-1B	33.548867	-117.716914	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure plus 10ft x 15ft pool	25	303	-	-	303
1J	Weir- Pool Complex	1. West Wetland	Figure 4-1B	33.548019	-117.716773	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure plus 10ft x 15ft pool	25	300	-	-	300
1K	Concrete V-ditch Outlet	1. West Wetland	Figure 4-1C	33.547727	-117.716674	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius	3	7	-	-	7
1L	Berm	1. West Wetland	Figure 4-1C	33.547246	-117.716618	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure	10	48	-	-	48
1M	Berm	1. West Wetland	Figure 4-1C	33.546713	-117.716539	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure	10	53	-	-	53
1N	Weir- Pool Complex	1. West Wetland	Figure 4-1D	33.545968	-117.716498	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure plus 10ft x 15ft pool	25	300	-	-	300
1O	Weir- Pool Complex	1. West Wetland	Figure 4-1D	33.545649	-117.716518	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure plus 10ft x 15ft pool	25	300	-	-	300
2A	Outlet	2. East Wetland	Figure 4-2A	33.544974	-117.714306	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above inlet 10 foot radius downstream of inlet	17	290	-	-	558
2B	Low-Flow Channel	2. East Wetland	Figure 4-2A	33.544434	-117.714985	Tributary to Aliso Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	638	1914	-	-	1914
2C	Outlet	2. East Wetland	Figure 4-2A	33.544853	-117.714370	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	10 foot radius	-	-	-	-	314
2D	Outlet	2. East Wetland	Figure 4-2B	33.543718	-117.715132	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above inlet 10 foot radius downstream of inlet	4	35	-	-	551
2E	Riser	2. East Wetland	Figure 4-2A	33.544355	-117.715479	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	10 foot radius	4	45	-	-	314
3A	Constructed Wetland Ponds	3. North Wetland	Figure 4-3	33.550134	-117.716472	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	Entire Pond Area	326	11026	-	-	11026
3B	Overflow Drain	3. North Wetland	Figure 4-3	33.550315	-117.716673	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	10 foot radius	10	150	-	-	314
3C	Outlet	3. North Wetland	Figure 4-3	33.550053	-117.716342	Tributary to Aliso Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above inlet 10 foot radius downstream of outlet	25	404	-	-	558
4A	Inlet	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4C	33.528054	-117.710020	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius downstream of structure	122	5617	-	6939	5522
4B	Inlet	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4B	33.529084	-117.709411	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above inlet 10 foot radius downstream of inlet	-	-	-	-	251
4C	Box Culvert	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4B	33.529721	-117.709032	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius downstream of concrete structure	65	3545	-	5438	3569
4D	Box Culvert	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4B	33.529922	-117.708783	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius downstream of concrete structure	35	508	-	7510	3480
4E	Low-Flow Channel	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4A	33.530969	-117.708445	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	420	1262	-	7	1428
4F	Treatment Wetlands (Planned)	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4B	33.529428	-117.708778	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	Entire Constructed Wetland	-	-	-	776	1032
4G	Low-Flow Channel	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4B	33.529019	-117.709208	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	424	1273	-	17	1468
4H	Concrete V-ditch	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4A	33.530811	-117.708308	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure	-	-	-	-	1028
4I	Outlet	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4C	33.528192	-117.709759	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above inlet 10 foot radius downstream of inlet	-	-	-	-	207
4J	Bioswales	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4A	33.530482	-117.708520	Sulphur Creek	Sediment Removal/Weed Removal	biannually	Extent of Bioswales	4	2	-	-	16441

