HABITAT MITIGATION & MONITORING PLAN

LAGUNA CANYON FOUNDATION

OC parks

OCTA







Invasive *Arundo donax* | Aliso Creek

OCTA MEASURE M - ALISO CREEK

ALISO VIEJO, CALIFORNIA

alis and wood Canyons wilderness park

Aliso Viejo - Laguna Niguel - Laguna Beach, Orange County, California

September 2017

Laguna Canyon Foundation
384 Legion Street
Laguna Beach, CA 92651

PROJECT: ALISO CREEK HABITAT MITIGATION AND MONITORING PLAN (HMMP)

PURPOSE: Orange County Transportation Authority (OCTA) Compensatory Mitigation for Measure M Program Transportation Improvements

OCTA M2 Freeway Program Project Permits:

- OCTA Measure M2 NCCP/HCP California Department of Fish and Wildlife (CDFW) Section 1602 Streambed Appendix
- U.S. Army Corps of Engineers (ACOE) Section 404 Standard Individual Permit (SPL-201200830-VCC)
- California State Water Resources Control Board (SWRCB) Section 401 Water Quality Certification – (File No. Pending)

Permits for HMMP Implementation:

- ACOE verification of Regional General Permit (RGP) No. 41-Invasive Exotic Plant Removal (SPL-2014-00713-VCL) (attached as Appendix A)
- CDFW Section1602 Streambed Alteration Agreement (LSAA) (#1600-2008-0247-R5)
- CEQA Mitigated Negative Declaration (SCH #2009031031)
- US Fish and Wildlife Service (USFWS) Biological Opinion (BO) (#FWS-OR-08B0013 09F0147)
- Formal Notification of Project to RWQCB pursuant the State Water Quality Control Board's section 401 water quality certification for RGP 41 (SWRCB ID: SB13007GN)

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REVISION DATE: September 2017

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Appendix D Sensitive Species Survey Report
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Appendix F OCTA Financial Assurance Letter of Commitment

1.0 Introduction

Preparation and proposed implementation of the Aliso Creek Habitat Mitigation and Monitoring Plan (Aliso Creek HMMP) is being funded by the Orange County Transportation Authority (OCTA) Measure M2 Program. As the permittee, OCTA is responsible for ensuring the satisfactory completion of all commitments in this plan necessary to obtain sign off from the regulatory and resource agencies. Successful implementation of the Aliso Creek HMMP could provide compensatory mitigation for some of the County-wide transportation improvements performed as part of the Measure M2 Program approved by voters in 2006. OCTA is responsible for implementation of the HMMP. OCTA intends to transfer long term management responsibilities to Orange County (OC) Parks, a division of the OC Community Resources Department, subject to prior review and approval of the Army Corps of Engineers (ACOE), State Water Resources Control Board (SWRCB), United States Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW). OCTA is funding and is under contract with the Laguna Canyon Foundation (LCF) to implement the habitat restoration and enhancement project (HMMP project). Implementation of the Aliso Creek HMMP will remove approximately 30 acres of invasive species (30 acre removal area is noted in Figure 7, Invasive Species Map), particularly arundo or giant reed (*Arundo donax*), in restoring (rehabilitating[1]) and enhancing 55 acres (see Figure 11, Target Vegetation Map) of riparian and adjacent transitional habitat along a critical portion of Aliso Creek that has become substantially degraded by heavy arundo infestation. The HMMP project would provide substantial benefits to regionally-important biological resources, as well as a number of non-biological benefits including enhanced public access and open space viewshed preservation. The HMMP project will adhere to best-practices widely used in restoration ecology, as well as to the requirements stipulated in the *OCTA Measure M2 Environmental Mitigation Program Restoration Funding Guidelines*[2].

The HMMP project builds on a multi-year effort being led by LCF and its partners to restore the Aliso Creek watershed from its headwaters to its ocean outflow at Aliso Beach. The HMMP project boundaries extend downstream of Moulton Parkway to approximately 500 feet downstream of the Avila Road intersection with Alicia Parkway in Aliso and Wood Canyons Wilderness Park (AWCWP). This is a key reach of Aliso Creek for invasive plant removal, as three other concurrent efforts upstream and downstream of the proposed rehabilitation and enhancement project will simultaneously remove invasive species throughout the entire watershed. The HMMP

[1] Rehabilitation is one of two forms of restoration recognized by the ACOE and the U.S. EPA in regulations promulgated in 2008, with the other being re-establishment (33 CFR Part 332, 40 CFR Part 230). As defined in the regulations, rehabilitation results in a gain in aquatic resource functions (and usually to a broad suite of functions – in contrast to enhancement), but it does not result in a gain in aquatic resource area.

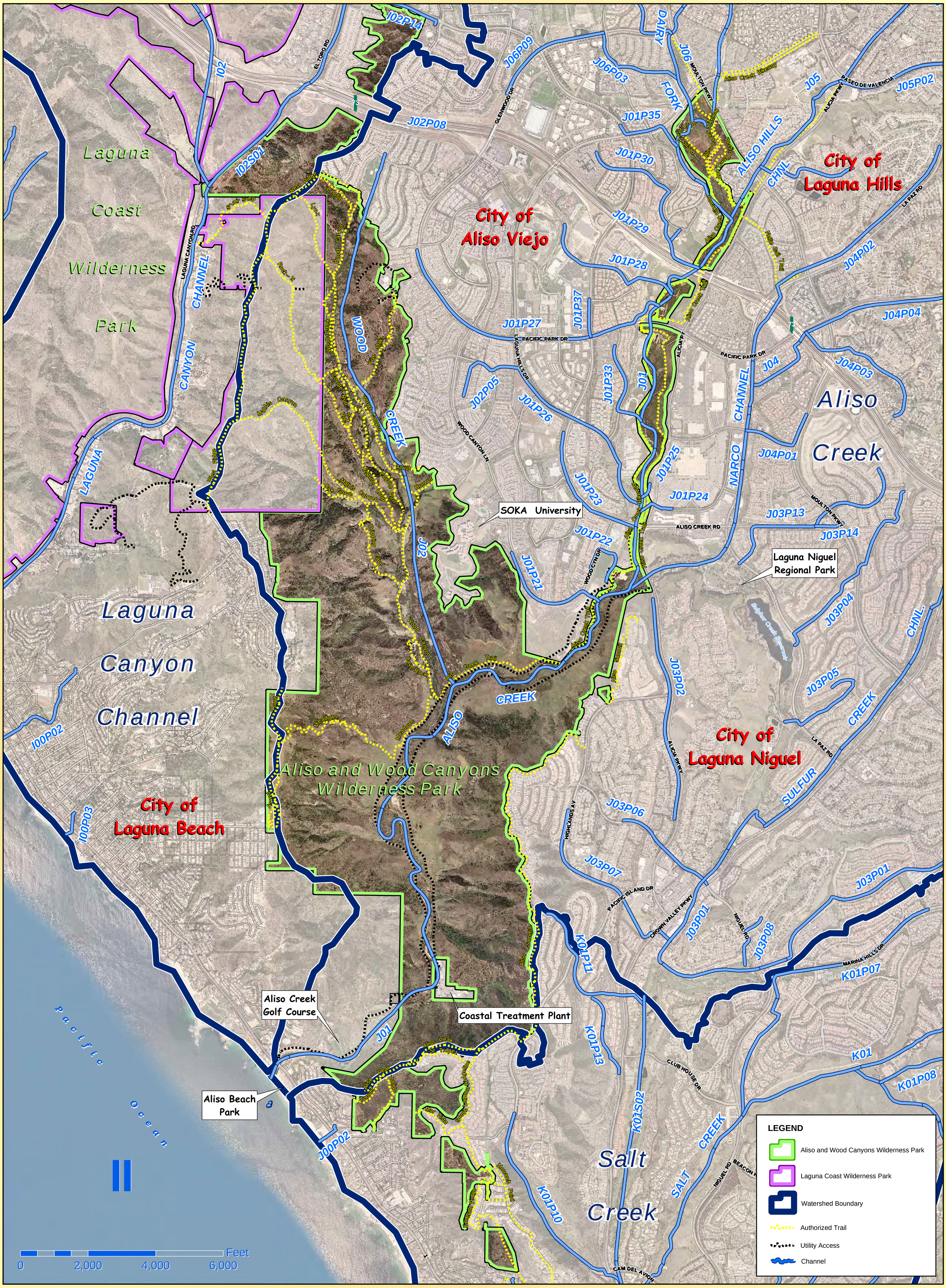
[2] This document was developed by OCTA to assist the restoration project sponsors/local entities to better understand the specific technical needs of the OCTA funded restoration projects, and was developed in cooperation with the United States Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife (CDFW), and the Army Corps of Engineers (ACOE).

project site follows Aliso Creek's linear meander for approximately 1.5 miles. GIS mapping has determined approximately 30 acres (100% density) of arundo is present in the 55-acre HMMP project area, in addition to other non-native species including but not limited to eucalyptus (*Eucalyptus globulus labill.*), black mustard (*Brassica nigra*), and Italian thistle (*Carduus pycnocephalus*).

Apart from its high levels of invasive species, the HMMP project site also comprises a broad range of native habitat, including willow scrub, riparian woodland, and mulefat scrub. This diverse habitat supports the presence of several sensitive species, including, southwestern pond turtle (*Clemmys marmorata pallida*) and coastal California gnatcatcher *(Polioptila californica).* Recent surveys have documented least Bell's vireo (*Vireo bellii pusillus*) within the HMMP project site; however 2014 surveys conducted utilizing USFWS Section 10(a)(1)(A) permit protocols did not document the presence of this species.

The HMMP project will be funded by OCTA and implemented by LCF and/or a designated contractor. The County of Orange is the existing landowner and will continue to be with management of the site being conducted by OC Parks, consistent with the site's location within AWCWP. The primary aim of restoration and enhancement activities within the HMMP project site will be the removal of non-native plants across the entire restoration and enhancement area, followed by the planting and natural recruitment of native species to establish a more diverse habitat structure conducive to supporting an array of native plants and wildlife. As discussed below, arundo has helped confine Aliso Creek flows to an incised primary channel, and removal of this species would allow for the creek to reclaim access to historic secondary channels along certain portions of the broader floodplain, which would provide ecological benefits to a broader suite of riverine functions. Though arundo removal cannot fully restore natural hydrologic regimes due to urban runoff-related downcutting also playing a significant role in the incised channel, arundo removal will nonetheless provide substantial improvements to creek habitat and hydrology. Considerable focus will be placed on the restoration and enhancement of suitable habitat for sensitive species occurring, or with the potential to occur on-site, such as least Bell's vireo and southwestern pond turtle.

Aliso and Wood Canyons Wilderness Park
Resource Management Plan
Figure 10: Watersheds

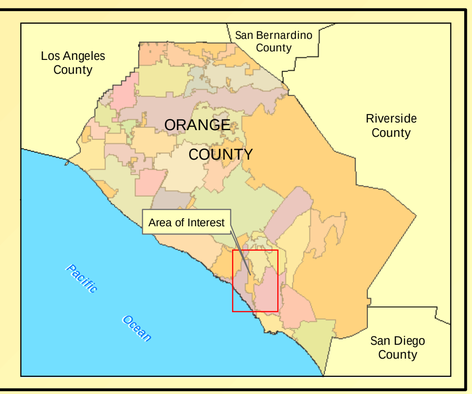


DESIGNED AND PRODUCED BY:
OC Public Works
GIS Mapping Unit
Brian Anderson

DATA SOURCE:
- Geomatics Land Information Systems Division
- Eagle Aerial Image 1 foot resolution, flown 04/2004

The County of Orange and Geomatics/LIS/GIS make no representations or warranties regarding the accuracy of the data from which this map was derived. Neither the County nor Geomatics/LIS/GIS shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

DATE: June 3, 2008

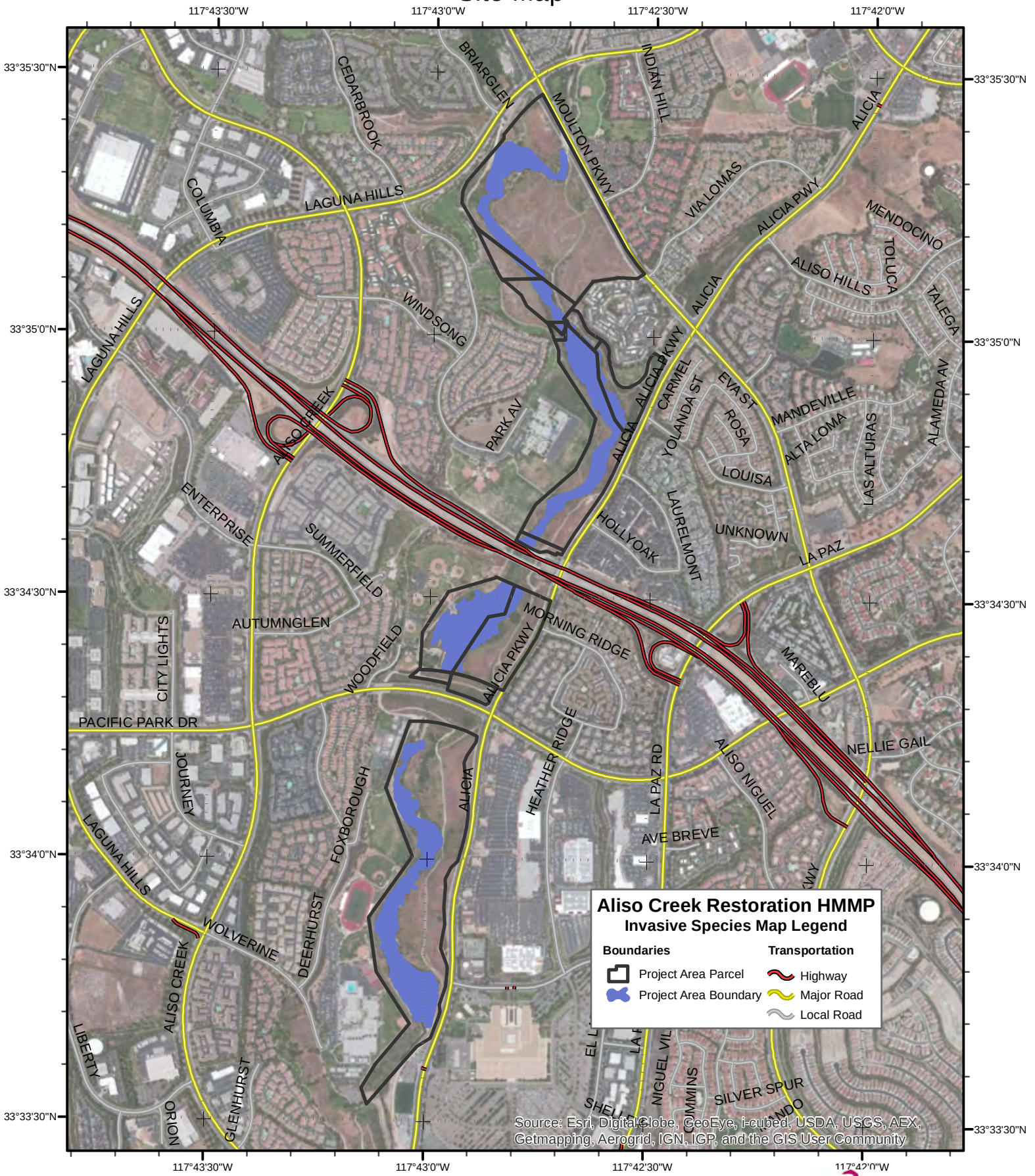


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Aliso Creek Restoration HMMP

Attachment F

Site Map



Aliso Creek Restoration HMMP
Invasive Species Map Legend

Boundaries	Transportation
Project Area Parcel	Highway
Project Area Boundary	Major Road
	Local Road

Map Scale: 1:17,500 if printed on a letter size (8.5" x 11") sheet.

0 1,000 2,000 3,000 4,000 Feet

0 300 600 900 1,200 Meters

Projection: Web Mercator Auxiliary Sphere WGS1984

Laguna Canyon Foundation

2.0 Land Ownership and Management

The site is owned by the County of Orange and managed by OC Parks, pursuant to the project's location within AWCWP. OC Parks manages nearly 60,000 acres of parklands, including 27,000 acres of open space and wilderness. Annually twelve million users visit OC Parks' thirteen regional parks, four miles of beaches, five wilderness parks, three nature preserves and seven historical sites. The Park system has an annual budget of $130 million and is managed by 279 full-time staff. The annual budget is funded through tax revenue and park user fees. The funding for the AWCWP is embedded in this overall budget and funding is allocated by annual recommendation of the OC Parks Department, with final review and approval from the elected Orange County Board of Supervisors.

AWCWP is supported by a full management team and field staff with expertise in all facets of open space and land management, including natural resource specialists, rangers, maintenance technicians, biologists, GIS specialists and land planners. AWCWP adheres to a Resource Management Plan (RMP) whose implementation is funded by the general OC Parks budget. The RMP is additionally supported by the Central/Coastal Natural Communities Conservation Plan (NCCP), which further governs management of AWCWP. An addendum is being prepared to the RMP to address long term management tasks and funding specific to the Aliso Creek HMMP site which are not currently included as part of the RMP.

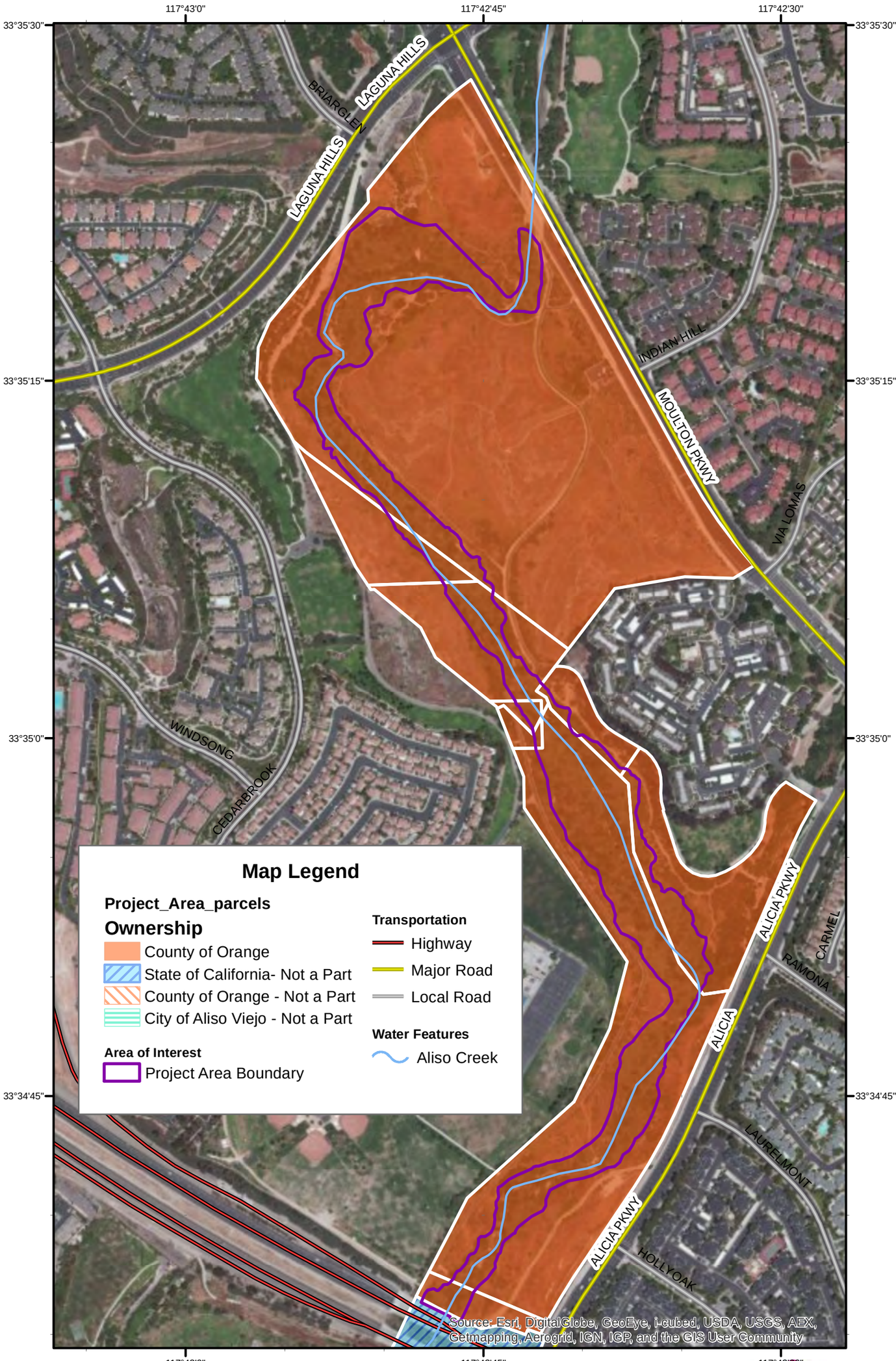
The County of Orange also manages habitat and water quality in its watersheds, including Aliso Creek, through OC Watersheds, a division of the OC Public Works Department. OC Watersheds is responsible for monitoring water quality, coordinating National Pollutant Discharge Elimination System (NPDES) compliance, implementing habitat restoration projects and managing water quality improvement projects. Along with OC Parks, OC Watersheds is an important partner to OCTA on this HMMP project, which spans 55 acres from approximately 500 feet downstream of the intersection of Avila Road and Alicia Parkway on its southern boundary to Moulton Parkway on its northern boundary. Southern Boundary: 33.561850°; -117716806°; Northern Boundary: 33.588248°; -117.712158°. Although there are several partnerships with OCTA to ensure that the activities proposed in this HMMP complements others efforts, OCTA is responsible for implementing the HMMP project and providing funding for the development, installation, maintenance, and monitoring (including long-term, as necessary) of this HMMP project.

The detailed RMP for AWCWP addresses the myriad habitat, invasive species, water quality, public access and management components of effective open space management. The full text of the RMP and all related exhibits is available at http://ocparks.com/parks/aliso/links. All NCCP documents are available at http://naturereserveoc.org/documents.htm. The Aliso Creek HMMP project area is located within the RMP area and is covered under that plan.

Aliso Creek HMMP

Property Ownership - North

Attachment F



Map Legend

Project_Area_parcels

Ownership

- County of Orange
- State of California- Not a Part
- County of Orange - Not a Part
- City of Aliso Viejo - Not a Part

Area of Interest

- Project Area Boundary

Transportation

- Highway
- Major Road
- Local Road

Water Features

- Aliso Creek

Map Scale: 1:8,000 if printed on a legal (8.5" x 14") sheet.

Meters: 0 100 200 400 600

Feet: 0 250 500 1,000 1,500 2,000

Projection: Web Mercator Auxiliary Sphere WGS1984

Laguna Canyon Foundation

Aliso Creek HMMP

Property Owernship - South

Attachment F



Map Scale: 1:8,000 if printed on a legal (8.5" x 14") sheet.

Meters
0 100 200 400 600

Feet
0 250 500 1,000 1,500 2,000

Projection: Web Mercator Auxiliary Sphere WGS1984

Laguna Canyon Foundation

2.1 Long Term Site Protection

A site protection instrument approved by County of Orange, the ACOE, SWRCB, and OCTA will be recorded over the HMMP project site for the purpose of ensuring long term protection of its conservation values. The approved site protection instrument must be recorded in advance of, or concurrent with (within two months), freeway project impacts to waters of the U.S. The site protection instrument will anticipate potential construction and maintenance of the federal Aliso Creek Mainstem Ecosystem project within areas covered by the site protection instrument. The site protection instrument will, to the extent appropriate and practicable, prohibit incompatible uses that might otherwise jeopardize the objectives of OCTA's compensatory mitigation project.

A Long Term Management Plan (LTMP) will be completed for the HMMP project and will be provided to the agencies as a separate document. The LTMP must be finalized within two months of freeway project impacts to waters of the U.S. The LTMP will include a description of long-term management needs, annual cost estimates for these needs, and identify the funding mechanism that will be used to meet those needs.

2.2 Responsible Parties

Applicant/Permittee:
Orange County Transportation Authority
550 South Main Street, PO Box 14184, Orange, CA 92863
Attn: Lesley Hill, 714.560.5759, lhill@octa.net

Ownership of HMMP project site:
County of Orange
c/o OC Parks
13042 Old Myford Road, Irvine, CA
Attn: Stacy Blackwood, Director, 714.973.6855, stacy.blackwood@ocparks.com

Long-term Management of HMMP project site:
OC Parks
13042 Old Myford Road, Irvine, CA
Attn: Stacy Blackwood, Director, 714.973.6855, stacy.blackwood@ocparks.com

OCTA is responsible for implementing the HMMP project and providing funding (amount approved by the OCTA Board of Directors in 2012) for the development, installation, maintenance, and monitoring (including long-term, as necessary) of the HMMP project as described in this plan. OCTA intends to transfer long term management mitigation responsibilities to OC Parks, subject to prior review and approval of the ACOE. As noted above, the HMMP project site is located within the

AWCWP RMP area and some long-term management activities are covered by existing funding from the County. Additional long-term management activities at the HMMP project site have been identified and funding in the form of an endowment will be provided by OCTA through the M2 program and in coordination with ACOE and OC Parks. A summary of long-term management tasks and costs is provided in Section 15.1; however, a separate LTMP will be prepared to address additional long-term management details such as administrative/enforcement processes (i.e., transfers, replacement, amendments, notices) and funding/task prioritization, requiring approval from the regulatory and resource agencies as described in Section 15.1. The separate LTMP will be an addendum to the RMP. As the permittee, OCTA is responsible for ensuring the satisfactory completion of all commitments in this plan necessary to obtain sign off from the regulatory and resource agencies.

2.3 Laguna Canyon Foundation Organizational Qualifications

OCTA intends to use the services of LCF to implement this Aliso Creek HMMP until performance standards have been achieved and confirmed by the applicable regulatory agencies. LCF is a 501.c.3 entity founded in 1990 whose mission is to preserve, protect and enhance the South Coast Wilderness System of Parks and Preserves. The South Coast Wilderness is comprised of more than 22,000 acres of coastal wilderness lands and includes Laguna Coast and AWCWP, Crystal Cove State Park, and open space lands owned by the cities of Laguna Beach, Irvine, Newport Beach, Aliso Viejo, Laguna Niguel and Dana Point. LCF manages a staff of experienced ecologists, biologists and educators, as well as more than 200 wilderness volunteers who aid LCF in habitat restoration, trail improvement, park management and outdoor education programs. LCF previously received funding from the OCTA M2 program for restoration of the Big Bend site in Laguna Canyon which has been fully planted and is presently on-budget and on-schedule in its maintenance/monitoring phase. LCF is also presently working with OC Parks to implement a 3 mile-long arundo removal and habitat restoration in the southern portion of Aliso Creek, near the Aliso Creek HMMP site, as described in Section 4.3 and depicted on Figure 4. The project began in 2012 and has removed more than 33 acres of arundo*,* pampas grass *(Cortaderia selloana),* and poison hemlock *(Conium maculatum)* to date.

3.0 Permits

The following permits/approvals have been obtained for implementation of the Aliso Creek HMMP:

- ACOE verification of Regional General Permit No. 41-Invasive Exotic Plant Removal (SPL-2003-01094-TOB)
- CDFW Section 1602 Streambed Alteration Agreement (#1600-2008-0247-R5)
- CEQA Mitigated Negative Declaration (SCH #2009031031)
- USFWS Biological Opinion (#FWS-OR-08B0013-09F0147)
- Formal Notification of Project to the SWRCB's section 401 water quality

certification for RGP 41 (SWRCB ID: SB13007GN)

4.0 Site Assessment and Baseline Conditions

4.1 Aliso Creek HMMP Site Location

GPS Coordinates: Northern Boundary: 33.588248°; -117.712158°
Southern Boundary: 33.561850°; -117716806°

APNs: 634-012-09, 634-341-01, 634-012-10, 634-021-09, 623-011-51, 623-011-36, 634-012-12, 634-012-13, 634-012-14, 634-012-15, 634-131-15, 634-131-18, 634-012-22

The HMMP project is located in AWCWP, in the city of Aliso Viejo, Orange County, California. The northernmost boundary of the project is Moulton Parkway and from that point the HMMP project boundaries extend southward, parallel to Alicia Parkway and hewing closely to the riparian and transitional zones of the creek. The southernmost boundary of the HMMP project is approximately 500 feet south of the junction of Alicia Parkway and Avila Road (Figure 3). Upstream from the HMMP project, Aliso Creek is occasionally channelized and heavily urbanized; however, the inception point of the HMMP project at Moulton Parkway begins a generally more natural, unchannelized stream reach of approximately 5 miles through AWCWP before reaching the Pacific Ocean at Aliso Beach.

4.2 Land Use History and Watershed Context

The Aliso Creek watershed is primarily suburban, supporting land uses that are 45% residential, 30% roads and public facilities, 12.3% commercial, 4.2% agricultural and 1.8% industrial. Most of the watershed has been developed into tracts of single-family homes, apartments and condominiums, with a supporting infrastructure of roads, schools, shopping centers and public buildings. Very little wilderness or undisturbed land remains in the watershed outside of the immediate vicinity of Aliso Creek and the 4,000+ acre AWCWP (which includes Wood Canyon), where the Aliso Creek HMMP project site is located.

Most of the suburban development was built within the last forty years. As recently as the 1930s, there was very little “built environment” near Aliso Creek. Cattle ranching was virtually the only land use in the area. Except for cattle ranchers and cowhands, the area was largely unpopulated. By 1940, the watershed was less than 1% developed. By the 1970s, the watershed was still barely 15% developed. But development accelerated at a furious pace beginning in the 1970s. By the year 2000, the watershed was over 70% developed, and nine communities were present in the watershed: Laguna Beach, Laguna Niguel, Aliso Viejo, Laguna Hills, Laguna Woods, Lake Forest, Mission Viejo, Foothill Ranch, and Portola Hills. The population within the

watershed increased from nearly zero in the 1930s to over 150,000 today. In just four decades the watershed has been almost entirely transformed, from primarily grazing and farming to primarily residential and commercial. It is now nearly fully developed.

Much of the residential and commercial development in the watershed was built in close proximity to the creek. In many places, little or no "buffer zone" exists between the creek channel and nearby streets, buildings and parking lots. Upstream from Interstate 5, the creek runs nearly adjacent to El Toro Road, a major highway. It then passes under freeway bridges, next to housing tracts and shopping centers, and through concrete culverts. The channel is directly contiguous to residential and commercial development in many places. There is residential development within one tenth of a mile from the channel virtually throughout much of the cities of Aliso Viejo, Laguna Niguel and Lake Forest.

The entire watershed has not been consumed by development, however. Some of it has been excluded from development by being incorporated into county parks and city parks. Preservation in the watershed began with the establishment of the Cleveland National Forest in 1908; the headwaters of the creek are located just within the boundary of this national forest. Additional parkland was set aside in the 1960s and 1970s: Laguna Niguel Regional Park was created in 1973, and protects 236 acres of the watershed. AWCWP was added to the Orange County park system in 1979, and now protects more than 4,000 acres in the lower part of the watershed.

4.3 Existing Structures and Roads/Trails with Ongoing Maintenance Activities

As previously discussed, the HMMP site is located on County of Orange land in a 55-acre portion of the AWCWP. County O&M activities in this area of the park are described below and on the map attached as Appendix B.

Aliso Creek Bikeway/Service Road. The County maintains this 20+ mile multi-use trail by routine inspections, clearing it of dirt and litter/debris and repairing any problems in the trail surface, including pavement and vegetation management. Access for repairs is usually via the bikeway itself, which is large enough to accommodate maintenance and contractor vehicles.

Dirt Trails. Several dirt multi-use trails provide maintenance, patrol and public access in this area of the park. The trails are maintained by routine inspections, clearing it of dirt and litter/debris and repairing any problems in the trail surface. Access for repairs is usually via the dirt trail itself, which is large enough to accommodate maintenance and contractor vehicles.

Concrete Spillways. Per the attached map, there are a few concrete spillways in the vicinity of (but outside) the restoration boundaries which help manage Aliso Creek flows. The concrete spillways are maintained by routine inspections, clearing them of silt and debris and repairing any problems in the structure. Access for repairs is usually

Aliso Creek Watershed Restoration

Watershed-scale Map Depicting Multiple Coordinated
Invasive Species Removals and Native Habitat Restorations

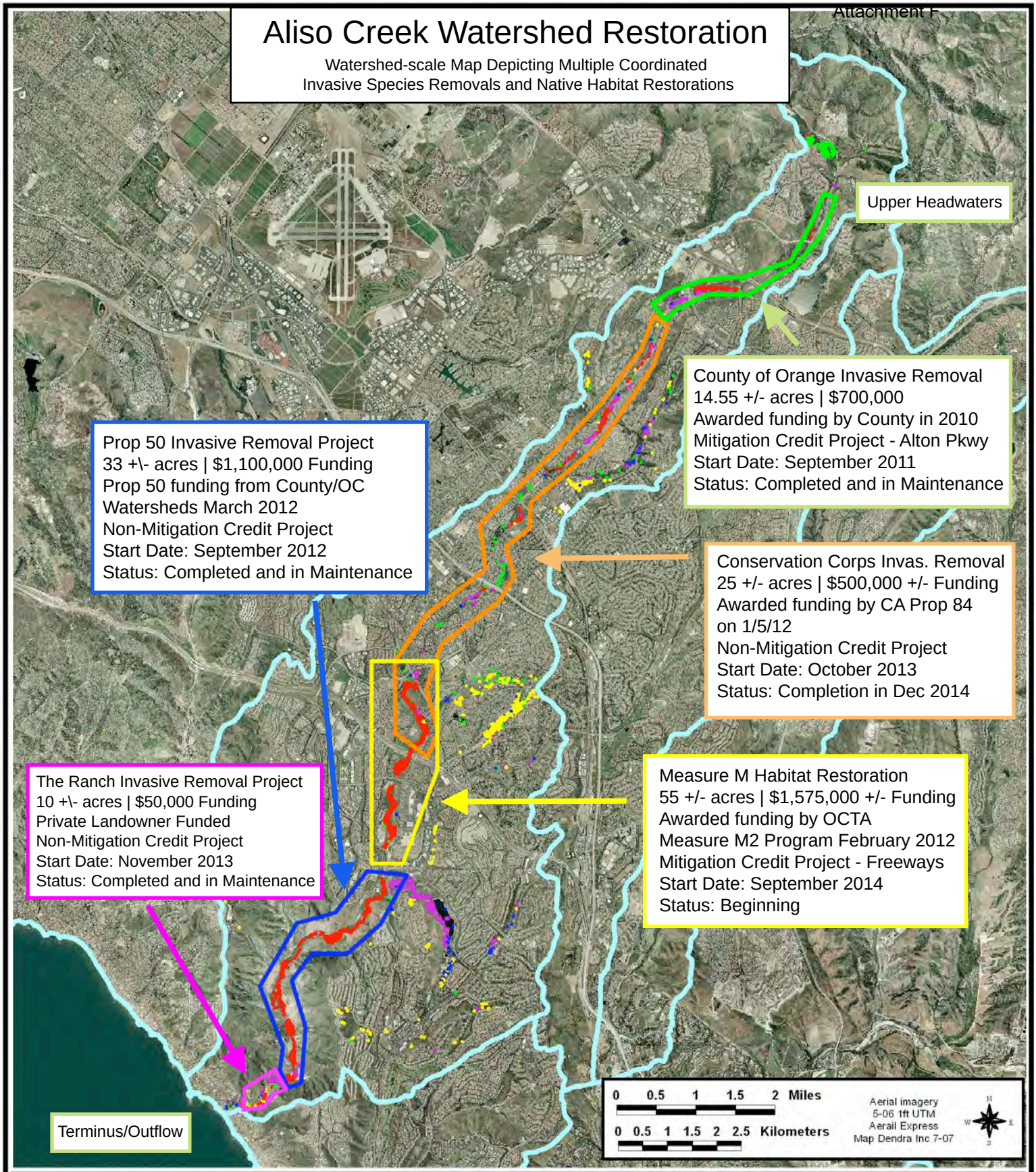


Figure 2. Invasive non-native riparian plants on Aliso Watershed.

Mapped invasive non-native plants

- Arundo
- Pampas grass
- Invasive palms
- Invasive shrubs
- Invasive trees

via the adjacent access roads, which are large enough to accommodate maintenance and contractor vehicles, and coordination with the agencies would occur if habitat impacts were necessary for work on the concrete spillways.

Rip Rap. Inside and adjacent to the restoration area, there are a few banks that were stabilized decades ago by rip rap, particularly where the Aliso Creek Bikeway passes near the creek bank. Rip rap is maintained by routine inspections and repairing any problems in the structure, although rip rap failures are rare in this area of Aliso Creek. Access for any needed repairs would usually occur via the adjacent access roads, which are large enough to accommodate maintenance and contractor vehicles, and coordination with the agencies would occur if habitat impacts were necessary for work on the rip rap areas.

Recycled Water Treatment. A small treatment facility for treating urban runoff is located on the bank of Aliso Creek. The facility is maintained by routine inspections and repairing any problems in the structure or its equipment. Access for any needed repairs would usually occur via the adjacent access roads. Coordination with the agencies would occur if any jurisdictional impacts would were possible during repairs.

4.4 Concurrent Habitat Restoration Efforts Upstream and Downstream of the HMMP Project Site

In addition to this HMMP project, concurrent habitat restoration efforts upstream and downstream help to buffer the HMMP project site by limiting the potential for invasive species reinvasion, and improving the overall ecological attributes of the Aliso Creek Watershed. These efforts are occurring under permits approved by the ACOE, USFWS, CDFW, RWQCB and other governing agencies. They include the following projects:

County of Orange Alton Parkway Mitigation: The project is removing non-native species and restoring 14.55 acres of habitat near the Aliso Creek headwaters, upstream of the M2 restoration area. The project is occurring over a 5 year time frame and began in approximately 2012. Additional funding is currently being sought to implement long term arundo maintenance over an estimated 10-15 year time frame.

Conservation Corps Proposition 84: The project began in January 2014 and will remove non-native species throughout the upper and middle portions of Aliso Creek, upstream of the M2 restoration area. The project is occurring over a 2-year time frame. Additional funding is currently being sought to implement long-term arundo maintenance over an estimated 10-15 year time frame.

County of Orange Proposition 50: The project was completed in December 2013 and removed more than 25 acres of arundo along a 3-mile southern section of Aliso Creek, downstream of the M2 restoration area. The project occurred over a 15-month timeframe, with 10 years of additional invasive species control funded by OC Parks.

Ben Brown's Golf Course/The Ranch at Laguna Beach: The private landowner of the site has completed removal of 3+ acres of arundo and pampas grass on the property, which is the southernmost private property along Aliso Creek, downstream of the M2 restoration area. Ongoing entitlement negotiations for a proposed renovation of the site and City of Laguna Beach invasive species enforcement are expected to mandate perpetual control of arundo on the property.

City of Laguna Beach Aliso Beach: The project is removing 2.5 acres of arundo and restoring bluff habitat along Aliso Beach, downstream of the M2 restoration area. The project is occurring over an 18-month timeframe and the City of Laguna Beach intends to perpetually control arundo on the site to ensure eradication.

4.5 Site Selection

Aliso Creek is an ideal site to perform restoration and enhancement activities due to the density of arundo present as well as severe water quality issues. Per the State of California 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report)[3], Aliso Creek is listed as impaired for warm freshwater habitat and water contact recreation beneficial uses. Causes of impairment include indicator bacteria, nitrogen, phosphorus, selenium, and toxicity due to natural sources, non-point sources, urban runoff/storm sewers, and unknown sources. Existing beneficial uses for Aliso Creek as included in the San Diego Regional Water Quality Control Board Basin Plan include Agricultural Supply, Non-Contact Water Recreation-2, Warm Freshwater Habitat, and Wildlife Habitat. Contact Water Recreation-1 is listed as a potential beneficial use. Aliso Creek runs for 19 miles from the Santa Ana Mountains to the Pacific Ocean, connecting several large public open space preserves. The riparian corridor associated with Aliso Creek is a key movement area for wildlife, so the restoration will improve overall connectivity of habitat, wildlife, and public access. Removal of arundo and revegetating with native species of different height structures will improve the overall habitat functions and services. Due to the arundo's dense stands that inhibit flows from moving around or through it, the arundo infestation has altered the hydrodynamics of the broader floodplain, helping to keep Aliso Creek flows confined to an incising primary channel and reducing access of creek flows to historic secondary channels. Removing the arundo will help allow the creek to reclaim these hydrologic connections over time, which will improve the ability of these floodplain areas to store and treat creek flows and reduce pollutants. In addition, the likelihood of successful replanting with native species is high as water is present year-round to support the vegetation communities proposed. Finally, restoration of this reach of Aliso Creek will complement other restoration projects in the same watershed being funded by other entities.

The areas described in this Aliso Creek HMMP comprise some of the highest levels of arundo infestations throughout the 19.7-mile Aliso Creek. The reach was chosen as

[3] http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

likely compensatory mitigation for some M2 project impacts because it begins a more natural span of the creek as it exits high density urban areas in Laguna Hills and Lake Forest, much of which are channelized. In addition, the creek occurs within the same watershed as some of the M2 project impacts. This reach is generally not channelized and characterized by broader open space buffer zones and reduced urban density, which is ideal for restoration and long-term management of generally self-sustainable riverine ecosystem. The northernmost location of the HMMP project site is the northernmost area of AWCWP, thus the site is afforded greater long-term land protection and management and also supports higher species diversity of benefit to the biodiversity improvement goals of the Aliso Creek HMMP.

The HMMP project will achieve the following improvements to the system: (1) protect, rehabilitate and enhance riparian corridors, transitional riparian-upland habitats, ecosystem integrity, and riparian-associated habitats of listed and sensitive species such as: least Bell's vireo, southwestern willow flycatcher, western pond turtle, bats, bobcat, and yellow-breasted chat through the removal of non-native invasive plant species and planting of native willow and mulefat scrub, and through preservation in perpetuity; and (2) improve floodplain connection throughout allowing Aliso Creek to reclaim portions of the historic floodplain and secondary channels by removing arundo, which is currently armoring banks and causing flows within Aliso Creek to concentrate within a confined primary channel.

As previously discussed, there are several concurrent restoration/enhancement efforts being implemented both upstream and downstream of the HMMP project site. These efforts are achieving substantial results towards eradication of arundo; however, the upstream reach of the creek has limited potential for improvement of multiple ecosystem attributes due to the more channelized nature of the stream in an urban setting. The removal and on-going treatment of arundo and other invasive species upstream and downstream of the HMMP project site lessens the risk of failure by reducing the risk of future re-infestation. Because arundo distributes vegetatively, it was critical to the success of the site that treatment and management of potential source material upstream was occurring prior to, or concurrent with, the proposed Aliso Creek HMMP activities. Through this watershed approach and proposed restoration and enhancement activities, the HMMP project site offers considerable benefits to multiple species, rehabilitation of the hydrologic and geomorphic regime, water quality enhancement and facilitation of upward trends of focal species such as least Bell's vireo and southwestern pond turtle. In addition, because most downstream arundo has been recently cleared in the 2012 – 2013 Proposition 50 effort, there will be immediate improvement in native habitat connectivity and recruitment opportunities through native seed-dispersal from the HMMP project site.

4.6 Soils and Topography

The Natural Resources Conservation Service (NRCS) has mapped the following soil series as occurring within the HMMP project area based on the SSURGO database (USDA/NRCS 2012b):

- Balcom
- Calleguas
- Myford
- Corralitos
- Capistrano
- Sorrento

The location of the soils associated with the HMMP project can be found in Figure 5. A description of all of the series included within the SSURGO mapping units is provided below based on the official soil descriptions provided by USDA (USDA/NRCS 2012b):

Balcom
The Balcom series consists of moderately deep, well-drained soils that formed in material weathered from soft, calcareous shale and sandstone. Balcom soils are found on rounded hills at elevations of 200 to 2,300 feet. The typical soil texture is that of loams with moderate to moderately slow permeability. Balcom soils have a moderate extent and are located in the Coast Range in south-central California and on the west side of the Sacramento Valley.

Calleguas
The Calleguas series consists of very shallow and shallow, well-drained soils that formed on uplands, hills, and mountains in material weathered from sedimentary rocks. Calleguas soils are found on exposed and often eroded south-facing slopes at elevations of 100 to 2,800 feet, with slopes of 9% to 75%. The typical soil texture is that of clay loams with medium or high runoff and moderate permeability.

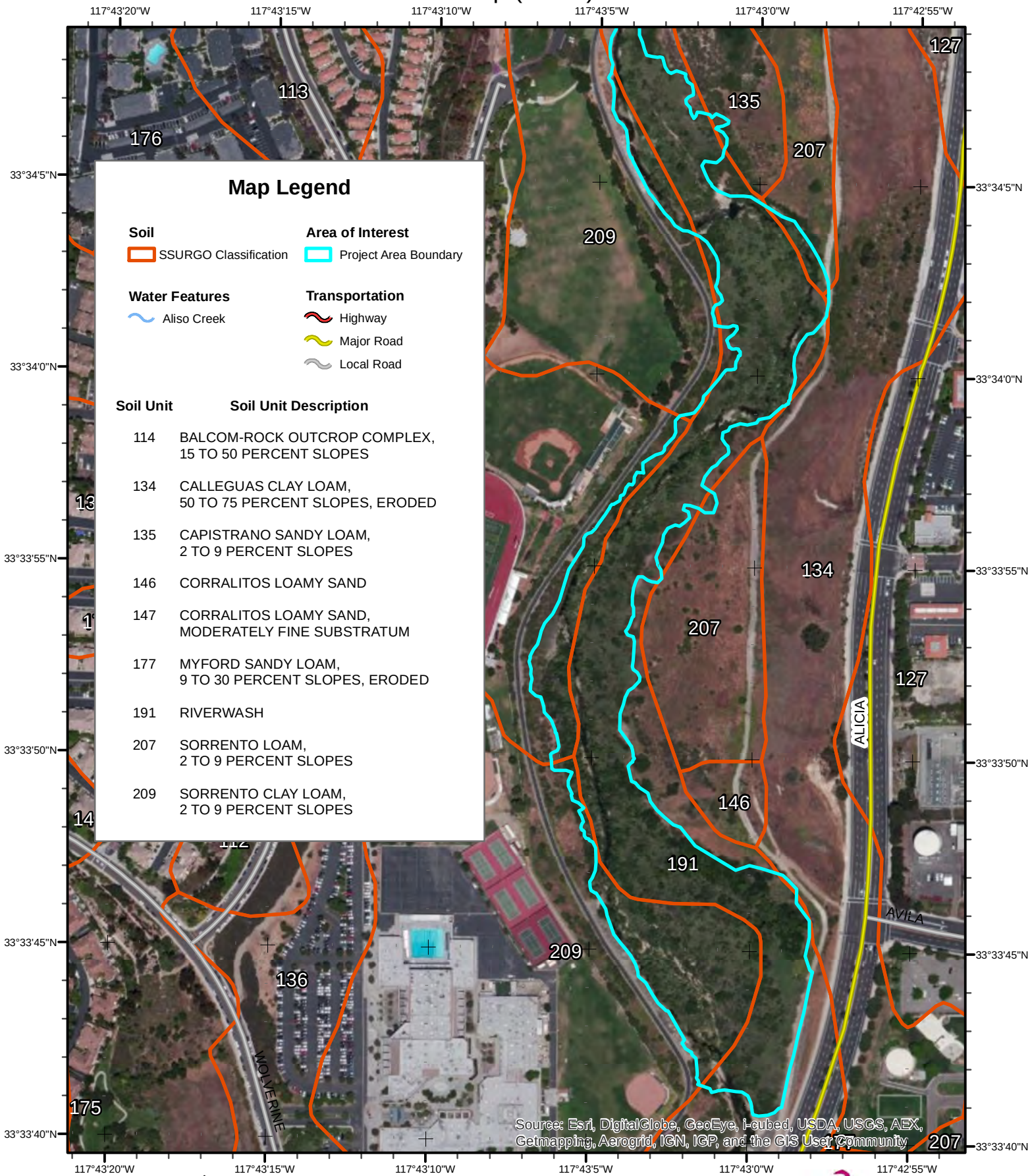
Capistrano
The Capistrano series consists of very deep, well-drained soils that formed in alluvium from sedimentary or granitic sources. Capistrano soils are found on alluvial fans and floodplains in small valleys at elevations of 25 to 2,500 feet, with slopes ranging from 0% to 15%. The typical soil texture is that of sandy loams with slow to medium runoff and moderately rapid permeability. These soils are found in coastal parts of southern California.

Corralitos
The Corralitos series consists of deep, somewhat excessively drained soils that formed in recent sandy alluvium derived from acid sandstone and related rocks. Corralitos soils are found on alluvial fans and in small valleys at elevations of 25 to 1,000 feet, with slopes ranging from 0% to 15%. The typical soil texture is that of loamy sands with slow runoff and rapid permeability. Corralitos soils have a moderate extent and are found in small coastal valleys from central California southward.

Aliso Creek HMMP

Attachment F

Soil Map (1 of 4)



Map Legend

Soil
- SSURGO Classification

Area of Interest
- Project Area Boundary

Water Features
- Aliso Creek

Transportation
- Highway
- Major Road
- Local Road

Soil Unit	Soil Unit Description
114	BALCOM-ROCK OUTCROP COMPLEX, 15 TO 50 PERCENT SLOPES
134	CALLEGUAS CLAY LOAM, 50 TO 75 PERCENT SLOPES, ERODED
135	CAPISTRANO SANDY LOAM, 2 TO 9 PERCENT SLOPES
146	CORRALITOS LOAMY SAND
147	CORRALITOS LOAMY SAND, MODERATELY FINE SUBSTRATUM
177	MYFORD SANDY LOAM, 9 TO 30 PERCENT SLOPES, ERODED
191	RIVERWASH
207	SORRENTO LOAM, 2 TO 9 PERCENT SLOPES
209	SORRENTO CLAY LOAM, 2 TO 9 PERCENT SLOPES

Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

0 250 500 Feet

0 50 100 150 Meters

Projection: Web Mercator Auxiliary Sphere WGS1984

Aliso Creek HMMP

Attachment F

Soil Map (2 of 4)



Map Legend

Soil
- SSURGO Classification

Area of Interest
- Project Area Boundary

Water Features
- Aliso Creek

Transportation
- Highway
- Major Road
- Local Road

Soil Unit	Soil Unit Description
114	BALCOM-ROCK OUTCROP COMPLEX, 15 TO 50 PERCENT SLOPES
134	CALLEGUAS CLAY LOAM, 50 TO 75 PERCENT SLOPES, ERODED
135	CAPISTRANO SANDY LOAM, 2 TO 9 PERCENT SLOPES
146	CORRALITOS LOAMY SAND
147	CORRALITOS LOAMY SAND, MODERATELY FINE SUBSTRATUM
177	MYFORD SANDY LOAM, 9 TO 30 PERCENT SLOPES, ERODED
191	RIVERWASH
207	SORRENTO LOAM, 2 TO 9 PERCENT SLOPES
209	SORRENTO CLAY LOAM, 2 TO 9 PERCENT SLOPES

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

149

Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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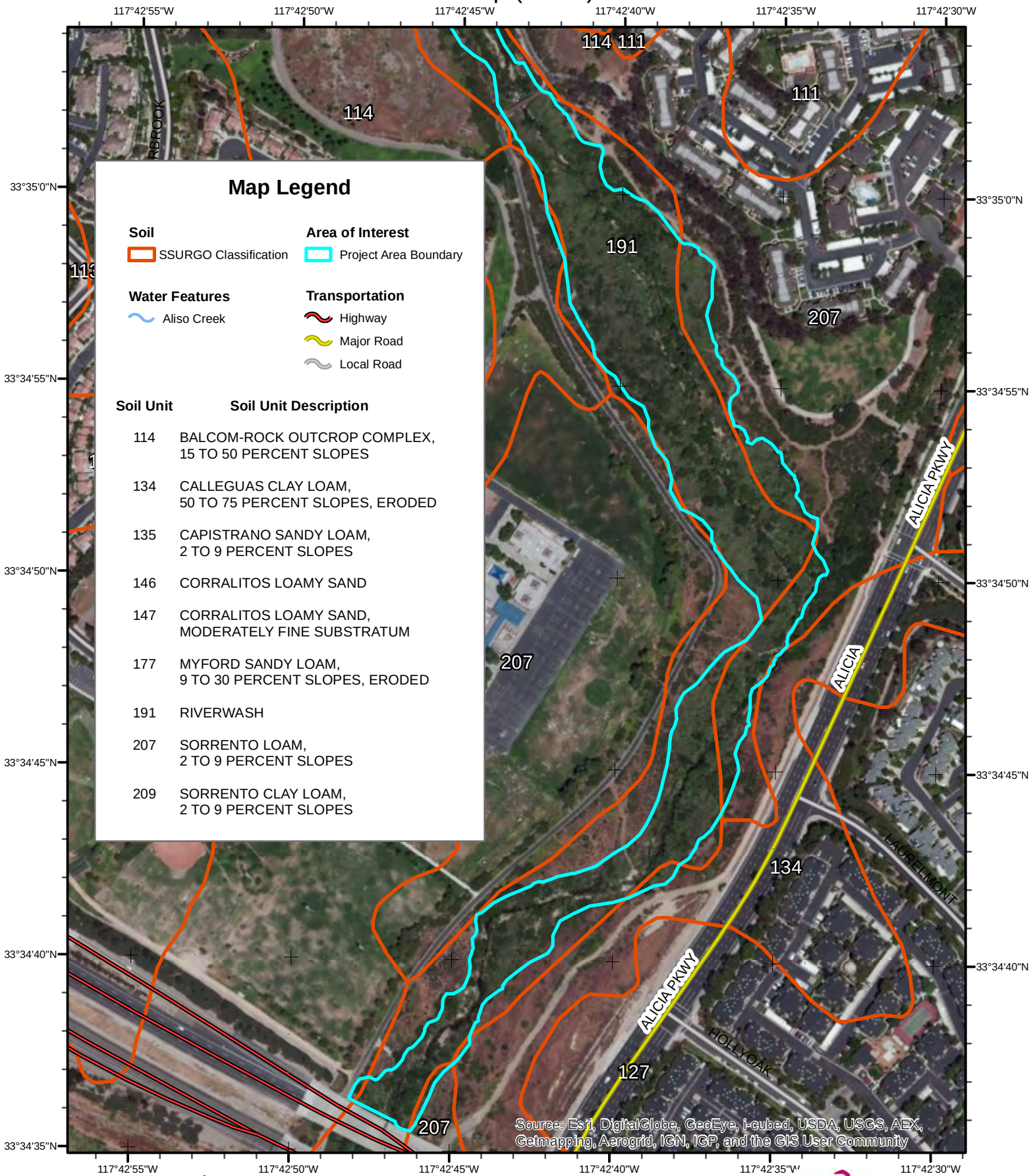
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Projection: Web Mercator Auxiliary Sphere WGS1984

Aliso Creek HMMP

Attachment F

Soil Map (3 of 4)



Map Legend

Soil
- SSURGO Classification

Area of Interest
- Project Area Boundary

Water Features
- Aliso Creek

Transportation
- Highway
- Major Road
- Local Road

Soil Unit	Soil Unit Description
114	BALCOM-ROCK OUTCROP COMPLEX, 15 TO 50 PERCENT SLOPES
134	CALLEGUAS CLAY LOAM, 50 TO 75 PERCENT SLOPES, ERODED
135	CAPISTRANO SANDY LOAM, 2 TO 9 PERCENT SLOPES
146	CORRALITOS LOAMY SAND
147	CORRALITOS LOAMY SAND, MODERATELY FINE SUBSTRATUM
177	MYFORD SANDY LOAM, 9 TO 30 PERCENT SLOPES, ERODED
191	RIVERWASH
207	SORRENTO LOAM, 2 TO 9 PERCENT SLOPES
209	SORRENTO CLAY LOAM, 2 TO 9 PERCENT SLOPES

Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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Projection: Web Mercator Auxiliary Sphere WGS1984

Aliso Creek HMMP

Soil Map (4 of 4)

Attachment F



Map Legend

Soil
- SSURGO Classification

Area of Interest
- Project Area Boundary

Water Features
- Aliso Creek

Transportation
- Highway
- Major Road
- Local Road

Soil Unit	Soil Unit Description
114	BALCOM-ROCK OUTCROP COMPLEX, 15 TO 50 PERCENT SLOPES
134	CALLEGUAS CLAY LOAM, 50 TO 75 PERCENT SLOPES, ERODED
135	CAPISTRANO SANDY LOAM, 2 TO 9 PERCENT SLOPES
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177	MYFORD SANDY LOAM, 9 TO 30 PERCENT SLOPES, ERODED
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207	SORRENTO LOAM, 2 TO 9 PERCENT SLOPES
209	SORRENTO CLAY LOAM, 2 TO 9 PERCENT SLOPES

Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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Projection: Web Mercator Auxiliary Sphere WGS1984

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Myford
The Myford series consists of deep, moderately well-drained soils formed on terraces with elevations of less than 1,500 feet. The typical texture is that of sandy loam and sandy clay loams with medium to rapid runoff and very slow permeability. Myford soils have a moderate extent and are located in southern California.

Sorrento
The Sorrento soil series consists of very deep, well-drained soils that formed in medium-textured alluvium, mostly from sedimentary rocks. Sorrento soils occur on alluvial fans and stabilized floodplains at elevations of 25 to 2,100 feet, with slopes of 0% to 15%. The texture is primarily that of fine loams with negligible to medium runoff and moderate to moderately slow permeability, depending on the dominant texture and stratification of the lower horizons. This series is located extensively through the valleys of the southern part of the Coast Range in California.

The following soil types or map units are identified on the hydric soils list for the Orange County and part of Riverside County (NRCS/USDA 2011):

- Corralitos Loamy Sand
- Corralitos Loamy Sand, Moderately Fine Substratum
- Riverwash

As noted, it is expected that removing the arundo will help allow Aliso Creek to reclaim access to the historic broader floodplain over time. Historic secondary channels exist along the floodplain and would be re-engaged in certain portions of the HMMP project area during higher flow events following the successful removal of arundo. Once the arundo is removed, the channel and adjacent floodplain will have the opportunity to re-establish dynamic equilibrium; but this process is expected to take several years and may be impeded by other negative creek hydrology factors, such as downcutting from urban runoff.

4.7 Hydrology

Aliso Creek is a perennial tributary to the Pacific Ocean. Creek hydrology is a combination of dry season urban runoff and storm flows following precipitation events. Aliso Creek and many of its tributaries were historically much narrower, supporting some intermittent riparian habitat and sections of wetlands, including alkali marsh. But the dry season urban runoff, as described further below, is thought to be the cause of perennialization of the creek.

The creek enters the HMMP project site at Moulton Parkway and extends southerly for approximately 12,612 linear feet before exiting the HMMP project area. As previously noted the Aliso Creek Watershed is 19.7 miles long and encompasses a drainage area of approximately 36 square miles (i.e., Aliso Creek's physical watershed defined by the ridgelines/interfluve and draining to the Pacific Ocean). The HMMP project site is part

of the San Juan hydrologic unit (HU), an HU that comprises the major tributaries of Arroyo Trabuco, Aliso Creek San Juan Creek, and Oso Creek. Many of the existing drainages are ephemeral or intermittent (although some have been perennialized by dry season urban runoff), and some are manipulated and/or channelized within urban concrete channels.

Within the HMMP project site, areas within the ordinary high water mark (OHWM) associated with Aliso Creek are generally characterized by a low flow channel containing open water and bound by an active floodplain with recently deposited sediment and emergent vegetation. The creek and active floodplain area is generally contained within incised vertical channel banks armored by arundo; the arundo, as discussed, reduces the ability of Aliso Creek flows to access the broader floodplain. The surrounding floodplain supports a riparian scrub and transitional ecotone community, and appears to be supported by creek flow-through and large (greater than 10-year) storm events.

The Aliso Creek watershed is heavily influenced by urban runoff. The HMMP project site flows year-round, receiving much of its regular dry season flow from storm drain input. Some of the problems occurring in this HMMP project site due to urban runoff include poor water quality, prevalence of invasive plant species, surface erosion and channel incision, and reduction of biodiversity. Annual precipitation in the HMMP project site is approximately 14 inches per year. On average, the wettest month is February, which averages 3.42 inches per year, and the driest month is August, which averages 0.03 inches per year. As is typical of the Mediterranean climate of this region, there is limited precipitation for the 6-month period between May and October, with an average precipitation of 1.35 inches per year.

4.8 Vegetation

LCF restoration ecologists conducted field mapping in May 2013 to identify existing vegetation communities and define GPS-referenced vegetation and percent cover polygons. In terms of native vegetation communities, Southern Willow Scrub and Mule Fat Scrub predominate at the site, with additional presence of Southern Cottonwood-Willow Riparian Forest and mixed transitional riparian/scrub habitats. Due to the high velocity flows in certain parts of the channel, the active channel is sporadically unvegetated; however, Southern Willow Scrub and Mule Fat Scrub are generally thick throughout the active channel, particularly in low flow areas, but also in high flow zones. Vegetation communities are further noted in Figure 7. Vegetation classifications utilized Holland (1986) and CDFW (2003) protocol and are generally described below.

Southern Cottonwood-Willow Riparian Forest

This community consists of tall, open, broadleafed winter-deciduous riparian forests dominated by Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), and several tree willows, including arroyo willow (*Salix lasiolepis*) and red

willow (*Salix laevigata*). Understories usually are shrubby willows with sporadic mixed mule fat (*Baccharis salicifolia*). Sub-irrigated and frequently overflowed lands along rivers and streams. The dominant species require moist, bare mineral soil for germination and establishment.

Mule Fat Scrub

Mule Fat Scrub historically occurs in intermittent stream channels with a fairly coarse substrate and moderate depth to water table. Mule fat is a key plant used by least Bell's vireo both for nesting and foraging. It grows rapidly and provides quick habitat benefits. Plants typical of mule fat scrub include mule fat, Santa Barbara sedge (*Carex babarae*), arroyo willow and sandbar willow (*Salix exigua*). Frequent flooding occurs in this community.

Disturbed Mule Fat Scrub

This habitat contains 20-50% cover of riparian scrub dominated by mule fat. Arundo represents the dominant non-native species with 20-50% cover. Some understory species associated with this habitat include dwarf nettle (*Urtica urens*), California mugwort *(Artemisia douglasiana),* and ripgut grass *(Bromus diandrus).* As with undisturbed Mule Fat Scrub, this habitat occurs in soils subject to frequent flooding along intermittent stream channels. Soils in this habitat contain fairly coarse substrate with a moderate depth to water table.

Southern Willow Scrub

Southern Willow Scrub forms dense thickets dominated by willows, which are typically too thick to allow much understory development. Scattered emergent cottonwoods and sycamores are common to this habitat type. Plants typical of southern willow scrub include sandbar and arroyo willows, black willow (*Salix goodingii*), and red willow. This community occurs on loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows.

Disturbed Southern Willow Scrub

As with Southern Willow Scrub, the dominant native tree species is arroyo willow. The dominant non-native species is arundo which has 20-50% cover. This community occurs on loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows.

Arundo/Riparian Forest

Non-native arundo dominates arundo/riparian forest with greater than 50% cover. Arundo grows best in moderately flat areas in alluvial soils that are well-drained and

moist. Several native riparian species often occur in this habitat such as arroyo willow and mule fat.

Coastal and Valley Freshwater Marsh

This habitat is dominated by broad-leaved cattail (*Typha latifolia*), California bulrush (*Schoenoplectus californicus*), and spiny rush (*Juncus acutus*). This marsh habitat typically occurs in areas of low creek flow or standing water. Soils associated with this habitat are sandy.

In addition to field mapping, a literature review was conducted to determine the sensitive plant species that have the potential to occur within the region. Sources included the California Natural Diversity Database (CNDDB) species data provided by CDFW for endangered and/or threatened species potentially occurring within the region. Sensitive wildlife species reviewed included those species listed as endangered or threatened under the Federal Endangered Species Act (FESA) and the California Endangered Species Act (CESA), candidates for listing by USFWS or CDFW, and species of special concern as defined by the CDFW. The riparian zones consist of mostly Arundo and are likely to not support sensitive plants species.

As determined by the literature review, the following sensitive plant species have the potential to occur in the HMMP project area:

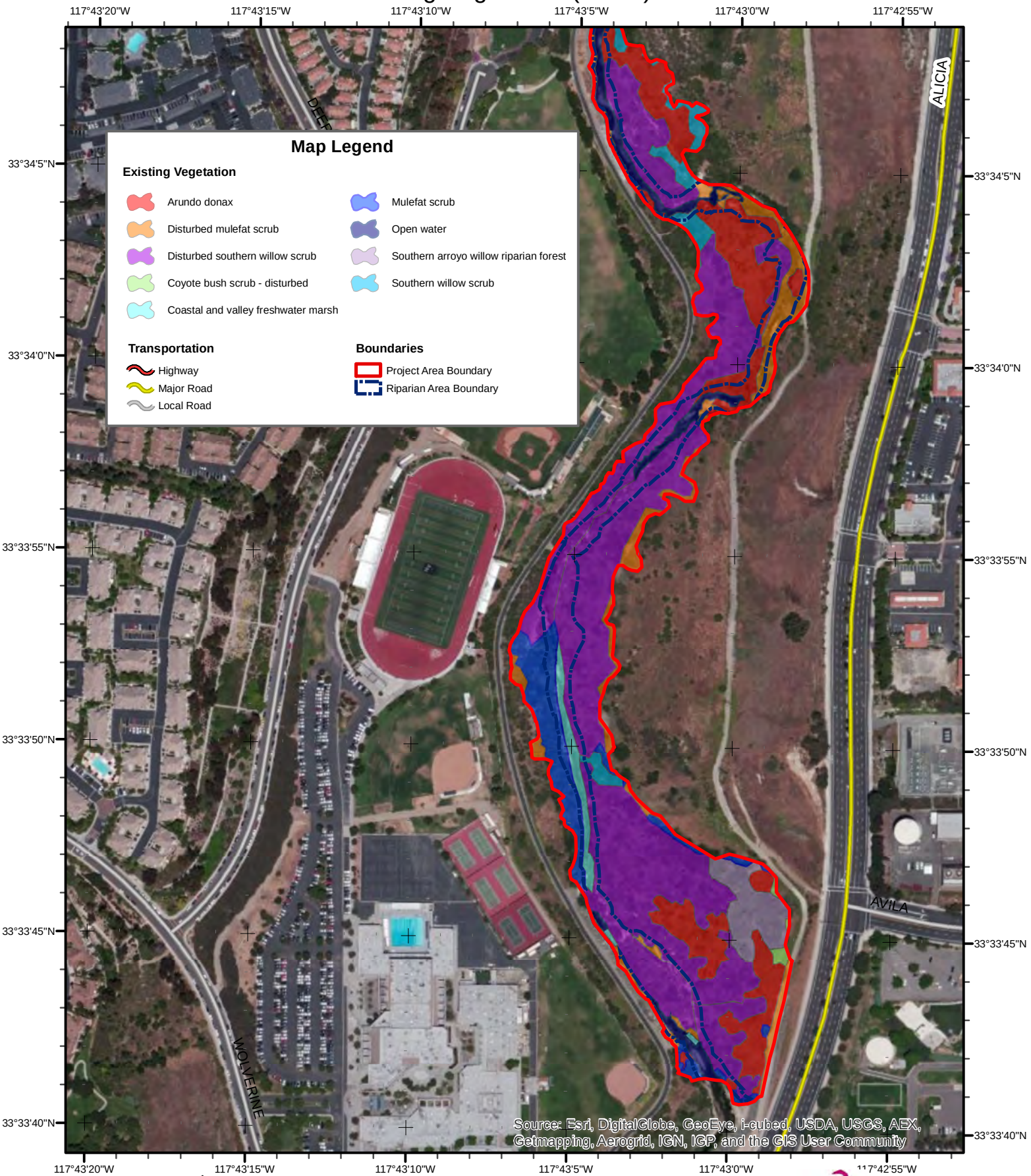
- Turkish rugging (*Chorisanthe staticoides*)
- Summer holly (*Comarostaphylis diversifolia*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- Catalina mariposa lily (*Calochortus catalinae*)
- Intermediate Mariposa Lily (*Calochortus weedii var. intermedius*)
- Pomona Locoweed (*Astragulis pomonensis*)
- Small Flower Microseris (*Microseris lanceolata*)
- Vernal Barley (*Hordeum intercedens*)
- Hummingbird Sage (*Salvia spathacea*)
- Palmer's Grappling Hook (*Harpagonella palmeri*)
- Southern tarplant (*Centromadia parryi spp. australis*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Neiblas Lichen species (*Var.)*
- Nuttall's scrub oak (*Quercus dumosa*)

Focused rare plant surveys conducted in 2014 did not detect any sensitive plants, although surveys were conducted during a very dry year (approximately 5 inches below a normal rain year; NRCS 2015).

Aliso Creek HMMP

Attachment F

Existing Vegetation (1 of 4)



Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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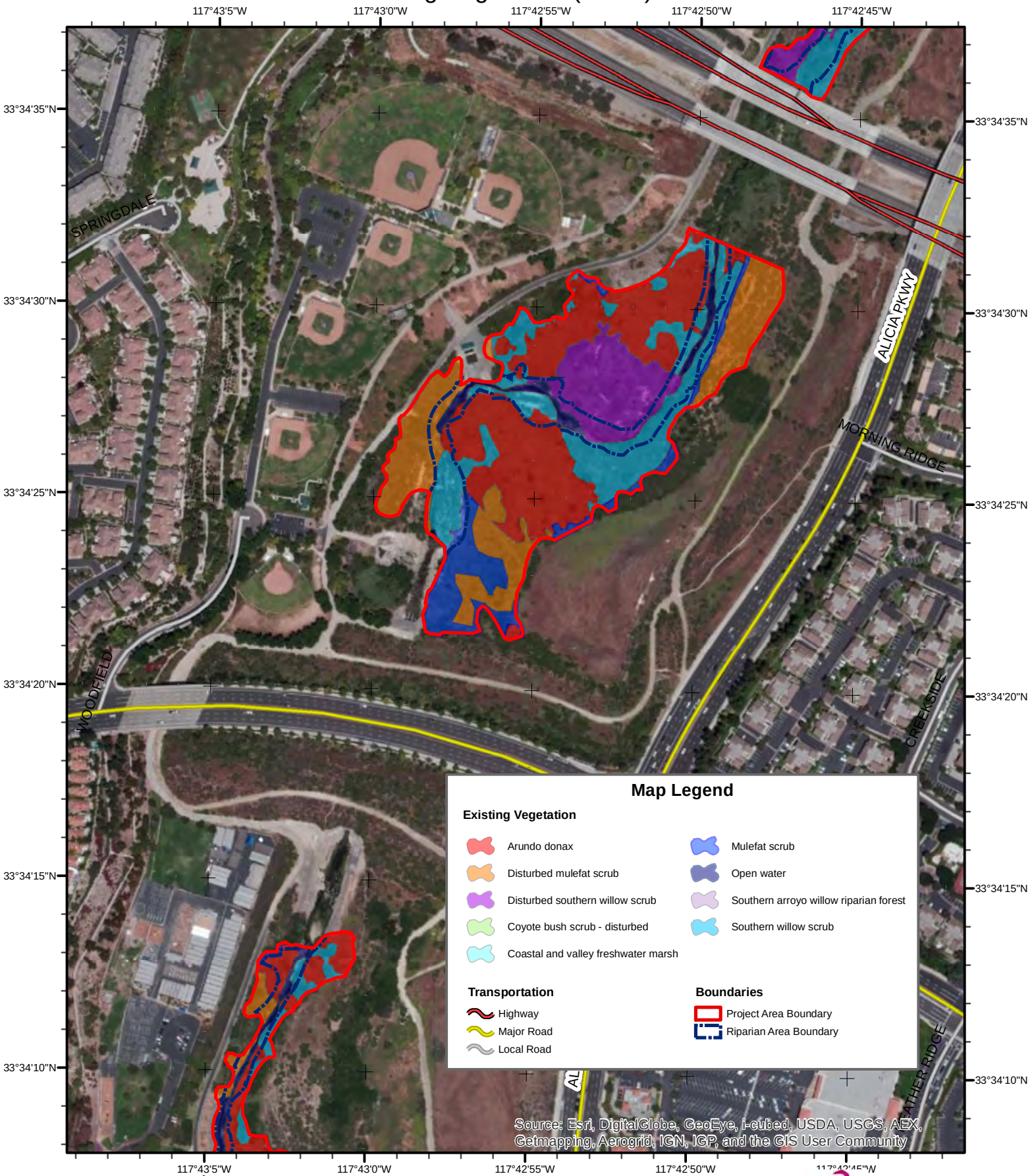
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Aliso Creek HMMP

Attachment F

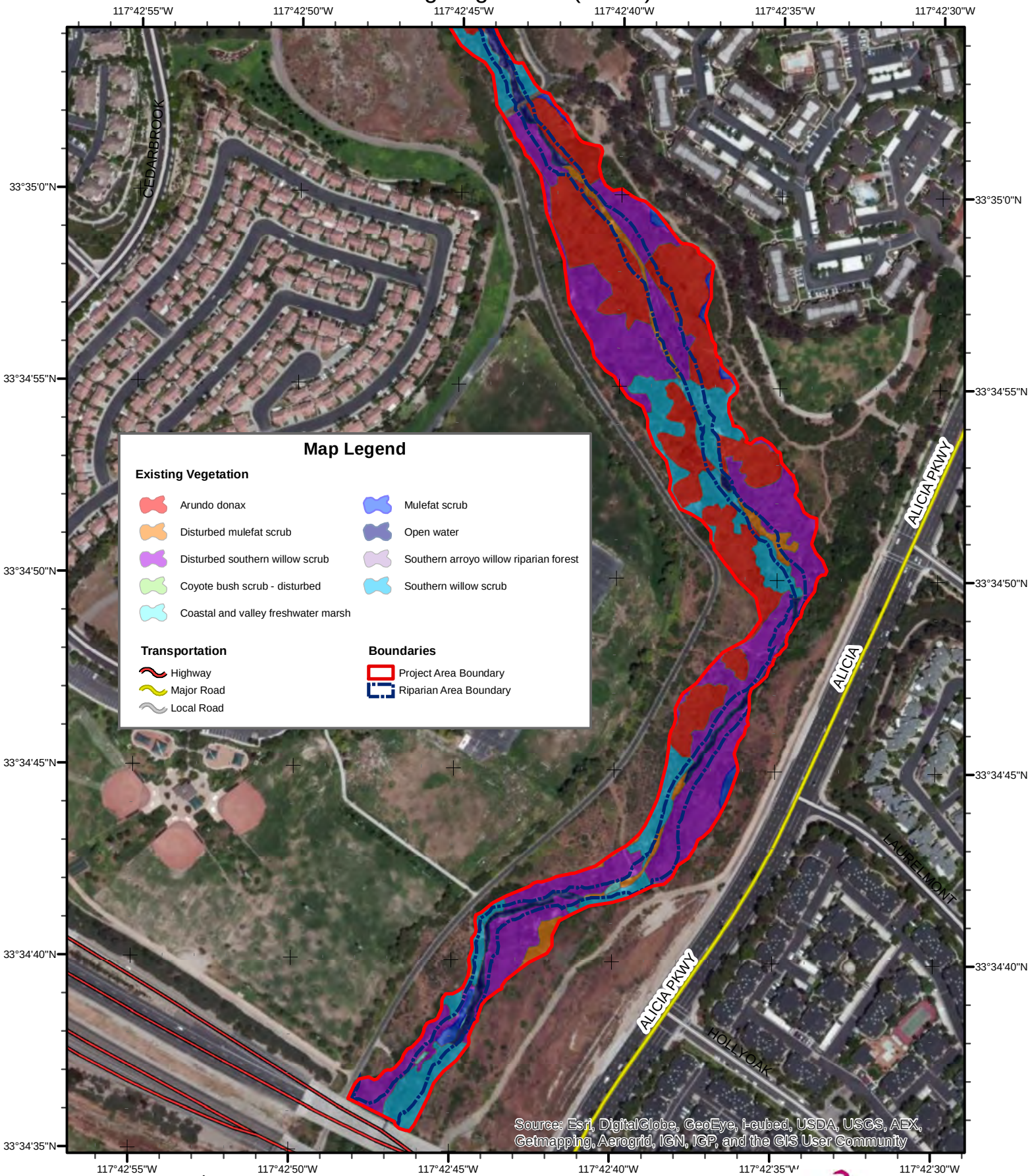
Existing Vegetation (2 of 4)



Aliso Creek HMMP

Existing Vegetation (3 of 4)

Attachment F



Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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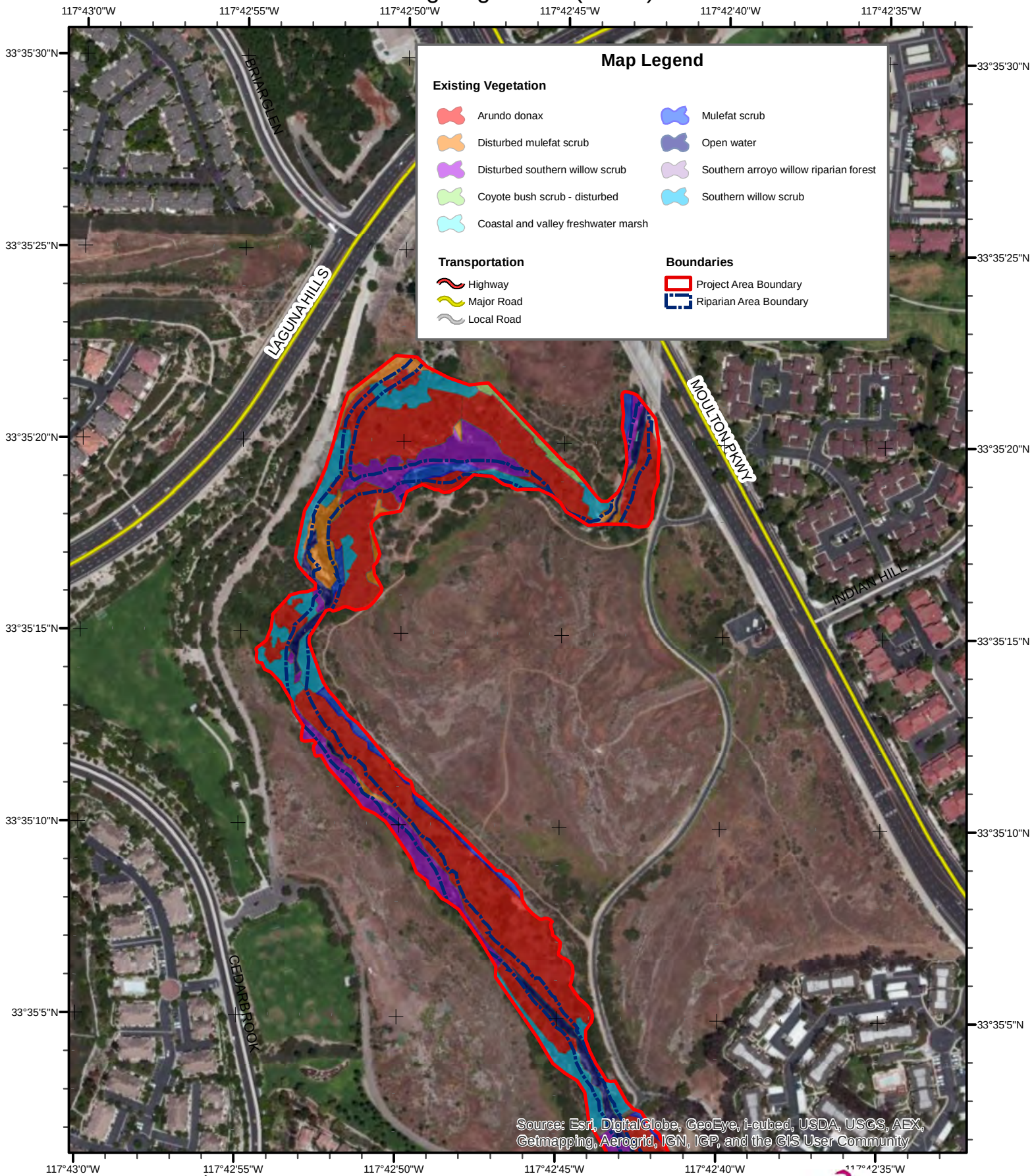
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Projection: Web Mercator Auxiliary Sphere WGS1984

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Aliso Creek HMMP

Existing Vegetation (4 of 4)

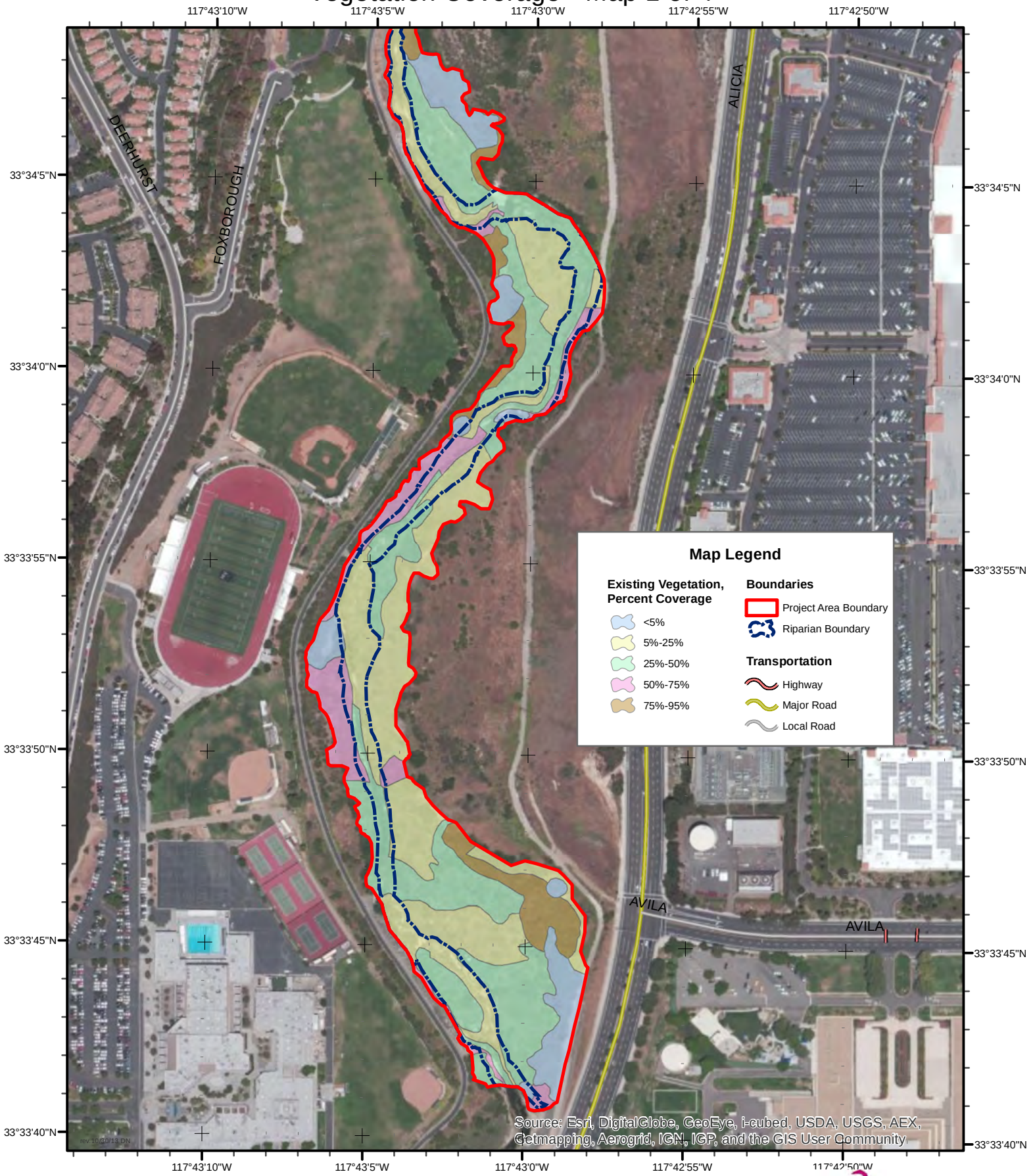


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Aliso Creek HMMP

Attachment F

Vegetation Coverage - Map 1 of 4



Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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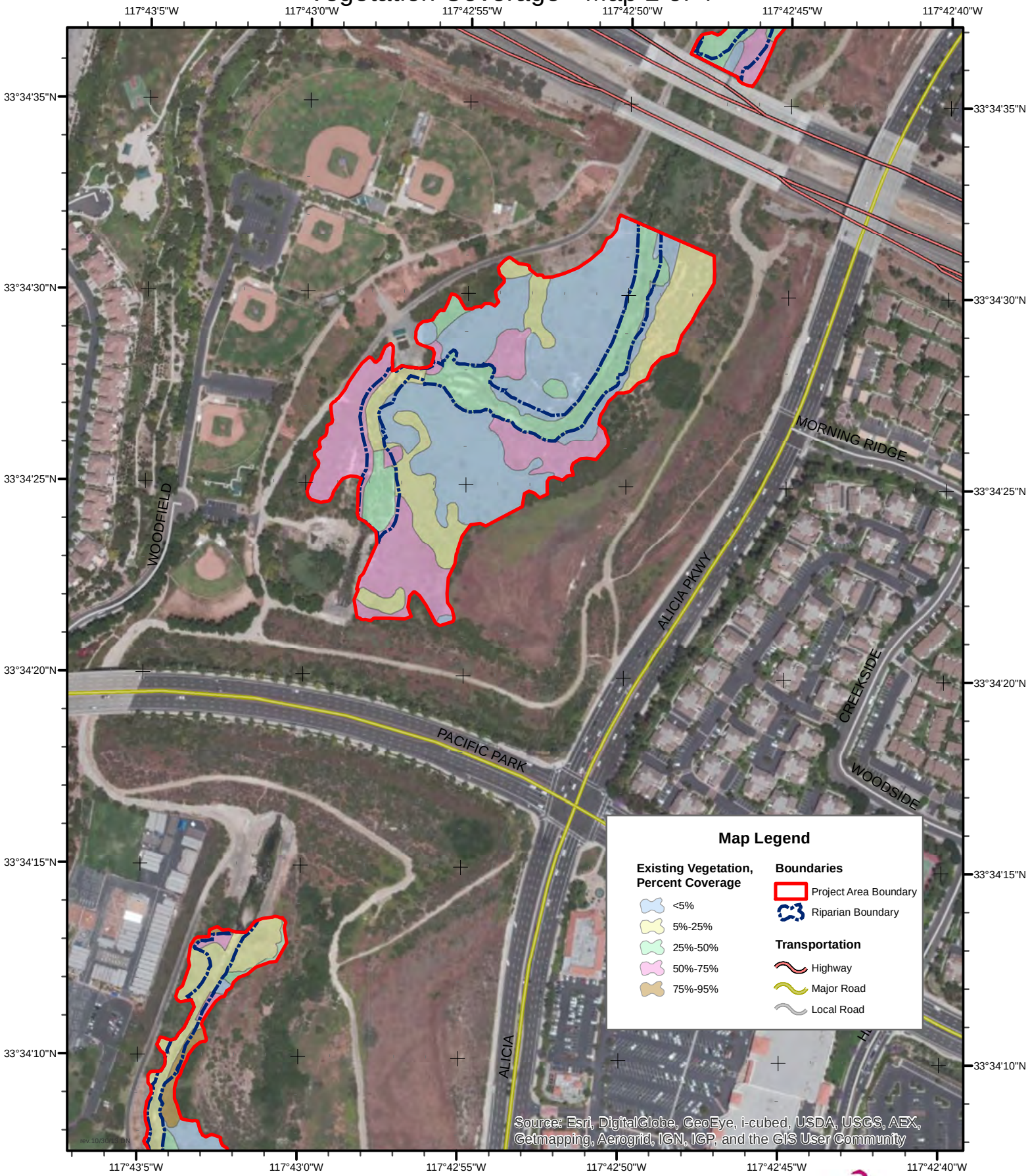
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Projection: Web Mercator Auxiliary Sphere WGS1984

Aliso Creek HMMP

Attachment F

Vegetation Coverage - Map 2 of 4



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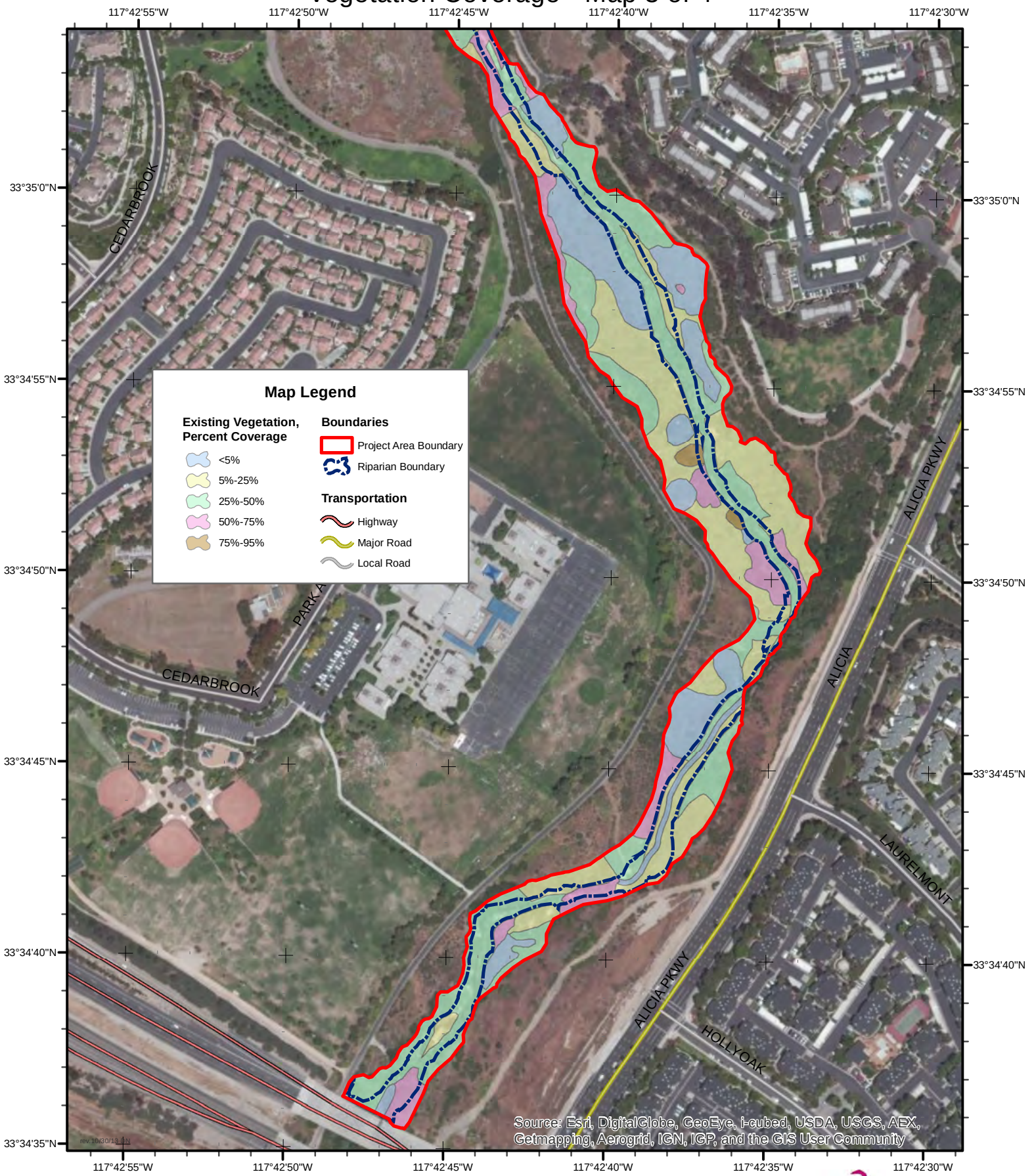
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Laguna Canyon Foundation

Aliso Creek HMMP

Attachment F

Vegetation Coverage - Map 3 of 4



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Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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0 100 200 Meters

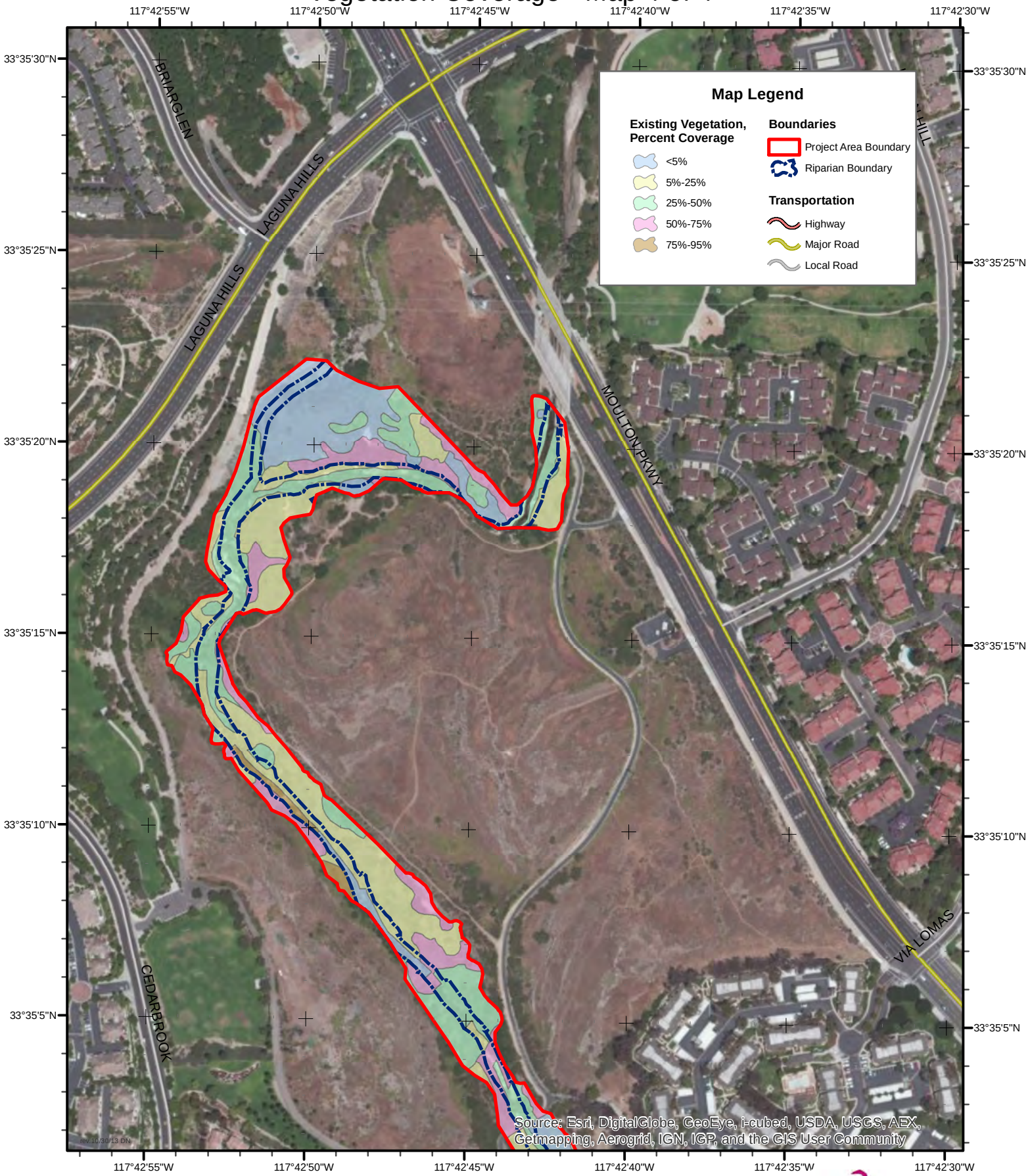
Projection: Web Mercator Auxiliary Sphere WGS1984

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Aliso Creek HMMP

Attachment F

Vegetation Coverage - Map 4 of 4



Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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Projection: Web Mercator Auxiliary Sphere WGS1984

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4.9 Invasive Plant Species

In 2007, an extensive biological study of the Aliso Creek Watershed was conducted for the County's Arundo Control and Re-Vegetation Program (Dendra: 2007). Invasive species, including arundo, were mapped in detail from the headwaters of Aliso Creek to its ocean outlet at Aliso Beach. The subsequent documentation provides an excellent analysis of invasive species populations throughout the creek. These data, including mapped GIS polygons of arundo populations, has yielded an acute understanding of the project's scope of work.