Station ID	Facility Type	Wetland Project Area	Map Sheet	Latitude	Longitude	Waterbody	Maintenance Activities	Frequency	Impact Dimensions	Waters of the U.S. (USACE/RWQCB)			CDFW Jurisdiction	
										Linear Feet	Wetland (Square Feet)	Non-Wetland (Square Feet)	CDFW Streambed	CDFW Riparian
4K	Outlet	4. Crown Valley Park Wetland Creation Area J03P01	Figure 4-4C	33.528170	-117.710084	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius	-	-	-	-	9
5A	Inlet	5. Sulphur Creek Park Wetland Enhancment Area	Figure 4-5	33.531331	-117.705520	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius downstream	40	1416	-	1109	1834
5B	Drop Structure	5. Sulphur Creek Park Wetland Enhancment Area	Figure 4-5	33.532001	-117.704095	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	15 foot radius from structure	60	694	797	797	772
5C	Low-Flow Channel	5. Sulphur Creek Park Wetland Enhancment Area	Figure 4-5	33.531633	-117.704767	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	688	2066	-	-	2066
6A	Low-Flow Channel	6. Sulphur Creek Wetland Creation	Figure 4-6	33.531911	-117.707662	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	112	637	-	-	637
7A	Outlet	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7G	33.540515	-117.695265	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius downstream	60	-	1717	3839	4
7B	Low-Flow Channel	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7c, 7G, and 7F	33.542173	-117.694074	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	1094	8602	484	484	8602
7C	Weir and Riprap Dissipator	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7G	33.541116	-117.694982	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	Within serviceable structure	64	2367	-	2887	-
7D	Inlet - Serviceable Structure	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7E	33.543117	-117.692830	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	30 foot radius downstream of structure	56	2919	-	1531	4055
7E	Inlet	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7E	33.543787	-117.692129	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	10 foot radius	61	2071	-	1029	3575
7F	Outlet	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7E	33.548876	-117.689744	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius downstream	7	7	-	848	7970
7G	Outlet	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7A	33.546185	-117.690643	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	30 foot radius downstream	105	4622	-	4122	4000
7H	Outlet	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7A	33.548677	-117.689994	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	6	28	-	-	28
7I	Concrete V-ditch	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7F	33.542353	-117.693982	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	-	-	-	-	7
7J	Concrete V-ditch	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7C	33.546826	-117.690605	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	-	-	-	-	-
7K	Concrete V-ditch	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7D	33.544747	-117.691212	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	-	-	-	7	-
7L	Concrete V-ditch	7. Rancho Niguel Upper Sulphur Creek	Figure 4-7B	33.547954	-117.690261	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	-	-	-	-	-
8A	Inlet	8. Crowne Royale	Figure 4-8B	33.537315	-117.698670	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	20 foot radius downstream	74	964	-	3875	1195
8B	Low-Flow Channel	8. Crowne Royale	Figure 4-8B	33.537525	-117.698002	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	1238	3715	-	-	3715
8C	Outlet	8. Crowne Royale	Figure 4-8B	33.537895	-117.697553	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	20 foot radius downstream	35	786	-	-	1253
8D	Outlet - Serviceable Structure	8. Crowne Royale	Figure 4-8A	33.539974	-117.695518	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	30 foot radius downstream	147	777	1384	8672	2173
8E	Outlet	8. Crowne Royale	Figure 4-8A	33.539308	-117.696044	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius above 15 foot radius downstream	29	300	-	-	735
8F	Concrete V-ditch	8. Crowne Royale	Figure 4-8B	33.537543	-117.697950	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	3	9	-	-	9
8G	Concrete V-ditch	8. Crowne Royale	Figure 4-8B	33.538412	-117.697243	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	-	-	-	-	6
9A	Outlet	9. Niguel Ridge	Figure 4-9B	33.533780	-117.701952	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius downstream	150	2672	-	8746	1611
9B	Inlet - Serviceable Structure	9. Niguel Ridge	Figure 4-9B	33.534432	-117.701196	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	30 foot radius downstream	259	241	1508	10411	1741
9C	Low-Flow Channel	9. Niguel Ridge	Figure 4-9A	33.535359	-117.700200	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	580	1738	-	-	1738
9D	Outlet	9. Niguel Ridge	Figure 4-9A	33.535481	-117.700045	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	15 foot radius	60	501	-	-	1413
9E	Outlet - Serviceable Structure	9. Niguel Ridge	Figure 4-9A	33.536261	-117.699350	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius downstream	159	571	1368	6392	1306
9F	Outlet	9. Niguel Ridge	Figure 4-9C	33.533003	-117.702528	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	15 foot radius	15	30	-	-	135
9G	Concrete V-ditch Outlet	9. Niguel Ridge	Figure 4-9C	33.532996	-117.702731	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius	-	-	-	-	14
9H	Low-Flow Channel	9. Niguel Ridge	Figure 4-9C	33.532998	-117.702693	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	557	1670	-	-	1670