Invasive plant species were further field-surveyed by LCF Restoration Ecologists throughout 2012 and 2013. Survey results were consistent with the 2007 mapping project completed by Dedra, though populations had increased as expected. Species surveyed included many identified by the Cal-IPC for the State of California-Southwest floristic province including, but not limited to, arundo*,* pampas grass *(Cortaderia selloana),* artichoke thistle (*Cynara cardunculus*), black mustard (*Brassica nigra*), tamarisk (*Tamarix* spp.), castor bean (*Ricinis communis*), and tree tobacco (*Nicotiana glauca*). Non-native and/or invasive species identified on site are listed in Figure 7.

Arundo is the most populous invasive species within the HMMP project site by an order of magnitude, creating monocultures of 80% - 100% density throughout large portions of the site. Arundo has been identified as one of the most pernicious non-native invasive species in Southern California. The widespread infestation of the species throughout Southern California watersheds has caused a significant reduction of native habitat, loss of State and Federally-listed endemic species, extensive degradation of riparian biotic/abiotic ecosystem services, and considerable economic costs in the form of flood and infrastructure damage. Coupled with this deleterious impact is its sturdy resistance to eradication, in large part due to its origins in similar Asian and Mediterranean climates as Southern California and its large sub-soil rhizome system, which stores carbohydrates and fuels continuous regrowth even after repeated removal and/or herbicide applications.

Aliso Creek, including the majority of the HMMP project site, has become particularly infested with arundo (County of Orange/OC Watersheds: 2012). The species has formed massive monotypic stands in the creek bed, monopolizing soil moisture, displacing native willow scrub communities, and helping to confine Aliso Creek flows to a primary, incised channel that infrequently accesses the broader historic floodplain. This has diminished habitat quality for the endangered least Bell's vireo and numerous other sensitive species (ACOE: 2009). Dense arundo stands have also caused widespread concern about potential wildfires, as arundo stands are often used by transients for shelter (Bell: 1997). The use results in frequent accidental fires that further destroy the native riparian habitat, endanger human life and cause immense property damage. Pursuant to the myriad ecological impacts caused by arundo, removal and control of the species will be the primary focus of the Aliso Creek HMMP

rehabilitation project; however, other non-native and/or invasive species will also be controlled, as further discussed in Section 6.0 - Restoration Strategy.

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Aliso Creek Restoration HMMP

Invasive Species Map

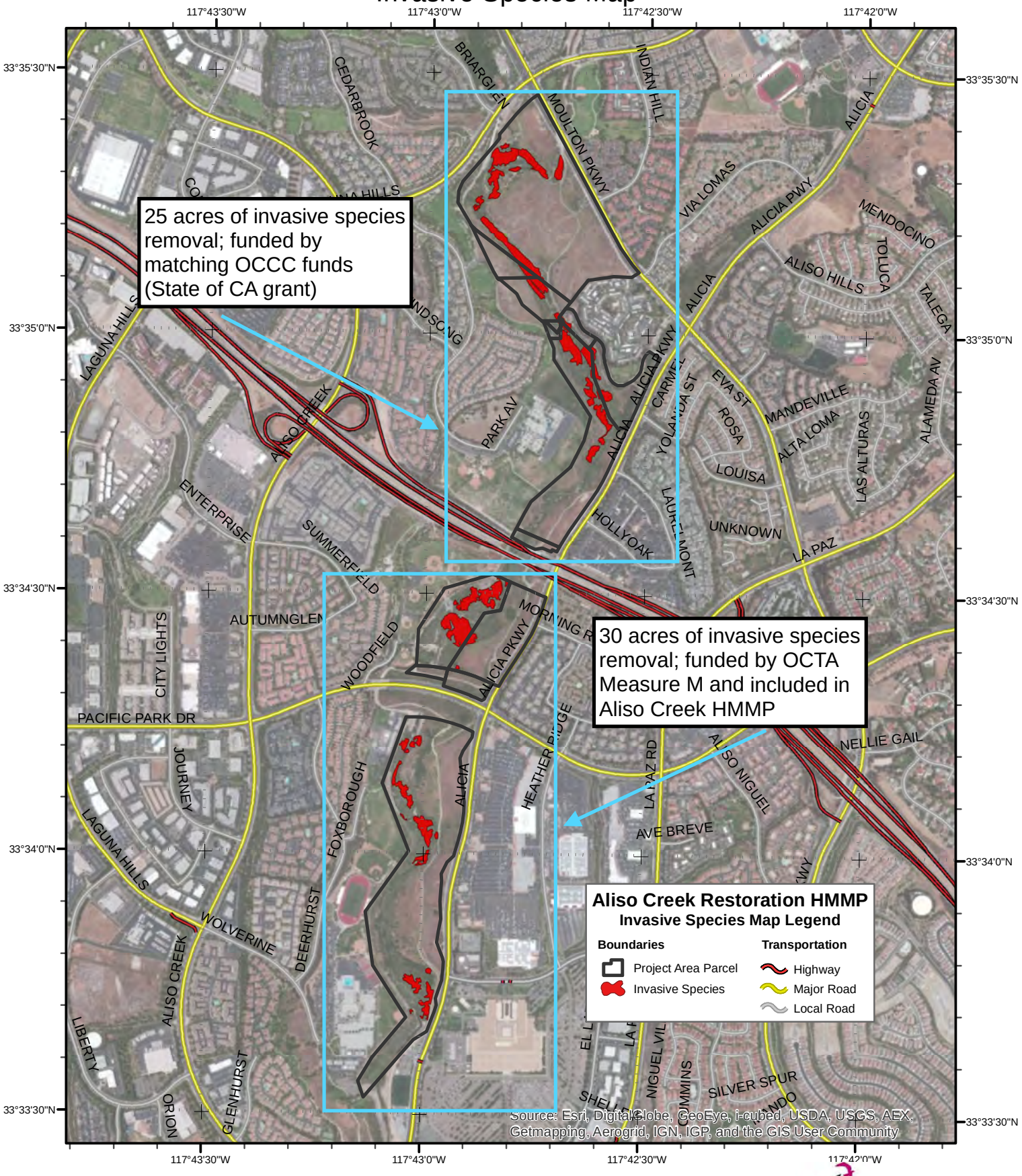


Table 1. Targeted Invasive Species for Removal

Scientific Name	Common Name
Silybum marianum	Milk Thistle
Carduus pycnocephalus	Italian Thistle
Washingtonia robusta	Mexican Fan Palm
Schinus terebinthifolius	Brazilian Pepper
Schinus molle	California Pepper
Myoporum spp.	Myoporum
Pennisetum setaceum	Fountain Grass
Carpobrotus edulis	Ice Plant
Chrysanthemum coronarium	Garland Chrysanthemum
Eucalyptus spp.	Eucalyptus
Acacia spp.	Acacia
Arundo donax	Arundo
Brassica nigra	Black Mustard
Conium maculatum	Hemlock
Cortaderia selloana	Pampas Grass
Cynara cardunculus	Artichoke Thistle
Foeniculum vulgare	Fennel
Nicotiana glauca	Tree Tobacco
Tamarix spp.	Tamarisk

4.10 Wildlife

A literature review and CNDDB species data search were conducted to determine the sensitive wildlife species that have the potential to occur within the region.

Documented occurrences of sensitive biological resources from previous biological investigations conducted within the County, the Orange County NCCP efforts, and the CNDDB were compiled. Determinations were made regarding the potential for sensitive

species to occur within the HMMP project area based on information gathered during Restoration Ecologist surveys and review of previous biological surveys, including the location of species occurrences, vegetation community, current site conditions, past and present land use and a review of known locations based on the CNDDB (CDFW 2006).

A habitat suitability assessment was conducted for the following focal, covered, conditionally covered, and planning wildlife species with potential to occur in the HMMP project area:

- Coastal California gnatcatcher (*Polioptila californica*)
- Southwestern pond turtle (*Emys [Clemmys] marmorata pallida*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Yellow warbler (*Dendroica petechia*)
- Yellow-breasted chat (*Icteria virens*)

According to the Site Assessment findings, the following species are known to occur within or adjacent to the HMMP project area:

- Coastal California gnatcatcher (*Polioptila californica*)
- Western Mastiff Bat (*Eumops perotis)*
- Yellow Breasted Chat (*Icteria virens)*
- Southwestern Pond Turtle (*Clemmys marmorata pallida)*
- Western Pond Turtle *(Actinemys marmorata)*
- Least Bell's vireo (*Vireo bellii pusillus*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)

Focused surveys for least Bell's vireo, southwestern willow flycatcher, and southwestern pond turtle were conducted in 2014. No least Bell's vireo or southwestern willow flycatcher were detected. Several southwestern pond turtles were identified throughout the creek. Specific avoidance and minimization measures will be developed for southwestern pond turtle in conjunction with the CDFW. In addition, pursuant to the potential occurrence of these and other species, LCF will adhere to species avoidance measures, as detailed extensively in the permits (Page 1). These measures are further detailed in the Implementation section of this Aliso Creek HMMP.

4.11 Invasive Wildlife Species

According to the Site Assessment findings, the following species are known to occur within or adjacent to the HMMP project area:

- Brown-headed Cowbird (*Molothrus ater*)
- Red Eared Slider (*Trachemys scripta elegans*)

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- Native Plant Species
- Native Animal Species
- Restoration Area
- OC Park Facilities

VEGETATION

- Dunes
- Scrub
- Chaparral
- Grassland
- Vernal Pools, Seeps, and Meadows
- Marsh
- Riparian
- Woodland
- Forest
- Cliff and Rock
- Marine and Coastal
- Lakes and Reservoirs
- Watercourses
- Agriculture
- Developed
- Disturbed

Portion of Aliso and Wood Canyons Wilderness Park

Portion of Aliso and Wood Canyons Wilderness Park

Aliso Creek Road
Cedarbrook
Laguna Hills Drive
Moulton Parkway
Alicia Parkway
Windsong
Park Avenue
Summerfield
Autmnglen
Pacific Park Drive
La Paz Road
Journey
Deerhurst
Liberty
Laguna Hills Drive South
Terrace View Road
Avila Road
El Lazo Road
Allegra Road

ALISO VIEJO
LAGUNA HILLS
LAGUNA NIGUEL
SAN JOAQUIN HILLS TRANSPORTATION CORRIDOR

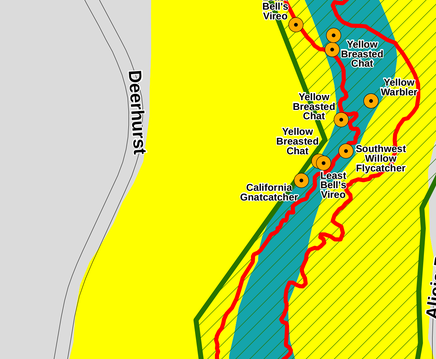
Southern Cottonwood Willow Riparian Forest
Least Bell's Vireo
Western Pond Turtle
Yellow Breasted Chat
Pomona Locoweed
Yellow Warbler
Southwest Willow Flycatcher
California Gnatcatcher
Red Shouldered Hawk
Southwest Pond Turtle

PREPARED BY:
OCCR - OC Parks GIS
Albert Lucero

DATA SOURCE:
- Geomatics Land Information Systems Division

The County of Orange and OCCR/OC Parks/Survey/GIS/LIS make no representations or warranties regarding the registration or accuracy of the data from which this map was derived. Neither the County nor OCCR/ OC Park/Survey/GIS/LIS shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

DATE: **February 11, 2013**



N

0 600 1,200 Feet

OCTA Project

OCparks

COUNTY OF ORANGE CALIFORNIA

- Crayfish (*Var.*)
- Bullfrog (*Var.*)

4.12 Jurisdictional Delineation

A Jurisdictional Delineation report was prepared for the HMMP project site by ICF International dated April 2013. The report shows that the site contains 9.51 acres of potential nonwetland waters of the United States (WoUS) and RWQCB waters of the state (WoS), and 1.95 acres of potential wetland WoUS and WoS. Approximately 50.98 acres of CDFW vegetated riparian streambed is present within the HMMP project site. A copy of the jurisdictional delineation report is included as Appendix C. A preliminary jurisdictional determination was issued by the ACOE dated May 9, 2013 concerning potential WoUS.

Due to a conflict with a State of California right-of-way, 0.27 acre of potential WoUS consisting of 0.12 acre of potential non-wetland WoUS and 0.15 acre of potential wetland WoUS was removed from the HMMP project area. As such, the HMMP project area as of June 2016 contains 9.39 acres of potential non-wetland and 1.80 acres of potential wetland WoUS. In addition, 0.71 acre of CDFW vegetated riparian streambed was removed from the HMMP project area and a total of 50.27 acres remain[4].

Table 2. Waters of the U.S., Waters of the State, and CDFW Jurisdictional waters within the HMMP Project Site

Drainage	ACOE and RWQCB Potential Jurisdiction (acres)		CDFW Streambed (acres)		Linear Feet[1]
	Non-Wetlands	Wetlands	Unvegetated Streambed	Riparian	
Aliso Creek	9.39	1.80	0	50.27	12,375

[1] Linear footage reported is for all jurisdictions (ACOE, RWQCB, and CDFW) as it includes the same linear segments of the stream.

4.13 ACOE/RWQCB Mitigation by Mitigation Classification

The HMMP project separates compensatory mitigation activities into the following classifications:

Rehabilitation areas will repair via non-native biomass removal and native replanting natural/historic functions in areas with arundo density greater than 25% cover. Areas with arundo density exceeding 25% affect a multitude of biotic and hydrologic

[4] Note that Proposition 84 funding and/or donated labor from LCF will address arundo removal and maintenance and monitoring in this area. No mitigation credits are requested for the CDFW riparian areas within this HMMP project area.

resources/functions, including but not limited to sediment transport, flood attenuation and denitrification (Hoshovksy, 1988; Schmitz, 2007). Rehabilitation areas of the project site are heavily degraded and the removal of such high densities of arundo, followed by restoration, will result in improvement of both habitat and hydrologic resources/functions. Rehabilitation areas will provide gains in aquatic resource function, but will not result in a gain of aquatic resource area.

Enhancement areas will primarily improve biotic function(s) in areas with arundo density less than 25% cover. Enhancement areas of the HMMP project site are degraded and the removal of the small densities of arundo, followed by restoration, will result in improvement of habitat. Enhancement areas will provide gains in aquatic resource function, but will not result in a gain of aquatic resource area.

Table 3. ACOE Mitigation by Type

Mitigation Classification	Total Mitigation Acres	Percent Invasive
Wetland Enhancement	1.80	< 25%
Non-Wetland Enhancement	3.64	< 25%
Non-Wetland Rehabilitation	5.75	> 25%
Riparian Buffer Enhancement[1]	39.08	< 25%
Total:	**50.27**	
[1] Riparian buffer area is outside of WoUS and within CDFW only jurisdiction.		

Table 4. ACOE/RWQCB and CDFW Mitigation Summary. Enhancement and Rehabilitation

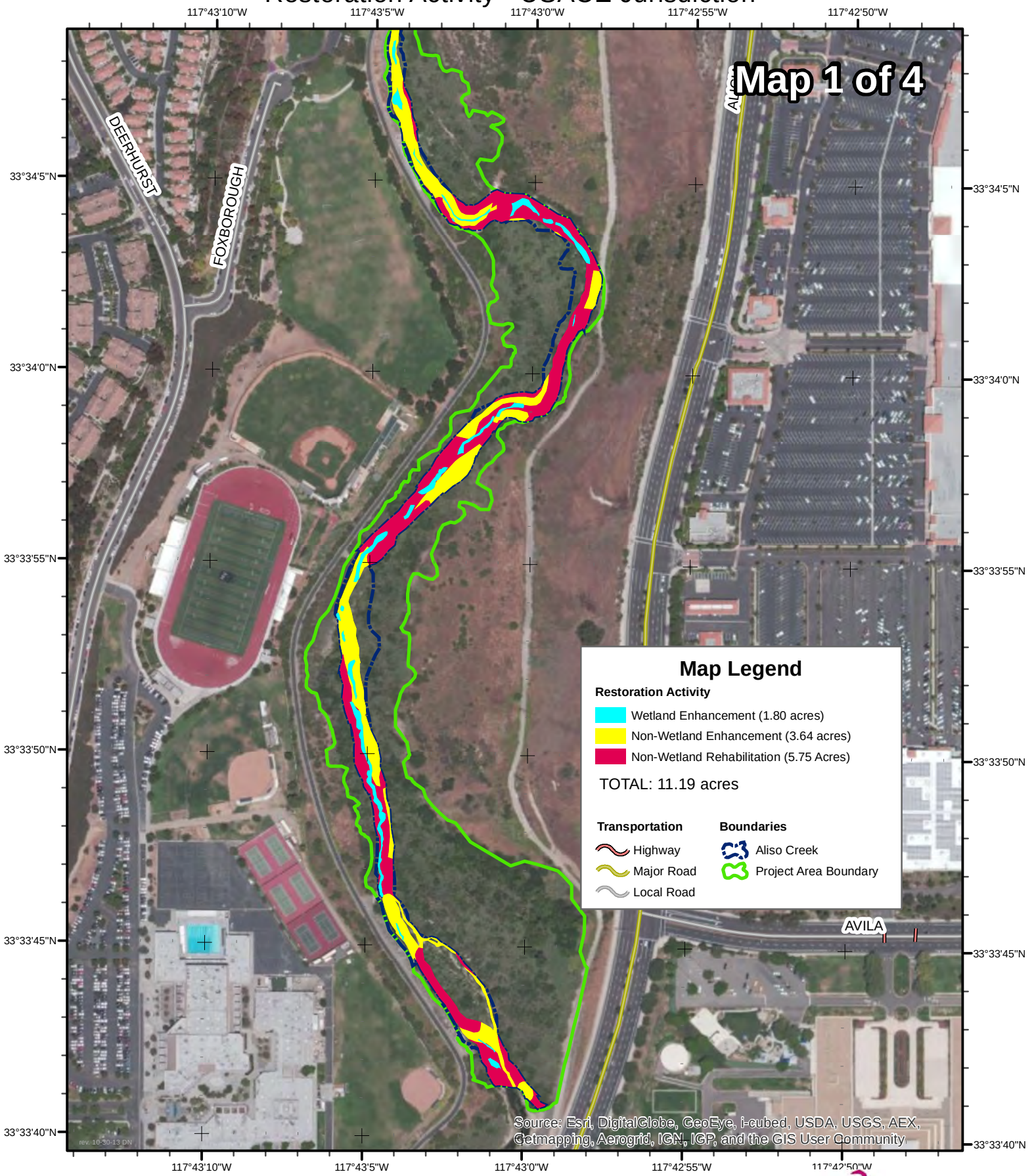
Mitigation Classification	Baseline Percent Cover (1st Year)	Target Percent Cover[5]	Total WoUS Restoration and Enhancement Acres	Total CDFW Restoration and Enhancement Acres	Total Non-Jurisdictional Restoration and Enhancement Acres	Total Restoration and Enhancement Acres

[5] 8th Year with 2 subsequent years of equal or greater cover without human interference

Aliso Creek HMMP

Attachment F

Restoration Activity - USACE Jurisdiction



Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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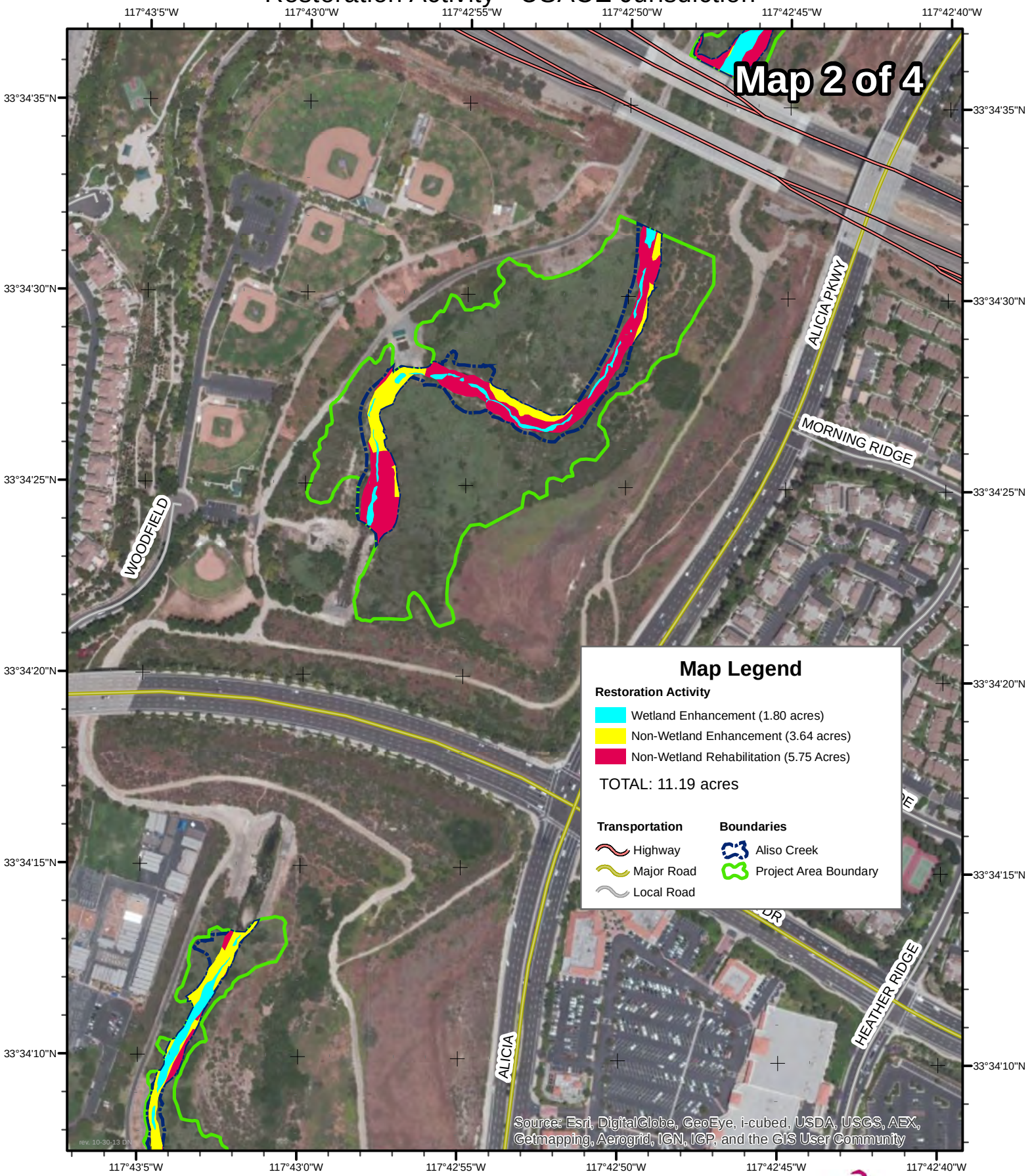
Projection: Web Mercator Auxiliary Sphere WGS1984

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Aliso Creek HMMP

Attachment F

Restoration Activity - USACE Jurisdiction



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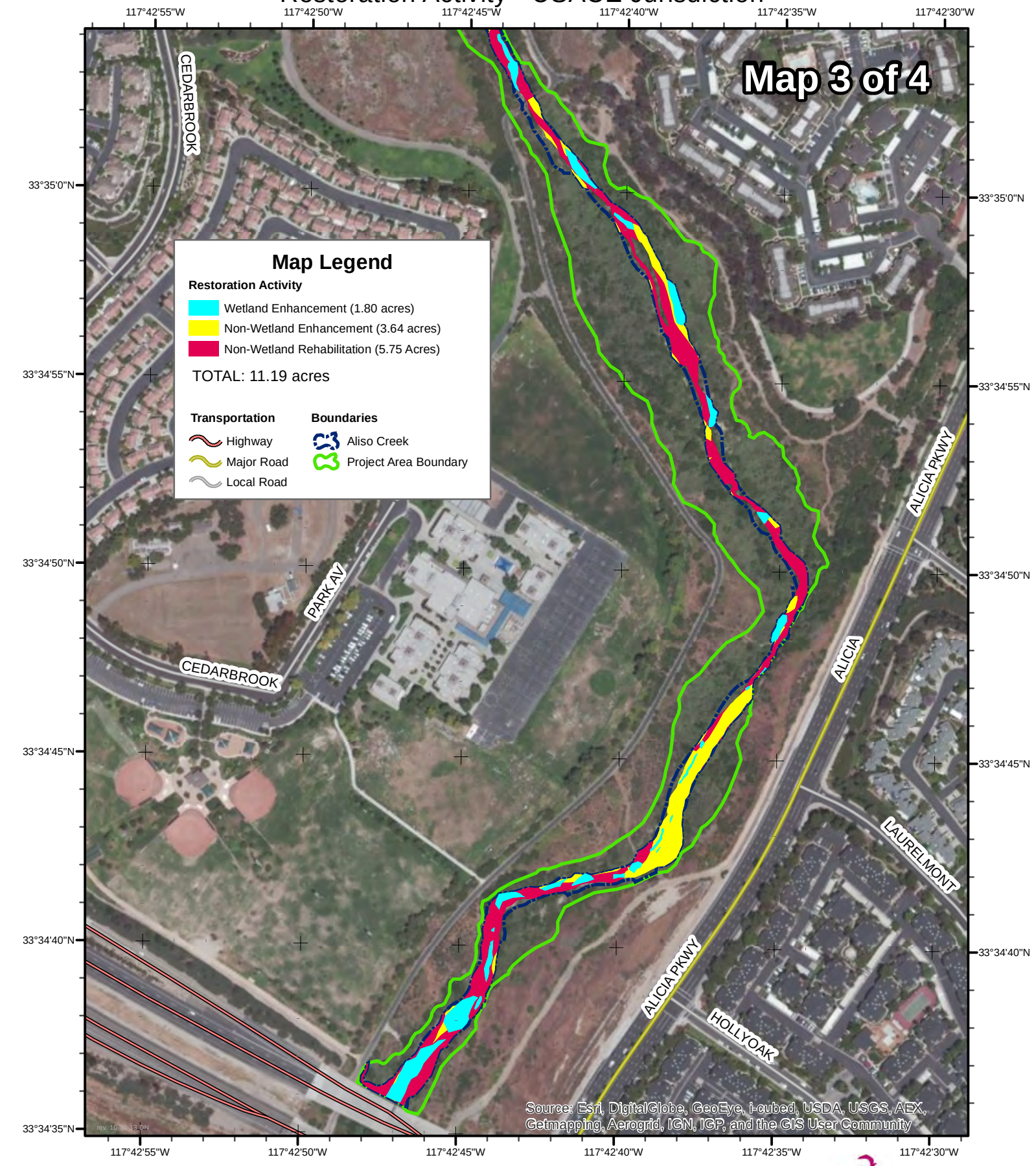
Projection: Web Mercator Auxiliary Sphere WGS1984

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Attachment F

Restoration Activity - USACE Jurisdiction



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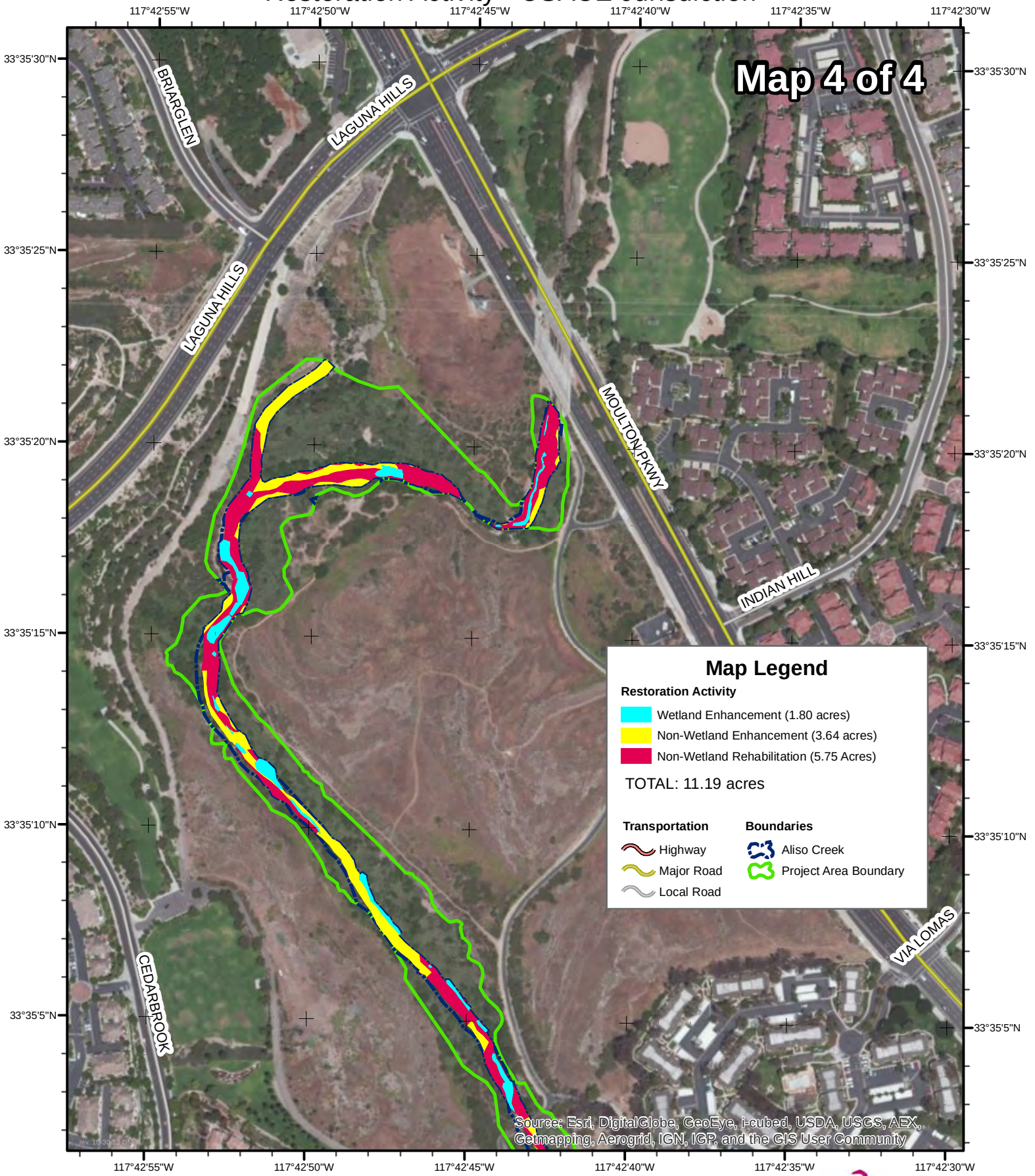
Projection: Web Mercator Auxiliary Sphere WGS1984

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Restoration Activity - USACE Jurisdiction



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Projection: Web Mercator Auxiliary Sphere WGS1984

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Enhancement	See Figure 6	75% - Riparian 65% - Transitional	5.44	26.74	2.45	29.19
Rehabilitation	See Figure 6	75% - Riparian 65% - Transitional	5.75	23.53	2.28	25.81
Total:			**11.19**	**50.27**	**4.73**	**55.0**[6]

Table 5. CDFW Jurisdictional Streambed Mitigation by Activity and Habitat Type

Aliso Creek	Enhancement	Southern Cottonwood-Willow Riparian Forest	***Salix lasiolepis*** ***Salix gooddingii*** ***Salix laevigata*** *Platanus racemosa* *Populus fremontii*	2.30	-
		Mulefat Scrub	***Baccharis salicifolia*** ***Salix lasiolepis*** ***Artemisia douglasiana*** *Mimulus aurantiacus* *Artemisia californica* *Rosa californica*	4.15	-
		Southern Willow Scrub	***Salix lasiolepis*** ***Salix gooddingii*** ***Salix laevigata*** *Baccharis salicifolia* *Platanus racemosa* *Populus fremontii*	19.39	-
		Freshwater Marsh	***Typha latifolia*** ***Typha domengensis*** ***Schoenoplectus californicus*** *Bolboschoenus maritiums*	0.75	-
Total Enhancement				**26.74**	
Aliso Creek	Rehabilitation	Southern Cottonwood-Willow Riparian Forest	***Salix lasiolepis*** ***Salix gooddingii*** ***Salix laevigata*** *Platanus racemosa*	2.12	-

[6] This total does not include WoUS, which is included in the CDFW total (e.g., the bottom row is not additive across due to overlapping jurisdictions, but the total restoration amount is 55.0 acres).

		Populus fremontii		
	Mulefat Scrub	***Baccharis salicifolia*** ***Salix lasiolepis*** ***Artemisia douglasiana*** *Mimulus aurantiacus* *Artemisia californica* *Rosa californica*	4.98	-
	Southern Willow Scrub	***Salix lasiolepis*** ***Salix gooddingii*** ***Salix laevigata*** *Baccharis salicifolia* *Platanus racemosa* *Populus fremontii*	15.03	-
	Coyote Scrub	***Baccharis pilularis*** ***Baccharis salicifolia*** *Artemisia douglasiana*	0.29	-
Total Rehabilitation	Freshwater Marsh	***Typha latifolia*** ***Typha domengensis*** ***Schoenoplectus californicus*** *Bolboschoenus maritiums*	**1.11**	**23.53**
Total CDFW Streambed Mitigation				**50.27**

4.14 California Rapid Assessment Method (CRAM)

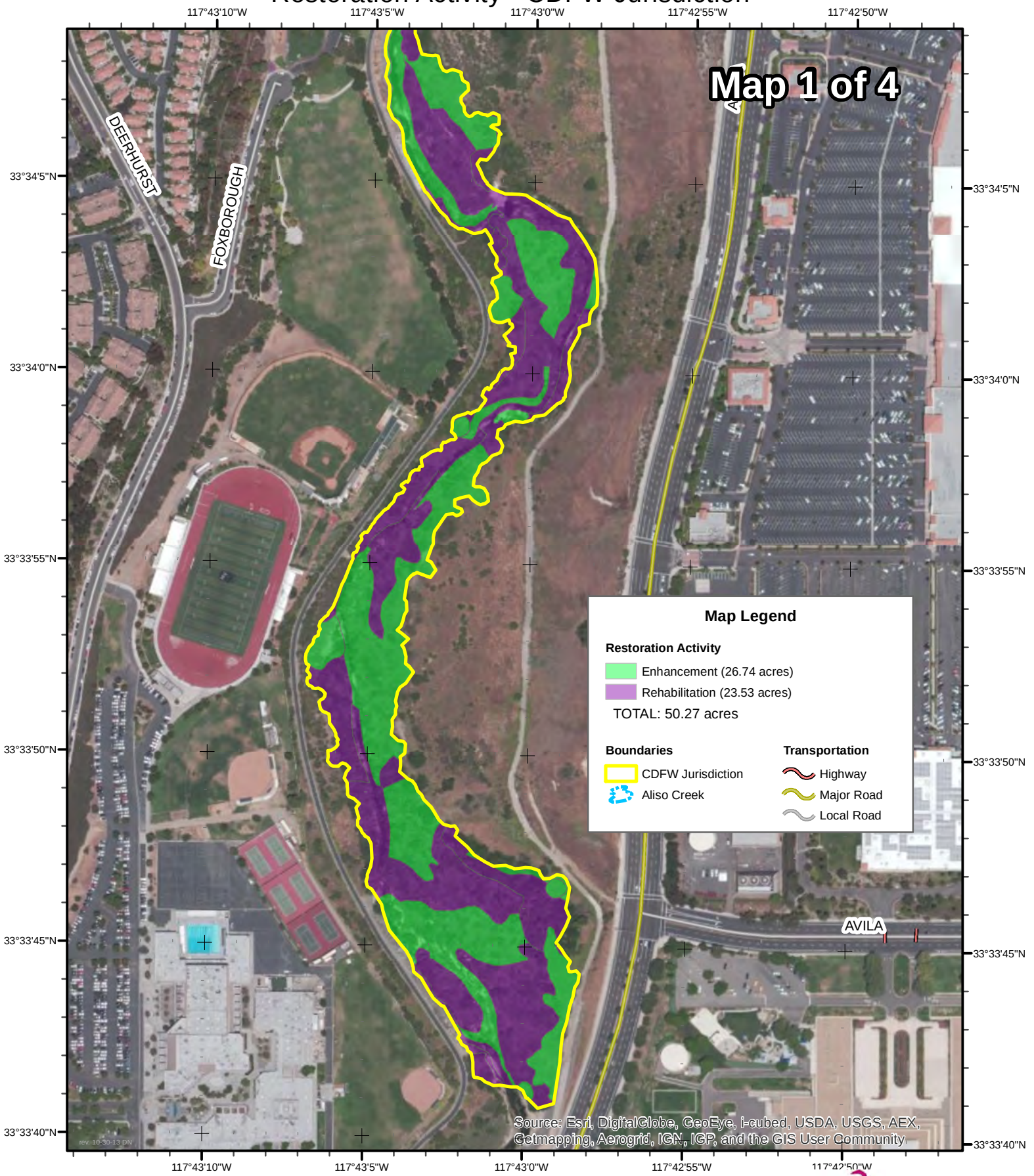
The California Rapid Assessment Method (CRAM) is an assessment tool to evaluate the condition of the different wetland types within California. CRAM provides a consistent method by which to monitor present conditions of wetlands and riparian areas in California. CRAM classifies six (6) wetland types (Riverine, Depressional, Playas, Estuarine, Lacustrine, and Slope). Riverine, Depressional, Estuarine, and Slope types are classified further into sub-types (i.e. Confined or Non-confined Riverine Wetlands; Individual Vernal Pools, Vernal Pool Systems, or Other Depressional Wetlands; Open and Bar-Built Estuarine; and various classes of Slope Wetlands).

In CRAM, four (4) attributes of wetlands are evaluated to determine an overall condition (i.e. how well the area functions as a wetland to provide ecological services) for the wetland. These four (4) attributes are assessed within a defined Assessment Area (AA):

Aliso Creek HMMP

Attachment F

Restoration Activity - CDFW Jurisdiction



Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

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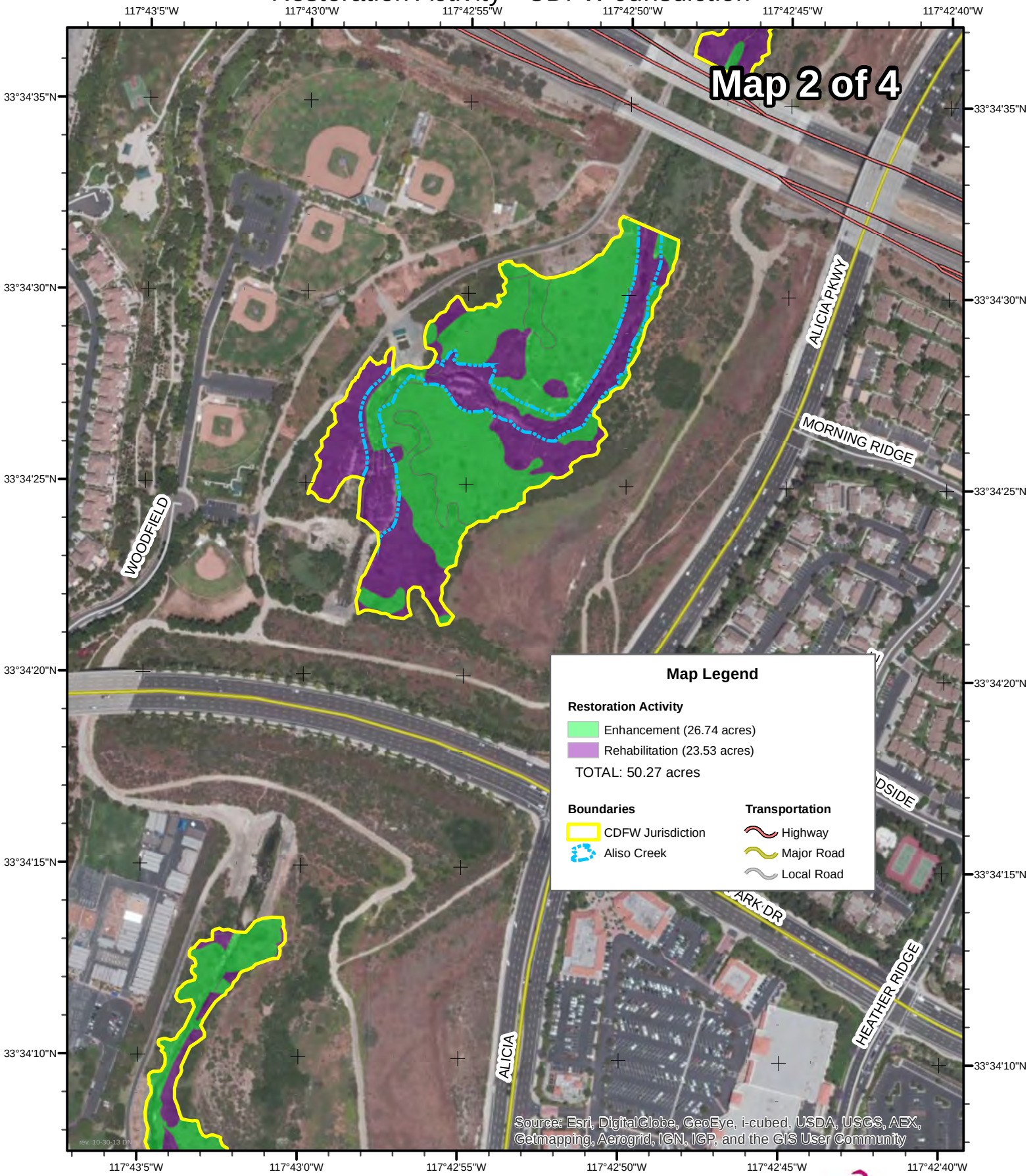
Projection: Web Mercator Auxiliary Sphere WGS1984

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Aliso Creek HMMP

Attachment F

Restoration Activity - CDFW Jurisdiction



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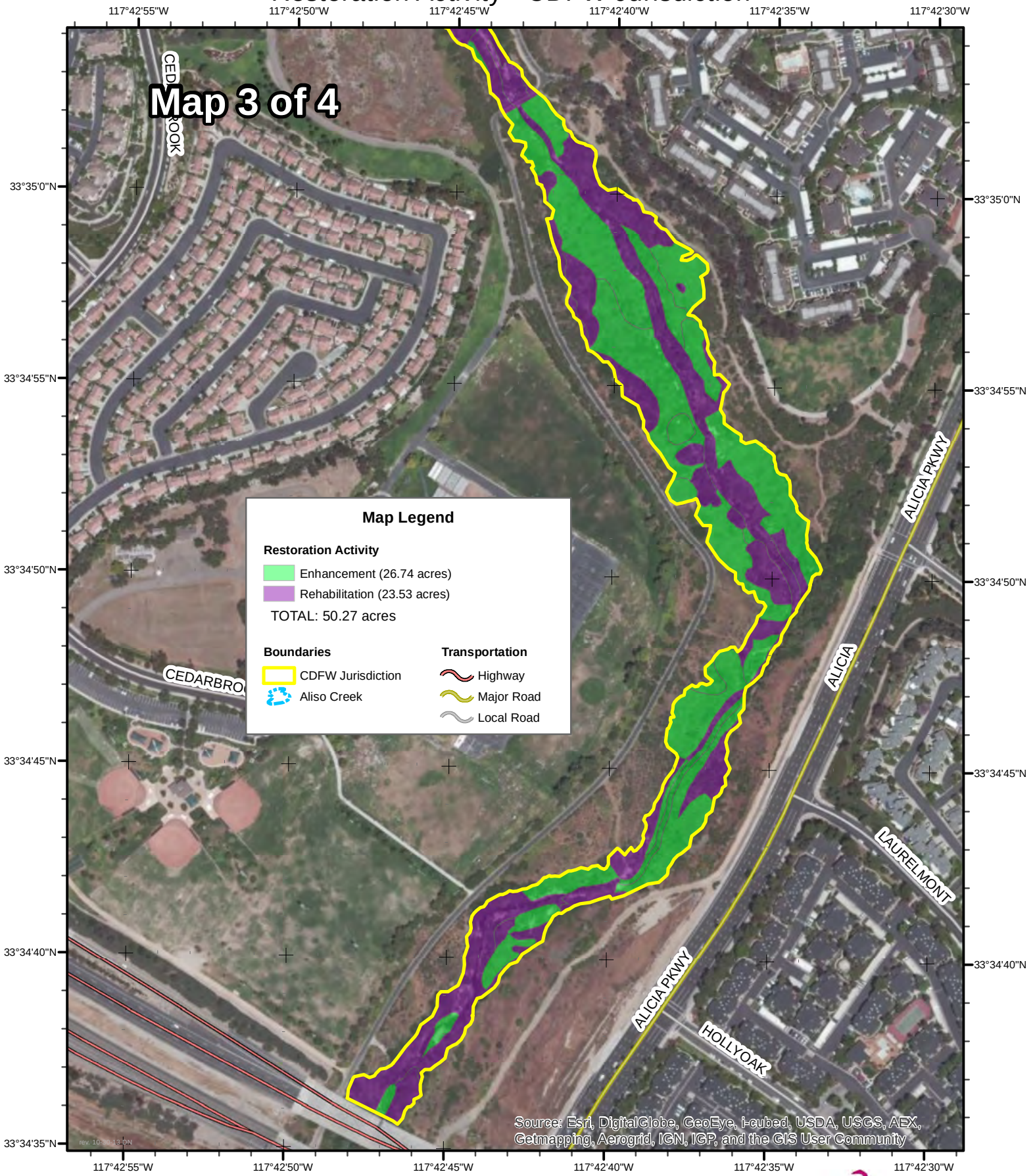
Projection: Web Mercator Auxiliary Sphere WGS1984

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Aliso Creek HMMP

Attachment F

Restoration Activity - CDFW Jurisdiction



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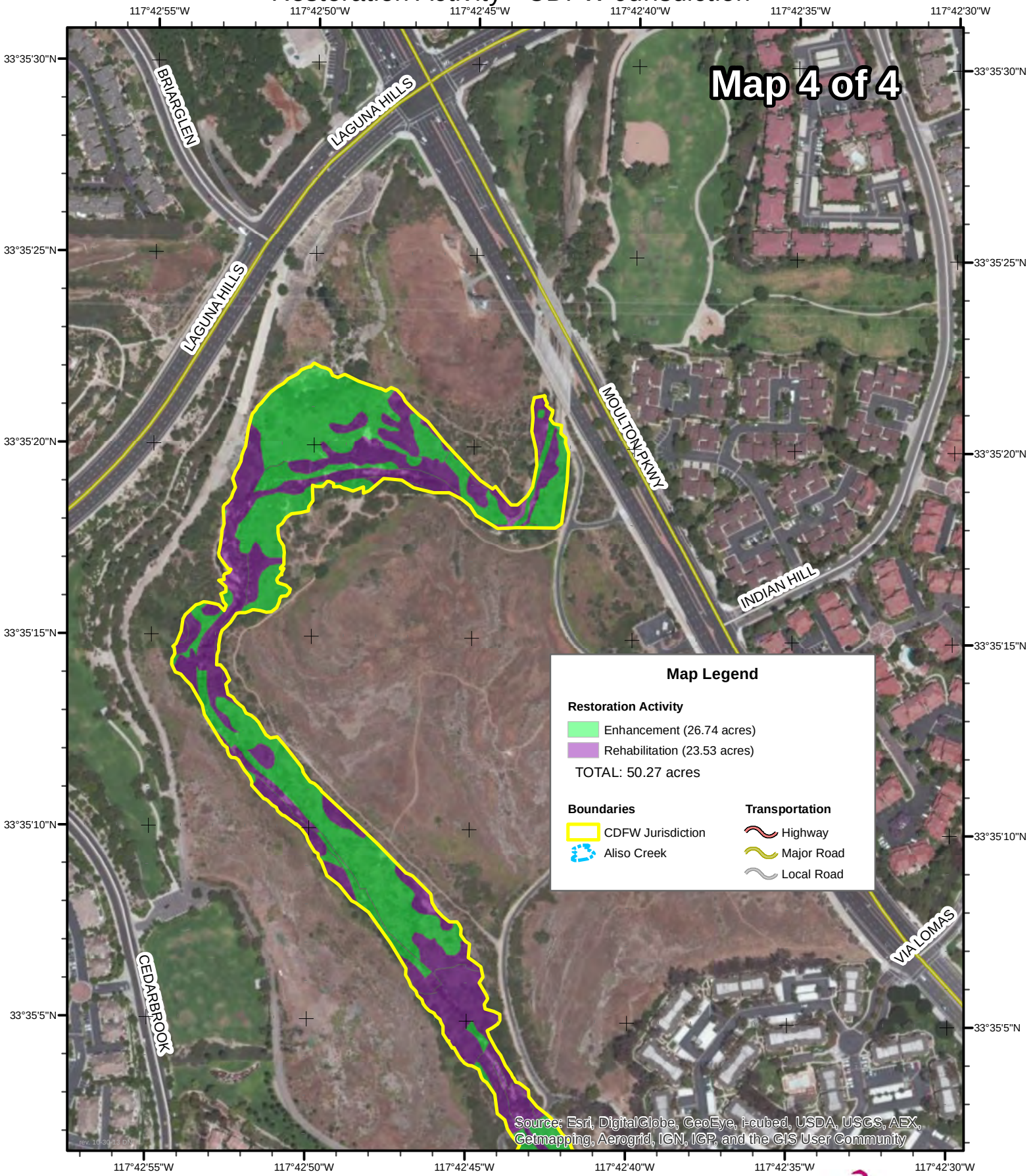
Projection: Web Mercator Auxiliary Sphere WGS1984

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Aliso Creek HMMP

Attachment F

Restoration Activity - CDFW Jurisdiction



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Projection: Web Mercator Auxiliary Sphere WGS1984

1) Buffer and Landscape Context
2) Hydrology
3) Physical Structure
4) Biotic Structure

Each attribute assessed through individual metrics and sub-metrics, which are measurable components or aspects of an attribute. Each metric is assigned a specific score based on observed current field conditions. Each attribute is given a score based on the metric scores. After a score has been assigned for all four (4) attributes, an overall CRAM index score for each AA may then be calculated by finding the average of the four (4) attribute scores, although understanding the meaning of CRAM index scores typically requires examination of the attribute or metric scores.

CRAM scores can be used to compare sites within a single wetland type, but not between different wetland types, although theoretically, two different wetlands with identical scores would be in about the same overall condition. CRAM scores for wetlands of the same type can be compared to determine which wetland has a higher conditional value, within known tolerances; index scores and attributes may vary by several points and be statistically the same. For example, a CRAM score of 88 indicates a higher value for a particular wetland as compared to another wetland of the same type with a CRAM score of 76, but a score of 82 would not be substantially higher.

CRAM Results

LCF field personnel Derek Ostensen, Max Borella and Matthew Sutton performed a CRAM non-confined riverine analysis of four (4) AAs within the HMMP project area. The attached *Exhibit 1 - Assessment Area Locations - September 2012 Aerial Photograph* depicts the mapped AAs within the site. AA No. 1 had the highest overall CRAM score of 63. AAs Nos. 2 and No. 3 had CRAM scores of 53 and 59, respectively, and AA No. 4 had the lowest overall CRAM score of 43[7].

Overall, the AAs were characterized by significant anthropogenic impacts, primarily in the form of excessive urban runoff, extensive invasive species such as arundo, and considerable erosion of creek banks. These historic impacts in the watershed are represented primarily through the low physical structure and biotic structure attribute scores with a slightly lesser impact on the hydrology scores as shown in Table 6. When comparing CRAM scores between AAs, it is important to keep in mind that there is an acceptable error of approximately 5 points within the attribute scores and 10 points in overall scores. Therefore, several of the AAs are essentially in the same condition as the differences in the scores are within the error rate of CRAM.

The Aliso Creek HMMP aims to address several factors degrading Aliso Creek within

[7] Due to the revisions made on the HMMP Project Area, AA-4 fell just outside of the downstream boundary. Therefore, AA-4 was reassessed on March 2, 2016 near the downstream edge of the updated HMMP Project Area.

the HMMP project area by comprehensively removing invasive species throughout the site and replanting with native species. The program would last 10 years and ensure successful control of arundo and other invasive species and re-establishment of a healthy native riparian ecosystem. These restoration activities will directly improve the CRAM biotic structure scores within each AA, which may include waters of the U.S. and CDFW riparian areas. The improvement in CRAM biotic scores is anticipated to indirectly improve physical structure, although increased CRAM physical structure scores are not proposed as there is uncertainty as to whether CRAM will detect a change and the recovery of the physical structure could take several years to occur. The HMMP project would have minimal effect on the hydrology scores as these reflect primarily dry season input from the watershed or other factors that are not being modified by the HMMP project. However, although maybe not captured by CRAM, hydrology within the site should improve due to the fact that arundo consumes much more water than native riparian vegetation and significantly alters or impedes the natural hydrologic regime. No changes to the buffer score are expected as the project is not improving the buffer condition. Projected CRAM scores are provided in Table 7 of this document.

Table 6. Assessment Area CRAM Attribute Scores (September 2012)

Attribute	AA 1	AA 2	AA 3	AA 4*	AA Average
Buffer and Landscape Connectivity	71	67	79	80	74
Hydrology	67	58	67	58	63
Physical Structure	63	38	38	50	47
Biotic Structure	50	50	50	56	52
Overall Score	63	53	59	61	59

*Due to the revisions made on the HMMP Project Area, AA-4 fell just outside of the downstream boundary. Therefore, AA-4 was reassessed on March 2, 2016 near the downstream edge of the updated HMMP Project Area.

5.0 S.M.A.R.T. Goals, Objectives and Performance Standards for Success Criteria

The Aliso Creek HMMP focuses on several S.M.A.R.T. (specific, measurable, achievable, relevant and time bound) restoration goals and objectives (USFWS and CDFW criteria) that closely align with the ecological and conservation goals of several regional planning documents, including the AWCWP RMP and the Central/Coastal

NCCP. The HMMP project is designed to improve ecosystem functions, services and habitat values and help reduce historic degradation from the urban watershed as described previously.

This section is organized per the approved OCTA Restoration Funding Guidelines to identify S.M.A.R.T. goals and objectives, followed by performance standards which quantitatively demonstrate the success of the restoration activities. Additional qualitative data is provided via annual monitoring. Performance standards are based on the stated goals of the program, the design of the HMMP project site, and CRAM criteria. This section includes a description of the stated goals and objectives of the program. Section 5.1 includes general performance standards for all of the aquatic resource areas within the HMMP project area, and Section 5.2 includes CRAM performance standards for the AAs.

Goal 1: Improve habitat quality for riparian plants and wildlife species by increasing native habitat diversity, density, and structure within 55 acres of Aliso Creek and associated transitional zones.

- Objective 1: Throughout the 55-acre HMMP project area, remove non-native species including but not limited to arundo and black mustard, to achieve 0% Cal-IPC List 1A species cover by year 8 with two years of sustained success without human intervention for a total of 10 years.
- Objective 2: Remove approximately 10,000 pounds of scattered debris across 55 acres consisting of illegally dumped construction waste, concrete and general litter by May 2015, plus remedial follow-ups for 9 additional years (10 years total).
- Objective 3: Maintain and/or enhance natural hydrology patterns across the HMMP project site and enhance water quality for this important coastal watershed by removing extensive anthropogenic debris and non-native species and debris. Native woody debris will be left intact as part of the natural system dynamics.
- Objective 4: Plant up to 55 acres of appropriate native species, including those consistent with native willow and sycamore woodland, willow scrub and mulefat scrub riparian communities, achieving at least 75% absolute native cover in the riparian habitat zone of the project (Figure 11) and at least 65% absolute native cover in the transitional zone of the project (Figure 11). Percent cover targets factor open water and alluvial wash areas naturally occurring in the project site, as well as appropriate density to support southwestern pond turtle, which generally prefers moderate density for creek ingress, egress and nesting.

Performance standards related to Goal 1 and its objectives are provided in Section 5.1.

Goal 2: Enhance management approaches for and biological documentation of the Aliso Creek Watershed through comprehensive data collection and the use of adaptive management techniques.

- Objective 1: Establish baseline data of entire 55-acre HMMP project area and relevant adjacent open space, including sensitive species occurrences and habitat characteristics prior to beginning any restoration work.
- Objective 2: Combine monitoring data collected over the 10 year period along with adaptive management techniques to adjust restoration methodology and maximize project benefits to the Aliso Creek Watershed, sensitive species and AWCWP. Transmit data annually to OC Parks and non-profit partners to aid ongoing implementation of long term management strategies regarding invasive species control and sensitive species populations/trends within the Aliso Creek watershed.

Specific performance standards are not tied to Goal 2. Objective 1 has been met; Objective 2 will occur during the implementation of this plan including monitoring and reporting requirements herein.

5.1 Performance Standards

The following performance measures will be monitored on an annual basis so that the HMMP project can be objectively evaluated to determine if it is developing into the desired resource type, providing the expected functions, and attaining any other applicable metrics:

Performance Standard 1: Removal of Invasive and Non-Native Species

Throughout the 55-acre HMMP project area (including both waters of the U.S. and Riparian buffer areas), remove targeted non-native species (per *Table 1. Targeted Invasive Species for Removal*) to achieve 0% Arundo, Tamarisk, Pampas Grass and Eucalyptus cover and less than 5% cover of all other Table 1 invasive species by year 8 with two years of sustained success without human intervention for a total of 10 years. Annual targets will be met, as specified below:

Year 1: 50% reduction of Table 1 invasive species
Year 2: 75% reduction of Table 1 invasive species
Year 3: 90% reduction of Table 1 invasive species
Year 4: 95% reduction of Table 1 invasive species
Years 5 - 8: 100% reduction of Arundo, Tamarisk, Pampas Grass and Eucalyptus cover; 95% or greater reduction of all other Table 1 invasive species
Years 8 – 10: Without intervention, two years of sustained 100% reduction of Arundo, Tamarisk, Pampas Grass and Eucalyptus cover; 95% or greater reduction of all other Table 1 invasive species.

Performance Standard 2: Container and Hydroseed Survival Rate

Target survivorship of tree, shrub, and herb strata container/hydroseed plants will be:

Year 1: 80% survival rate of container plants/seeded areas
Year 2: 100% survival rate of container plants/seeded areas
Year 3: 100% survival rate of container plants/seeded areas
Year 4: 100% survival rate of container plants/seeded areas
Years 5-8: 100% survival rate of container plants/seeded areas
Years 8 – 10: Without irrigation or other human intervention, 100% survival rate of container plants/seeded areas

Performance Standard 3: Absolute Native Plant Coverage – Riparian Zone

Target percent absolute cover (for combined strata) of native species for tree, shrub, and herb strata in the Riparian Zone will be:

Year 1: Equal to or greater than baseline
Year 2: 15% absolute cover
Year 3: 25% absolute cover
Year 4: 45% absolute cover
Year 5: 65% absolute cover
Years 8 – 10: Without intervention, 75% or greater absolute cover (without irrigation)

Performance Standard 4: Absolute Native Plant Coverage – Transitional Zone

Target percent absolute cover (for combined strata) of native species for tree, shrub, and herb strata in the Transitional Zone will be:

Year 1: Equal to or greater than baseline
Year 2: 15% absolute cover
Year 3: 30% absolute cover
Year 4: 45% absolute cover
Year 5: 60% absolute cover
Years 8 – 10: Without intervention, 65% or greater absolute cover (without irrigation)

Performance Standard 5: Trash/Debris Removal

The City will ensure that target percent of relative cover are met for trash/debris removal annually as indicated below.

Year 1: 0% absolute cover
Year 2: 0% absolute cover
Year 3: 0% absolute cover
Year 4: 0% absolute cover
Year 5-10: 0% absolute cover

Additional criteria, listed below, will be considered as indicators of successful revegetation throughout the life of the HMMP project.

Functionality as Wildlife Habitat

While conducting qualitative surveys, OCTA will have a qualified habitat restoration specialist or other individual knowledgeable in native plant revegetation with a B.S. in Restoration Ecology or related field and 5 years of experience, hereinafter referred to as the Project Biologist, record wildlife observations within the revegetated habitat. The development of quantitative measures for wildlife use is not necessary for this mitigation site, but documentation of wildlife usage of any restoration area should be considered among the performance standards.

Native Plant Recruitment

Evidence of native plant recruitment from year to year is another example of the successful establishment of a functional, self-sustaining habitat. Noted recruitment would be considered a satisfied performance standard. However, the lack of such recruitment should not detract from the other, more significant performance standards listed above.

Determination of successful completion, in accordance with applicable performance standards, will be performed by the Project Biologist during the biannual visit and documented in the annual report. After performance standards have been met as confirmed by the applicable regulatory agencies, long term monitoring and maintenance will be initiated.

5.2 CRAM Success Criteria/Performance Standards

In CRAM, four (4) attributes are evaluated to determine an overall condition (i.e. how well the area functions as a wetland to provide ecological services) for the wetland. These four (4) attributes are assessed within a defined AA or areas immediately surrounding the AA and are:

1) Buffer and Landscape Context
2) Hydrology
3) Physical Structure
4) Biotic Structure

The baseline and projected CRAM scores per AA are provided in the following tables. Due to the urbanized nature of the Aliso Creek watershed, certain CRAM categories including *Buffer and Landscape Context* and *Hydrology* will likely not exhibit improvement due to the urban limitations of the HMMP site. Primary CRAM metric improvements for the HMMP project site will occur in Physical and Biotic Structure, specifically *Structural Patch Richness, Topographic Complexity, Number of Co-dominant species, Horizontal Interspersion and Zonation and Vertical Biotic Structure.*

As previously noted, it is expected that removal of the large populations of arundo will help allow Aliso Creek to reclaim access to its historic floodplain over time. Historic secondary channels exist along the floodplain and would be re-engaged in certain portions of the project area during higher flow events following the successful removal of arundo. Once the arundo is removed, the channel and adjacent floodplain will have the opportunity to re-establish dynamic equilibrium. Nonetheless, it must be noted that this process is expected to take several years and its overall success may be impeded by other negative hydrologic factors outside the restoration project's control, such as 40+ years of downcutting from upstream urban runoff. This substantial amount of downcutting may ultimately limit the ability of the creek to retake its historic floodplain once arundo is removed. The targeted CRAM metrics reflect that possibility. As indicated in the following tables, CRAM metrics will be sustained or improve depending on the metric. It is expected that success would be met by year 3 with sustained performance through year 10. Years 7 to 10 criteria would be met without human intervention.

Table 7-AA-1 CRAM Performance Standards (AA #1)

CRAM Attributes	Metrics		Baseline Scores and Projected		Performance Standards		
			Pre-Construction	Year 3	Year 5	Year 7	Year 10
Buffer and Landscape Context	Landscape Connectivity		9	9	9	9	9
	Buffer Sub-metrics:						
	- Percent of Assessment Area with Buffer		12	12	12	12	12
	- Average Buffer Width		12	12	12	12	12
	- Buffer Condition		6	6	6	6	6
	Attribute Score (Raw/Final)		**17/71**	**17/71**	**17/71**	**17/71**	**17/71**
Hydrology	Water Source		6	6	6	6	6
	Hydroperiod or Channel Stability		6	6	6	6	6
	Hydrologic Connectivity		12	12	12	12	12
	Attribute Score (Raw/Final)		**24/67**	**24/67**	**24/67**	**24/67**	**24/67**
Structure	Physical	Structural Patch Richness	9	9	12	12	12
		Topographic Complexity	6	6	9	9	9
	Attribute Score (Raw/Final)		**15/63**	**15/63**	**21/88**	**21/88**	**21/88**
	Biotic	Plant Community Sub-metrics:					
		- Number of Plant Layers	6	6	9	9	9
		- Number of Co-dominant Species	3	6	9	9	9
		- Percent Invasion	9	12	12	12	12
		Horizontal Interspersion and Zonation	6	6	9	9	9
		Vertical Biotic Structure	6	3	12	12	12
	Attribute Score (Raw/Final)		**18/50**	**17/47**	**31/86**	**31/86**	**31/86**

CRAM Attributes	Metrics	Baseline Scores and Projected		Performance Standards		
		Pre-Construction	Year 3	Year 5	Year 7	Year 10
	Overall AA Score	63	62	78	78	78

Table 7-AA-2 CRAM Performance Standards (AA #2)

CRAM Attributes	Metrics		Baseline Scores and Projected		Performance Standards		
			Pre-Construction	Year 3	Year 5	Year 7	Year 10
Buffer and Landscape Context	Landscape Connectivity		9	9	9	9	9
	Buffer Sub-metrics:						
	- Percent of Assessment Area with Buffer		12	12	12	12	12
	- Average Buffer Width		3	3	3	3	3
	- Buffer Condition		9	9	9	9	9
	Attribute Score (Raw/Final)		**16/67**	**16/67**	**16/67**	**16/67**	**16/67**
Hydrology	Water Source		6	6	6	6	6
	Hydroperiod or Channel Stability		6	6	6	6	6
	Hydrologic Connectivity		9	9	9	9	9
	Attribute Score (Raw/Final)		**21/58**	**21/58**	**21/58**	**21/58**	**21/58**
Structure	Physical	Structural Patch Richness	3	3	9	9	9
		Topographic Complexity	6	6	9	9	9
	Attribute Score (Raw/Final)		**9/38**	**9/38**	**18/75**	**18/75**	**18/75**
	Biotic	Plant Community Sub-metrics:					
		- Number of Plant Layers Present	6	6	9	9	9
		- Number of Co-dominant Species	3	6	9	9	9
		- Percent Invasion	9	12	12	12	12
		Horizontal Interspersion and Zonation	6	6	9	9	9
		Vertical Biotic Structure	6	3	12	12	12
	Attribute Score (Raw/Final)		**18/50**	**17/47**	**31/86**	**31/86**	**31/86**
	Overall AA Score		53	53	72	72	72

Table 7-AA-3 CRAM Performance Standards (AA #3)

CRAM Attributes	Metrics	Baseline Scores and Projected		Performance Standards		
		Pre-Construction	Year 3	Year 5	Year 7	Year 10
Buffer and Landscape	Landscape Connectivity	12	12	12	12	12
	Buffer Sub-metrics:					

CRAM Attributes	Metrics		Baseline Scores and Projected		Performance Standards		
			Pre-Construction	Year 3	Year 5	Year 7	Year 10
Context	- Percent of Assessment Area with Buffer		12	12	12	12	12
	- Average Buffer Width		6	6	6	6	6
	- Buffer Condition		6	6	6	6	6
	Attribute Score (Raw/Final)		**19/79**	**19/79**	**19/79**	**19/79**	**19/79**
Hydrology	Water Source		6	6	6	6	6
	Hydroperiod or Channel Stability		6	6	6	6	6
	Hydrologic Connectivity		12	12	12	12	12
	Attribute Score (Raw/Final)		**24/67**	**24/67**	**24/67**	**24/67**	**24/67**
Structure	Physical	Structural Patch Richness	3	3	9	9	9
		Topographic Complexity	6	6	9	9	9
	Attribute Score (Raw/Final)		**9/38**	**9/38**	**18/75**	**18/75**	**18/75**
	Biotic	Plant Community Sub-metrics:					
		- Number of Plant Layers Present	6	6	9	9	9
		- Number of Co-dominant Species	3	6	9	9	9
		- Percent Invasion	9	12	12	12	12
		Horizontal Interspersion and Zonation	6	6	9	9	9
		Vertical Biotic Structure	6	3	12	12	12
	Attribute Score (Raw/Final)		**18/50**	**17/42**	**31/86**	**31/86**	**31/86**
Overall AA Score			59	57	77	77	77

Table 7-AA-4 CRAM Performance Standards (AA #4)

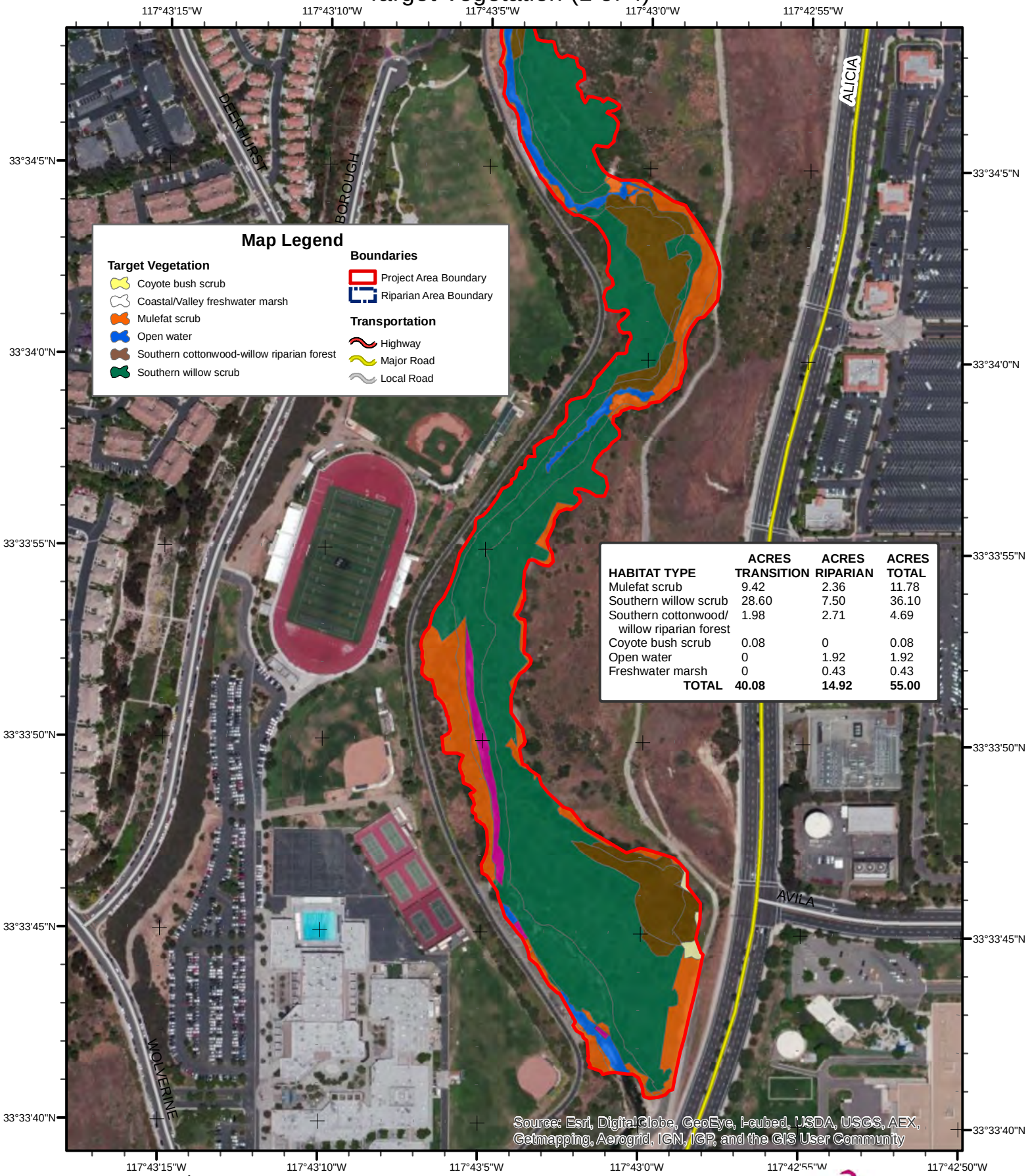
CRAM Attributes	Metrics		Baseline Scores and Projected		Performance Standards		
			Pre-Construction	Year 3	Year 5	Year 7	Year 10
Buffer and Landscape Context	Landscape Connectivity		12	12	12	12	12
	Buffer Sub-metrics:						
	- Percent of Assessment Area with Buffer		12	12	12	12	12
	- Average Buffer Width		6	6	6	6	6
	- Buffer Condition		6	6	6	6	6
	Attribute Score (Raw/Final)		**19/80**	**19/80**	**19/80**	**19/80**	**19/80**
Hydrology	Water Source		6	6	6	6	6
	Hydroperiod or Channel Stability		12	12	12	12	12
	Hydrologic Connectivity		3	3	3	3	3
	Attribute Score (Raw/Final)		**21/58**	**21/58**	**21/58**	**21/58**	**21/58**
Structure	Physical	Structural Patch Richness	6	6	9	9	9
		Topographic Complexity	6	6	9	9	9

CRAM Attributes	Metrics		Baseline Scores and Projected		Performance Standards		
			Pre-Construction	Year 3	Year 5	Year 7	Year 10
	Attribute Score (Raw/Final)		**12/50**	**12/50**	**18/75**	**18/75**	**18/75**
	Biotic	Plant Community Sub-metrics:					
		- Number of Plant Layers	12	12	12	12	12
		- Number of Co-dominant Species	9	9	12	12	12
		- Percent Invasion	3	3	9	12	12
		Horizontal Interspersion and Zonation	6	6	9	9	9
		Vertical Biotic Structure	6	3	9	12	12
	Attribute Score (Raw/Final)		**20/56**	**17/47**	**29/81**	**33/92**	**33/92**
Overall AA Score			61	59	74	74	74

Aliso Creek HMMP

Attachment F

Target Vegetation (1 of 4)



HABITAT TYPE	ACRES TRANSITION	ACRES RIPARIAN	ACRES TOTAL
Mulefat scrub	9.42	2.36	11.78
Southern willow scrub	28.60	7.50	36.10
Southern cottonwood/ willow riparian forest	1.98	2.71	4.69
Coyote bush scrub	0.08	0	0.08
Open water	0	1.92	1.92
Freshwater marsh	0	0.43	0.43
TOTAL	**40.08**	**14.92**	**55.00**

Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

0 250 500 750 1,000 Feet

0 50 100 150 200 250 300 Meters

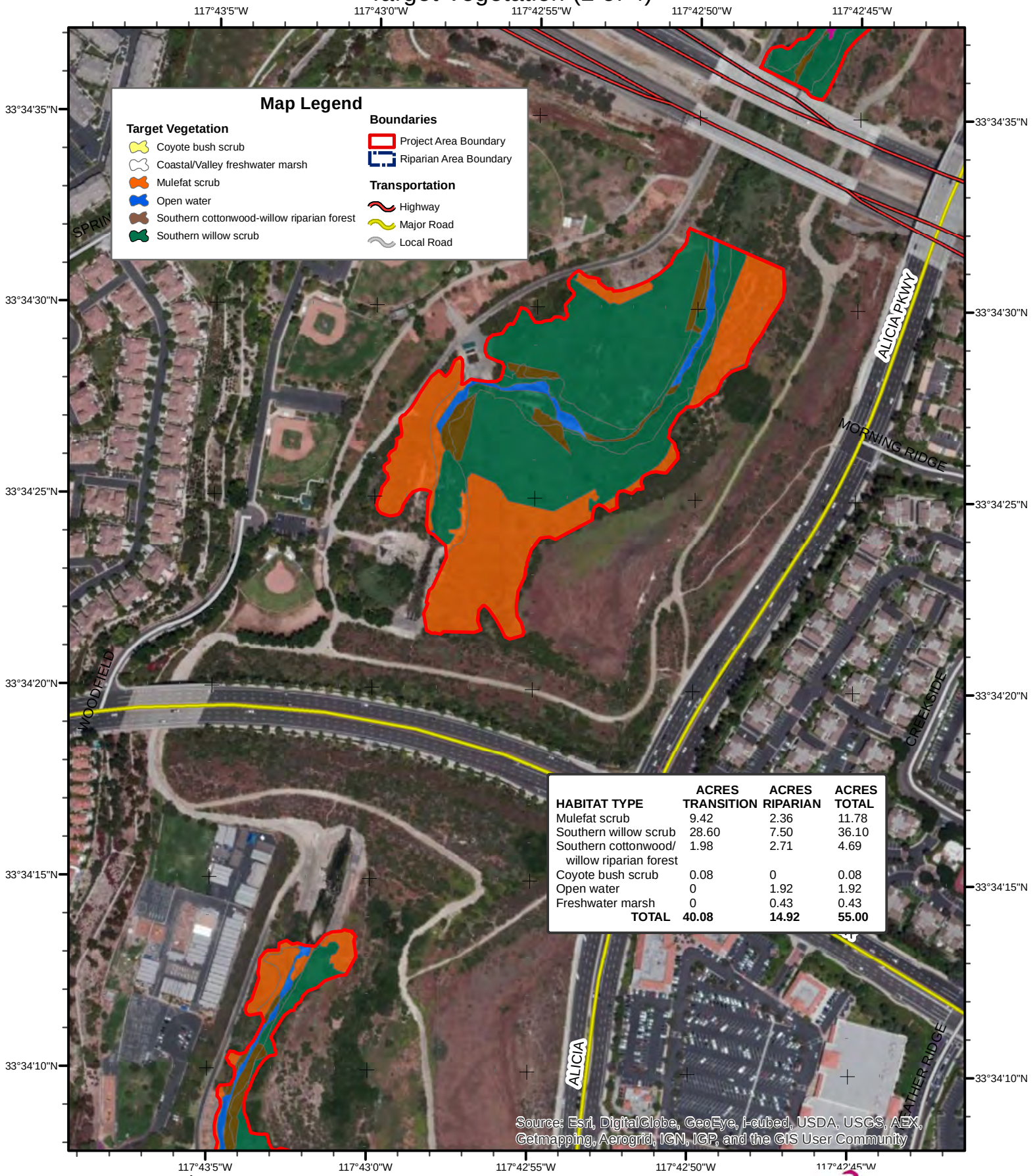
Projection: Web Mercator Auxiliary Sphere WGS1984

Laguna Canyon Foundation

Aliso Creek HMMP

Attachment F

Target Vegetation (2 of 4)



HABITAT TYPE	ACRES TRANSITION	ACRES RIPARIAN	ACRES TOTAL
Mulefat scrub	9.42	2.36	11.78
Southern willow scrub	28.60	7.50	36.10
Southern cottonwood/ willow riparian forest	1.98	2.71	4.69
Coyote bush scrub	0.08	0	0.08
Open water	0	1.92	1.92
Freshwater marsh	0	0.43	0.43
TOTAL	**40.08**	**14.92**	**55.00**

Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

0 250 500 750 1,000 Feet

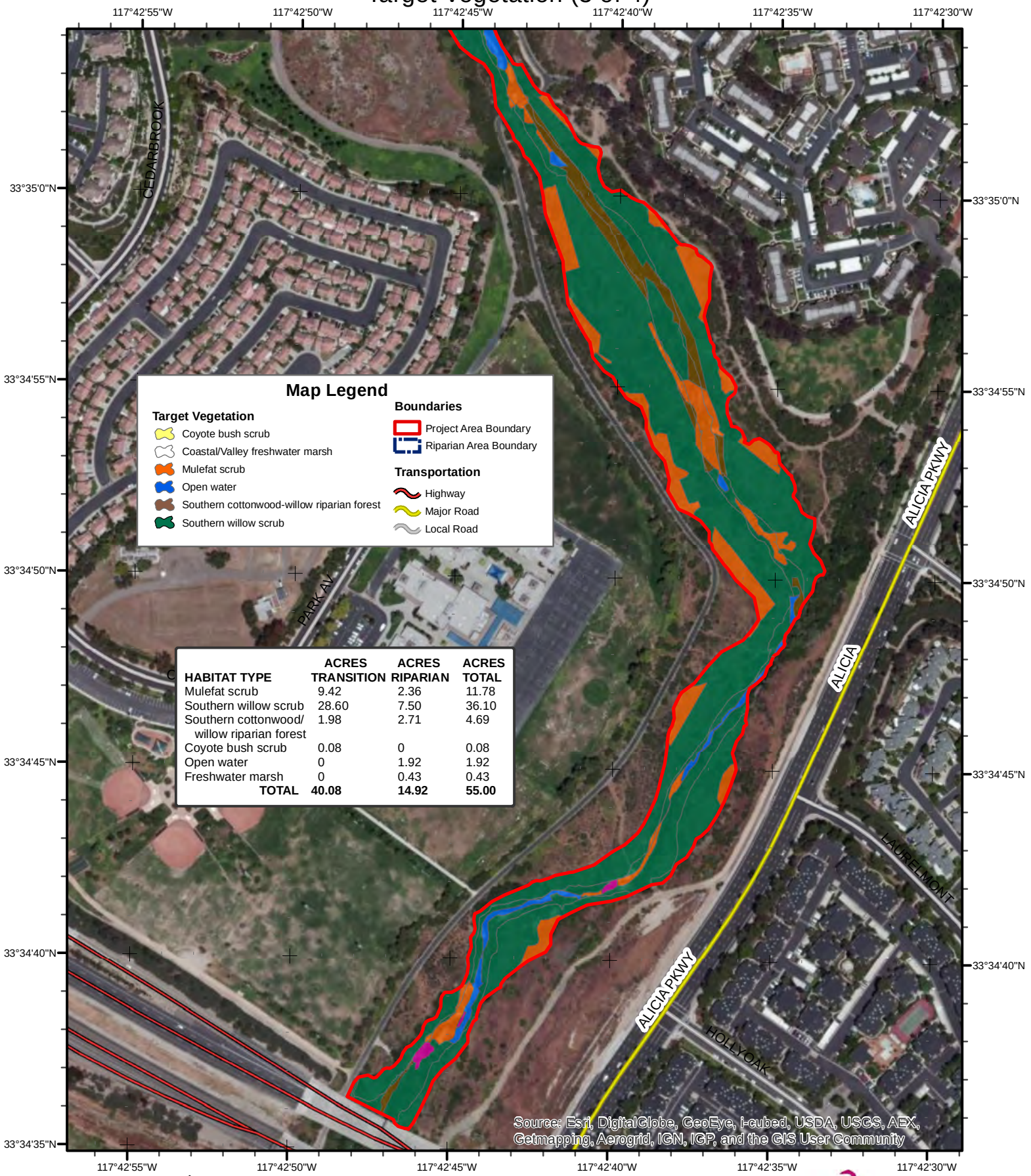
0 50 100 150 200 250 300 Meters

Projection: Web Mercator Auxiliary Sphere WGS1984

Aliso Creek HMMP

Target Vegetation (3 of 4)

Attachment F



HABITAT TYPE	ACRES TRANSITION	ACRES RIPARIAN	ACRES TOTAL
Mulefat scrub	9.42	2.36	11.78
Southern willow scrub	28.60	7.50	36.10
Southern cottonwood/ willow riparian forest	1.98	2.71	4.69
Coyote bush scrub	0.08	0	0.08
Open water	0	1.92	1.92
Freshwater marsh	0	0.43	0.43
TOTAL	**40.08**	**14.92**	**55.00**

Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

0 250 500 750 1,000 Feet

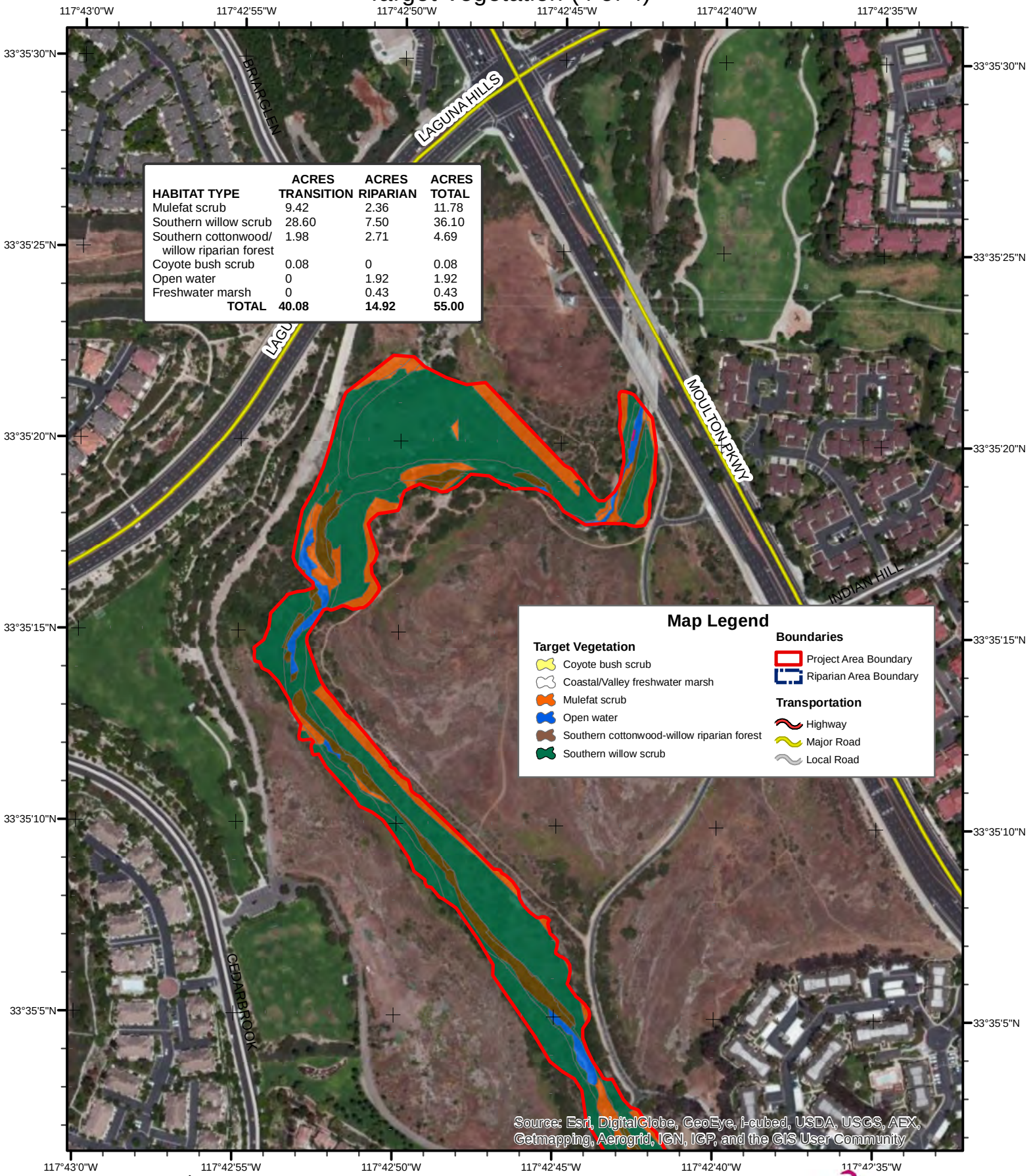
0 50 100 150 200 250 300 Meters

Projection: Web Mercator Auxiliary Sphere WGS1984

Laguna Canyon Foundation

Aliso Creek HMMP

Target Vegetation (4 of 4)



HABITAT TYPE	ACRES TRANSITION	ACRES RIPARIAN	ACRES TOTAL
Mulefat scrub	9.42	2.36	11.78
Southern willow scrub	28.60	7.50	36.10
Southern cottonwood/ willow riparian forest	1.98	2.71	4.69
Coyote bush scrub	0.08	0	0.08
Open water	0	1.92	1.92
Freshwater marsh	0	0.43	0.43
TOTAL	**40.08**	**14.92**	**55.00**

Map Legend

Target Vegetation
- Coyote bush scrub
- Coastal/Valley freshwater marsh
- Mulefat scrub
- Open water
- Southern cottonwood-willow riparian forest
- Southern willow scrub

Boundaries
- Project Area Boundary
- Riparian Area Boundary

Transportation
- Highway
- Major Road
- Local Road

Map Scale: 1:4,000 if printed on a letter size (8.5" x 11") sheet.

0 250 500 750 1,000 Feet

0 50 100 150 200 250 300 Meters

Projection: Web Mercator Auxiliary Sphere WGS1984

Laguna Canyon Foundation

6.0 Restoration Strategy

The rehabilitation and enhancement strategy for the HMMP project site considers the varied habitat conditions present and the targeted tenth-year species composition and ecosystem functions. The approach also factors in appropriate riparian and transitional zone densities as would naturally occur and which are of greatest benefit to particular species of focus for the HMMP project, such as least Bell's vireo and southwestern pond turtle.

Due to the substantial infestation of non-native plant species in the HMMP project area, particularly arundo, comprehensive eradication is a central focus of the restoration approach. Arundo will be controlled using a variety of methods as conditions dictate, including foliar application, cut-stump and "folding," as well as biomass removal. Other non-native species will be addressed using both manual removal and herbicide application, including both spray and wick/wheel application.

Following initial control of arundo and other invasives, native planting will occur according to appropriate vegetation communities (Figure 11), soils and hydrology. Revegetation will focus on increasing species biodiversity, number of plant strata, and native cover. At HMMP project completion, performance standards will delineate net gains in several ecosystem metrics.

The restoration strategy is designed to provide benefits and upward native population trends for a wide variety of species; however, the approach also includes certain unique considerations required for southwestern pond turtle enhancement.

6.1 Restoration Strategies to Benefit Southwestern Pond Turtle (SWPT)

As part of the restoration planning and habitat assessment for the project, special focus was given to determining on-site populations and habitat of southwestern pond turtle, including present and targeted (post-restoration) habitat suitability for the species. The State and Federally-listed species occurs in higher population numbers within Aliso Creek than virtually anywhere else in Orange County. The species has experienced a significant decline throughout the County and the potential to improve its habitat range and population numbers as part of this HMMP project is an important component of the Aliso Creek HMMP.

6.2 SWPT Species Background, Taxonomy and Characteristics

The SWPT historically occurred from the Puget Sound in Washington State to Sierra San Pedro Martir in Baja California, Mexico. Its range was primarily west of the Cascade and Sierra Nevada mountain ranges with outlying locations along the Mojave River in San Bernardino County, California (Stebbins 2003). It is chiefly an aquatic

species that may occupy ponds, lakes, marshes, streams, rivers, vernal pools, estuaries, irrigation ditches, cattle ponds, and water treatment ponds (Holland 1991, 1994, Goodman 1996, Stebbins 2003).