Station ID	Facility Type	Wetland Project Area	Map Sheet	Latitude	Longitude	Waterbody	Maintenance Activities	Frequency	Impact Dimensions	Waters of the U.S. (USACE/RWQCB)			CDFW Jurisdiction	
										Linear Feet	Wetland (Square Feet)	Non-Wetland (Square Feet)	CDFW Streambed	CDFW Riparian
9I	Concrete V-ditch Outlet	9. Niguel Ridge	Figure 4-9A	33.535900	-117.699646	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	6	28	-	-	28
9J	Concrete V-ditch Outlet- Serviceab	9. Niguel Ridge	Figure 4-9B	33.534349	-117.701285	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	6	-	28	28	-
9K	Concrete V-ditch Outlet	9. Niguel Ridge	Figure 4-9B	33.533562	-117.702193	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	3	4	-	-	7
9L	Concrete V-ditch Outlet	9. Niguel Ridge	Figure 4-9C	33.532551	-117.703285	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	3	9	-	-	7
10A	Riprap Bank	10. USACE Sulphur Creek Restoration Project	Figure 4-10A	33.536032	-117.705865	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	Within serviceable structure	91	3625	-	9429	1605
10B	Outlet	10. USACE Sulphur Creek Restoration Project	Figure 4-10B	33.534970	-117.707070	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius above 10 foot radius downstream	-	-	-	-	250
10C	Box Culvert	10. USACE Sulphur Creek Restoration Project	Figure 4-10D	33.531921	-117.708040	Sulphur Creek	Sediment Removal Vegetation clearing/removal	biannually	15 foot radius downstream	58	783	-	1912	939
10D	Low-Flow Channel	10. USACE Sulphur Creek Restoration Project	Figure 4-10B	33.534116	-117.707119	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	1830	5490	-	-	5490
10E	Outlet	10. USACE Sulphur Creek Restoration Project	Figure 4-10D	33.532602	-117.707715	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	10 foot radius	-	-	-	-	257
10F	Outlet	10. USACE Sulphur Creek Restoration Project	Figure 4-10C	33.533514	-117.707799	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	Within serviceable structure	20	81	-	-	402
10G	Outlet	10. USACE Sulphur Creek Restoration Project	Figure 4-10A	33.536008	-117.706045	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	3 foot radius	-	-	-	28	-
11A	Box Culvert	11. Sulphur Creek in Crown Valley Community Park	Figure 4-11	33.531032	-117.706062	Sulphur Creek	Vegetation clearing/removal Sediment Removal	biannually	30 foot radius downstream	59	2046	-	-	2826
11B	Low-Flow Channel	11. Sulphur Creek in Crown Valley Community Park	Figure 4-11	33.531325	-117.706859	Sulphur Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	620	1859	-	-	1859
12A	Outlet	12. La Paz Park Wetlands	Figure 4-12	33.553837	-117.712317	Narco Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above 10 foot radius downstream	6	76	-	-	558
12B	Outlet	12. La Paz Park Wetlands	Figure 4-12	33.553735	-117.712400	Narco Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above 10 foot radius downstream	26	475	-	-	558
12C	Inlet	12. La Paz Park Wetlands	Figure 4-12	33.553620	-117.712343	Narco Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above 10 foot radius downstream	21	340	-	-	558
12D	Outlet	12. La Paz Park Wetlands	Figure 4-12	33.553191	-117.711990	Narco Creek	Removal of noxious weeds Trimming of riparian trees and	biannually	10 foot radius	-	-	-	-	120