The western pond turtle (*Actinemys mamorata*) is split into two subspecies, the northwestern pond turtle (*Actinemys marmorata marmorata*) and the southwestern pond turtle (Seelinger, 1945). The northwestern pond turtle occurs north of San Francisco Bay, California to the state of Washington. The southwestern pond turtle occurs south of San Francisco Bay, California to Sierra San Pedro Martir in Baja California, Mexico. The two subspecies intergrade in the San Joaquin Valley (Ernst et al., 1994, Holland 1991, 1994; Goodman, 1997). The northwestern pond turtle has a triangular inguinal scute that is absent in southwestern pond turtles that distinguishes individuals between the two subspecies. This species is a member of the Emydidae family, which is the largest turtle family in North America comprising of more than 50 species distributed throughout the world.

The southwestern pond turtle is a small to medium emydid turtle with a carapace length of usually 150-160 mm and body mass of 600 grams; they rarely exceed this size in southern California (Holland 1994). They have an olive drab carapace with yellow radiating from the center to the outside of each scute. The plastron contrasts the carapace with a light yellow. It is unknown the maximum life of this species in the wild; however, it is thought that they can live up to 50 years (Bury, 1970).

Southwestern pond turtles are habitat generalists. They eat aquatic invertebrates, carrion, fish, tadpoles, and aquatic vegetation (cattail and bulrush). Southwestern pond turtles females generally nest during the spring to early summer (April through June). They are known to double-clutch (i.e. lay two clutches of eggs). The nesting sites are highly variable. They prefer to nest on exposed south to southeast facing slopes to maximize the solar energy for egg incubation. Nests have been located from flat areas a few meters from the water to over 800 meters from the water (Nerhus, unpublished data). There is also evidence that southwestern pond turtles possess a tendency to exhibit nest site fidelity. The behavior occurs when a female southwestern pond turtle will lay its eggs in the same location over several clutches over several years (Goodman, 2000; Nerhus, pers obs).

Southwestern pond turtles have been documented downstream of the HMMP project area in relatively large numbers in AWCWP. General habitat assessments and trapping have occurred within that southern portion of Aliso Creek and it has been determined that there is a regionally significant population residing within the park. Studies and surveys have included mitigation southwestern pond turtles relocations (Goodman pers comm.), USGS trapping (Schuster pers comm.), and general habitat surveys (Nerhus, pers obs). The general population estimation in this area is approximately 150 southwestern pond turtles and may be larger since prior published data.

6.3 Restoration Methods to Benefit SWPT Habitat/Populations

Aestivation Habitat Enhancement - Southwestern pond turtles utilize leaf litter, dried cattail marsh mats, existing burrows, and rock crevices to aestivate and over winter. The key requirement is that southwestern pond turtles can find areas with relatively stable temperatures. Enhancing the southern willow scrub and mulefat scrub will be the most beneficial habitat feature for this species. These are the natural habitat types that southwestern pond turtles would utilize to over winter or aestivate. Synergistically, this habitat is also very important for many rare birds such as the least Bell's vireo, yellow breasted chat, and yellow warbler. It is particularly notable that dense populations of arundo will be removed from this habitat zone. The extensive arundo invasion of both aestivation and nesting habitat (discussed below) has significantly impeded southwestern pond turtle movement, nesting, and aestivation, thereby impeding southwestern pond turtle population growth.

Nesting Habitat Enhancement - Since southwestern pond turtles nesting strategy is to maximize soil surface temperatures for egg incubation, females typically lay their eggs at exposed bare ground patches within low-density vegetation in transitional zone or grass areas. Accordingly, transitional zone habitat will be planted at 6' on center, allowing for appropriate density to encourage nesting.

Aquatic Enhancement – Though grading new pools on the active floodplain would benefit the species, the restoration project does not include formal grading or contouring within the stream channel or active floodplain. Nonetheless, removal of dense stands of arundo and other invasive species will enhance and expose existing pools. In addition, when biomass removal of dense stands of arundo is needed, the landscape will be left rough and micro- and macro-topographic features created by the arundo removal equipment will be left to improve physical structure and facilitate pool development. Removal of arundo and improving micro- and macro-topographic features during construction activities will improve the hydrodynamics within the channel and terraces and pools are expected to naturally develop. Improved pools and hydrologic functions will allow for southwestern pond turtles to better thermo-regulate, avoid predators, locate mates for breeding, and provide areas for cover.

Basking Enhancement – Removal of debris or vegetation (particularly arundo) covering basking boulders will occur to improve basking opportunities for southwestern pond turtles. In addition, the transitional areas will be weeded and revegetated to approximately 65% native cover in order to provide appropriately moderate density for pond turtle ingress, egress and nesting.

Establishment of New SWPT Populations or Enhancement of Existing Populations - Translocation of southwestern pond turtles from other populations within Aliso Creek is also a consideration that will be evaluated in coordination with OCTA and wildlife agency personnel. There is presently a drop-structure barrier separating the HMMP project from the large population of southwestern pond turtles in lower Aliso Creek,

thus translocation may be a key step in supporting a larger southwestern pond turtle population in the middle and northern portions of Aliso Creek, including the HMMP project over the short term. A long term solution would be to identify a funding mechanism (USFWS grant or other source) or private mitigation dollars to remove, modify, and/or replace the drop structure to allow for natural migration of the species. LCF and OC Parks will revisit this potential restoration opportunity in the future if a need or funding mechanism is identified.

7.0 Species Surveys and Avoidance Measures

In order to minimize impacts to sensitive plants and wildlife, species avoidance measures will be implemented. All applicable State and Federal laws governing sensitive species will be followed, as well as the Best Management Practices (BMPs) noted herein and specific permit requirements from regulatory agencies. In addition, the avoidance and minimization measures listed in the BO (#FWS-OR-08B0013-09F0147) and the LSAA (#1600-2008-0247-R5) (attached) for the HMMP project will be followed. A sensitive plant and wildlife survey has been conducted by Glenn Lukos Associates (GLA) to identify any sensitive plant and wildlife species present on the HMMP project site prior to project commencement. The survey is provided as Appendix D. Preconstruction focused surveys were conducted in 2014 for least Bell's vireo, southwestern willow flycatcher, southwestern pond turtle, and rare plants. No least Bell's vireo, southwestern willow flycatcher, and/or rare plants were detected. A total of four southwestern pond turtles were observed at three locations during surveys. Avoidance and minimization measures have been incorporated into this Aliso Creek HMMP to reduce the potential for impacts to southwestern pond turtle. Finally, avoidance and minimization measures for southwestern pond turtle are being developed and will be coordinated with CDFW. Specific avoidance measures are further noted below.

<u>Breeding/Nesting Birds</u>
The following measures from the BO cover listed and non-listed nesting birds:

1. Per page 1 of the BO, only a small amount of native riparian habitat for southwestern willow flycatcher and least Bell's vireo is permitted for trimming (branches less than 10 centimeters (cm) (4 inches (in)) in diameter only) where it occurs directly adjacent to stands of arundo to allow arundo to be treated without affecting the native vegetation.
2. Per page 2 of the BO, all components of the HMMP project as described in the Aliso Creek HMMP that have the potential to disturb nesting least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher (i.e., cutting and hauling non-native vegetation, and use of power equipment) will be completed outside of their respective breeding seasons (March 15 to September 15 (least Bell's vireo), May 1 to September 15 (southwestern willow flycatcher), and February 15 to August 30 (California gnatcatcher)).
3. Page 6 of the BO describes the herbicide treatment cycle. Foliar applications

of herbicides are initiated in the fall. After foliar application, biomass reduction (hand cutting of non-native vegetation) may occur in the winter, particularly where stands are thick and large (over 0.05 ha (0.13 ac)). Sites will be re-treated (with herbicides) in the spring and again in the fall. Re-vegetation of native plants will occur in the winter to spring months. Maintenance activities will occur spring through fall.

Attachment 1 of the BO lists required measures for least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher, as well as other species:

1. Biomass reduction and use of power equipment in riparian habitat will occur outside the breeding season March 15 to September 15.
2. Biomass reduction and use of power equipment in coastal sage scrub will occur outside the breeding season for California gnatcatcher (February 15 to August 30). Re-vegetation within coastal sage scrub and use of power equipment outside of coastal sage scrub, but within 500 feet, will be completed by March 1. Sites may only be accessed along trails, and work may only occur in areas with no California gnatcatcher nesting structure.
3. If a project requires access to a site through potential habitat for endangered and threatened plant species, a qualified botanist/biologist will identify access paths to the treatment areas and check for endangered and threatened plant species prior to project activities. If listed plant species are located, they will be flagged, crew members would be required to avoid them, and the Carlsbad Fish and Wildlife Office will be contacted to ensure that no additional measures are required.

Attachment 1 of the BO also lists measures for maintenance activities that will occur March 15 to September 15:

1. No areas may be worked in that have vegetation structure suitable for nesting (work only in mowed areas with new plantings).
2. No powered equipment may be used at the restoration sites (only watering and treatments with backpacks). The water truck does have a gas powered pump, but this will operate along access roads or in staging areas.
3. Avian monitors may be used as requested.
4. Equipment used during the maintenance phase such as trucks, ATVs, and hands tools will be staged at areas which are located along roads or on degraded areas with no native vegetation. Compacted dirt lots, road shoulders, and old disturbed sites are typically the type of areas that are used for staging.
5. Crew members will avoid wading through streams whenever possible.
6. All garbage and waste material generated by the work crew will be removed from the site.
7. Photos will be used to document the effectiveness of the treatments, when possible.

During the breeding season, herbicide application on arundo resprouts may be conducted and the following avoidance measures will be followed:

- A habitat restoration specialist will be present on site to monitor herbicide application and adherence to all agency permit requirements and species avoidance measures.
- No biomass removal will occur unless otherwise approved by the permitting agencies.
- Truck-mounted application of herbicide may only occur from paved roads with long hoses to avoid any disturbance from the truck-mounted pump.

Bats

A large bridge for CA-73 crosses the project site and may support potential roost sites for bats. However, the restoration activities as described herein will not result in any direct impacts to the bridge or potential indirect impacts to roosting bats.

7.1 Measures to Minimize Impacts to Riparian Resources

If work is performed during the winter storm period (October through February), OCTA will have LCF monitor the five day weather forecast. Where the forecast indicates precipitation, OCTA will have LCF secure the site to prevent materials from entering the stream or washing downstream. The site will be completely secured one day prior to precipitation, unless prior written approval has been provided by the permitting agencies. During precipitation events, restoration activities will be prohibited *except* for those activities necessary to secure the site. No work will occur in areas containing flowing water until storm flows have receded and the soil moisture content has stabilized. In addition, the following measures will be implemented:

- OCTA's Project Biologist will oversee all crew efforts to ensure low-impact work methods are implemented, including creek access points, species avoidance, staging areas, and water quality protection.
- No more than three crews will be active on the site at one time.
- Crew size will not exceed 16 individuals.
- Each crew may use up to 2 ATV's to move equipment and herbicide as needed. However, ATV's will likely only be an incidental component of this project. If used, ATV's will not drive in channel areas and ATV's will operate only in open areas - woody vegetation (>1" DBH) will not be cleared or driven upon.
- All tractors will be rubber tired or rubber tracked.
- Herbicide and refueling will occur only at staging areas, which are located along roads or on degraded areas with no native vegetation. Compacted dirt lots, road shoulders, and old disturbed sites are typically the type of areas that are used for staging.
- All regulations involving use of herbicides will be followed including BMP's. Agency-approved aquatic herbicide formulations will be used when near open

water and licensed Qualified Applicators will coordinate all herbicide application. A marking dye will be used to assure that drift or overspray onto non-target vegetation is not occurring.
- No mowing will occur in the stream channel.
- No mulched/mowed biomass will be placed in the stream channel.
- No native vegetation will be mowed.
- No mowed arundo mulch will be placed over previously existing stands of arundo if there is likelihood that such material could enter creek flows or other sensitive habitat areas.
- No open habitat or native vegetation will be covered with mowed arundo mulch.

Further, OCTA will have LCF also ensure that invasive control activities are consistent with the ACOE's verification of Regional General Permit No. 41 including its programmatic 401 conditions for Removal of Invasive, Exotic Plants such that impacts to sensitive aquatic resources are avoided or minimized. In accordance with this general permit, only broadcast foliar application of herbicides approved by the US Environmental Protection Agency (USEPA) for use in wetlands and by the California Department of Pesticide Regulation for use within the State will be used. Application of herbicides in any area supporting threatened and/or endangered species will be consistent with the USEPA's Office of Pesticide Programs, Endangered Species Protection Program county bulletins.

7.2 Measures to Minimize Impacts to Southwestern Pond Turtle (SWPT) Populations and Habitat

During focused biological surveys in 2014, GLA biologists detected four adult southwestern pond turtles within the onsite boundaries and two additional southwestern pond turtles off site to the north of the northern project boundary. Several red-eared sliders were also detected on and off site during the biological surveys. It is assumed that pond turtles inhabit and move unimpeded throughout the proposed work area.

As further described in Section 8.1, Arundo Removal Methods, OCTA will have LCF remove all Arundo along both sides of Aliso Creek. OCTA proposes to have LCF cut and remove all Arundo with work crews using hand tools and with the assistance of a small, rubber-tracked tractor. Biomass removal is anticipated to occur in one season (2014-2015) with planting and spraying to occur in subsequent years.

In southern California, southwestern pond turtles can be active throughout the entire year. Southwestern pond turtles generally stay in close proximity to the water. However, nesting in southern California has been reported up to 48 meters from a watercourse. Due to the large size of the work area, multiple year timeline of the restoration, and potential impacts to wildlife species including the pond turtle it is impractical to install turtle exclusion fencing during the restoration work throughout the entire work area. However, GLA biologists, LCF and CDFW (Christine Beck and Russ

Barabe) have coordinated together to determine several measures to minimize potential encounters with pond turtles and also include procedures to follow if a turtle is encountered within the work area.

Minimization Measure 1: Worker Environmental Education Program and Education Manual

- A worker environmental education program will be developed by a CDFW-approved biologist that will include an onsite education meeting that all workers must attend prior to commencement of restoration activities and will also include a worker education manual to be kept on site that will discuss all required avoidance measures to minimize SWPT impacts and procedures to follow if a turtle is encountered within the work area. The worker education manual will include photo exhibits that explain how to differentiate pond turtles from red-eared sliders.

Minimization Measure 2: Turtle Spotter, Exclusion Fencing and Inspection

- Due to the density of Arundo in the HMMP project site, with Arundo canes growing at 2" – 6" on-center spacing, it is unlikely that SWPT are present within the Arundo stands. However, SWPT may be present in adjacent native habitat, creek banks, creek channel and slopes. Accordingly, a CDFW-approved spotter will conduct an inspection of any such areas where the tractor will operate prior to the tractor entering these areas. Exclusion fencing, such as a staked silt fence, will be placed on both sides of the tractor ingress/egress to the Arundo stand or in other locations as appropriate to avoid SWPT impacts whenever the tractor will be working within 500' of known locations of SWPT as described in the 2014 GLA survey or in subsequent field observations during the HMMP project.

- Mechanized equipment will not be used in flowing or ponded areas within 1,500 feet of known locations of SWPT described in the 2014 GLA survey.

- A CDFW-approved biologist will conduct a weekly pre-inspection of all work areas intended to be cleared of arundo in the upcoming week to determine areas with likelihood of SWPT. Additional exclusion fencing will be used in these areas as appropriate to avoid SWPT impacts.

- The HMMP project site is generally bordered on either side by degraded upland/grassland habitat and/or fairly homogenous non-native grassland/mustard fields (former grazing areas from the Moulton Ranch). Because SWPT can be found in such habitat up to 500m from the creek (Holland 1994, Holland and Bury 1998), it is recommended that the tractor avoid to the extent possible lateral movement through vegetation communities as the tractor moves from one Arundo stand to the next across the several-mile long HMMP project site. When such lateral movement is necessary, a turtle spotter will review the tractor path for any SWPT occurrences or possible

nest/overwintering/aestivation sites. However, as a general practice, the tractor will utilize existing maintenance roads/trails that parallel the project on both sides of the creek for lateral movement along the creek. When moving from existing maintenance roads/trails to Arundo removal areas, the tractor will utilize as few ingress/egress routes as possible so as to minimize potential impacts to SWPT.

Minimization Measure 3: Procedure if Turtles are Detected in the Work Area

- If any turtle is encountered in the work area, the site foreman should cease activities within 500' of where the turtle was observed. A digital photograph should be taken of the turtle and emailed or texted to a qualified biologist for identification. All turtles observed will be documented using GPS and data points submitted to CNDDB. Observations will include the species, location, time of day, and habitat.

- If any turtle is suspected to be nesting, a qualified biologist should visit the subject area to identify the species and investigate further. If the suspected nesting turtle is a native pond turtle, work activities in the immediate area should cease until a qualified biologist makes the determination that nesting activities have ceased and no harm to the pond turtle will occur.

- Prior to any field crew or biologist handling native pond turtles for the purpose of relocation, coordination with CDFW will be required[8]; relocation can only occur when a Department-approved biologist is present. Please contact Russ Barabe, CDFW western pond turtle lead, at 858-467-4260 before handling any pond turtle.

- Native pond turtles will be released onsite, either upstream or downstream, away from work activities. The priority for relocation will be in areas that have already been cleared of giant reed.

- LCF will coordinate with CDFW to develop an approach for handling and removing native red-eared sliders from the HMMP project site[9].

- Although not anticipated, if any vegetation removal is to occur during periods when western pond turtles could be aestivating (generally the warmest

[8] GLA recommends early coordination with CDFW to obtain approval prior to commencement of work activities. This approval is not necessary for each relocation event, but would be a blanket authorization for the HMMP project.

[9] As previously mentioned, red-eared sliders are non-native and are competitors to pond turtles. In previous sites where GLA encountered red-eared sliders, all sliders captured were either donated to a local turtle club or euthanized.

months/weeks of the year), then coordination with CDFW would be required prior to the removal.

8.0 Site Preparation

A detailed work map will guide restoration crew efforts and will provide clear communication between LCF, OCTA and the permitting and wildlife agencies with respect to ongoing site activities. Figure 12 notes several separate sub-map areas within the HMMP project site (Zone 01, Zone 02, etc.), which will be used in communicating precisely where work is occurring on a given day, as well as other important information, such as adjacency to sensitive species, staging areas, distance between crews, and ingress/egress points into the work area.

Site preparation during the first year of the HMMP project will focus on invasive species control and eradication, installation of supplemental irrigation and removal of illegally-dumped debris within the creek that impedes natural hydrology and native revegetation.

Specific site preparation will be carried out prior to treatment of arundo. Preparation entails separating, or creating a space, between arundo and native vegetation. This allows the arundo to be treated without affecting the native woody vegetation. The space between arundo and native vegetation is created by pushing, detangling and/or trimming the vegetation. Both arundo and native woody vegetation may be trimmed; however, native woody vegetation in excess of four inches in diameter will not be trimmed without prior approval by CDFW.

8.1 Arundo Removal Methods

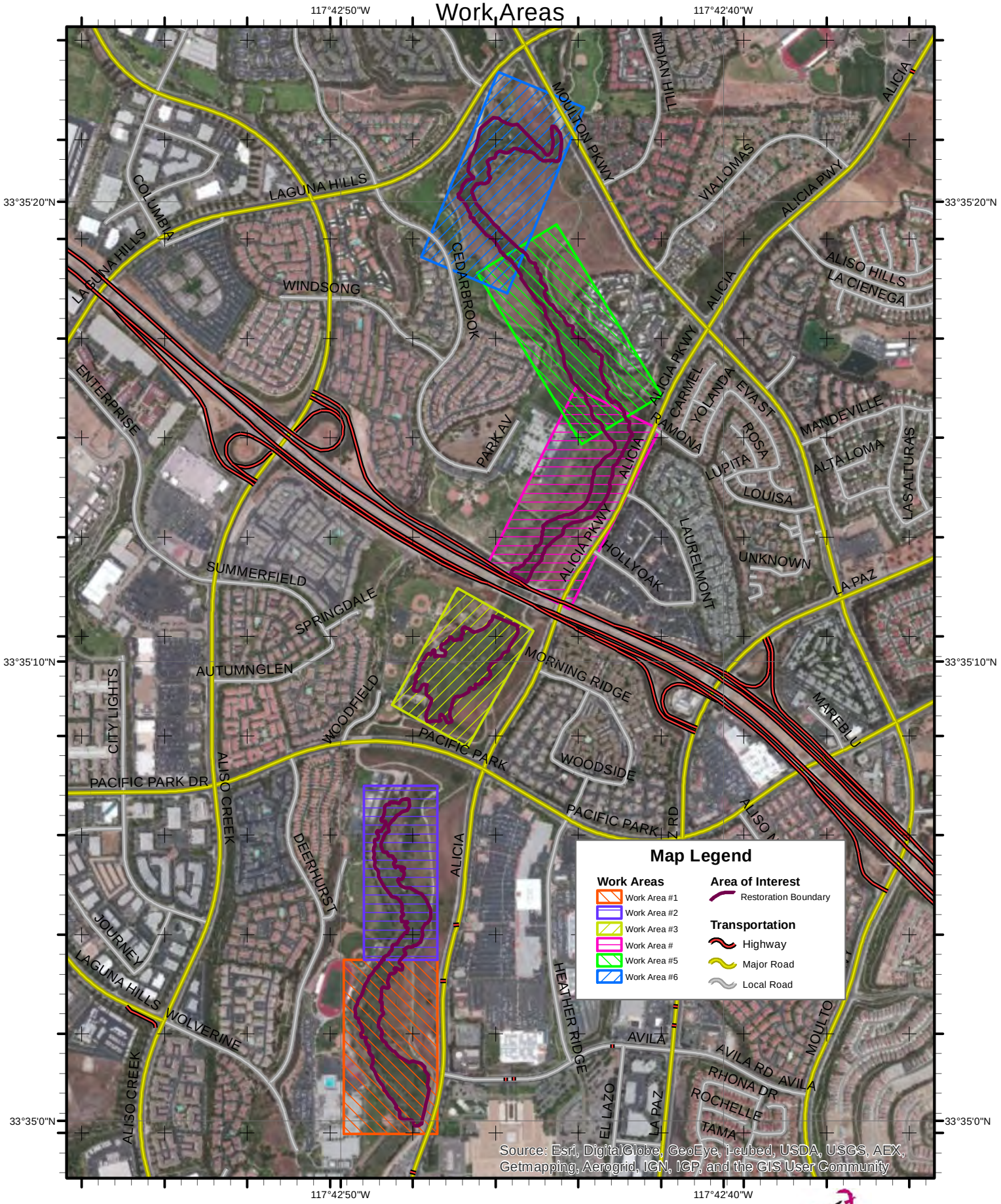
A Habitat Restoration Specialist will oversee all crew efforts to ensure low-impact work methods are implemented, including creek access points, species avoidance, staging areas, and water quality protection. The arundo removal/treatment cycle will begin with foliar application of herbicide, followed by biomass reduction and/or application of aquatic-approved glyphosate (3-5%) and/or Imazapyr (3% under the *Habitat* label) to arundo cuts or resprouts. Herbicide will be applied by certified QAL/QAC applicators via truck-mounted tanks and hose sprayers with marking dye. Backpack sprayers will be used when site conditions require them. Following herbicide application, arundo stands will be left for at least 45 days to allow for herbicide uptake and death of rhizomes. Additional invasives as further noted in Figure 7 will be treated in the same manner. Glyphosate or flurazifop-p (Fusillade) may be substituted for the glyphosate/Imazapyr arundo combination when treating other invasives.

Biomass removal work will end each year by March 15th per the avian breeding season, unless otherwise agreed upon with OCTA and the permitting agencies. Most biomass reduction will entail hand cutting with a portion of mechanical cutting via a tractor-mounted flail mower or brush saw. Cut arundo will be stacked and mowed or chipped.

Aliso Creek HMMP

Work Areas

Attachment F



Map Scale: 1:18,500 if printed on a letter size (8.5" x 11") sheet.

Meters
0 500 1,000

Feet
0 1,000 2,000 3,000 4,000

Projection: Web Mercator Auxiliary Sphere WGS1984

Arundo stumps are then left to regrow. When arundo regrowth reaches 12" to 36" height, another foliar herbicide application is made.

Crews will generally cut arundo using chainsaws. Hand tools (loppers and machetes) may be used, but in limited situations. Crews of 16 or fewer individuals will work in teams of 5 or less. For each team, a designated individual(s) cuts and the other team members pull, haul, and stack the cut arundo cane. No more than one crew may operate at a given site. Crews typically do not use ATV's; however, they will be used on occasion in a low-impact manner when needed (see Measures to Minimize Impacts to Riparian Resources).

Chippers will be used at sites where mowing is not possible due to site topography. Chippers will be staged on dirt or paved roads and may chip material onto disturbed/maintained areas outside the creek profile, into areas where arundo previously existed, or into containers for hauling off site. Arundo chips will not be chipped into any active portion of the creek or into any portion of the creek or creek banks in which chips could be swept into the creek during a rain or storm event. The on-site Habitat Restoration Specialist will coordinate with all restoration crews and OC Parks rangers to identify approved locations for arundo chippings that do not impact native habitat or provide opportunities for arundo chippings to resprout or enter creek flows. It is expected that more than 85% of arundo biomass will be chipped onto adjacent dirt access roads, which will aid in erosion and weed control and limit chippings near the riparian area.

Mowing will be limited due to access and topography. During mowing, a fixed tooth or hammer flail mowing attachment will be mounted on a tractor. The mowing attachment will mulch the dead (or live) arundo cane into a layer about 4" thick. The mowing attachment and tractor do not dig into the soil surface or change topography of the site. All mowed material will be placed over previously cut arundo stands and spread of mowed material will be limited to allow revegetation of native species.

8.2 Additional Site Preparation/Non-Native Species Removal

Other non-native species noted in Table 1 will be removed by herbicide application, mechanical string trimmers, chainsaws, and hand tools. Species will be removed prior to seed set and with careful consideration of adjacent native species and wildlife. Hemlock and black mustard are the primary pioneer invaders in this portion of Aliso Creek following arundo removal, hence close oversight will occur to ensure arundo-cleared areas are not reinfested with a new invasive species. As needed, woody species such as eucalyptus (*Eucalyptus spp.*) and acacia (*Acacia spp.)* will receive stump or girdle applications of herbicide.

The amount of site preparation weeding that is required across the HMMP project area will vary depending on the amount and timing of rainfall, as well as each soil and soil seed bank. Each area will be evaluated after each weeding event to assess the

progress of site preparation and to determine next steps. Areas will be approved for native seeding and planting based on whether enough progress has been made in weed management. Ongoing site preparation will be guided by adaptive management. Adaptive management is an iterative decision-making and learning process used when there is uncertainty regarding resource responses to management actions (Atkinson 2004, Williams et al. 2009, Lewison and Deutschman 2014). The USFWS and National Marine Fisheries Service (NMFS) Five-Point Policy defines *adaptive management* as "an integrated method for addressing uncertainty in natural resource management that incorporates a structured process for learning by doing." Pursuant to Section 2805(a) of the California Fish and Game Code, "'adaptive management' means to use the results of new information gathered through the monitoring program of the plan and from other sources to adjust management strategies and practices to assist in providing for the conservation of covered species." The Corps' definition of adaptive management "means the development of a management strategy that anticipates likely challenges associated with compensatory mitigation projects and provides for the implementation of actions to address those challenges, as well as unforeseen changes to those projects. It requires consideration of the risk, uncertainty, and dynamic nature of compensatory mitigation projects and guides modification of those projects to optimize performance. It includes the selection of appropriate measures that will ensure that the aquatic resource functions are provided and involves analysis of monitoring results to identify potential problems of a compensatory mitigation project and the identification and implementation of measures to rectify those problems." Adaptive management seeks to reduce uncertainty and improve success in achieving conservation goals through structured monitoring and evaluation of management actions.

The following weed control methods are anticipated to be utilized as determined by site conditions:

- Hand pulling and/or manual removal using hand tools
- Herbicide treatment using spray, wick and roller application
- Cut-stump herbicide application for certain weeds such as fennel
- Following weed control and prior to seeding, weed thatch will be evaluated and removed as necessary to facilitate seed/soil contact.

9.0 Planting Plan

A multi-storied, biodiverse habitat structure that incorporates hydrologic, soil and microclimate conditions is intended by the native planting plan. There are two primary restoration zones in the project – Zone A (Riparian) and Zone B (Transitional). Within these zones, several different vegetation communities exist, which will be restored and enhanced in specific manners according to their natural characteristics. Native and non-native vegetation communities were surveyed by LCF Restoration Ecologists to determine appropriate habitat communities for planting, which will be directed in the

field. These targeted vegetation communities are reflected in Figure 11, Target Vegetation.

Zone A – Riparian

The riparian portion of the project comprises the more active creek channel and lateral floodplain, as well as secondary channels and banks with sufficient hydrologic characteristics to support more water-dependent riparian vegetation. Though sporadic transitional and upland species are found in the riparian zone, vegetation cover generally adheres closely to a riparian species composition.

Zone B – Transitional

The urban setting and developed condition of the watershed has created a defined riparian/transitional zone boundary with little gradation. The transitional zone is characterized by more abundant transitional/upland species and drier hydrologic attributes. Species composition ranges from riparian vegetation, including willow woodland, to mulefat and coastal sage scrub habitats, with frequent intermixing of plant types.

To the extent possible, native seed and container stock will be sourced from Aliso Creek, within 5 miles of the site. When this is not feasible due to sourcing and supply constraints, native seed and container stock will be provided from local seed within 20 miles of the HMMP project site.

Soil testing will be conducted prior to and during installation to determine soil suitability and prescribe appropriate soil amendments (if necessary) to ensure adequate growing conditions. Soil testing will occur during site preparation and will include an assessment of soil texture, nutrients, pH, and compaction, among other factors.

9.1 Vegetation Types

The following plant communities constitute the existing vegetation on site and the native plant palettes for native revegetation. The planting associations for this project are based on the Holland (1986) vegetation and CDFW (2006) association concepts. The species listed in a vegetation association are closely tied to a common set of soil and hydrologic factors.

<u>Southern Cottonwood-Willow Riparian Forest</u>

This community consists of tall, open, broad-leafed winter-deciduous riparian forests dominated by Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), and several tree willows, including arroyo willow (*Salix lasiolepis*) and red willow (*Salix laevigata*). Understories usually are shrubby willows with sporadic mixed mule fat (*Baccharis salicifolia*). Sub-irrigated and frequently overflowed lands along

rivers and streams. The dominant species require moist, bare mineral soil for germination and establishment.

Mule Fat Scrub

Mule fat scrub historically occurs in intermittent stream channels with a fairly coarse substrate and moderate depth to water table. Mule fat is a key plant used by least Bell's vireo both for nesting and foraging. It grows rapidly and provides quick habitat benefits. Plants typical of mule fat scrub include mule fat, Santa Barbara sedge (*Carex babarae*), arroyo willow and sandbar willow (*Salix exigua*). Frequent flooding occurs in this community.

Disturbed Mule Fat Scrub

This habitat contains 20-50% cover of riparian scrub dominated by mule fat. Arundo represents the dominant non-native species with 20-50% cover. Some understory species associated with this habitat include dwarf nettle (*Urtica urens*), California mugwort, and ripgut grass. As with undisturbed mule fat scrub, this habitat occurs in soils subject to frequent flooding along intermittent stream channels. Soils in this habitat contain fairly coarse substrate with a moderate depth to water table.

Southern Willow Scrub

Southern Willow Scrub forms dense thickets dominated by willows, which are typically too thick to allow much understory development. Scattered emergent cottonwoods and sycamores are common to this habitat type. Plants typical of southern willow scrub include sandbar and arroyo willows, black willow (*Salix goodingii*), and red willow. Occurs on loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows.

Disturbed Southern Willow Scrub

As with Southern Willow Scrub, the dominant native tree species is arroyo willow. The dominant non-native species is arundo, which has 20-50% cover. Occurs on loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows.

Arundo/Riparian Forest

Non-native arundo dominates arundo/riparian forest with greater than 50% cover. Arundo grows best in moderately flat areas in alluvial soils that are well-drained and moist. Several riparian species often occur in this habitat such as arroyo willow and mule fat.

Coastal and Valley Freshwater Marsh

This habitat is dominated by broad-leaved cattail (*Typha latifolia*), California bulrush (*Schoenoplectus californicus*), and spiny rush (*Juncus acutus*). This marsh habitat typically occurs in areas of low creek flow or standing water. Soils associated with this habitat are sandy.

9.2 Seeding and Planting Schedule and Methods

Following soil testing, all native plantings will occur between November 1st and March 15 to take advantage of winter rains. For areas with supplemental irrigation provided for container stock, planting (but not seeding) may occur into early spring depending on ongoing site assessment and adaptive management techniques. Container stock will be installed no later than March 15th, cuttings will be installed no later than February 1st, and seed will be planted no later than December 31st. Natural recruitment will be encouraged throughout the site using adaptive management techniques, such as providing supplemental watering to areas with a likelihood of high native seed banks.

Seeding and Planting Specifications

During site preparation, large stands of arundo, tamarisk, pampas grass and other non-native species will be removed, eliminating non-native competition with native species, expediting natural recruitment throughout the site and benefiting additional active revegetation/planting efforts.

Seeding

Broadcast seeding will occur by raking soil into small furrows, spreading a native seed mix as detailed in Tables 9 and 11, and tamping the soil to create an effective seed-soil interface. Broadcast seed will be applied in areas where invasive species have been substantially reduced and where site conditions pose a strong likelihood of re-vegetation success. Hydroseeding may occur as conditions merit; however, hand seeding and bellygrinder broadcasting will be the primary seeding methods.

Planting

Container plantings will be installed in a layout defined by the Habitat Restoration Specialist according to microtopography, hydrology, soil conditions and other factors that will become further evident following large scale arundo biomass removal. Container plantings will be watered by crews by hand and/or via supplemental irrigation on a regular schedule, adjusted for seasonal weather events as appropriate.
All native container plants will be planted with the following specifications:

- Planting holes shall be made with the minimal disturbance.

- Prior to planting, the planting hole will be filled with water to finish grade, then allowed to drain.
- If needed based on soil tests, a fertilizer packet shall be added to the planting hole in the root zone prior to planting.
- Plants shall be set in the planting hole so that the crown of the root ball is approximately 0.25 inch above finish grade. Under no circumstance should the plant crown be buried or elevated at a height in which roots show.
- A watering basin will be provided around each plant from 18 – 24 inches in diameter.
- Plants will be watered thoroughly shortly after planting.
- The irrigation system will be tested to ensure that it is properly functioning.
- Plant basins will be mulched with approximately 3 inches of wood mulch after planting.

Table 8. Zone A – Riparian. Container Plant Palette/Specifications

Scientific Name	Common Name	Spacing within Groups
Ambrosia psilostachya	Western ragweed	5’
Artemesia dracunculus	Tarragon	6’
Artemisia douglasiana	Mugwort	5’
Baccharis salicifolia	Mulefat	4’
Juncus acutus	Spiny rush	4’
Leymus condensatus	Giant wild rye	5’
Leymus triticoides	Creeping wild rye	5’
Lotus scoparius	Deerweed	5’
Malosma Laurina	Laurel sumac	3’
Platanus racemosa	Western sycamore	20’
Populus fremontii	Cottonwood	20’
Quercus agrifolia	Coast live oak	20’
Rosa californica	Wild Rose	6’
Rubus ursinus	California Blackberry	6’
Salix exigua	Sandbar willow	15’
Salix goodingii	Black willow	20’
Salix lasiolepis	Arroyo willow	15’
Sisyrinchium bellum	Blue eyed grass	6’

Table 9. Zone A – Riparian. Seeding Plant Palette//Specifications

Scientific Name	Common Name	Lbs./Acre	%P/%G
Ambrosia psilostachya	Western ragweed	3	2/30
Artemesia dracunculus	Tarragon	2	6/50
Artemisia douglasiana	Mugwort	3	10/50
Baccharis salicifolia	Mulefat	4	10/50
Isocoma menziesii	Coast Goldenbush	1	98/75
Lotus scoparius	Deerweed	2	90/60
Oenothera elata	Hooker's Evening Primrose	1	98/75
Pluchea odorata	Marsh fleabane	1	35/60
Sisyrinchium bellum	Blue eyed grass	3	95/75
	Total:	26 Lbs/Acre	
%P/%G = Minimum percentage purity and percentage germination for acceptable seed quality.			

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Table 10. Zone B – Transitional. Container Plant Palette/Specifications

Scientific Name	Common Name	Spacing within Groups
Ambrosia psilostachya	Western ragweed	5’
Artemesia dracunculus	Tarragon	6’
Artemisia californica	California sagebrush	5’
Artemisia douglasiana	Mugwort	5’
Baccharis pilularis cons.	Coyote bush	5’
Baccharis salicifolia	Mulefat	6’
Encelia californica	California sunflower	4’
Eriogonum fasciculatum	California buckwheat	4’
Heteromeles arbutifolia	Toyon	15’
Isocoma menziesii	Coast goldenbush	5’
Juncus acutus	Spiny rush	4’
Leymus condensatus	Giant wild rye	5’
Leymus triticoides	Creeping wild rye	5’
Lotus scoparius	Deerweed	5’
Malosma Laurina	Laurel sumac	3’
Mimulus auriantiacus	Monkeyflower	5’
Opuntia littoralis	Prickly pear cactus	3’
Platanus racemosa	Western sycamore	15’
Populus fremontii	Cottonwood	20’
Quercus agrifolia	Coast live oak	20’
Rhus integrifolia	Lemonadeberry	15’
Rosa californica	Wild Rose	6’
Rubus ursinus	California Blackberry	6’
Salix exigua	Sandbar willow	15’
Salix goodingii	Black willow	20’
Salix lasiolepis	Arroyo willow	15’
Salvia mellifera	Black sage	5’
Sambucus mexicanus	Mexican elderberry	15’
Sisyrinchium bellum	Blue eyed grass	6’

Table 11. Zone B – Transitional. Seeding Plant Palette/Specifications

Scientific Name	Common Name	Lbs./Acre	%P/%G
Ambrosia californica	Western ragweed	3	2/30
Artemesia dracunculus	Tarragon	2	6/50
Artemisia douglasiana	Mugwort	3	10/50
Baccharis salicifolia	Mulefat	4	10/50
Baccharis pill. cons.	Coyote Bush	2	2/40
Eschscholzia californica	California Poppy	3	98/75
Eriogonum fasciculatum	Buckwheat	4	40/60
Isocoma menziesii	Coast Goldenbush	1	98/75
Lotus scoparius	Deerweed	2	95/80
Lupinus succulentus	Arroyo Lupine	1	98/85
Sisyrinchium bellum	Blue eyed grass	3	95/75
	Total:	28 Lbs/Acre	

%P/%G = Minimum percentage purity and percentage germination for acceptable seed quality.

9.3 Irrigation Plan

Temporary supplemental irrigation will be installed in certain areas of the HMMP project area to aid in revegetation of native species. Irrigation will be discontinued no less than two years before HMMP project completion. It is anticipated that in the first year following installation, native plants will be irrigated at a frequency sufficient to keep soil within the root zone moist during the active growing season. In year 2, irrigation is anticipated to lessen, with frequency based on specific plant requirements. This schedule will be tailored as appropriate to changing site conditions and climatic patterns. Irrigation will utilize adjacent Points of Connection (POCs) from Moulton Niguel Water District and will incorporate drip, overhead and hand watering approaches as conditions merit. Upon preparation of the irrigation design and system components, the Irrigation Plan will be provided for OCTA and agency review.

9.4 Grading

No grading is planned as part of implementing the Aliso Creek HMMP. Though creation of basking and pond enhancements for SWPT were discussed with the agencies, the budget and permit limitations of the HMMP project preclude such earth-moving efforts at this time. SWPT enhancements will occur through the substantial habitat and natural hydrology improvements of the HMMP project over time.

10.0 Maintenance Program

A comprehensive maintenance program will be implemented throughout the duration of this HMMP project, including fire suppression, erosion control, weed control, plant protection, debris removal and other items noted in the following schedule and sections.

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Table 12. Implementation and Maintenance Schedule

HMMP Tasks	Year 1 – 2015				Year 2 – 2016				Year 3 – 2017			
	F	W	S	S	F	W	S	S	F	W	S	S
Seed Collection		X	X	X								
Site Preparation, Weeding or Spray	X	X			X							
Site Preparation, Spray, Flagging and/or Species Surveys			X	X								
Seeding and Planting					X	X	X					
Irrigation Design & Approval		X	X	X	X							
Irrigation					X	As	As	X	X	As	As	X
Maintenance Weeding					X	X	X	X	X	X	X	X
Remedial Seeding/Planting									As	As	As	
Implementation Monitoring	W	W	W	W	W	W	W	W	W	W	W	W
Biological Monitoring			X				X				X	

As = As Needed
W = Weekly
BW = Bi-Weekly (every other week)
M = Monthly
Q = Quarterly

In Years 4 through 10, maintenance weeding and monitoring will continue on a regular schedule, likely quarterly, depending on site conditions and performance. Spraying arundo resprouts will be an important focus during Years 4 through 10. Remedial planting is not expected after Year 3. Annual monitoring/reporting will occur each spring through Year 10.

10.1 Erosion Control

Temporary, low-impact erosion control measures (such as straw wattles) will be installed as needed following removal of invasive plants to protect water quality and

prevent adverse water, soil or runoff conditions. The use of plastic netting is excluded without exception. Preferred material is hemp or soft netting that is flexible or bonded fiber matrix. Once sufficient vegetative cover has developed to prevent erosion, any temporary erosion control devices will be removed.

10.2 Weed Control

Invasive species control constitutes one of the most essential components of the HMMP project; therefore, weeds will be closely monitored and treated throughout the duration of the HMMP project.

Weeds will be controlled in the restoration area for 10 years. Weeds will be removed mechanically, to the degree feasible. Where mechanical removal is ineffective or detrimental to the soil profile, herbicides will be applied utilizing appropriate methodologies and application rates, as described in the Site Preparation section.

Follow-up foliar application of herbicide will be applied to any re-sprouting foliage invasive species in the restoration area approximately 2 to 7 weeks after the initial treatment. It is anticipated that up to eight cut-stump and/or foliar applications of herbicide to arundo will occur in the maintenance phase of this HMMP project.

Weed control activities will occur prior to seed set to prevent weed seed from contributing to the soil seed bank. Care will be taken to avoid native plantings during weed control activities. Spraying will not be performed under windy conditions to avoid herbicide drift. A marking dye will be used in all maintenance herbicide applications. Wick and roller applications will often be used to minimize potential herbicide overspray, particularly in ongoing maintenance, for which wick and roller applications are cost/labor-effective due to the limited biomass as compared to initial Site Preparation removals.

10.3 Plant Protection Guidelines

As detailed in the planting plan (Section 8.11), plant protection measures will be included throughout restoration and enhancement areas where plant loss or damage from herbivores (e.g., rabbits, gophers, ground squirrels, and deer) is likely. The need for additional plant protection will be adaptively assessed and adjusted accordingly. After removal, plant protection devices shall be disposed of at an appropriate offsite facility.

10.4 Trash and Debris Removal

Trash and debris will be removed from the restoration and enhancement areas during initial site preparation and throughout the project's duration. Garbage, debris, and noxious weed biomass will be removed from the restoration and enhancement site. Dead or downed wood of native species will not be removed except as required for

safety or flood control purposes.

10.5 Irrigation Maintenance and Repair

Irrigation maintenance and repairs will occur to ensure proper irrigation of native plantings as needed throughout the project's duration. The irrigation system will be continually monitored and quality checked, along with root-zone moisture testing, to verify adequate functioning.

10.6 Vandalism

LCF will note any instance of vandalism and report occurrences to OCTA within 24 hours. Recommendations for the replacement of damaged plants and their protection shall be developed by LCF and submitted to OCTA for review and approval. Remedial measures will be undertaken in a timely manner by LCF. A description of all remedial actions will be included in the annual monitoring reports.

10.7 Fire Suppression

Consistent, comprehensive removal of non-native species will be utilized throughout the restoration and enhancement implementation, thereby reducing the presence of highly flammable non-native grasses and shrubs capable of spreading fire quickly across the landscape.

In addition to appropriate site maintenance, LCF will incorporate Orange County Fire Authority (OCFA) fire prevention policies for the County's Open Space areas, including the restoration and enhancement site. Because the restoration and enhancement site is already within a County wilderness park, OCFA fire prevention policies are in place and will be observed by LCF and all crews.

10.7.1 Sensitive Resource Areas

Areas supporting particularly sensitive resources will be properly noted on HMMP project maps to alert fire personnel to the presence of sensitive species. Fire personnel will be advised to avoid these areas or minimize impacts to them to the maximum extent practicable during fire prevention measures, while maintaining effective fire suppression tactics.

10.8 Flood Control

Flooding is a natural occurrence along stream channels and limited protection can be provided. In addition, flooding can help to distribute native species and improve the physical structure of the active floodplain, but can severely damage young plant material. Therefore, OCTA will have LCF or its contractor implement erosion control measures in the first 5 years of site development to control for flooding damage. After a

severe flooding event, the Project Biologist will determine if damage to the restoration and enhancement areas requires remedial measures, such as native re-planting. The Project Biologist may determine that the best course of action is a set period of time for natural recovery (with a focus on invasive, non-native species abatement/eradication) after which time, if recovery does not occur, remedial actions are warranted. If substantial remedial actions are recommended, OCTA will coordinate with permitting agencies for approval of all activities within jurisdictional aquatic resources.

11.0 Monitoring Program

A complete monitoring program will be implemented by OCTA through LCF or its contractor to measure HMMP project progress. The monitoring program will be comprised of the following principal components.

11.1 Frequency and Duration

Monitoring will be conducted continuously for the duration of the HMMP project and include habitat monitoring, photo monitoring, species monitoring, and adaptive management. All monitoring activities will be summarized in quarterly and annual reports. Reports during the early quarters of the HMMP project will primarily document non-native species removal efforts, including removal of biomass. Reports in later quarters will document treatment of non-native resprouts and ongoing maintenance efforts, as well as native revegetation of areas in which non-native species are sufficiently under control to allow for planting. Long-term monitoring will be conducted per the AWCWP RMP and Aliso Creek LTMP addendum.

11.2 Adaptive Management Plan

Adaptive management techniques will be employed for monitoring restoration and enhancement progress and adjusting methodologies as needed. Utilizing the baseline site assessment, ongoing restoration and enhancement monitoring will continuously update information that will inform adaptive management (e.g., qualitative and quantitative data collection), measure the success of specific restoration and enhancement activities (e.g., vegetative growth, non-native species removal) and measure species response to restoration and enhancement activities (e.g., distribution and abundance of target species).

11.3 Photo-monitoring

Photo-monitoring stations (points, plots) will be established within the HMMP project site. Photo stations allow a photographic record to be developed over time, and are a valuable tool for monitoring change. For monitoring change, the ability to replicate conditions (e.g., location, direction, camera lens and angle) between years is particularly important; therefore, photo stations and photographs will be well-marked

and documented, as follows:

Photo station locations will be recorded using a GPS device; in addition, the location will be marked on a map and included with the annual and final monitoring reports. A photo log form shall be used for all photo documentation. The log will include (but is not limited to) the following information:

- Photographer name
- Date of photo documentation
- Photo station location (including GPS point)
- Camera type and lens
- Film type
- Compass direction for each photograph
- Height and angle or camera for each photograph

Both the photo log for each photo station and all photographs taken at the station will be included in the annual and final monitoring reports. Photographs will be labeled and cross-referenced to the photo log. Video-monitoring may also be used to demonstrate the restoration and enhancement progress and to make comparisons between before and after conditions.

11.4 Habitat Monitoring

Qualitative and quantitative monitoring of habitat conditions will focus on demonstrating successful reduction of non-native species and revegetation of native species throughout the site and included with the annual and final monitoring reports.

11.5 Transect Monitoring

The transect methodology provided below will be used annually for vegetation monitoring during the first 5 (five) years of the project and in years 7 (seven), 9 (nine) and 10 (ten), subject to the discretion of the Project Biologist and as access allows. Relevés or similar will be used if transects cannot be conducted. See Appendix E for details regarding the relevé method.

Random vegetation transects will be established perpendicular to the riparian corridor to collect quantitative data on species composition and structure (e.g., species, height, development of multiple vertical layers/strata) along each transect. Per CDFW recommendation, a combination of point intercept and quadrat methods will be used. Transects will be placed perpendicular to the stream, with point-intercept measures taken at 1 meter intervals and quadrats placed every 5th meter. Total transect length will be determined based on the width of the riparian zone, with the mid-point of the transect placed at the thalweg.

When documenting data and methodologies for habitat monitoring, the following elements will be provided and included with the annual and final monitoring reports:

- The type and number of sampling units (e.g., transects, plots, points)
- The sampling unit size and shape
- The placement of sampling units and whether they will be temporary or permanent
- Sample data collection forms
- Percent absolute cover of native and non-native/invasive species.

11.6 Native Species Monitoring

Native species monitoring will be conducted by the Habitat Restoration Specialist and will evaluate and document progress to date in native species revegetation, as well as any occurrences of sensitive plant or animal species, as observed by the Project Biologist.

To assess continuing progress towards the goals of the restoration and enhancement, the following target species or species groups are recommended for monitoring:

- Riparian Birds (All species occurrences)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Yellow warbler (*Dendroica petechia*)
- Yellow-breasted chat (*Icteria virens*)
- Coastal California gnatcatcher (*Polioptila californica*)
- Southwestern pond turtle (*Emys [Clemmys] marmorata pallida*)

Targeted species or species groups will be monitored annually to assess their distribution, relative abundance, and/or breeding activity. Annual spring surveys will be conducted according to standard survey methods that pertain to survey time of day, weather conditions, and search approach. While the emphasis of this HMMP project is not on coastal sage scrub, there may be benefits to coastal California gnatcatcher as a result of the project to foraging habitat and as a movement corridor. Incidental observations occurring during other monitoring survey visits will be recorded.

Surveys for riparian birds will be conducted along systematic survey routes, monitoring all portions of the riparian habitat. Monitoring will identify species using the habitat and their relative abundance, and quantify the number of nesting pairs of any sensitive riparian bird species (e.g., least Bell’s vireo, southwestern willow flycatcher, yellow-breasted chat, Cooper’s hawk) using the habitat for nesting.

Surveys shall be conducted at varying times of day between visits. The stream reach shall be monitored three times during March through mid-August, with at least a 7-day interval between site visits. Surveys shall begin within 1 hour after sunrise and end by

noon, and should not be conducted under extreme conditions (i.e., during heavy rain or when the temperature is >95°F or <40°F or with winds >10 mph). Taped vocalizations shall be used, as needed. Territories (singing males) and nest locations shall be mapped.

11.7 Invasive Species Monitoring

Invasive plant species will be monitored as part of the Maintenance Program and during habitat monitoring. Where invasive plant species are determined to pose a threat to restoration and enhancement success, remedial actions will be implemented, as discussed and documented in the appropriate reports. Invasive animal species will be monitored throughout the HMMP project. Annual surveys will be performed for bullfrogs, cowbirds, and other invasive animal species that have the potential to significantly and negatively affect native wildlife. Surveys shall be conducted by walking through suitable habitat and mapping their distribution and relative abundance. Maps and surveys will be included in the annual and final monitoring reports. Where invasive animals are determined to pose a threat to native species, recommendations for management will be included in the appropriate reports.

12.0 Contingency Measures

If the HMMP project underperforms in any area, OCTA will coordinate potential remedial actions with the agencies (ACOE, SWRCB, USFWS, CDFW). Remedial measures may include (but are not limited to):

- Replacement native plantings
- Remedial native reseeding
- Soil testing
- Invasive control
- Supplemental irrigation.

In the event of a major fire or flood or other disturbance that substantially damages the HMMP project, post-disturbance site conditions will be assessed as soon as the area is safe to access (e.g., the threat has passed). This post-damage site assessment will be documented in a letter report by LCF to the agencies (ACOE, SWRCB, USFWS, CDFW) and OCTA with accompanying photographs. At a minimum, invasive species abatement practices will likely be initiated or increased to encourage natural recovery processes.

If evidence of natural recovery, as defined by native species regeneration (e.g., seedlings, stump sprouting), is not observed within three months or one growing season of the disturbance, or if the recovery is deemed inadequate to meet the stated goals and objectives of the HMMP project, an analysis will be provided by LCF to the agencies (ACOE, SWRCB, USFWS, CDFW) and OCTA detailing the cause of the failure. Following submittal of this analysis, OCTA through LCF or its contractor will

consult with the agencies (ACOE, SWRCB, USFWS, CDFW) to determine an appropriate course of action. Adaptive management will also be a part of the Aliso Creek LTMP addendum.

13.0 Reporting and Documentation

Reporting will be fulfilled pursuant to Section 6 of the *Measure M2 Environmental Mitigation Program Restoration Funding Guidelines*.

Four quarterly maintenance reports per year, one annual monitoring report per year and one final report following HMMP project completion will be provided for the project. Reports will be submitted by the Project Biologist to OCTA and the permitting agencies. Reports will be provided to OCTA and the permitting agencies on the following schedule:

Quarterly Period per Year	Report Due
December 15 – March 15	April 10
March 15 – June 15	July 10
June 15 – September 15	October 10
September 15 – December 15	January 10

Annual Report	Report Due
January - December	February 1

Final Report	Report Due
Dec 11, 2014 – Oct 15, 2024	February 1, 2025

13.1 Quarterly Implementation and Maintenance Reports

LCF, with input from appropriate contractors, will provide maintenance reports during the entire maintenance period. Maintenance reports will be prepared and submitted to OCTA and the permitting agencies following each maintenance visit. Maintenance visits will be conducted a minimum of once monthly during the first year after installation and quarterly thereafter. Maintenance reports will be letter reports (unless specific issues dictate a longer report) and will include:

- Person or person(s) conducting the maintenance
- Date(s) of maintenance visits
- General site conditions
- Description of maintenance activities (e.g., irrigation maintenance, weed control and trash/debris removal) and actions taken
- Issues or problems requiring follow-up attention

- Recommendations

Reports will include a narrative discussion detailing progress to date in non-native species removal and native revegetation, as well as maps showing areas where restoration and enhancement work has occurred and the current status of those areas as of the reporting date.

13.2 Annual Status Reports

LCF will provide OCTA and the permitting agencies an Annual Status Report (ASR) no later than February 1 of each year for the HMMP project and continuing until the performance criteria specified in the final Aliso Creek HMMP are achieved[10]. OCTA will then request a final review of the site and written confirmation of success from the resource and permitting agencies. The ASR shall present an overview of the restoration and enhancement effort, focusing on year-to-date activities, and shall specifically address maintenance activities, monitoring methodologies and results, success criteria (as measured by plant survival, percent cover, and/or other parameters), remedial actions (including but not limited to native replanting or reseeding), and recommendations for the following year. The ASR shall include the following:

- A list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year
- A description of the restoration and enhancement activities, including native revegetation and exotic
  species removal, and when the activities were conducted
- Description of natural recruitment of native species on the site
- Qualitative and quantitative monitoring data related to required performance standards
- Weather conditions and response of restoration and enhancement areas and/or implementation of restoration and enhancement activities to changes in weather conditions
- Observations of any state or federally listed threatened or endangered species, California species of special concern, or their sign on restoration and enhancement areas
- A table of general wildlife species using the site including reptiles, birds, mammals and invertebrates based on casual observation of those animals, their tracks, scat or other signs
- Discussion of any problems encountered during restoration/enhancement, and the remediation implemented, including weed control, trash and debris removal, etc.
- The number by species of native plants replaced
- Copies of all photo documentation
- Maps identifying monitoring areas, transects, and planting zones

[10] The Aliso Creek LTMP addendum will describe the reporting schedule during the long-term management.

- GPS points of all transect locations and photo documentation points
- Discussion and recommendations
- Copies of all permits, and any special conditions or letters modifying the original permit conditions
- A table showing the implementation status of each restoration task
- An assessment of the effectiveness (e.g., success criteria) of each completed or partially completed restoration/enhancement task

13.3 Final Report

Upon completion of the maintenance and monitoring programs, a Final Report and Notification of Completion will be provided by LCF to OCTA and the resource and permitting agencies that summarizes methods, results, remedial actions, and adaptive management from all HMMP project efforts. Appendices will include all pertinent data and photo documentation from biological and implementation monitoring/reporting. The Final Report will also include the dates all restoration and enhancement activities were completed, before and after color photographs of the restoration and enhancement activities, one copy of "as built" drawings (final planting plan) for the entire HMMP project (signed, dated, to scale and no larger than 11 x 17 inches).

The Final Report will serve as the complete record of the HMMP project. The Final Report may also include recommendations for modifications to the long-term management measures for the HMMP project site, as applicable.

14.0 Project Budget

Table 13.

Implementation and Monitoring Tasks	**Date(s)**	**Firm Fixed Price[11]**
Pre-Project Planning Pre-Project 1. Prepare HMMP 2. Pre-Project Surveys/Baseline Conditions 3. Site Preparation 4. Irrigation Design/Permitting	September 2012 – December 2013	$135,000
Year One Implementation 1. Pre-Project Surveys/Baseline Conditions 2. Site Preparation	December 2014 – December 2015	$325,000

[11] Labor is approximately 75% of the cost for each item.

3. Invasive Removal 4. Irrigation Design/Permitting/Installation 5. Monitoring and Reporting 6. Native Planting and Seeding (as appropriate)		
Year Two Implementation 1. Site Preparation 2. Invasive Removal 3. Irrigation Installation and Maintenance 4. Native Planting and Seeding (as appropriate) 5. Monitoring and Reporting	January 2016 – December 2016	$295,000
Year Three Implementation 1. Invasive Removal 2. Irrigation Maintenance 3. Native Planting and Seeding (as appropriate) 4. Monitoring and Reporting	January 2017 – December 2017	$135,000
Year Four Implementation 1. Site Maintenance 2. Monitoring and Reporting	January 2018 – December 2018	$105,000
Year Five Implementation 1. Site Maintenance 2. Monitoring and Reporting	January 2019 – December 2019	$45,000
Year Six Maintenance and Monitoring 1. Site Maintenance 2. Monitoring and Reporting	January 2020 – December 2020	$15,000
Year Seven Maintenance and Monitoring 1. Site Maintenance 2. Monitoring and Reporting	January 2021 – December 2021	$15,000

Year Eight Maintenance and Monitoring 1. Site Maintenance 2. Monitoring and Reporting	January 2022 – December 2022	$15,000
Year Nine Maintenance and Monitoring 1. Site Maintenance 2. Monitoring and Reporting	January 2023 – December 2023	$15,000
Year Ten Maintenance and Monitoring 1. Site Maintenance 2. Monitoring and Reporting	January 2024 – December 2024	$5,000
TOTAL:		$1,105,000

15.0 Financial Assurances

OCTA commits to providing enhancement and rehabilitation of 1.80 acres of wetland and 9.39 acres of non-wetland waters of the U.S. A letter of commitment is attached as Appendix F.

15.1 Long-Term Management Plan and Associated Funding

Upon completion of and acceptance by the regulatory and resource agencies that the 10-year performance standards have been achieved for the site, implementation of long-term management for the mitigation site will begin. The responsibility of long term management of Aliso Creek HMMP project area will be transferred from OCTA to OC Parks via an appropriate mechanism, subject to review and approval by the by the ACOE, USFWS, CDFW, and SWRCB. As noted above, the HMMP project site is located within the AWCWP RMP area and an approved protection mechanism will be established for the HMMP project area. Funding for long-term management activities not currently covered in the existing RMP will be provided by OCTA to OC Parks or another acceptable management entity (i.e. LCF) through coordination with the ACOE, SWRCB, and OC Parks via an endowment.

As such, this section describes the tasks and provides cost estimates associated with long-term management activities not currently implemented and funded by the County's regular operating budget (i.e., trash, trespass, and fire hazard monitoring, trash/fire hazard removal and cleanup, and signage). A separate LTMP with additional

information regarding administrative/ enforcement processes (i.e., cures, transfers, replacement of land manager, amendments, notices) and funding/task prioritization will be prepared and submitted to the ACOE and SWRCB for approval. The separate LTMP will be an addendum to the RMP. While it is not anticipated that major management actions will be needed, an objective of the long-term management plan is to conduct monitoring to identify any issues that arise, and using adaptive management, including as defined in the Corps' regulations, to determine what actions might be appropriate to conserve the site's natural resource functions and services in perpetuity.

A. Biological Resources

A.1 Waters of the U.S., including wetlands

Objective: Monitor, conserve and maintain the Aliso Creek Project site's **waters of the U.S., including wetlands**. Limit any impacts to waters of the U.S. from vehicular travel or other adverse impacts.

Task: At least one annual walk-through survey will be conducted to qualitatively monitor the general condition of these habitats. General topographic conditions, hydrology, general vegetation cover and composition, invasive species, and erosion will be noted, evaluated and mapped during a site examination in the spring. Notes to be made will include observations of species encountered, general water quality (i.e., turbidity, pollutants such as oil and sheen), general extent of wetlands, and any occurrences of erosion, and weed/non-native species invasion.

Task: Establish reference sites for photographs and prepare a site map showing the reference sites for the Aliso Creek Project file. Alternatively, utilize photographic reference sites, if any, developed during HMMP management period. Reference photographs will be taken once per year.

A.2 Threatened/Endangered Animal Species Minimization

Objective: Avoid and minimize take of federally listed species.

Task: Avian Species: LBV, SWWF, and CAGN - Management activities during the breeding season[12] that have the potential to destroy active nests (e.g., spraying or pulling vegetation off existing roads or trails within coastal sage scrub or woody riparian vegetation) or disrupt nesting activities (e.g., weed whipping along roads and trails adjacent to coastal sage scrub or woody riparian vegetation) will be conducted under the oversight[13] of a monitoring biologist[14] who will ensure that nesting activities

[12] The breeding season for gnatcatcher is February 15 through August 31, and the breeding season for vireo and flycatcher is March 15 through September 15.

[13] "Oversight" includes, but is not limited to, the following activities, which will be conducted as necessary to ensure that no nests are destroyed and that nesting activities of listed species are not disrupted: training personnel

for gnatcatcher, vireo, and flycatcher nests are not disrupted and that no nests are destroyed.

A.3 Invasive Species

Objective: Monitor and maintain control over target invasive plant species that threaten native plant communities within the site, including Arundo (*Arundo donax*), Italian thistle (*Carduus pycnocephalus*), Pampas grass (*Cortaderia selloana*), tree tobacco (*Nicotiana glauca*), castor bean (*Ricinus communis*), artichoke thistle (*Cynara cardunculus*), and tamarisk (*Tamarix ramosissima*). These species have a moderate to high level of invasiveness within onsite habitats, rated as "high" or "moderate" by the California Invasive Plant Council (Cal-IPC). The site will be monitored on an annual basis to ensure that the property maintains its biological functions and conservation value and does not degrade due to invasive plant species, trespassing, or illegal dumping.

Task: Each year's annual walk-through survey (or a supplemental survey) will include a qualitative assessment of potential or observed weed invasions, primarily in or around the waters of the U.S. Additional actions to control invasive species will be evaluated and prioritized on an annual basis, as necessary to ensure that any new growth of invasive plant species is treated and not permitted to become large masses.

B. Security, Safety, and Public Access

Element B.1 – Trash and Trespass/Fire Hazard Monitoring

Objective: Monitor sources of trash, trespass, and fire hazards.

Objective: Collect and remove trash, repair vandalized structures, rectify trespass impacts, and identify fire hazards.

Task: During each annual site visit, record general areas of persistent or problematic trash and/or trespass, including homeless encampments and fire hazards. Record type, location, and management recommendations to avoid, minimize, or rectify a trash, trespass, and/or potential fire hazard impact.

Task: As needed, and at least once yearly, collect and remove as much trash and repair and rectify vandalism, trespass, and potential fire hazard impacts.

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on vegetation to be avoided and removed; flagging specific areas to be avoided; training personnel on avoidance and minimization measures; regularly inspecting work activities; and providing direct supervision of management activities when necessary.

[14] The monitoring biologist will be familiar with the listed species that potentially occur in the affected habitat (gnatcatcher, vireo, and/or flycatcher) and their breeding behavior.

C. Reporting and Administration

Element C.1 – Annual Report

Objective: Assess and record management tasks and general site conditions for the purpose of reporting and determining management priorities.

Task: Prepare a summary of general site conditions/monitoring results and management activities for inclusion in the NCC Annual Report. The Annual Report will be provided to the Corps every year until the site protection documents have been recorded. After this milestone, the Annual Report will be made available at the request of the Corps. The Annual Report may also be downloaded from the NCC website at http://occonservation.org/.

Task: Note (1) any habitat enhancement measures deemed to be warranted, (2) any problems that need near term attention (e.g., weed removal, erosion control), and/or (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date.

D. Equipment and Materials

Element D.1 – Equipment and Materials

Objective: Include funding for equipment and materials needed to accomplish long-term management tasks described hererin.

Task: Field supplies such as herbicides and pin flags/markers will be purchased. Vehicle mileage to and from the site will be charged. Missing and damaged signs will be replaced as necessary.

Table 14 - Aliso Creek Long-Term Management Tasks and Estimated Costs

Initial and Capital Tasks and Costs		
Task		**Cost**
Endowment Establishment Fee		$3,000
Legal Defense Fund		$7,500
OCTA Endowment Initial Costs Total		**$10,500**
Ongoing Tasks and Costs		
Task	**Frequency**	**Cost**

Element A.1 Waters of the U.S., Including Wetlands		
Monitor waters of the U.S.	Annually	$1,000
Reference photography	Annually	$700
Element A.2 Threatened/Endangered Animal Species Minimization		
Monitor work conducted during the nesting season	As-needed	$3,900
Element A.3 Invasive Species		
Assess weed growth, extent	Annually	$2,720
Weed removal	As-needed	$2,000
Element B.1 Trash and Trespass		
Trash and trespass monitoring/fire hazard monitoring	Annually	$3,558 (Task is funded by County's operating budget and not included in the OCTA Endowment Summary Task Total below. Based off of 2 hours patrol time per week for 52 weeks.)
Trash/fire hazard removal and cleanup	As-needed (Annually)	$24,000 (Task is funded by County's operating budget and not included in the OCTA Endowment Summary Task Total below. This will cover the cost for approximately 1 large unauthorized encampment every 2 months.)
Element C.1 Annual Report		
Incorporate monitoring and management into NCCP Annual report	Annually	$1,000
Account administration	As-needed	$3,250
Element D.1 Equipment/Materials		
Vehicles and supplies	As-needed	$800
Signage	30 per year	$1,500 (Task is funded by County's operating budget and not included in the OCTA Endowment Summary Task Total below. Includes approximately 30 signs and posts.)

OCTA Endowment Summary		
Task Total for Endowment		$15,370
Contingency for Endowment	**15%**	*$2,306*
Total Estimated Annual Cost for Endowment		**$17,676**

15.2 Confirmation of HMMP Performance and Release

Upon receipt of the Final Report, OCTA will request the regulatory agencies confirm that the required performance standards have been met and release OCTA from further monitoring and maintenance. If a regulatory agency raises an objection to terminating the 10-year monitoring and maintenance program, the objection should clearly indicate the reasons for the objection and arguments for not terminating the monitoring and maintenance program. LCF, on behalf of OCTA, would schedule a meeting to resolve the agency concerns and implement additional adaptive management measures and, extend the monitoring period. The HMMP project will be considered complete upon receipt of written confirmation from the ACOE, USFWS, SWRCB, and CDFW. The HMMP project will not be considered complete until approved performance standards have been achieved, long term financial assurances have been established, and the site protection instruments have been recorded. Until such time, annual monitoring reports will be required to be submitted to the agencies.

16.0 Data Documentation

LCF will be responsible for maintaining and submitting HMMP project documentation to OCTA with all reports. Data to be submitted shall include maps (including GIS-generated maps where possible), quantitative monitoring data (including forms and field notes), photo documentation (photographs and accompanying photo logs) and video documentation (if applicable). Data will be provided in an electronic format, to the degree feasible.

LCF will maintain a record of maintenance and monitoring activities to assist in evaluating changes in resource status, and responses to remedial or adaptive management actions. Restoration/enhancement status will be reviewed annually to inform the next year's restoration and enhancement maintenance and management activities.

17.0 References

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APPENDIX A

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CA 90017-3401

January 30, 2017

Derek Ostensen
Laguna Canyon Foundation
C/O: Derek Ostensen & Associates
1278 Glennerye, Suite 260
Laguna Beach, CA 92651

SUBJECT: Verification Re-issuance of RGP No. 41, Aliso Creek Arundo Removal Project

Dear Mr. Ostensen:

I am responding to your August 16, 2016 request to re-issue your Department of the Army permit verification letter/notice to proceed for the Aliso Creek Arundo Removal Project (Corps File No. SPL-2014-00713-TWJ). The project site is located within a 2.8-mile-long reach of Aliso Creek (lat/long: 33.57511°N, -117.71385°W), approximately between Moulton Parkway and Alicia Parkway, near the City of Aliso Viejo, Orange County, California.

On December 11, 2014, we issued a verification letter/notice to proceed for your proposed use of Regional General Permit (RGP) No. 41 to conduct various activities associated with the project. The conditions of this verification letter authorized only non-ground-disturbing activities, including arundo (*Arundo donax*)/non-native plant biomass removal using hand cutting via chain saw or loppers, or alternatively via a tractor mower (with rubber tires) or brush saw (referred to as Phase 1). On November 5, 2015 you requested re-issuance of the verification letter to include ground-disturbing aspects (referred to as Phase 2) of the project. At that time we were aware that some of the arundo removal work associated with Phase 1 was ongoing and that the LCF was actively working at the site. We re-issued a verification of RGP No. 41 on February 25, 2016, which included Phase 2 activities.

As Phases 1 and 2 of your arundo removal program have progressed, you identified three distinct areas within the Aliso Creek Habitat Mitigation and Monitoring Plan (HMMP) (see Figure 2 enclosed) where manual removal of arundo is not practicable (as previously proposed) due to high densities. The three areas are archaeologically sensitive and occur at the locations of the following sites: 1) 30-000390, 2) 30-000849, and 3) 30-000389 and 30-001357. Your August 16, 2016 RGP No. 41 re-issuance request (referred to as Phase 3) specifically seeks to include non-native biomass removal activities using mechanized equipment in the three areas listed above, which would require temporary discharge of fill material into 11.19 acres of wetland and non-wetland waters of the U.S.

For this RGP No. 41 verification letter/notice to proceed to be valid, you must comply with all of the non-discretionary Special Conditions listed below, which include project-specific conditions as well as the terms and conditions of RGP No. 41:

1. All work in waters of the U.S. must be completed no later than April 7, 2019, the expiration date of RGP 41. If the Permittee is unable to complete the authorized work by this date, the Permittee must request, in writing, an extension from the Corps Regulatory Division prior to the deadline.

2. No debris, soil, silt, sand, rubbish, cement or concrete washings thereof, oil or petroleum products or washings thereof, shall be allowed to enter into or placed where it may be washed by rainfall or runoff into Aliso Creek or other waterway. When project operations are completed, any and all excess construction materials, debris, and/or other associated excess project materials shall be removed to an appropriate off-site location outside of any waters of the U.S. Proper best management practices and storm water controls shall be implemented and maintained during construction. Temporary fills for diversion or dewatering of the construction site are not authorized by this Regional General Permit notice to proceed.

3. Within 45 calendar days of completing authorized work in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division a memo including the following:

   A) Date(s) work within waters of the U.S. was initiated and completed;
   B) Summary of compliance status with each special condition of this permit (including any noncompliance that previously occurred or is currently occurring and corrective actions completed or being taken to achieve compliance); and
   C) Color photographs taken at the project site before and after construction for those aspects directly associated with impacts to waters of the U.S.;

4. Trunk line installation, identified in the February 25, 2016 verification re-issuance, shall avoid sites 30-000389, 30-000390, 30-000849, and 30-001357.

5. Under the guidance of an archaeological monitor, for all areas within the archaeologically sensitive areas identified on the APE map, any machinery used in the biomass removal shall be atop a mat of cut arundo that is a minimum of 6 inches thick. Using this method, no equipment would be in contact with any exposed ground surface. As the equipment enters an archaeologically sensitive area, the arundo would be cut with a tractor-mounted brush saw and laid on the ground surface forming a protective mat of vegetation between the machine and the ground with the protective mat being extended as the biomass removal extends into the archaeologically sensitive area. The arundo would be cut approximately 6 inches above the soil grade, without excavation or ground penetration. Where practicable, cut arundo would be stacked behind the machine on the protective mat of vegetation where it would be removed by a small bobcat machine with a grapple bucket for chipping within upland areas at least 50 feet away from the archaeologically sensitive area. After all of the biomass has been cut within the archaeologically sensitive area the protective mat of vegetation would be removed by manually collecting it and placing it in the bobcat bucket while the bobcat remains on the protective mat and retreats from the archaeologically sensitive area. Where removal and chipping offsite is not

practicable, the arundo would be moved to an identified mulching area. A layer of arundo canes approximately 24 inches thick would be placed on top of the soil. This would help form a protective layer upon which additional arundo can be mulched. The additional arundo would be placed on top of the protective layer and mulched to a standard wood chip/mulch condition; however, mulching would not penetrate the protective layer of arundo canes or the underlying soil. The archaeological monitors would periodically inspect the protective layer to verify that it is intact and serving its protective purpose. These procedures would ensure that the machines remain on vegetation mats at all times and that the soil (and any archaeological materials potentially contained within the soil) would not be affected by the removal process. If any of the methods described disturb the ground, the monitor shall be authorized to stop work and hand removal would be required.

6. This Corps permit does not authorize you to take any federally listed as threatened or endangered species, in particular the southwestern willow flycatcher (*Empidonax trailli extimus*) and least Bell's vireo (*Vireo bellii pusillus*), or to adversely modify designated critical habitat of any federally listed species. In order to legally take a federally listed species or affect designated critical habitat, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA section 10 permit, or a Biological Opinion (BO) under ESA section 7, with "incidental take" provisions with which you must comply). The enclosed U.S. Fish and Wildlife Service (USFWS) BO (FWS-OR-08B0013-09F0147) contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under this Corps Regulatory Division permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BO, terms and conditions of which are incorporated by reference in this permit verification. Failure to comply with the terms and conditions associated with the incidental take specified in the BO, where a take of the federally listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps Regulatory Division permit. The Corps Regulatory Division and USFWS are the appropriate authority to determine compliance with the avoidance and minimization measures.

7. No activity may substantially disrupt the movement of those species of aquatic life indigenous to the water body, including those species which normally migrate through the area.

8. The Permittee shall make every effort to ensure that vegetation nodes, root stalks, or other debris resulting from their activity do not enter or remain in any actively flowing watercourse.

9. The Permittee shall not stockpile invasive plants and associated debris during the flood season (November 15 to April 15). Stockpiling during this time must be conducted within the uplands only. Stockpiling is allowed between April 16 and November 14; however, it must occur in previously disturbed or degraded areas. Stockpiles cannot be placed within 50 feet of flowing water, must be placed in such a manner that is not dispersed by currents or other forces, and must be disposed of within 3 months (or 15 days in areas known to experience flash flooding)

of initial creation of the stockpile by either removal to an appropriate upland disposal area or by burning. Prior to upland disposal or burning of any stockpiles or debris, all appropriate state and local permits must be obtained.

10. Burning of stockpiles shall not occur within 1,000 feet of native riparian or wetland habitat areas between March 15 and September 15.

11. Access roads which are no longer necessary for site monitoring, restoration, maintenance, or treatment must be removed completely and the affected areas hydroseeded with appropriate native riparian or wetland vegetation.

12. Planting of native container species, identified in the February 25, 2016 verification re-issuance, shall avoid sites 30-000389, 30-000390, 30-000849, and 30-001357, including a 100-foot buffer.

13. Discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of water.

14. In partially infested stands, native riparian vegetation must be flagged prior to commencement of any mechanized activities and must be avoided. In fully infested stands, native riparian vegetation should be avoided to the maximum extent practicable. Any native riparian trees of 3 inches diameter at breast height (DBH) or larger that are removed from fully infested stands must be replaced on site at a 2:1 ratio. However, native riparian tree replacement is not authorized within sites 30-000389, 30-000390, 30-000849, and 30-001357, or within a 100-foot buffer around these sites. Therefore, the RGP No. 41 requirement to replace native riparian trees at a 2:1 ratio is to be met by the Permittee outside of these specific sites and the 100-foot buffer around each of them.

15. The Permittee shall ensure all project sites are marked in such a way as to warn the public about the local use of herbicides during project implementation.

16. All pesticide mixing shall occur outside waters of the U.S. or at locations devoid of vegetation.

17. No mechanized equipment, rubber tired vehicles, track vehicles, or other equipment shall be stored, staged, or fueled in waters of the U.S., including wetlands.

18. Following the invasive removal activity, the Permittee shall ensure that the project site contains less than 5% absolute cover of invasive non-native vegetation (i.e., the invasive species covered by this RGP) for a period of two years from completion of the initial vegetation removal. At the end of this two-year period, the Permittee shall submit to the Corps a brief description of the status of the site including photo documentation and an estimate of the degree of infestation and amount of native flora before and after the project.

19. The Permittee shall ensure that all contractors receive a copy of this RGP and are made aware of the conditions and restrictions within. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in compliance with the terms and conditions of the permit.

20. You must maintain the activity authorized by this permit in good conditions of this permit. You are not relieved of this conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification from the permit from this office, which may require restoration of the area.

21. This RGP is certified pursuant to Section 401 of the Clean Water Act (Water Quality Certification) subject to the standard conditions that apply to all certifications as well as the following additional conditions:

    A) Applicants of projects proceeding under RGP 41 shall provide a copy of the "Notification" package to the State Board and the appropriate Regional Water Quality Control Board (Regional Board).These copies shall be mailed at the same time to:

        Program Manager
        401 Certification and Wetlands Unit
        Division of Water Quality
        State Water Resources Control Board
        P.O. Box 100
        Sacramento, California 95812-0100

        Program Manager
        CWA Section 401 Water Quality Certification Program
        San Diego Regional Water Quality Control Board (Region 9)
        2375 Northside Drive, Suite 100
        San Diego, CA 92108

    The applicant shall provide a fee of $145.00 (fee subject to change) for review and processing of the notice per CCR Title 23, section 2200. If the applicant is not contacted by the Regional Board within 30 days of the postmarked date of the notification, the applicant may assume that the project meets the conditions of this certification and may proceed with the project.

    B) Extracted Plant Material Stockpile: Extracted plant materials stockpiled at sites known to experience flash flooding outside the flood season (November 15-April 15) shall be

removed within 15 days of the initial creation of the stockpile in order to contain the potential spread of exotic, invasive plant material in such flash-flood prone areas.

C) Other State Permits: Projects proceeding under RGP41 shall comply with all applicable National Pollutant Discharge Elimination System permits and Waste Discharge Requirements.

D) California Environmental Quality Act (CEQA): Projects permitted under RGP 41 shall comply with CEQA.

E) California Endangered Species Act: The discharge shall not result in the taking of any State endangered species, threatened species, or candidate species, or the habitat of any such species unless the activity is authorized by the California Department of Fish and Wildlife pursuant to a permit, memorandum of understanding, or other document or program in accordance with Fish and Game Code sections 2081, 2081.1, or 2086.

F) Pollution: The discharge shall not cause pollution, contamination, or nuisance as defined in California Code Section 13050.

G) Cumulative Impact: The discharge by itself or in combination with other discharges shall not have a significant cumulative effect or degrade water quality or beneficial uses.

H) Channel Destabilization: The Discharge shall not directly or indirectly destabilize the channel or bed of receiving water.

I) Toxic Substances: The discharge shall not include substances in concentrations toxic to human, plant, animal or aquatic life or produce detrimental physiological responses.

J) Hazardous substances: The discharge shall not include waste classified a “hazardous” or “designated waste” as defined in Title 22 CCRs section 66261 and California Water Code Section 13173.

22. Activities within a 200 foot buffer of sites 30-000389, 30-000390, 30-000849, and 30-001357 shall be monitored by a professional archaeologist and Native American monitor.

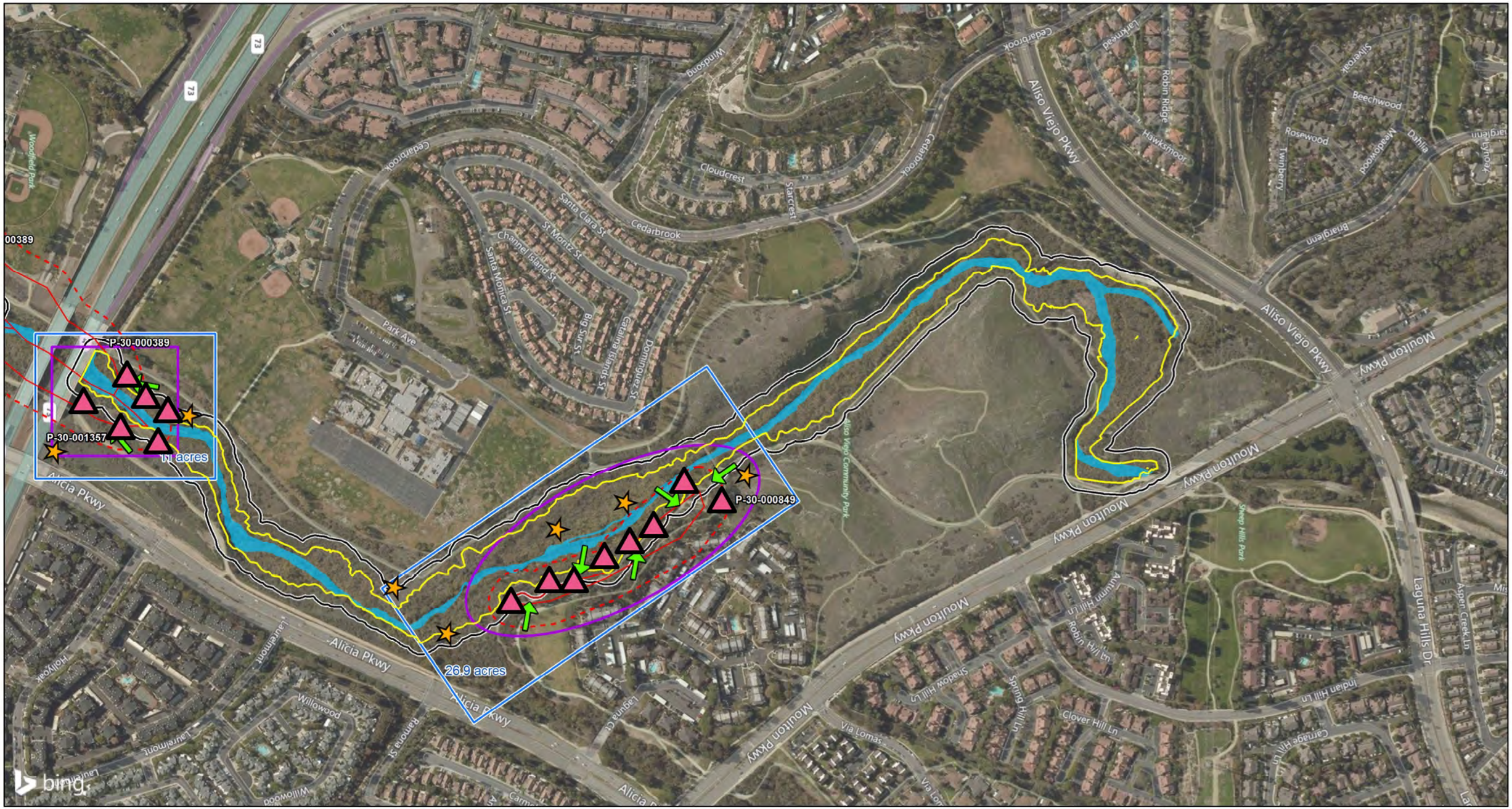
23. Pursuant to 36 C.F.R. section 800.13, in the event of any discoveries during construction of either human remains, archeological deposits, or any other type of historic property, the Permittee shall notify the Corps' Regulatory Division (Tim Jackson at 213-452-3419 or Spencer MacNeil at 805-585-2152) and Archaeology staff (Meg McDonald at 213-452- 3849) within 24 hours. The Permittee shall immediately suspend all work within 100 feet of any area(s) where potential cultural resources are discovered. The Permittee shall not resume construction in the area

surrounding the potential cultural resources until the Corps Regulatory Division re-authorizes project construction, per 36 C.F.R. section 800.13.

Thank you for participating in the regulatory program. If you have any questions, please contact Tim Jackson at 213-452-3419 or via e-mail at Timothy.W.Jackson@usace.army.mil. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

Mark D. Cohen
Deputy Chief, Regulatory Division



LSA

LEGEND

- Project Boundary
- Area of Potential Effects (Includes a 50 foot Buffer beyond the Restoration Activity)
- Remaining Arundo Removal Area APEs
- Cultural Resources
- 100 foot Buffer around Cultural Resources
- US Army Corps of Engineers Jurisdictional Area
- Work Area
- Staging and Chipping Area
- Ingress/Egress
- Mulching over Protective Layer

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FEET

SOURCE: Bing Maps (2013); OCTA (2014)

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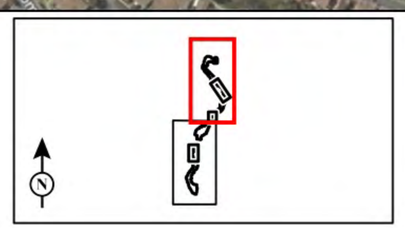


FIGURE 2
Sheet 1 of 2

Aliso Creek

Phase 3 Arundo Removal Operations Map



LSA

LEGEND

- Project Boundary
- Area of Potential Effects (Includes a 50 foot Buffer beyond the Restoration Activity)
- Remaining Arundo Removal Area APEs
- Cultural Resources
- 100 foot Buffer around Cultural Resources
- US Army Corps of Engineers Jurisdictional Area
- Work Area
- Staging and Chipping Area
- Ingress/Egress
- Protective Layer w/ Mulching Area

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FEET

SOURCE: Bing Maps (2013); OCTA (2014)

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FIGURE 2
Sheet 2 of 2

Aliso Creek
Phase 3 Arundo Removal Operations Map

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CA 90017-3401

December 11, 2014

ATTN: Derek Ostensen
Laguna Canyon Foundation
C/O: Derek Ostensen& Associates
1278 Glennerye, Suite 260
Laguna Beach, CA 92651

Dear Mr. Ostensen:

This correspondence is in reply to your request (SPL-2014-00713-VCL) dated November 18, 2014, for a Department of the Army Permit. Your proposed Aliso Creek Arundo Removal Project would result in discharges of dredged or fill material into approximately 1.95 acres of wetland and 9.51 acres of non-wetland waters of the U.S. Therefore, pursuant to section 404 of the Clean Water Act (33 U.S.C. 1344; 33 C.F.R. parts 323 and 330), your proposed project requires a Department of the Army permit. The proposed project would take place within a 2.8-mile-long reach of Aliso Creek (lat/long: 33.57511°N, -117.71385°W), approximately between Moulton Parkway and Alicia Parkway, near the City of Aliso Viejo, Orange County, California (see attached map).

I have determined that the Aliso Creek Arundo Removal Project, if conducted as described in your request, would comply with Regional General Permit (RGP) No. 41 for removal of invasive, exotic plants (exotics). Specifically, and as shown in the enclosed figure(s), you are authorized to:

1. Temporarily discharge dredged or fill material into approximately 1.95 acres of wetland and 9.51 acres of non-wetland waters of the U.S. associated with temporary staging (stockpiling of cut biomass) and equipment access to remove giant reed (*Arundo donax*) within a 2.8-mile-long reach of Aliso Creek. No grading or other ground disturbance is authorized.

For this RGP No. 41 verification letter/notice to proceed to be valid, you must comply with all of the non-discretionary Special Conditions listed below, which include project-specific conditions as well as the terms and conditions of RGP No. 41:

1. All work in waters of the U.S. must be completed no later than April 7, 2019, the expiration date of RGP 41. If the Permittee is unable to complete the authorized work by this date, the Permittee must request, in writing, an extension from the Corps Regulatory Division prior to the deadline.

2. No debris, soil, silt, sand, rubbish, cement or concrete washings thereof, oil or petroleum products or washings thereof, shall be allowed to enter into or placed where it may be washed by rainfall or runoff into Aliso Creek or other waterway. When project operations are completed, any and all excess construction materials, debris, and/or other associated excess

project materials shall be removed to an appropriate off-site location outside of any waters of the U.S. Proper best management practices and storm water controls shall be implemented and maintained during construction. Temporary fills for diversion or dewatering of the construction site are not authorized by this Regional General Permit notice to proceed.

3. Within 45 calendar days of completing authorized work in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division a memo including the following:
   A) Date(s) work within waters of the U.S. was initiated and completed;
   B) Summary of compliance status with each special condition of this permit (including any noncompliance that previously occurred or is currently occurring and corrective actions completed or being taken to achieve compliance); and
   C) Color photographs taken at the project site before and after construction for those aspects directly associated with impacts to waters of the U.S.;

4. An archaeological monitor shall be present during any activity within a 100-foot-wide buffer of known or potential sensitive sites identified in the memorandum, "Summary Results of a Cultural Resources Assessment for the Aliso Creek Restoration Project, Orange County, California" dated November 5, 2014. Pursuant to 36 C.F.R. section 800.13, in the event of any discoveries during construction of either human remains, archeological deposits, or any other type of historic property, the Permittee shall notify the Corps' Regulatory Division (Veronica Li at 213-452-3292) and Archaeology staff (John Killeen at 213-452-3861) within 24 hours. The Permittee shall immediately suspend all work within 100 feet of any area(s) where potential cultural resources are discovered. The Permittee shall not resume work in the area surrounding the potential cultural resources until the Corps Regulatory Division re-authorizes project work, per 36 C.F.R. section 800.13.

5. This Corps permit does not authorize you to take any federally listed as threatened or endangered species, in particular the southwestern willow flycatcher (*Empidonax trailli extimus*) and least Bell's vireo (*Vireo bellii pusillus*), or to adversely modify designated critical habitat of any federally listed species. In order to legally take a federally listed species or affect designated critical habitat, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA section 10 permit, or a Biological Opinion (BO) under ESA section 7, with "incidental take" provisions with which you must comply). The enclosed U.S. Fish and Wildlife Service (USFWS) BO (FWS-OR-08B0013-09F0147) contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under this Corps Regulatory Division permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BO, terms and conditions of which are incorporated by reference in this permit verification. Failure to comply with the terms and conditions associated with the incidental take specified in the BO, where a take of the federally listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps Regulatory Division permit. The Corps

Regulatory Division and USFWS are the appropriate authority to determine compliance with the avoidance and minimization measures.

6. No activity may substantially disrupt the movement of those species of aquatic life indigenous to the water body, including those species which normally migrate through the area.

7. The Permittee shall make every effort to ensure that vegetation nodes, root stalks, or other debris resulting from their activity do not enter or remain in any actively flowing watercourse.

8. The Permittee shall not stockpile invasive plants and associated debris during the flood season (November 15 to April 15). Stockpiling during this time must be conducted within the uplands only. Stockpiling is allowed between April 16 and November 14; however, it must occur in previously disturbed or degraded areas. Stockpiles cannot be placed within 50 feet of flowing water, must be placed in such a manner that is not dispersed by currents or other forces, and must be disposed of within 3 months (or 15 days in areas known to experience flash flooding) of initial creation of the stockpile by either removal to an appropriate upland disposal area or by burning. Prior to upland disposal or burning of any stockpiles or debris, all appropriate state and local permits must be obtained.

9. Burning of stockpiles shall not occur within 1,000 feet of native riparian or wetland habitat areas between March 15 and September 15.

10. Access roads which are no longer necessary for site monitoring, restoration, maintenance, or treatment must be removed completely and the affected areas hydroseeded with appropriate native riparian or wetland vegetation.

11. No activity is authorized which may adversely affect historic properties listed, or eligible for listing, on the National Register of Historic Places until the District Engineer has complied with the provisions of 33 C.F.R. section 325, Appendix C. The Permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Officer and the National Register of Historic Places (see 33 C.F.R. section 330.4(g)). Federal permittees should follow their own procedures for compliance with the requirements of the National Historic Preservation Act and other Federal historic preservation laws. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must notify the Corps'

Regulatory Division (Veronica Li at 213-452-3292) and Archaeology staff (John Killeen at 213-452-3861) within 24 hours. Corps Regulatory Division will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

12. Discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of water.

13. In partially infested stands, native riparian vegetation must be flagged prior to commencement of any mechanized activities and must be avoided. In fully infested stands, native riparian vegetation should be avoided to the maximum extent practicable. Any native riparian trees of 3 inches diameter at breast height (DBH) or larger that are removed from fully infested stands must be replaced on site at a 2:1 ratio. Due to restrictions on ground disturbance under this RGP 41 Notice to Proceed, no removal of native riparian trees of 3 inches DBH or larger or riparian replacement planting is authorized.