12E	Outlet	12. La Paz Park Wetlands	Figure 4-12	33.553178	-117.711652	Narco Creek	Removal of noxious weeds Trimming of riparian trees and shrubs	biannually	10 foot radius	-	-	-	-	205
12F	Inlet	12. La Paz Park Wetlands	Figure 4-12	33.553405	-117.710934	Narco Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above 10 foot radius downstream	20	207	-	-	558
12G	Outlet	12. La Paz Park Wetlands	Figure 4-12	33.553283	-117.710701	Narco Creek	Removal of noxious weeds Trimming of riparian trees and	biannually	10 foot radius	4	1	-	-	313
12H	Outlet	12. La Paz Park Wetlands	Figure 4-12	33.553495	-117.710595	Narco Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius above 10 foot radius downstream	23	223	-	-	558
12I	Inlet	12. La Paz Park Wetlands	Figure 4-12	33.554289	-117.710444	Narco Creek	Sediment Removal Vegetation clearing/removal	biannually	3 foot radius	-	-	-	-	-
12J	Low-Flow Channel	12. La Paz Park Wetlands	Figure 4-12	33.553416	-117.710754	Narco Creek	Sediment Removal Vegetation clearing/removal	biannually	3 feet wide	88	352	-	-	352
12K	Low-Flow Channel	12. La Paz Park Wetlands	Figure 4-12	33.553729	-117.712334	Narco Creek	Sediment Removal Vegetation clearing/removal	biannually	3 feet wide	52	156	-	-	156
13A	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13F	33.505357	-117.708611	Salt Creek	Vegetation clearing/removal Sediment Removal	biannually	Within serviceable structure	162		7297	22385	-
13B	Inlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13F	33.506019	-117.707317	Salt Creek	Vegetation clearing/removal Sediment Removal	biannually	30 foot radius	144	2752	-	5560	2113
13C	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13E	33.508504	-117.707335	Salt Creek	Vegetation clearing/removal Sediment Removal	biannually	30 foot radius	52	891	-	713	987
13D	Low-Flow Channel	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13B	33.509712	-117.700975	Salt Creek	Sediment Removal Cattail/Freshwater Marsh Removal	biannually	3 feet wide	6920	20688	81	-	20843
13E	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13C	33.511904	-117.697089	Salt Creek	Vegetation clearing/removal Sediment Removal	biannually	30 foot radius	42	717	-	-	2534
13F	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13C	33.511633	-117.695652	Salt Creek	Sediment Removal Vegetation clearing/removal	biannually	15 foot radius	-	-	-	-	47
13G	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13C	33.511243	-117.694731	Salt Creek	Sediment Removal Vegetation clearing/removal	biannually	30 foot radius	51	2146	-	761	1886
13H	Inlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13B	33.510925	-117.692858	Salt Creek	Herbaceous Vegetation removal Sediment Removal	biannually	15 foot radius	-	-	-	-	353
13I	Drop Structure	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.510020	-117.691577	Salt Creek	Herbaceous Vegetation removal Sediment Removal	biannually	30 foot radius	55	1210	58	-	1424
13J	Inlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.508934	-117.691226	Salt Creek	Weed Wiping and rack out Vegetation trimming	biannually	20 foot radius	-	-	-	-	-