14. The Permittee shall ensure all project sites are marked in such a way as to warn the public about the local use of herbicides during project implementation.

15. All pesticide mixing shall occur outside waters of the U.S. or at locations devoid of vegetation.

16. No mechanized equipment, rubber tired vehicles, track vehicles, or other equipment shall be stored, staged, or fueled in waters of the U.S., including wetlands.

17. Following the invasive removal activity, the Permittee shall ensure that the project site contains less than 5% absolute cover of invasive non-native vegetation (i.e., the invasive species covered by this RGP) for a period of two years from completion of the initial vegetation removal. At the end of this two-year period, the Permittee shall submit to the Corps a brief description of the status of the site including photo documentation and an estimate of the degree of infestation and amount of native flora before and after the project.

18. The Permittee shall ensure that all contractors receive a copy of this RGP and are made aware of the conditions and restrictions within. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in compliance with the terms and conditions of the permit.

19. You must maintain the activity authorized by this permit in good conditions of this permit. You are not relieved of this conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must

obtain a modification from the permit from this office, which may require restoration of the area.

20. This RGP is certified pursuant to Section 401 of the Clean Water Act (Water Quality Certification) subject to the standard conditions that apply to all certifications as well as the following additional conditions:

A) Applicants of projects proceeding under RGP 41 shall provide a copy of the "Notification" package to the State Board and the appropriate Regional Water Quality Control Board (Regional Board).These copies shall be mailed at the same time to:

Program Manager
401 Certification and Wetlands Unit
Division of Water Quality
State Water Resources Control Board
P.O. Box 100
Sacramento, California 95812-0100

Program Manager
CWA Section 401 Water Quality Certification Program
San Diego Regional Water Quality Control Board (Region 9)
2375 Northside Drive, Suite 100
San Diego, CA 92108

The applicant shall provide a fee of $145.00 (fee subject to change) for review and processing of the notice per CCR Title 23, section 2200. If the applicant is not contacted by the Regional Board within 30 days of the postmarked date of the notification, the applicant may assume that the project meets the conditions of this certification and may proceed with the project.

B) Extracted Plant Material Stockpile: Extracted plant materials stockpiled at sites known to experience flash flooding outside the flood season (November 15-April 15) shall be removed within 15 days of the initial creation of the stockpile in order to contain the potential spread of exotic, invasive plant material in such flash-flood prone areas.

C) Other State Permits: Projects proceeding under RGP41 shall comply with all applicable National Pollutant Discharge Elimination System permits and Waste Discharge Requirements.

D) California Environmental Quality Act (CEQA): Projects permitted under RGP 41 shall comply with CEQA.

E) California Endangered Species Act: The discharge shall not result in the taking of any

State endangered species, threatened species, or candidate species, or the habitat of any such species unless the activity is authorized by the California Department of Fish and Wildlife pursuant to a permit, memorandum of understanding, or other document or program in accordance with Fish and Game Code sections 2081, 2081.1, or 2086.

F) Pollution: The discharge shall not cause pollution, contamination, or nuisance as defined in California Code Section 13050.

G) Cumulative Impact: The discharge by itself or in combination with other discharges shall not have a significant cumulative effect or degrade water quality or beneficial uses.

H) Channel Destabilization: The Discharge shall not directly or indirectly destabilize the channel or bed of receiving water.

I) Toxic Substances: The discharge shall not include substances in concentrations toxic to human, plant, animal or aquatic life or produce detrimental physiological responses.

J) Hazardous substances: The discharge shall not include waste classified a "hazardous" or "designated waste" as defined in Title 22 CCRs section 66261 and California Water Code Section 13173.

This verification is valid through April 7, 2019. If on April 7, 2019 you have commenced or are under contract to commence the permitted activity you must request, in writing, an extension from the Corps Regulatory Division prior to the deadline. However, if I discover noncompliance or unauthorized activities associated with the permitted activity I may request the use of discretionary authority in accordance with procedures in 33 C.F.R. § 330.4(e) and 33 C.F.R. §§ 330.5(c) or (d) to modify, suspend, or revoke this specific verification at an earlier date.

An RGP does not grant any property rights or exclusive privileges. Additionally, it does not authorize any injury to the property, rights of others, nor does it authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, state, or local authorizations required by law.

Thank you for participating in the regulatory program. If you have any questions, please contact Veronica Li at 213-452-3292 or via e-mail at Veronica.C.Li@usace.army.mil. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

COHEN.MARK.D.1239558450

Digitally signed by COHEN.MARK.D.1239558450
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=COHEN.MARK.D.1239558450
Date: 2014.12.11 17:22:58 -08'00'

Mark D. Cohen
Deputy Chief, Regulatory Division

Enclosures

LOS ANGELES DISTRICT
U.S. ARMY CORPS OF ENGINEERS

CERTIFICATE OF COMPLIANCE WITH DEPARTMENT OF THE ARMY REGIONAL GENERAL PERMIT

Permit Number: *SPL-2014-00713-VCL*

Name of Permittee: *Derek Ostensen, Laguna Canyon Foundation*

Date of Issuance: *December 11, 2014*

Upon completion of the activity authorized by this permit and the mitigation required by this permit, sign this certificate, and return it by **ONE** of the following methods;

1) Email a digital scan of the signed certificate to Veronica.C.Li@usace.army.mil

OR

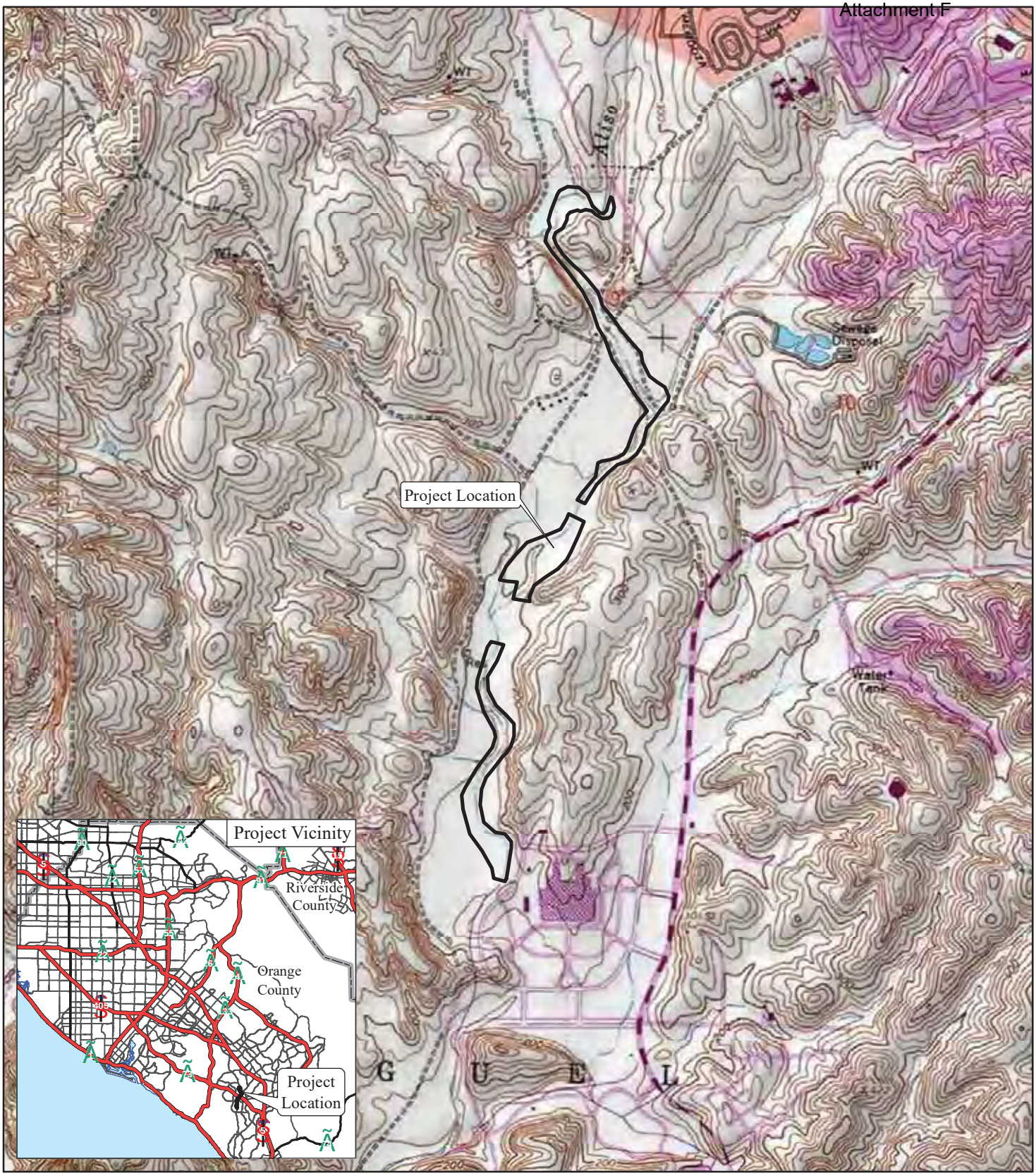
2) Mail the signed certificate to

U.S. Army Corps of Engineers
ATTN: Regulatory Division SPL-2014-00713-VCL
915 Wilshire Boulevard, Suite 930
Los Angeles, CA 90017-3401

I hereby certify that the authorized work and any required compensatory mitigation has been completed in accordance with the RGP authorization, including all general, regional, or activity-specific conditions. Furthermore, if credits from a mitigation bank or in-lieu fee program were used to satisfy compensatory mitigation requirements I have attached the documentation required by 33 C.F.R section 332.3(l)(3) to confirm that the appropriate number and resource type of credits have been secured.

_____ _____

Signature of Permittee Date



LSA

LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

SOURCE: USGS 7.5' Quad - San Juan Capistrano (1981), CA

I:\OCT1401\GIS\AlisoCreek_ProjectLocation.mxd (11/3/2014)

Aliso Creek

Project Location and Vicinity

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

In Reply Refer To:
FWS-OR-08B0013-09F0147

RECEIVED
AUG 21 2009
AUG 25 2009
REGULATORY DIVISION
LOS ANGELES OFFICE

Colonel Thomas H. Magness, IV
District Commander
U.S. Army Corps of Engineers
Los Angeles District
PO Box 532711
Los Angeles, California 90053-2325

Attention: Forest Vanderbilt, South Coast Branch, Regulatory Division
(File No. SPL-2008-00716-FBV)

Subject: Formal Section 7 Consultation for Invasive Plant Removal in the San Juan Hydrologic Unit, Orange County, California

Dear Colonel Magness:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed Invasive Plant Removal Project (project) located in the San Juan Hydrologic Unit, Orange County, California, and its effects on the federally endangered arroyo toad (*Bufo californicus*), in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*). Formal consultation was initiated on November 28, 2008, and extended by mutual agreement of our agencies on April 24, 2009.

In a separate letter dated October 8, 2008, you determined the proposed project may affect the federally endangered least Bell's vireo (*Vireo belli pusillus*, "vireo") and southwestern willow flycatcher (*Empidonax traillii extimus*, "flycatcher") and the federally threatened coastal California gnatcatcher (*Polioptila californica californica*, "gnatcatcher") and its designated critical habitat, all which may be present in the watersheds of the San Juan Hydrologic Unit. Based on our review of the information provided in Dendra (2008a) and the Applicant's (i.e., the County of Orange) commitment to implement the avoidance and minimization measures described on page 6 of this document (see Attachment), we concur with your assessment that the proposed project is not likely to adversely affect the vireo, flycatcher, or gnatcatcher.

The proposed project is expected to improve habitat conditions for these species, and only a small amount of native riparian habitat for flycatcher and vireo will be trimmed [branches less than 10 centimeters (cm) [4 inches (in) in diameter only] where it occurs directly adjacent to stands of giant reed (*Arundo donax*) to allow giant reed to be treated without affecting the native vegetation. In addition, the Applicant will complete components of the proposed project with

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potential to disturb nesting vireo, flycatcher, and gnatcatcher (i.e., cutting and hauling non-native vegetation, and use of power equipment) outside of their respective breeding seasons[1]. Treatment methods for the project in the San Juan and San Mateo watersheds, as described in the Biological Study for the project, dated September 27, 2008 (Dendra 2008b), are slightly different than those that will be applied to the remainder of the San Juan Hydrologic Unit (Dendra 2008a); however, the avoidance and minimization measures referred to above for vireo, flycatcher, and gnatcatcher, will be applied throughout the project area.

This biological opinion is based on information provided in the: 1) Biological Study for the project (Dendra 2008b); 2) *Explanation/Details of Arundo treatment methods that will be used by the County of Orange on Arundo control and re-vegetation projects in South Orange County (San Juan Hydrologic Unit)* (Dendra 2008a); and 3) correspondence, notes, and other information compiled during discussions with the County of Orange and their representatives on the proposed project. The project file addressing this consultation is maintained at the Carlsbad Fish and Wildlife Office (CFWO).

The San Juan Hydrologic Unit contains eight separate watersheds including San Juan, San Mateo, Trabuco, Oso, Aliso, Salt, Prima Deshecha, and Segunda Deshecha (Figure 1). Project activities are proposed in all eight watersheds. Based on available survey information within the San Juan Hydrologic Unit[2], only San Mateo and San Juan Creeks (and adjacent upland areas) are known to be occupied by arroyo toads. There are no historic records of arroyo toads in the Aliso, Salt, Prima Desheca, or Segunda Descheca watersheds (USFWS 1999). In addition, these watersheds are largely developed and do not contain adequate stream terraces and/or adjacent uplands to support arroyo toads (e.g., USFWS 1999, page 40). Based on this information, we consider these areas to be unoccupied by toads, and the biological opinion provides no further analyses of project impacts on toads for these unoccupied watersheds.

Arroyo toad tadpoles were observed in Trabuco Creek approximately 1.6 kilometers (km) [1.0 mile (mi)] downstream from Cleveland National Forest in 1997 (Holland personal communication, 2000 *in* Bonterra 2001); however, no project activities are proposed in the area where the tadpoles were observed, and no arroyo toads have been observed during surveys of Trabuco Creek conducted since that time (USFWS 1999, Dudek 2000, Bonterra 2001, Bloom 2004). Therefore, based on the best available information at this time, we believe project impacts to arroyo toads in the Trabuco Creek are unlikely, and the biological opinion provides no further analysis of project impacts on toads in the Trabuco Creek.

Further, the proposed project within portions of the San Juan and San Mateo watersheds overlaps an area that is covered by the Orange County Southern Subregion Habitat Conservation Plan (HCP). On January 10, 2007, we issued a section 10(a)(1)(B) permit for the HCP, which establishes a multiple species conservation program to minimize and mitigate habitat loss and

[1] Breeding seasons are identified in the Biological Study as March 15 to September 15 (vireo), May 1 to September 15 (flycatcher), and February 15 to August 30 (gnatcatcher).

[2] Available survey information includes CNDDB (2009) and the CFWO survey database.

the incidental take of covered species, including arroyo toad, in association with activities covered under the permit. Invasive plant removal and control are covered activities anticipated to occur within the HCP's Habitat Reserve and will be carried out by the permittees (i.e., Rancho Mission Viejo and the County of Orange).

The status of the arroyo toad and the effects of implementing the HCP were previously addressed in our biological opinion dated January 10, 2007. In the biological opinion for the HCP, we concluded that the level of anticipated take for arroyo toad was not likely to result in jeopardy to the species. Concurrently with the HCP, the U.S. Army Corps of Engineers (Corps) developed a Special Area Management Plan (SAMP) within the San Juan Creek and Western San Mateo Creek watersheds as an alternate framework for regulating the discharge of dredged and/or fill materials into waters of the United States pursuant to Section 404 of the Clean Water Act. Formal section 7 consultation for activities covered by the Corps' long-term individual permit (Corps Permit Number 1999-16236 issued March 10, 2007) for the San Juan Creek and Western San Mateo Creek SAMP was concluded by our letter dated January 10, 2007.

When we issued the section 10 (a)(1)(B) permit for the HCP, the County of Orange was authorized incidental take of arroyo toads in association with the removal of invasive species in Caspers Wilderness Park. Provided that the proposed action is consistent with the HCP and its associated implementation agreement (IA) and permit, we do not anticipate any adverse effects to or incidental take of arroyo toads that were not previously evaluated in the biological opinion for the HCP. Therefore, it is our conclusion that implementation of the proposed project in areas already addressed by the HCP in Caspers Wilderness Park will not result in jeopardy to the arroyo toad.

By this consultation, we are extending to the Corps the take coverage for arroyo toad already provided to the County of Orange under their incidental take permit for the HCP. Extension of take coverage to the Corps under the HCP is limited to the proposed project in areas overlapping the portion of the San Juan watershed occupied by arroyo toad within Caspers Wilderness Park and only for actions in compliance with the HCP and its associated IA and permit.

Non-native vegetation will also be removed from upland areas of the San Mateo Watershed outside of the area covered by the HCP. Proposed work areas (outside of the area covered by the HCP) are unlikely to be occupied by arroyo toad because they are located greater than 0.8 km (0.5 mi) from San Mateo Creek, in areas where arroyo toads have not previously been observed, and consist predominantly of very low quality habitat for arroyo toad. The Applicant has also agreed to implement several measures to ensure the quality of habitat in occupied areas of San Mateo Creek is not degraded as a result of project activities within these unoccupied upland areas.

1. A Biological Monitor will be retained by the Applicant to visit the work site periodically throughout the duration of the project to ensure project activities are conducted as described in the Biological Study and all conservation measures listed

below are being implemented. The Biological Monitor must be knowledgeable of arroyo toad biology and ecology. At least 7 days prior to initiating project activities, the Applicant will submit to the CFWO, in writing, the name(s), any permit numbers, and resumes of all proposed biological monitors. Proposed activities will not begin until an authorized biologist has been approved by the CFWO.

2. The Applicant will assign a Contract Foreman(s) that will be on site during project implementation and will be responsible for ensuring project activities are conducted as described in the Biological Study and all conservation measures listed below are being implemented.

3. The Biological Monitor, in coordination with the Contract Foreman, will identify staging areas and access routes to be used for all movement of personnel, including ingress and egress of equipment and personnel. Staging areas will be established in compacted and degraded areas. No native vegetation removal or grading will occur to establish staging areas and access routes. The Biological Monitor will provide a map of designated staging areas and access routes to the Contract Foremen and CFWO prior to initiation of project activities.

4. ATVs will not drive in channel areas or over native woody vegetation.

5. Fueling, repair, and staging of equipment and vehicles will be restricted to designated staging areas.

6. Crew members will avoid wading through the creek whenever possible.

7. Work will not take place when it may cause degradation of water quality downstream. For example, no work will occur during rain events

8. No cut vegetation, loose soil, or other debris will be placed in the stream channel or on its banks.

Provided project activities in San Mateo Watershed follow the methods described in the Biological Study and conservation measures identified above are implemented, we have determined that the proposed project is not likely to adversely affect arroyo toad in the San Mateo Watershed (outside of the area covered by the HCP), and the biological opinion provides no further analysis of project impacts on toads in the San Mateo Watershed.

In summary, the above evaluation addresses all areas of concern to the arroyo toad within project areas that are: 1) unoccupied (Aliso, Salt, Prima Desheca, and Segunda Descheca watershed); 2) potentially occupied but impacts are unlikely (Trabuco Watershed), 3) occupied but overlap the HCP (San Mateo and San Juan watersheds); and 4) outside the HCP within the San Mateo Watershed but not likely to impact arroyo toads. Thus, this biological opinion will address only

those proposed project activities to be completed in the portion of San Juan Creek occupied by the arroyo toad and outside of the area covered by the HCP.

CONSULTATION HISTORY

On August 30, 2007, we met with the Applicant and their representatives to discuss invasive plant mapping completed in the San Juan Hydrologic Unit and potential impacts to federally listed species associated with non-native plan removal. Between October 2007 and September 2008, we worked with the Applicant and their representatives to develop the project description, including conservation measures to avoid and minimize impacts to federally listed species. On November 24, 2008, we received a letter from your agency requesting formal consultation and on April 24, 2009, the consultation period was extended to May 25, 2009. On August 20, 2009, we inquired whether your agency desired to review a draft biological opinion and were informed that such review was not necessary.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the issuance of a permit by the Corps under section 404 of the Clean Water Act that will authorize the temporary discharge of fill into wetland and non-wetland waters of the United States for implementation of the proposed Invasive Plant Removal project. Project activities will be completed on approximately 142 ha (351 ac) within the San Juan Hydrologic Unit, including Aliso, Salt, Oso, Trabuco, San Juan, Prima Desheca, Segunda Deshecha, and San Mateo creeks and adjacent upland areas (Figure 1).

According to 50 CFR § 402.02 pursuant to section 7 of the Act, the "action area" means all areas to be affected directly or indirectly by the Federal action. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area. For the proposed action, we define the action area to be San Juan Creek and adjacent upland areas from Interstate 5 to the Rancho Mission Viejo property boundary [approximately 1.2 km (0.75 mi)] downstream from Antonio Parkway), where project activities are expected to affect the arroyo toad (Figure 2).

The purpose of invasive plant species removal is to reduce fire and flood risk, save water, improve water quality, and enhance habitat in the watersheds of southern Orange County. Depending on funding, project sites will be monitored for 10 years or longer after invasive plants are initially removed and annually, as necessary, to ensure that all infestations are ultimately controlled. In San Juan Creek, the proposed project will primarily target giant reed; however, pampas grass (*Cortaderia selloana*) and other invasive palms, shrubs, vines, and trees will also be removed.

The proposed project consists of a yearly herbicide treatment cycle. Foliar applications of herbicides are initiated in the fall. After foliar application, biomass reduction (hand cutting of non-native vegetation) may occur in the winter, particularly where stands are thick and large [over 0.05 ha (0.13 ac)]. Sites will be re-treated (with herbicides) in the spring and again in the fall. Re-vegetation of native plants will occur in the winter to spring months. Maintenance activities will occur spring through fall.

Conservation Measures

All activities addressed in this biological opinion will follow the methods described in the Biological Study. The Applicant has agreed that the following conservation measures will be implemented as part of the proposed action to minimize and avoid impacts to arroyo toad.

1. A Biological Monitor will be retained by the Applicant to conduct activities as specified in the measures below. The Biological Monitor must be knowledgeable of arroyo toad biology and ecology. At least 7 days prior to initiating project activities, the Applicant will submit to the CFWO, in writing, the name(s), any permit numbers, and resumes of all proposed biological monitors. Proposed activities will not begin until an authorized biologist has been approved by the CFWO.

    a. The Biological Monitor will visit the work site periodically throughout the duration of the project to ensure that all conservation measures are being implemented. The Biological Monitor will have the authority to halt/suspend all activities that do not adhere to this biological opinion.

    b. The Biological Monitor will conduct a contractor education program to ensure that the Contract Foreman and all contractors, as applicable, understand the requirements of the Conservation Measures and their importance to minimizing impacts to the arroyo toad. The Contract Foreman is defined here as the party responsible for ensuring avoidance and minimization measures are implemented for a particular activity. The education program will include: a) the purpose of resource protection, b) a description of the arroyo toad and its habitat, c) the conservation measures that will be implemented in conjunction with project activities (i.e., Conservation Measures 2a-2v), and d) the general provisions of the Act.

    c. The Biological Monitor, in coordination with the Contract Foreman, will identify staging areas and access routes to be used for all movement of personnel, including ingress and egress of equipment and personnel. Staging areas will be established in compacted and degraded areas. No native vegetation removal or grading will occur to establish staging areas and access routes. The Biological Monitor will provide a map of designated staging areas and access routes to the Contract Foremen and CFWO prior to initiation of project activities.

d. Prior to initiating project activities during the arroyo toad breeding season (February through July), the Biological Monitor will conduct a survey for arroyo toads in the proposed work area. If arroyo toads are observed, then project activities will be postponed until the Biological Monitor confirms that arroyo toads are no longer present in the work area.

2. The Applicant will assign a Contract Foreman(s) to be responsible for ensuring avoidance and minimization measures are implemented for a particular activity as follows:

General Measures: The following measures will apply during all project activities:

a. If a member of the work crew observes an arroyo toad while conducting project activities, then the Biological Monitor will be contacted immediately and project activities will be diverted to another area until the Biological Monitor is available to survey the area. Crews will avoid working in any areas where arroyo toads are active.

b. No smoking will be allowed in the project area to prevent fires, which could impact habitat for arroyo toad;

c. Light all-terrain vehicles (ATVs) with wide tires will be used to transport equipment and native plants from staging areas to work areas as necessary;

d. ATVs will not drive in channel areas or over native woody vegetation;

e. No more than 2 ATVs will be assigned to each crew;

f. Dogs will not be allowed on the project site;

g. To avoid attracting predators of the arroyo toad, food related trash items will be enclosed in sealed containers, and all trash will be removed from the project site on a daily basis;

h. Fueling, repair, and staging of equipment and vehicles will be restricted to designated staging areas;

i. Crew members will avoid wading through the creek whenever possible;

j. Work will not take place when it may cause degradation of water quality downstream. For example, no work will occur during rain events.

Herbicide Application:

k. Herbicide application will be accomplished by licensed contractors using herbicides (including additives) currently approved by the U.S. Environmental Protection Agency for use in wetlands;

l. No herbicide will be applied to native vegetation. Herbicide will be tinted with biodegradable dye to facilitate visual control of spray;

m. Handling of concentrate strength herbicides will take place in designated staging areas only;

n. No more than 3 crews of 16 or fewer individuals will work in the watershed at one time. Each crew will be separated by at least 1.6 km (1 mi). No more than 5 people will work together as a team in one location.

Biomass Reduction:

o. Non-native vegetation will either be left in place following herbicide treatment (isolated stands) or be cut by hand (with chainsaws) and hauled to designated staging areas. Roots will be left intact to reduce the potential for soil erosion.

p. No cut vegetation, loose soil, or other debris will be placed in the stream channel or on its banks.

q. Material hauled from riparian areas may be chipped or mowed and spread in designated staging areas or taken off site.

r. Biomass reduction will primarily occur from mid-January through late February and no later than March 15 to avoid the riparian bird breeding season.

s. No more than 3 crews of 16 or fewer individuals will work in the watershed at one time. Each crew will be separated by at least 1 mi (1.6 km). No more than 5 people will work together as a team in one location.

Re-vegetation:

t. Planting of native vegetation will occur between December 15 and March 15.

u. No more than 2 crews of 12 individuals each will work in the watershed at one time. The crews will be separated by a distance of at least 1.6 km (1 mi).

STATUS OF THE SPECIES

Listing Status

The arroyo toad was listed as endangered on December 16, 1994 (59 FR 63264). At the time of listing, the arroyo toad was described as the arroyo southwestern toad (*Bufo microscaphus californicus*). Gergus (1998) published a genetic justification for the reclassification of the arroyo southwestern toad as a full species [i.e., arroyo toad (*Bufo californicus*)]. Critical habitat for the arroyo toad was designated on April 13, 2005 (70 FR 19562) and encompasses about 4,733 ha (11,695 ac) in Santa Barbara, Ventura, Los Angeles, San Bernardino, and Riverside counties. No critical habitat is designated within the action area. A recovery plan for the arroyo toad was completed on September 24, 1999 (USFWS 1999).

Description

The arroyo toad is a small, dark-spotted toad of the family Bufonidae. The parotoid glands, located on the top of the head, are oval-shaped and widely separated. A light/pale area or stripe is usually present on these glands and on top of the eyes. The arroyo toad's underside is buff-colored and usually without spots (Stebbins 1985). Recently metamorphosed individuals typically blend in with streamside substrates and are usually found adjacent to water. The male arroyo toad's courtship vocalization is a high trill, usually lasting 8-10 seconds per call.

Habitat Affinities

Toads require shallow, slow-moving streams, and riparian habitats that have natural flooding regimes which maintain areas of open, sparsely vegetated, sandy stream channels and terraces (USFWS 2001). Optimal breeding habitat consists of low gradient stream reaches that have shallow pools with fine textured substrates (i.e., sand or gravel). Upland habitats used by toads during both the breeding and non-breeding seasons include alluvial scrub, coastal sage scrub, chaparral, grassland, and oak woodland (Griffin et al. 1999, USFWS 2001). This species has been observed moving approximately 1.6 km (1 mi) within a stream reach and up to 1.1 km (0.7 mi) away from the stream, into native upland habitats (Holland and Goodman 1998, Sweet 1992) or agricultural areas (Griffin et al. 1999). Holland and Sisk (2001) found on Cristianitos Creek on Camp Pendleton that 88.73 percent (323 of 364) of captures of adult and subadult toads were within the riparian area and 11.26 percent (41 of 364) were in upland habitats; no metamorphic toads were captured in uplands. Of the 41 captures, distances from the edge of the riparian area varied greatly from 25-1,142 meters (m) [82-3,747 feet (ft)] [mean 539 m (1,768 ft), standard deviation = 330 m (1,082 ft)]. Movement distances may be regulated by topography and channel morphology (Holland and Sisk 2000). Toads are critically dependent on upland terraces and the marginal zones between stream channels and upland terraces during the non-breeding season, especially during periods of inactivity, generally late fall and winter (Sweet 1992). Adult and juvenile toads burrow into loose soils in stream terraces and in uplands, where they may remain during daylight hours or for longer periods during the dry season (Sweet 1989).

Life History/Population Dynamics

Toads typically breed from February to July on streams with persistent water (Griffin et al. 1999). Female toads must feed for a minimum of approximately 2 months to develop the fat reserves needed to produce a clutch of eggs (Sweet 1992). Eggs are deposited, and larvae develop in shallow pools with minimal current and little or no emergent vegetation, and the substrate in these pools is generally sand or fine gravel overlain with silt. Toad eggs hatch in 4 to 5 days, and the larvae are essentially immobile for an additional 5 to 6 days. They then begin to disperse from the pool margin into the surrounding shallow water, where they spend an average of 10 weeks. After metamorphosis (June-July), the juvenile toads remain on the bordering gravel bars until the pool no longer persists (usually from 8 to 12 weeks depending on site and yearly conditions) (Sweet 1992). Male toads reach adulthood in 1 to 2 years, and females become sexually mature in 2 to 3 years. Individuals may become sexually mature by the following spring if conditions are favorable (Sweet 1992, 1993).

Toad larvae feed on loose organic material such as interstitial algae, bacteria, and diatoms. They do not forage on macroscopic vegetation (Sweet 1992, Jennings and Hayes 1994). Juvenile toads rely on ants almost exclusively (USFWS 1999). By the time they reach 1.8 to 2.3 cm (0.7 to 0.9 in) in length, they take more beetles, along with ants (Sweet 1992; USFWS 1999). Adult toads probably consume a wide variety of insects and arthropods including ants, beetles, spiders, larvae, caterpillars, and others.

Historic and Current Range

Historically, arroyo toads occurred in at least 22 river basins in southern California from the upper Salinas River system in Monterey County to San Diego County and southward to the vicinity of San Quintin, Baja California, Mexico. They have been found at elevations extending from sea level to 2,440 m (8,000 ft) (USFWS 1999). Arroyo toads have been extirpated from an estimated 75 percent of their former range in the United States (USFWS 1999), and they now occur primarily in small, isolated areas in the middle to upper reaches of streams. The current distribution of the arroyo toad in the United States is from the San Antonio River in Monterey County, south to the Tijuana River and Cottonwood Creek Basin along the Mexican border. Arroyo toads are also known from a seemingly disjunct population in the Arroyo San Simeon River System, about 16 km (10 mi) southeast of San Quintin, Baja California. Although the arroyo toad occurs principally along coastal drainages, it also has been recorded at several locations on the desert slopes of the Transverse Range (Patten and Myers 1992, Jennings and Hayes 1994).

Arroyo toads occur in San Juan Creek from near its headwaters in Cleveland National Forest to where San Juan Creek crosses under Antonio Parkway and potentially down to Interstate 5 (Bloom 2001, 2002; Bloom and Niemela 2001; Quinnell 2004; Bonterra Consulting 2008; Cadre Environmental 2003; Swift 2006). The upper limit of occupied habitat likely varies in relation to seasonal water distribution. San Juan Creek, below Interstate 5, is narrowly confined between

levees and is not suitable habitat for arroyo toad. The arroyo toad population in San Juan Creek may function as an important linkage between toads in Santiago Creek to the north (Santa Ana River Watershed) and the San Mateo Creek Watershed to the south (70 FR 19562).

Population Dynamics and Estimates

Arroyo toad populations vary considerably from year to year, depending on environmental conditions. Approximately three-fold changes have been observed from one year to the next (Sweet 1993), and greater variations would likely be observed with more data on arroyo toad populations. Because female arroyo toads lay an average of approximately 5,000 eggs during the breeding season (Sweet 1992), there is the potential for rapid increases in population size given favorable conditions, but toad recruitment reflects the inherent variability of their environment. During years of drought, pools may dry before larvae have reached metamorphosis, and females may forego breeding altogether. If flooding occurs after eggs have been laid, a large percentage of the eggs and larvae can be lost. Finally, heavy predation pressure by birds, mammals, reptiles, and other amphibians on metamorphosing and newly metamorphosed juveniles can drastically reduce recruitment. Once toads have reached the subadult stage, survivorship is higher. Annual mortality of adults and subadults has been estimated between 35 percent and 70 percent (Sweet 1993; Holland and Sisk 2000, 2001), which would mean that few arroyo toads survive past 5 years in the wild. Because of the dynamic nature of arroyo toad populations and their habitat, movements of individuals are likely important for colonizing areas where arroyo toads have been locally extirpated or where new habitat has been created due to flooding events or changes in human management.

Insufficient information regarding population dynamics and suitable habitat is available to estimate the range-wide arroyo toad population (USFWS 1999). The density of arroyo toads is unevenly distributed in space and time, with particular sites having high densities of larvae, metamorphs, subadults, and adults present under favorable ecological conditions, but absent during poor conditions (Holland et al. 2001). Dramatic natural fluctuations in all life-stage categories and difficulty in detecting adult arroyo toads under all but the most optimal conditions make accurate estimation of populations difficult. Due to the mobility of arroyo toads and other factors affecting their spatial and temporal heterogeneity, estimating toad densities (per unit area) at given sites may be considered to be inaccurate.

Threats

Because arroyo toad habitats (i.e., broad, flat floodplains in southern California) are favored sites for flood control projects, agriculture, urbanization, and recreational facilities, such as campgrounds and OHV parks, many arroyo toad populations were reduced in size or extirpated due to extensive habitat loss from 1920 to 1980 (USFWS 1999). The loss of habitat, coupled with habitat modifications due to the manipulation of water levels in many central and southern California streams and rivers, as well as predation from introduced aquatic species, caused arroyo toads to disappear from a large portion of their previously occupied habitat in California

(Jennings and Hayes 1994). Currently, the major threats to arroyo toad populations are from stream alteration, the spread of giant reed and other non-native riparian species, introduction and spread of non-native predators (fish, bullfrogs, crayfish, etc.), urban and rural development, mining, recreation, grazing, drought, wildfire, and large flood events (USFWS 1999).

The arroyo toad population in San Juan Creek is threatened by exotic predators (bullfrogs), increased water diversions, and residual effects of gravel mining operations and requires special management to reduce the impacts associated with these threats (70 FR 19562). Other potential threats include habitat degradation as a result of invasion by giant reed, runoff from adjacent nurseries and development, and recreation activities next to and within the creek (USFWS 1999). In 2001, a telemetry study of arroyo toads in San Juan Creek indicated that exotic predators and vehicle traffic were the cause of mortality for 2 of the 13 study animals (Cadre Environmental 2003). One arroyo toad was tracked by its transmitter to the gut of a bullfrog, and another was tracked to the treads of a dump truck that had driven on a dip-crossing through San Juan Creek. Other observations from the telemetry study included the desiccation of arroyo toad larvae in pools along the creek that dried up prior to the completion of toad metamorphosis (Cadre Environmental 2003). The authors speculated that drying of these pools may have been due to decreased rainfall or to groundwater pumping for agricultural practices that affected creek water levels. Towards the western extent of their range in San Juan Creek, certain areas, such as the confluence of Trampas Canyon and San Juan Creek, may be important breeding sites during drought years because they hold water for longer than other pools along the creek (Cadre Environmental 2003).

Conservation

As described in the recovery plan, the arroyo toad's recovery depends on conserving, maintaining, and restoring the riparian and upland habitats used by the arroyo toad throughout its range. Management activities should address the threats described above, including maintaining appropriate hydrological conditions, controlling non-native vegetation and predators, and minimizing activities in the stream channel that could kill and injure arroyo toads and disrupt their breeding.

Several incidental take permits pursuant to Section 10(a)(1)(B) of the Act have been issued for the arroyo toad addressing the effects of urban development on this species. In 1997 and 1998, the Service issued permits to the City of San Diego and the County of San Diego, respectively, for Multiple Species Conservation Plans (MSCP). In 2004, the Service issued a permit for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). In 2007, the Service issued permits for the Orange County Southern Subregion Habitat Conservation Plan (HCP). These plans are expected to provide long-term protection for arroyo toads and their habitat in western Riverside, Orange, and San Diego counties. For example, all known locations and about 78 percent of riparian suitable habitat will be conserved by the San Diego MSCP; 93 percent of arroyo toad locations (39 of 42 locations) are anticipated to be conserved under the Western Riverside MSHCP; and 75 percent of modeled arroyo toad habitat [535 ha (1,322 ac)]

will be conserved and managed under the Orange County Southern Subregion HCP. Conservation of toads through these conservation plans address, at least in part, task 3 of the recovery plan of identifying and securing additional populations and suitable habitat (on non-Federal lands).

In September of 2005, the U.S. Forest Service published a Land Management Plan for the southern California National Forests (USFS 2005), which identified the distribution of arroyo toads in southern California forests, including Cleveland National Forest (which encompasses the headwaters of San Juan Creek). The plan proposed no new roads or trails in areas occupied by arroyo toads and stated that any new project in an area occupied by arroyo toads or other federally listed species should "promote the conservation and recovery of these species and their habitats."

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of State and private actions that are contemporaneous with the consultation in progress.

The action area covers a linear distance of approximately 3.7 km (2.3 mi) and includes approximately 89 ha (220 ac) of ruderal upland habitat, sandy wash, and riparian vegetation in and adjacent to San Juan Creek from Interstate 5 to the Rancho Mission Viejo property boundary (Figure 1). Residential and commercial developments bordering the action area to the north and south limit the opportunities for dispersal of arroyo toads to adjacent upland areas. A total of 21.4 ha (52.9 ac) of non-native vegetation, consisting primarily of giant reed (90 percent) were mapped in the San Juan Creek Watershed (Dendra 2007). Based on information provided in the Biological Study, we estimate approximately 4 to 6 ha (10 to 15 ac) of non-native vegetation were mapped the action area. Project activities in the action area will primarily consist of the removal of giant reed along the banks of San Juan Creek.

Protocol surveys conducted throughout the action area in 2001 did not detect toads (Bloom 2002); however, an adult toad was detected less than 1.6 km (1 mi) upstream from the action area (Bloom 2001). Arroyo toads were observed in the action area through 1995 but not observed during any surveys conducted between 1995 and 2001 (Bloom 2002). Bloom (2002) postulated that riparian habitat in the action area was more dense than is preferred by the arroyo toads in 2001. Storm events that occurred in the winter of 2004/2005 may have improved the quality of habitat for arroyo toads along this reach. One neonate arroyo toad was identified in this area in summer 2005 during fish surveys in the vicinity of the La Novia Bridge in the City of San Juan Capistrano (Swift 2006). Exposed, sandy, gravel bars are located in the action area and may support arroyo toad breeding if persistent water is available. In addition, arroyo toads may occasionally disperse into the action area from occupied areas upstream.

Quantifying the number of arroyo toads that may be located in the action area at the time the proposed project is implemented is difficult for a number of reasons. Suitable habitat in the action area may change during a given year or from year to year depending on climatic conditions, flooding, or other natural or human-related events (USFWS 1999), which in turn influence female reproductive success and juvenile survival. In addition, except during the early juvenile stage (first 4-5 weeks), arroyo toads forage at night and burrow during the day (Sweet 1989). No reliable survey method exists for determining the locations or densities of arroyo toads that may be burrowed within upland habitat.

Although the specific locations and density of arroyo toads cannot be determined, given available survey information and the potential for dispersal into the action area, we expect arroyo toads likely occur in low density along San Juan Creek and adjacent undeveloped uplands within the action area.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the proposed action for their justification. Inter-dependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The majority of proposed project activities will occur outside the arroyo toad breeding season, at a time when the species is aestivating (buried in the substrate) and will not be visible to either the Biological Monitor or contractors. Potential effects to the arroyo toad include the crushing of arroyo toads inside burrows due to ground-disturbing activities and trampling from foot traffic and/or ATVs. Further, arroyo toads have the potential to be disturbed from burrowing sites during vegetation removal. Arroyo toads located outside of burrows may also be trampled by project activities; however, the contractor education program (Conservation Measure 1b) will increase the potential for detection and avoidance of arroyo toads by contractors. Some project activities are scheduled to occur during the breeding season; however, these activities will be postponed until after the breeding season if the Biological Monitor determines arroyo toads (breeding adults, eggs, and/or larvae) are present in the vicinity of the proposed work area (Conservation Measure 1d). Therefore, impacts to breeding adult arroyo toads, arroyo toad eggs, and arroyo toad larvae are unlikely.

Other measures that will reduce the potential for crushing arroyo toads include limits on the crew size that will work in a particular area and on the number of support vehicles that will be provided for each crew (Conservation Measures 2f, 2o, 2t, and 2u). In addition, the use of ATVs for support vehicles, as opposed to larger vehicles, will reduce the potential for crushing arroyo

toads (Conservation Measure 2d). ATVs are relatively lightweight and have wide tires, resulting in low ground pressure.

Although we cannot quantify the number of arroyo toads that may be directly impacted by proposed project activities, the potential for effects to the arroyo toad is expected to be low due to the low density of arroyo toads observed in the action area and based on monitoring results for a similar non-native plant removal program that is occurring in San Luis Rey River Watershed. The San Luis Rey River supports one of the largest known arroyo toad populations in the United States (USFWS 2004); however, no impacts to arroyo toads were identified in annual monitoring reports submitted to the CFWO for this program between 2004 and 2008 (MRCD and SMSLRWMA 2005, 2006, 2007, and 2008). Because the proposed project includes measures to minimize potential effects to arroyo toad that are similar to those implemented as part of the San Luis Rey River non-native plant removal program, it is reasonable to assume a similar low potential for individuals present in the action area to be impacted. In addition, because the vast majority of arroyo toad observations within the San Juan Creek Watershed have occurred upstream from the action area, the number of individuals affected by the proposed project, if any, would be a small fraction of the population within the watershed.

The proposed project could result in temporary habitat degradation as a result of pollutants and sediment entering arroyo toad habitat during and after project activities. The Applicant will implement several conservation measures that will greatly minimize the potential for this to occur: 1) fueling, repair, and staging of equipment and vehicles will be restricted to designated staging areas (Conservation Measure 2i); 2) handling of concentrate strength herbicides will take place in designated staging areas only (Conservation Measure 2n); 3) ATVs will not drive in channel areas (Conservation Measure 2e); 4) crew members will avoid wading through the creek whenever possible (Conservation Measure 2j); 5) work will not take place when it may cause degradation of water quality downstream (Conservation Measure 2k); and 6) no cut vegetation, loose soil, or other debris will be placed in the stream channel or on its banks (Conservation Measure 2q). Implementation of these measures will help to ensure habitat for arroyo toad is not degraded as a result of the proposed action.

The removal of non-native vegetation (and specifically giant reed) from arroyo toad habitat is identified as a task in the recovery plan for arroyo toad that may benefit arroyo toad populations (USFWS 1999). Giant reed rapidly colonizes newly created flood terraces and soon becomes an impenetrable mass of vegetation. It also stabilizes stream terraces and helps to deepen flood channels, resulting in habitat unsuitable for arroyo toads. Dense stands may also have higher rates of evapotranspiration (i.e., evaporation of water from plant leaves) than native vegetation, increasing the rate at which breeding pools dry (USFWS 1999). Therefore, although the proposed project will result in a temporary disturbance to degraded habitat for arroyo toad, over the long-term, we expect the removal of non-native vegetation to increase the amount of suitable habitat available for arroyo toad in the action area thereby supporting recovery of the species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

We are unaware and have not identified any cumulative effects in the action area that may impact the arroyo toad in relation to the proposed action.

CONCLUSION

After reviewing the current status of the arroyo toad, environmental baseline for the action area, effects of the proposed action, and the cumulative effects, it is our opinion that the action, as proposed, is not likely to jeopardize the continued existence of the arroyo toad. We reached this conclusion by considering the following:

1) Effects to the arroyo toad are expected to be very minor and are concentrated within a small fraction of its overall range;

2) The proposed project includes measures to minimize potential direct and indirect impacts to the arroyo toad; and

3) The removal of invasive plant species should improve habitat conditions for the arroyo toad and support recovery of the species over time.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by us to include significant habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by us as an action that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 7(o)(2) of the Act, such incidental take is not considered a prohibited taking under the Act, provided that such taking is in compliance with this incidental take statement.

The measures described below are non-discretionary and must be undertaken by the Corps and/or the Applicant in order for the exemption in section 7(o)(2) to apply. The Corps has a

continuing duty to regulate the activity that is covered by this incidental take statement. If the Corps and/or the Applicant (1) fails to assume and implement the terms and conditions, and/or the Corps (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

To monitor the impact of incidental take, the Corps and/or the Applicant must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

Because arroyo toads are buried for much of the year and because we do not have site-specific data regarding the density of arroyo toads at this location, it is not possible to quantify the precise number of individual toads that may be injured or killed. Because of the low density of arroyo toads recorded in this area during previous surveys, we anticipate that few, if any, arroyo toads will be impacted by the proposed project. Because we cannot provide a reliable estimate of the numbers of individuals of arroyo toads that are likely to be incidentally taken, we have established a take threshold that, if exceeded, will trigger reinitiation of consultation. The take threshold and limit is the death or injury of two (2) arroyo toads. If the take threshold is reached, the Corps shall immediately contact the CFWO to review the activities resulting in take and to determine if additional protective measures are required.

EFFECT OF THE TAKE

In the accompanying biological opinion, we determined that this level of anticipated take is not likely to result in jeopardy to the arroyo toad.

REASONABLE AND PRUDENT MEASURE

The Applicant is implementing conservation measures as part of the proposed action to minimize the incidental take of arroyo toads. In addition to these conservation measures, the following reasonable and prudent measure is necessary to monitor and report the take of arroyo toad:

> The Applicant will monitor and report the level of incidental take of arroyo toad to the Service throughout the life of the project and report on the effectiveness of the project's minimization measures to reduce incidental take of arroyo toads.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Corps and/or the Applicant must comply with the following terms and conditions which implement the reasonable and prudent measure described above. These terms and conditions are non-discretionary.