Maintenance Facility Summary Table

Station ID	Facility Type	Wetland Project Area	Map Sheet	Latitude	Longitude	Waterbody	Maintenance Activities	Frequency	Impact Dimensions	Waters of the U.S. (USACE/RWQCB)			CDFW Jurisdiction	
										Linear Feet	Wetland (Square Feet)	Non-Wetland (Square Feet)	CDFW Streambed	CDFW Riparian
13K	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.509093	-117.691110	Salt Creek	Sediment Removal Vegetation clearing/removal	biannually	15 foot radius	-	-	-		133
13L	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.509138	-117.690826	Salt Creek	Herbaceous Vegetation removal Sediment Removal	biannually	30 foot radius	60	1205	-	-	2437
13M	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.509204	-117.690695	Salt Creek	Herbaceous Vegetation removal Sediment Removal	biannually	10 foot radius	-	-	-	-	-
13N	Inlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.508965	-117.690389	Salt Creek	Herbaceous Vegetation removal Sediment Removal	biannually	15 foot radius	16	230	-		291
13O	Riser	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.509317	-117.690488	Salt Creek	Weed Wiping and rack out Vegetation trimming	biannually	20 foot radius	21		63	128	
13P	Outlet	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.509848	-117.691476	Salt Creek	Herbaceous Vegetation removal Sediment Removal	biannually	30 foot radius	30	496	66	-	706
13Q	Riser	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13E	33.509018	-117.707450	Salt Creek	Vegetation clearing/removal Sediment Removal	biannually	15 foot radius	-	-	-	-	-
13R	Basin with Riser	13. Salt Creek Corridor Habitat Restoration Area	Figure 4-13A	33.509509	-117.691942	Salt Creek	Weed Wiping and rack out Vegetation trimming	biannually	20 foot radius	17	-	218	329	-

Total USACE/RWQCB	Square Feet	Acres
Wetland (Square Feet)	121,632	2.79
Non-Wetland (Sqaure Feet)	15,069	0.35
Linear Feet	20,942	

Total CDFW	Square Feet	Acres
CDFW Streambed	117457	2.70
CDFW Riparian	164287	3.77

Appendix C

Post-Maintenance Summary Report Outline

Laguna Niguel Wetlands Operations and Maintenance Annual Post-Maintenance Summary Report

Time period covering _____ to _____
dd/mm/yy dd/mm/yy

PART 1 – SITE SPECIFIC MAINTENANCE ACTIVITIES

Wetland Site Name: _____

Maintenance Facility ID Numbers (i.e. 1A, 1B, etc) work was completed for:

Date(s) Performed: _____

Maintenance Actions Completed:

- | | |
|---|---|
| <input type="checkbox"/> Vegetation Maintenance | <input type="checkbox"/> Trash and Debris Maintenance |
| <input type="checkbox"/> Sediment Maintenance | <input type="checkbox"/> Access Path Maintenance |
| <input type="checkbox"/> Flowline Maintenance | <input type="checkbox"/> Rodent and Pest Control |

Minimization Measures Implemented:

- | | |
|--|--|
| <input type="checkbox"/> Avoidance of nesting season | <input type="checkbox"/> Off-site Disposal |
| <input type="checkbox"/> Biological Monitor | <input type="checkbox"/> |
| <input type="checkbox"/> Erosion Control | <input type="checkbox"/> |
| <input type="checkbox"/> Personnel Training | <input type="checkbox"/> Other: |

Site Specific Issues/Concerns/Recommendations: _____

PART 2 – PROGRAM OVERVIEW AND RECOMMENDATIONS

Table 1. Annual Operation and Maintenance Impacts

Wetland Site	Linear Feet	USACE and RWQCB Jurisdictional		CDFW Jurisdictional	
		Non-wetland (acre)	Wetland (acre)	Streambed	Riparian
1- West Wetland					
2 - East Wetland					
3 - North Wetland					
4 - Crown Valley Park Wetland Creation Area/J03P01					
5 - Sulphur Creek Park Wetland Enhancement Area					
6 - Sulphur Creek Creation Area at Crown Valley					
7 - Rancho Niguel Upper Sulphur Creek					
8 - Crown Royale Upper Sulphur Creek					

9 – Niguel Ridge Upper Sulphur Creek					
10 - USACE Restoration Area					
11 – Sulphur Creek in Crown Valley Park					
12 – La Paz Park Wetlands					
13 – Salt Creek Corridor Habitat Restoration Area					
Total					

General Program Notes and Recommendations (including adaptive management and monitoring):

Attachment 1. Pre- and Post-Maintenance Photographs