A brief summary report documenting that the project is in compliance with the conservation measures given in this biological opinion will be submitted to the Service by May 1 annually, during each year that project activities are conducted.

Disposition of Sick, Injured, or Dead Specimens

The CFWO and the Corps are to be notified within 3 working days should any endangered or threatened species be found dead or injured as a direct or indirect result of the implementation of this project. Notification must include the date, time, and location of the carcass, and any other pertinent information. Dead animals should be marked in an appropriate manner, photographed, and left on site. Injured animals should be transported to a qualified veterinarian. Should any treated animals survive, this office should be contacted regarding the final disposition of the animals. The office contact person is the CFWO staff biologist for Orange County, who may be contacted at the letterhead address or at (760) 431-9440.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- We recommend that the Corps and the County of Orange consider monitoring the status of arroyo toads in the action area periodically throughout the duration of the project to determine if the removal of non-native plants is benefiting the arroyo toad population in the watershed. Collection of this information would allow the Corps and the County of Orange to evaluate the extent to which their actions are contributing to the recovery of the species.

REINITIATION NOTICE

This concludes formal consultation on the proposed Invasive Plant Removal Project as outlined in materials submitted to us. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Any questions or comments regarding this biological opinion should be directed to Christine Medak of my staff at (760) 431-9440.

Sincerely,

Jim A. Bartel
Field Supervisor

cc:
Zoila Finch, County of Orange

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Figure 1

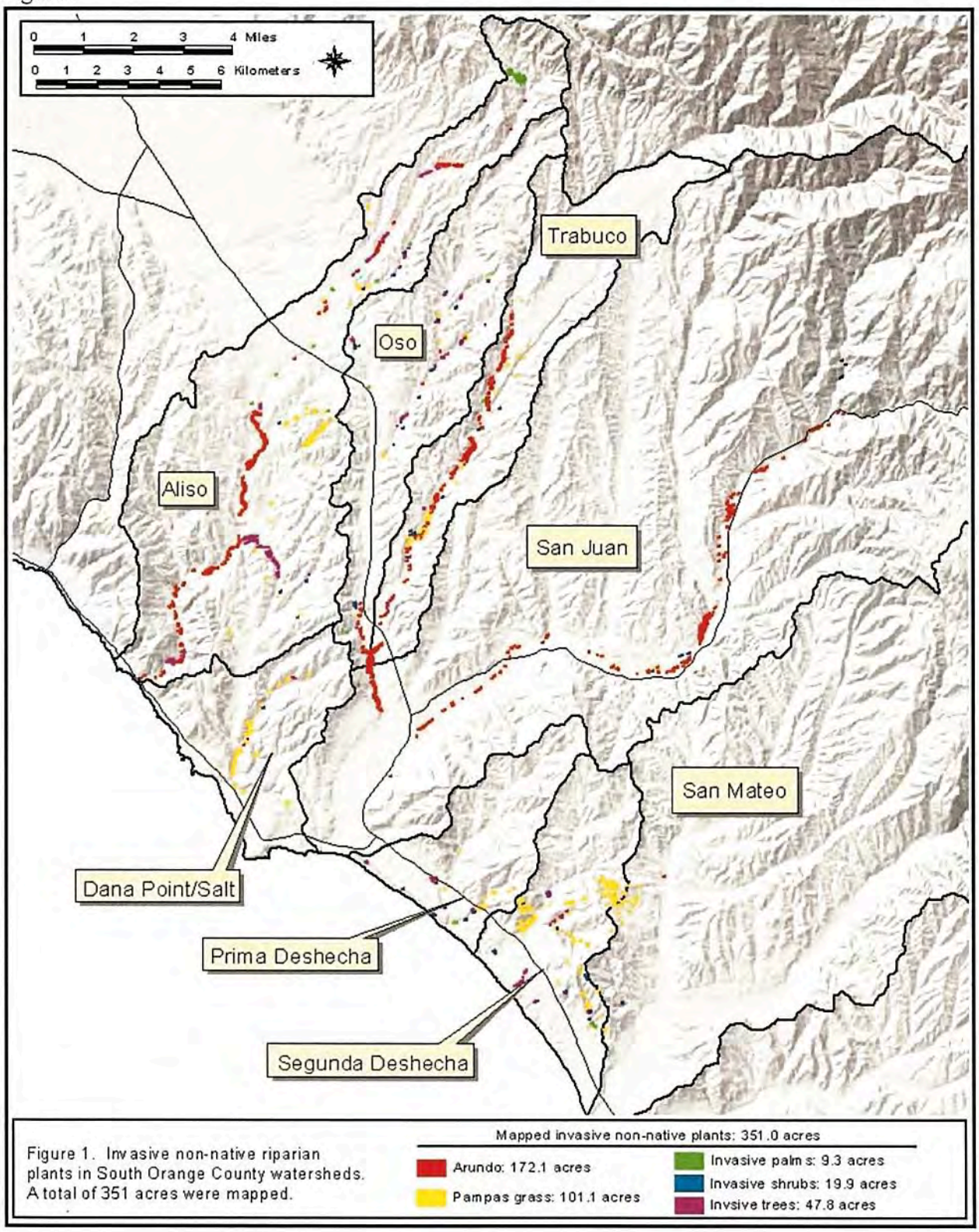
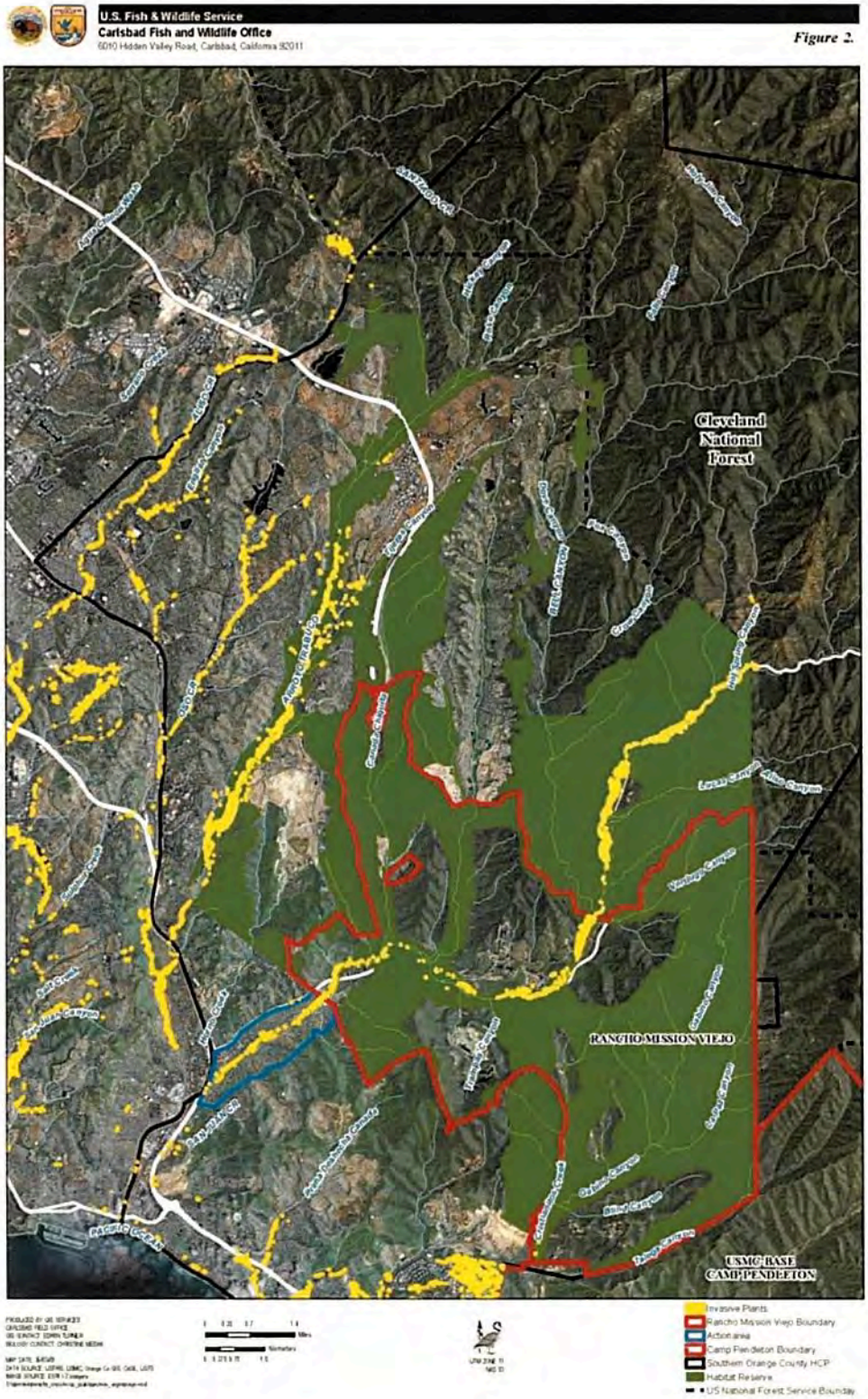


Figure 1. Invasive non-native riparian plants in South Orange County watersheds. A total of 351 acres were mapped.

Figure 2


U.S. Fish & Wildlife Service
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Carlsbad, California 92011
Figure 2.
Cleveland National Forest
RANCHO MISSION VIEJO
USMC BASE CAMP PENDLETON
PACIFIC OCEAN
Invasive Plants
Rancho Mission Viejo Boundary
Action area
Camp Pendleton Boundary
Southern Orange County HCP
Habitat Reserve
US National Forest Service Boundary

ATTACHMENT

Maintenance Activities: Between March 15th and Sep 15th

1) No areas may be worked in that have vegetation structure suitable for nesting (work only in mowed areas with new plantings).
2) No powered equipment may be used at the restoration sites (only watering and treatments with backpacks). The water truck does have a gas powered pump, but this will operate along access roads or in staging areas.
3) Avian monitors may be used as requested.
4) Equipment used during the maintenance phase such as trucks, ATVs, and hands tools will be staged at areas which are located along roads or on degraded areas with no native vegetation. Compacted dirt lots, road shoulders, and old disturbed sites are typically the type of areas that are used for staging.
5) Crew members will avoid wading through streams whenever possible.
6) All garbage and waste material generated by the work crew will be removed from the site.
7) Photos will be used to document the effectiveness of the treatments, when possible.

Species Conservation Measures

Biomass reduction and use of power equipment in riparian habitat will occur outside the breeding season for the federally endangered least Bell's vireo (March 15 to September 15) and the endangered southwestern willow flycatcher (May 1 to September 15).

Biomass reduction (usually of treated pampas grass) and use of power equipment in coastal sage scrub will occur outside the breeding season for the federally threatened coastal California gnatcatcher (February 15 to August 30). Re-vegetation within coastal sage scrub and use of power equipment outside of coastal sage scrub, but within 500 feet, will be completed by March 1st. Sites may only be accessed along trails, and work may only occur in areas with no nesting structure (areas where pampas grass was reduced).

If a project requires access to a site through potential habitat for endangered and threatened plant species (in the area covered by the South Orange County Team Arundo, this is upland habitat without a clearly defined trail), a qualified botanist/biologist will identify access paths to the treatment areas and check for endangered and threatened plant species prior to project activities. If listed plant species are located, they will be flagged, crew members would be required to avoid them, and the Carlsbad Fish and Wildlife Office will be contacted to ensure that no additional measures are required.

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CA 90017-3401

February 25, 2016

ATTN: Derek Ostensen
Laguna Canyon Foundation
C/O: Derek Ostensen& Associates
1278 Glennerye, Suite 260
Laguna Beach, CA 92651

Dear Mr. Ostensen:

I am responding to your November 5, 2015 request to amend your Department of the Army permit verification letter/notice to proceed for the Aliso Creek Arundo Removal Project (Corps File No. SPL-2014-00713-VCL). The project is located within a 2.8-mile-long reach of Aliso Creek (lat/long: 33.57511°N, -117.71385°W), approximately between Moulton Parkway and Alicia Parkway, near the City of Aliso Viejo, Orange County, California.

On December 11, 2014, we issued a verification letter/notice to proceed for your proposed use of Regional General Permit No. 41 to conduct various activities associated with the project. The conditions of the original verification letter authorized only non-ground-disturbing activities, including arundo (*Arundo donax*)/non-native plant biomass removal using hand cutting via chain saw or loppers, or alternatively via a tractor mower (with rubber tires) or brush saw (referred to as Phase 1). We are aware some biomass removal has already occurred in portions of the site; however, non-native plant removal is ongoing and the LCF is actively working at the site.

Your amendment request specifically seeks to include in the verification letter ground-disturbing aspects of the Aliso Creek Arundo Removal Project (referred to as Phase 2), which involve installing trunk irrigation lines and planting of native container species to facilitate recovery of native habitats in the biomass-removal areas. Minor surface disturbance is required for these work activities. Other non-ground-disturbing activities associated with seeding native species would also occur. In total, the work would occur within approximately 82.27 acres consisting of the wetland and non-wetland waters of the U.S. identified in the December 2014 verification letter, riparian and upland buffer habitat immediately adjacent to those waters, and an additional 50 feet of upland buffer.

Please be aware of the importance of complying with RGP No. 41's requirement for fully infested stands to replace onsite at a 2:1 ratio all removed native riparian trees with diameter at breast height (DBH) equal or greater than 3 inches, which would involve ground disturbance.

Under the provisions of 33 CFR § 325.7(b), your permit verification letter is amended to delete Special Conditions 4 and 11 and replace them with the following Special Conditions regarding cultural/historic resources identified during the records search, pedestrian survey, and Native American consultation:

4. Trunk line installation shall avoid sites 30-000389, 30-000390, 30-000849, and 30-001357.
11. Planting of native container species shall avoid sites 30-000389, 30-000390, 30-000849, and 30-001357, including a 100-foot buffer.
21. Activities within a 200 foot buffer of sites 30-000389, 30-000390, 30-000849, and 30-001357 shall be monitored by a professional archaeologist and Native American monitor.
22. In the event of any historic property/cultural resource discoveries, the Permittee shall immediately cease work within 100 feet of the discovery and notify the Corps Regulatory Division (Tim Jackson at 213-452-3419 or Spencer MacNeil at 805-585-2152) who will comply with 36 CFR section 800.13(b).

In addition, Special Condition 13 is replaced in its entirety to state:

> In partially infested stands, native riparian vegetation must be flagged prior to commencement of any mechanized activities and must be avoided. In fully infested stands, native riparian vegetation should be avoided to the maximum extent practicable. Any native riparian trees of 3 inches diameter at breast height (DBH) or larger that are removed from fully infested stands must be replaced on site at a 2:1 ratio. However, native riparian tree replacement is not authorized within sites 30-000389, 30-000390, 30-000849, and 30-001357, or within a 100-foot buffer around these sites. Therefore, the RGP No. 41 requirement to replace native riparian trees at a 2:1 ratio is to be met by the Permittee outside of these specific sites and the 100-foot buffer around each of them.

The terms and conditions of Permit verification No. SPL-2014-00713-VCL, except as changed herein, remain in full force and effect.

Thank you for participating in the regulatory program. If you have any questions, please contact Tim Jackson at 213-452-3419 or via e-mail at Timothy.W.Jackson@usace.army.mil. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

Mark D. Cohen
Deputy Chief, Regulatory Division

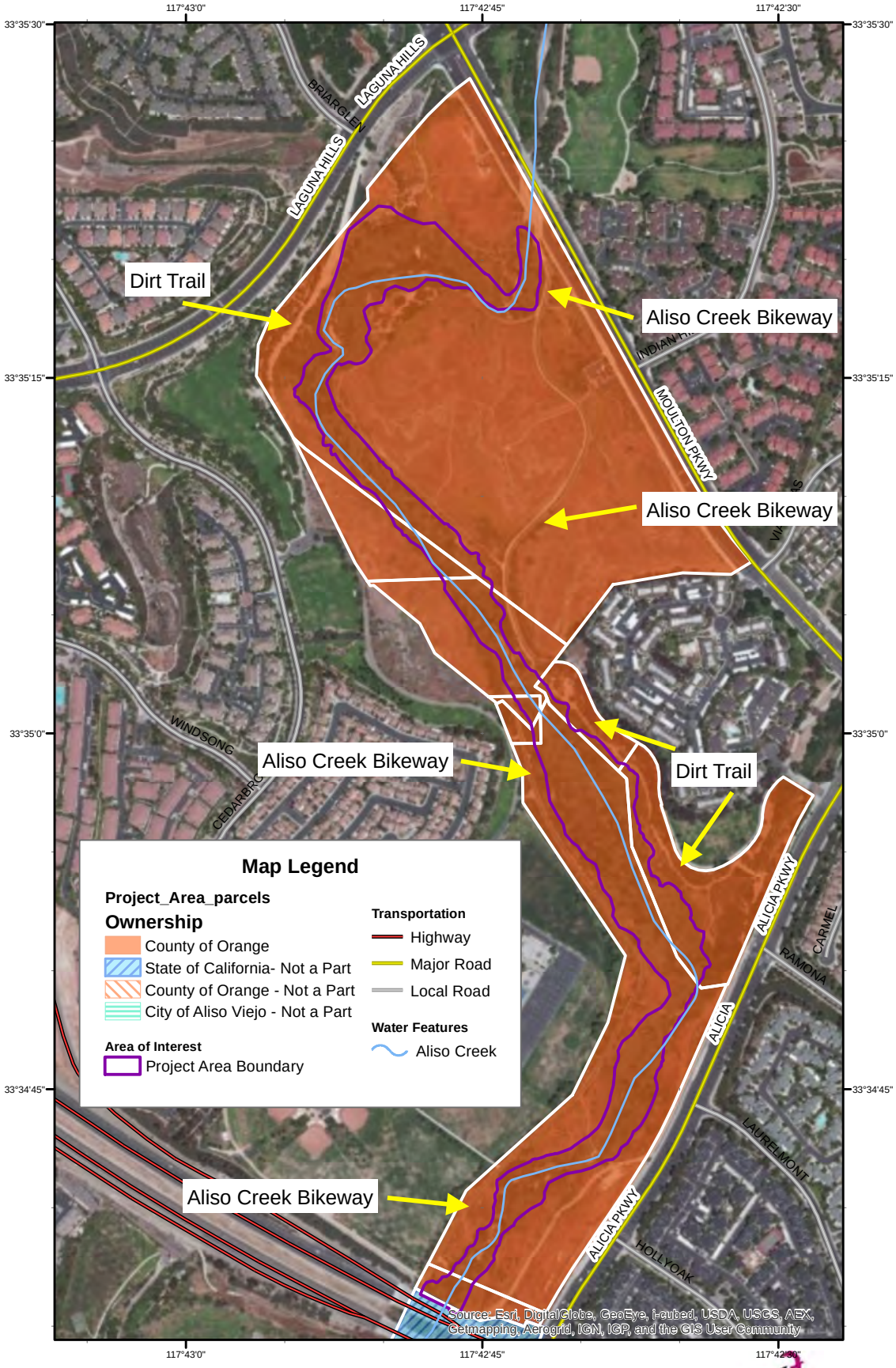
APPENDIX B



Figure 8
National Wetlands Inventory Map
Aliso Creek Jurisdictional Delineation

Aliso Creek HMMP

Property Ownership - North



Map Scale: 1:8,000 if printed on a legal (8.5" x 14") sheet.

Meters
0 100 200 400 600

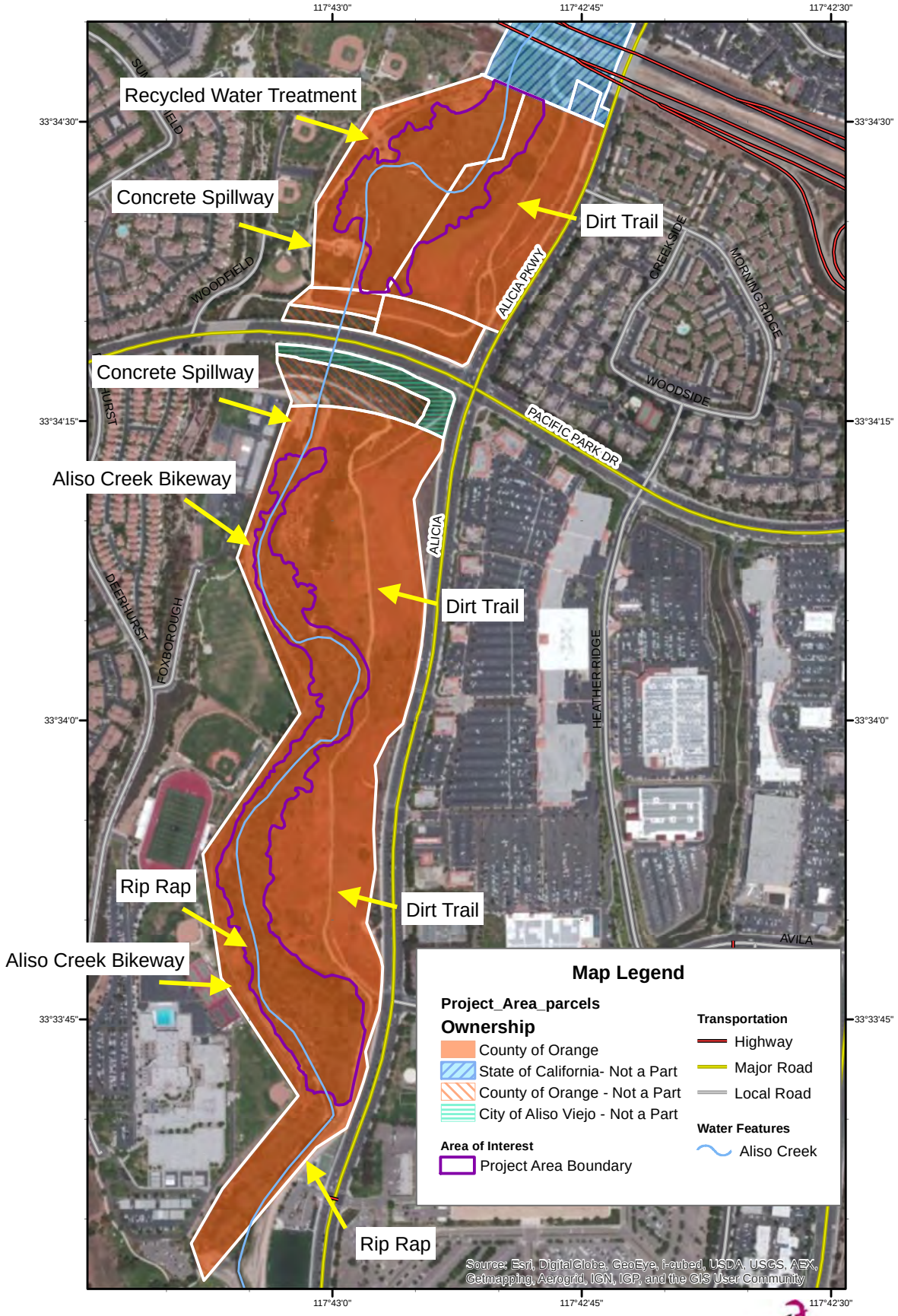
Feet
0 250 500 1,000 1,500 2,000

Projection: Web Mercator Auxiliary Sphere WGS1984

Laguna Canyon Foundation

Aliso Creek HMMP

Property Ownership - South



Map Scale: 1:8,000 if printed on a legal (8.5" x 14") sheet.

Meters
0 100 200 400 600

Feet
0 250 500 1,000 1,500 2,000

Projection: Web Mercator Auxiliary Sphere WGS1984

Laguna Canyon Foundation

APPENDIX C

JURISDICTIONAL DELINEATION REPORT

ALISO CREEK
ORANGE COUNTY, CA

PREPARED FOR:

Laguna Canyon Foundation
PO Box 4895
Laguna Beach, CA 92652
Contact: Derek Ostensen

PREPARED BY:

ICF International
1 Ada, Suite 100
Irvine, CA 92618
Contact: Lexi Kessans
949-333-6613

April 2013

ICF International. 2013. Jurisdictional Delineation Report, Aliso Creek, Aliso Viejo, California. April. (ICF 513.12) Irvine, CA. Prepared for Laguna Canyon Foundation, Laguna Beach, CA.

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Acronyms and Abbreviations

AMSL	above mean sea level
CWA	Clean Water Act
CDFW	California Department of Fish and Wildlife
EPA	U.S. Environmental Protection Agency
FAC	facultative
FACW	facultative wetland
FEMA	Federal Emergency Management Agency
ft	foot/feet
GPS	global positioning systems
HU	hydrologic unit
HUC	hydrologic unit code
lf	linear feet
NHD	National Hydrography Dataset
NI	no indicator
NO	no occurrence
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate
OCTA	Orange County Transportation Authority
OHWM	Ordinary High Water Mark
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
RWQCB	Regional Water Quality Control Board
SSURGO	Soil Survey Geographic (database)
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	United States Geological Survey
WoS	Waters of the State
WoUS	Waters of the U.S.

Executive Summary

ICF International (ICF) conducted a routine-level delineation of jurisdictional waters and wetlands of Aliso Creek. The purpose of this delineation was to identify the extent of jurisdictional waters within the project site subject to state and federal jurisdiction under Sections 401 and 404 of the Clean Water Act (CWA) as well as Section 13260 of the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and Section 1602 of the California Fish and Game Code within the Orange County Transportation Authority (OCTA) Measure M2 restoration project, implemented by Laguna Canyon Foundation. Relevant jurisdictions include federal jurisdiction regulated by the U.S. Army Corps of Engineers (USACE) as waters of the United States (WoUS) or USACE wetlands, state waters regulated by the State Water Resources Control Board (SWRCB) and/or San Diego Regional Water Quality Control Board (RWQCB), and aquatic features regulated by the California Department of Fish and Wildlife (CDFW).

Within the Aliso Creek project site, there is a total of 9.51 acres non-wetland WoUS and waters of the state (WoS), and 1.95 acres wetland WoUS and WoS. Approximately 50.98 acres of CDFW vegetated riparian streambed is present within the project site.

Jurisdictional Delineation Figures are attached as Appendix A. Ordinary High Water Mark Data Sheets and Wetland Determination Forms are included as Appendices B and C, respectively. Site Photographs are attached as Appendices D-1 and D-2, respectively. A Preliminary Jurisdictional Determination form is included in Appendix E.

Chapter 1
Introduction

ICF International (ICF) has conducted a routine-level delineation of jurisdictional waters and wetlands for the Aliso Creek restoration project site (project). The purpose of this delineation was to identify the extent of federal and state jurisdiction within the restoration project site for Orange County Transportation Authority's (OCTA) Measure M2 project pursuant to Sections 401 and 404 of the Clean Water Act (CWA) as well as Section 13260 of the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and Section 1602 of the California Fish and Game Code.

Section 404 of the CWA covers waters of the United States (WoUS) as well as federal wetlands and is regulated by the U.S. Army Corps of Engineers (USACE). Under Section 401 of the CWA, the Regional Water Quality Control Board (RWQCB) regulates at the state level all activities that are regulated at the federal level by the USACE. The RWQCB or State Water Resources Control Board (SWRCB) may also regulate activities affecting non-federal waters and wetlands (e.g., isolated features) under the Porter-Cologne Act. Section 1602 of the California Fish and Game Code is regulated by the California Department of Fish and Wildlife (CDFW) and covers aquatic features, which may include lakes or streambeds with a defined bed and bank plus any adjacent riparian vegetation.

The information and results presented herein document the investigation, best professional judgment, and conclusions of ICF. It is correct and complete to the best of our knowledge. However, all jurisdictional delineations should be considered preliminary until reviewed and approved/ determined by the regulatory agencies.

1.1 Project Location

The project is located within Aliso Viejo, Orange County, California (Figure 1) and contains one blue-line drainage as depicted on the United States Geological Survey (USGS) 7.5-minute San Juan Capistrano quadrangle (dated 2012) (Figure 2). The project begins just south of Moulton Parkway, west of Aliso Viejo Parkway and extends southerly for approximately 2.45 miles along Alicia Parkway prior to ending just south of Avila Road.

Chapter 2
Methodology

2.1 Project Research

Prior to the field visit, a 200-foot-scale (1 inch = 200 feet) aerial photograph of the site was obtained and compared with the USGS 7.5-minute topographic San Juan Capistrano quadrangle map and Google Earth (Google Earth 2012) to observe vegetation types, topographic changes, and visible drainage patterns associated with Aliso Creek. In addition, the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) database (USDA/NRCS 2012a) and National Wetland Inventory (NWI) (USFWS 2012) were reviewed to identify the soil series and mapped wetlands that occur within the restoration project site.

2.2 Field Investigation

ICF conducted the jurisdictional waters and wetland delineation in August, 2012, with a follow-up visit in February, 2013 (Table 2-1).

Table 2-1 Delineation Field Dates

Date	Delineators
August 23, 2012	Lexi Kessans, Zackry West
August 28, 2012	Zackry West, Paul Schwartz
August 29, 2012	Zackry West, Daniel Cardoza
February 21, 2013	Zackry West

The study area for the delineation consisted of the restoration site boundary. The survey was conducted on foot, and jurisdictional limits were recorded using high-resolution aerial photographs (1 inch=200 feet) and sub-meter accuracy Trimble global positioning systems (GPS) unit. Existing conditions were documented as field notes and site photographs.

Common plant species observed were identified by visual characteristics and morphology in the field. Taxonomic nomenclature for plants follows the *Jepson Manual: Higher Plants of California* (Baldwin et. al. 2012). When no common name for plant species was listed in the Jepson Manual, common names were taken from *The Vascular Plants of Orange County: An Annotated Checklist* (Roberts 2008).

The February 21, 2013 follow-up visit was conducted at the request of the USACE after their review of aerial photographs to verify whether additional flagged areas supported an OHWM. These areas were systematically observed, and were documented with site photographs. Any additional areas supporting an OHWM were mapped using a sub-meter accuracy Trimble GPS unit.

2.2.1 USACE Jurisdiction

Potential WoUS and wetlands were delineated using methods established in the *Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008a), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b), the *USACE Jurisdictional Determination Form Instructional Guidebook* (USACE/EPA 2007), the *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in* Rapanos v. United States & Carabell v. United States *Memorandum* (USACE/EPA 2008), and *Draft Guidance on Identifying Waters Protected by the Clean Water Act* (USACE/EPA 2011). Non-wetland waters were delineated based on the presence of OHWM indicators, and OHWM data sheets were recorded, attached as Appendix B. At each evaluation area, several parameters were considered to determine whether the sample point is within a wetland. Three criteria normally must be fulfilled in order to classify an area as a jurisdictional USACE wetland: (1) a predominance of hydrophytic vegetation, (2) the presence of hydric soils, and (3) the presence of wetland hydrology. Details of the application of these techniques are described below.

- **Hydrophytic Vegetation:** The hydrophytic vegetation criterion is satisfied at a location if greater than 50% of all the dominant species present within the vegetation unit have a wetland indicator status of obligate (OBL), facultative wetland (FACW), or facultative (FAC) (Environmental Laboratory 1987). An OBL indicator status refers to plants that have a 99% probability of occurring in wetlands under natural conditions. A FACW indicator status refers to plants that usually occur in wetlands (67–99% probability) but are occasionally found elsewhere. A FAC indicator status refers to plants that are equally likely to occur in wetlands or elsewhere (estimated probability 34–66% for each). An NI (no indicator) status designates that insufficient information was available to determine an indicator status. An NO (no occurrence) status indicates that the species does not occur in the region; when a plant with an NO status is found within a region, it usually indicates that the plant is ornamental. The wetland indicator status used for this report follows the *Draft-Final National Wetland Plant List* (USACE 2012).
- **Hydric Soils:** The definition of a hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA/NRCS 1994). This determination is made based on various field indicators detailed in the *Arid West Supplement* and the *Field Indicators of Hydric Soils in the United States (Version 7.0)* (USDA/NRCS 2010).
- **Wetland Hydrology:** Wetland hydrology is determined using indicators of inundation or saturation (flooding, ponding, or tidally influenced) detailed in the *Wetland Delineation Manual* and the *Arid West Supplement*.

Soil pits were dug to examine soil color and texture and determine the wetland boundary. Wetland Data Forms are attached as Appendix C. For instances in which wetland boundaries were obvious or abrupt, a single sample point was used, versus the standard paired-pit (one sample point with wetland results paired with one sample point with non-wetland results, used to identify a wetland boundary) technique. These instances included in-channel wetlands and vegetated sand/gravel bars meeting a predominance of hydrophytic vegetation.

2.2.2 State Jurisdiction

Evaluation of state jurisdiction followed guidance from Section 401 of the CWA and typically follows the same jurisdictional areas as USACE. In addition, the study area was reviewed for resources potentially regulated under Porter-Cologne Act (i.e., isolated features). Isolated vernal pools, isolated wetlands, or other aquatic features not normally subject to federal regulation did not occur within the restoration site so no further evaluation was necessary.

2.2.3 CDFW Jurisdiction

CDFW jurisdiction typically includes water features with a defined bed and bank. Evaluation of potentially jurisdictional areas followed the guidance of standard practices by CDFW personnel. Briefly, CDFW jurisdiction was delineated by measuring outer width and length boundaries of potentially jurisdictional areas (lakes or streambeds), consisting of the greater of either the top of bank measurement or the extent of associated riparian or wetland vegetation.

Chapter 3
Environmental Setting

The following section describes the topography and land use, hydrology, and soils associated with the project area. Vegetation associated with Aliso Creek is described in Section 4.1 – Delineated Feature Description.

3.1 Topography & Land Use

The topography of the project site has a gently downward slope with an elevation ranging from roughly 263 feet (ft) above mean sea level (AMSL) at the northern boundary to approximately 180 ft AMSL at the southern boundary.

Land uses in the local vicinity include undeveloped open space, recreational uses including a pedestrian and bicycle trail, schools, sports complexes, and residential and commercial development.

3.2 Hydrology

3.2.1 Precipitation

Average precipitation in Aliso Viejo is approximately 13.93 inches per year (The Weather Channel, 2012). Table 3-1 summarizes the average precipitation for the project area.

Table 3-1. Rainfall Data Summary for the Project Area (in inches)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average	2.85	3.42	1.96	0.88	0.25	0.11	0.06	0.03	0.25	0.65	1.09	2.38	13.93
*Data source: The Weather Channel, http://www.weather.com; Accessed August 2012.													

3.3 Hydrologic Units

The project site is located within the San Juan hydrologic unit (HU) (Figure 6b). General information on this major watershed is provided below.

3.3.1 San Juan

The San Juan HU drains into San Juan Creek and various tributaries, which eventually drain into the Pacific Ocean. Topography varies from the coastal foothills of the Santa Ana Mountains to a broad and shallow farming and ranching valley. Arroyo Trabuco, Aliso Creek, San Juan Creek, and Oso Creek are major tributaries within the San Juan HU. Many of the existing drainages are ephemeral or intermittent, and some are manipulated and/or channelized within urban concrete channels. Watershed maps are attached as Figures 6a and 6b.

3.4 Soils

3.4.1 Soil Series

The NRCS has mapped the following soil series as occurring within the study area based on the SSURGO database (USDA/NRCS 2006):

- Balcom
- Calleguas
- Capistrano
- Corralitos
- Myford
- Sorrento

The location of the soils associated with the project can be found in Figure 7. A description of all of the series included within the SSURGO mapping units is provided below based on the official soil descriptions provided by USDA (USDA/NRCS 2012):

3.4.1.1 Balcom

The Balcom series consists of moderately deep, well-drained soils that formed in material weathered from soft, calcareous shale and sandstone. Balcom soils are found on rounded hills at elevations of 200 to 2,300 feet. The typical soil texture is that of loams with moderate to moderately slow permeability. Balcom soils have a moderate extent and are located in the Coast Range in south-central California and on the west side of the Sacramento Valley.

3.4.1.2 Calleguas

The Calleguas series consists of very shallow and shallow, well-drained soils that formed on uplands, hills, and mountains in material weathered from sedimentary rocks. Calleguas soils are found on exposed and often eroded south-facing slopes at elevations of 100 to 2,800 feet, with slopes of 9% to 75%. The typical soil texture is that of clay loams with medium or high runoff and moderate permeability. Calleguas soils have a high extent and are located in the Coast Range in the central and south-central part of California.

3.4.1.3 Capistrano

The Capistrano series consists of very deep, well-drained soils that formed in alluvium from sedimentary or granitic sources. Capistrano soils are found on alluvial fans and floodplains in small valleys at elevations of 25 to 2,500 feet, with slopes ranging from 0% to 15%. The typical soil texture is that of sandy loams with slow to medium runoff and moderately rapid permeability. These soils are found in coastal parts of southern California.

3.4.1.4 Corralitos

The Corralitos series consists of deep, somewhat excessively drained soils that formed in recent sandy alluvium derived from acid sandstone and related rocks. Corralitos soils are found on alluvial fans and in small valleys at elevations of 25 to 1,000 feet, with slopes ranging from 0% to 15%. The typical soil texture is that of loamy sands with slow runoff and rapid permeability. Corralitos soils have a moderate extent and are found in small coastal valleys from central California southward.

3.4.1.5 Myford

The Myford series consists of deep, moderately well-drained soils formed on terraces with elevations of less than 1,500 feet. The typical texture is that of sandy loam and sandy clay loams with medium to rapid runoff and very slow permeability. Myford soils have a moderate extent and are located in southern California.

3.4.1.6 Sorrento

The Sorrento soil series consists of very deep, well-drained soils that formed in medium-textured alluvium, mostly from sedimentary rocks. Sorrento soils occur on alluvial fans and stabilized floodplains at elevations of 25 to 2,100 feet, with slopes of 0% to 15%. The texture is primarily that of fine loams with negligible to medium runoff and moderate to moderately slow permeability, depending on the dominant texture and stratification of the lower horizons. This series is located extensively through the valleys of the southern part of the Coast Range in California.

3.4.2 Map Units

The following map units occur within the study area according to the NRCS.

- Riverwash- consists primarily of recently deposited alluvium, is prone to frequent flooding, and often carries recent sediment deposits and rocks from upstream.
- Water- includes areas mapped as open water such as lakes and reservoirs.

3.4.3 Project Area Hydric Soil Types and Map Units

The following soil types or map units are identified on the hydric soils list for the Orange County and part of Riverside County (NRCS/USDA 2011). Note that under Section 5 of the Arid West Supplement, vegetated sand and gravel bars within floodplains are assumed to contain hydric soils.

- Corralitos Loamy Sand
- Corralitos Loamy Sand, Moderately Fine Substratum
- Riverwash

Chapter 4
Jurisdictional Delineation Results

The following chapter describes the delineated feature and expected jurisdictional status within the study area. This report documents existing conditions within the project area.

The information and results included herein document the investigation, best professional judgment, and conclusions of ICF. It is correct and complete to the best of our knowledge. However, all jurisdictional determinations should be considered preliminary until reviewed and approved by the regulatory agencies.

Detailed information, including maps of Aliso Creek within the project site, Ordinary High Water Mark Data Sheets, Wetland Determination Forms, photographs, and a Preliminary Jurisdictional Determination Form are provided in the following appendices:

- Appendix A provides aerial photos depicting the delineated feature and project area.
- Appendix B contains Ordinary High Water Mark Data Sheets.
- Appendix C contains Wetland Determination Forms.
- Appendices D-1 and D-2 contain photographs of Aliso Creek.
- Appendix E contains the Preliminary Jurisdictional Determination form.

4.1 Delineated Feature Description

There is one jurisdictional stream within the project site. Jurisdictional delineation figures depicting the delineated feature, sample points, and photo points are attached in Appendix A as Figures 3a and 3b.

4.1.1 Aliso Creek

Aliso Creek is a perennial tributary to the Pacific Ocean. The creek enters the project area at Moulton Parkway and extends southerly for approximately 12,612 linear feet before exiting the project area.

Aliso Creek supports a mix of native and non-native riparian and wetland vegetation, primarily consisting of giant reed (*Arundo donax*, FACW), arroyo willow (*Salix lasiolepis*, FACW), red willow (*Salix laevigata*, FACW), white alder (*Alnus rhombifolia*, FACW), western sycamore (*Platanus racemosa*, FAC), Eucalyptus (*Eucalyptus* sp., NI), mulefat (*Baccharis salicifolia*, FACW), Mexican fan palm (*Washingtonia robusta*, NI), mugwort (*Artemisia douglasiana*, FAC), cocklebur (*Xanthium strumarium*, FAC), southern cattail (*Typha domingensis*, OBL), Olney's three-square bulrush (*Schoenoplectus americanus*, OBL) and Bermuda grass (*Cynodon dactylon*, FACU). Along the banks of the feature, vegetation is dominated by coyote brush (*Baccharis pilularis*, UPL), summer mustard (*Hirschfeldia incana*, UPL), black mustard (*Brassica nigra*, UPL), false fleabane (*Pulicaria paludosa*, FAC), curly dock (*Rumex crispus*, FAC), and fennel (*Foeniculum vulgare*, UPL).

OHWM indicators included change in average sediment texture, change in vegetation species, change in vegetation cover, break in bank slope, and water staining. OHWM data sheets are attached as Appendix B.

Within the project site, areas within the OHWM associated with Aliso Creek were generally characterized by a low flow channel containing open water and bound by an active flood plain of active or recently deposited sediment and emergent vegetation, overall contained within incised channel banks. The surrounding floodplain supports a riparian scrub community, and appears to be supported by large (greater than 10-year) storm events.

4.2 Delineation Results Summary

Aliso Creek is subject to USACE, RWQCB, and CDFW jurisdiction. Table 4-1 contains jurisdictional summaries for Aliso Creek. A Preliminary Jurisdictional Determination form is provided in Appendix E.

Table 4-1. Jurisdictional Delineation Summary

Drainage	U.S. and State Non-Wetland Waters (acres)	U.S. and State Wetland Waters (acres)	CDFW Unvegetated Streambed (acres)	CDFW Riparian (acres)	U.S./State/CDFW Linear Feet
Aliso Creek	9.51	1.95	0	50.98	12,612

4.3 List of Delineators and Report Preparers/Reviewer

Lexi Kessans, Southern California Regulatory Team Manager-Delineator/Report Preparer

Zackry West, Senior Regulatory Specialist/Biologist-Delineator/Report Reviewer

Paul Schwartz, Biologist-Delineator

Daniel Cardoza, Regulatory Specialist-Delineator

Jenna Kilfoyle-GIS Specialist

Alex Angier-GIS Specialist

Chapter 5
References

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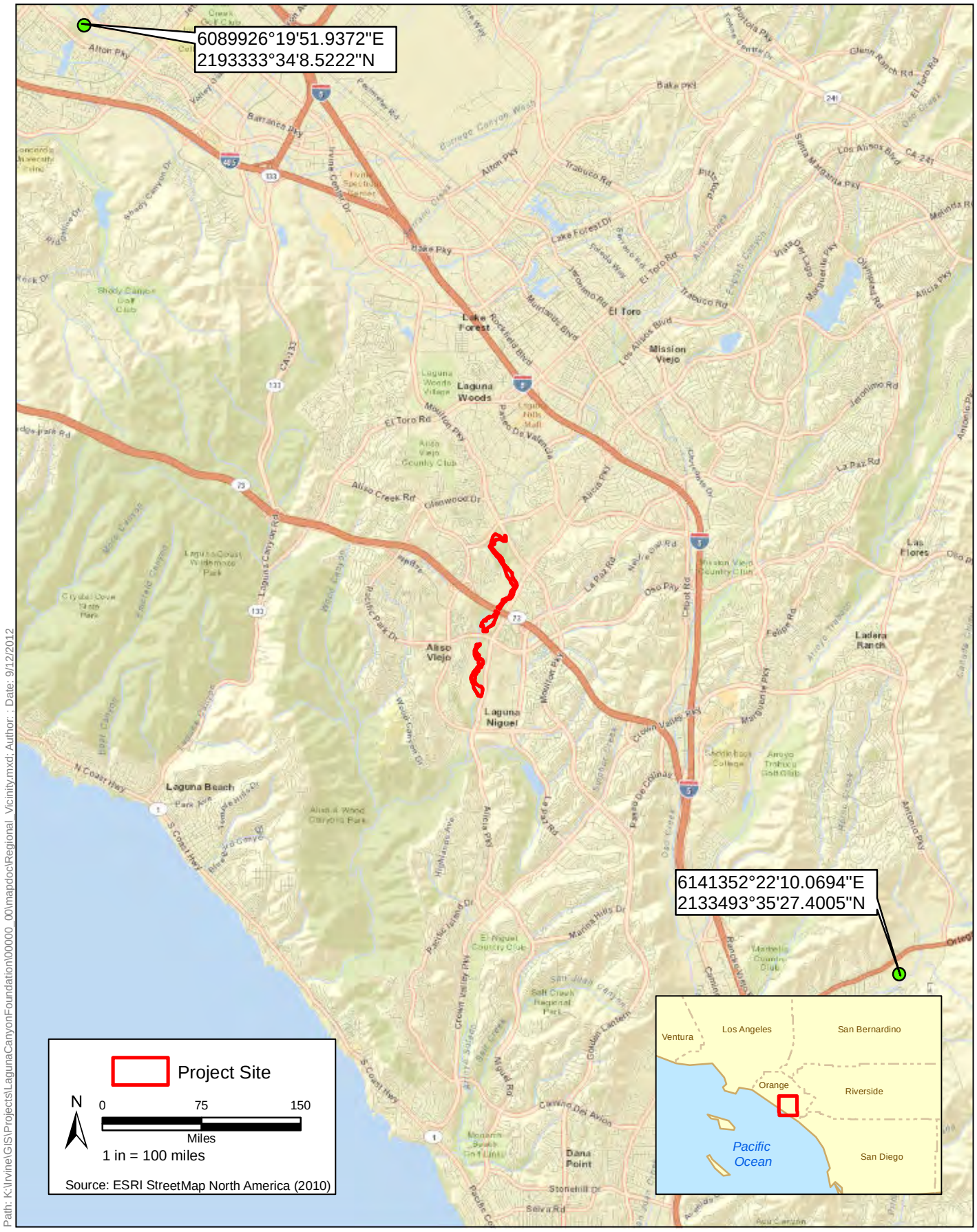
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Appendix A
Jurisdictional Delineation Figures



Path: K:\Irvine\GIS\Projects\LagunaCanyonFoundation\00000_00\mapdoc\Regional_Vicinity.mxd; Author: ; Date: 9/12/2012

Figure 1
Regional Vicinity Map
Aliso Creek Jurisdictional Delineation

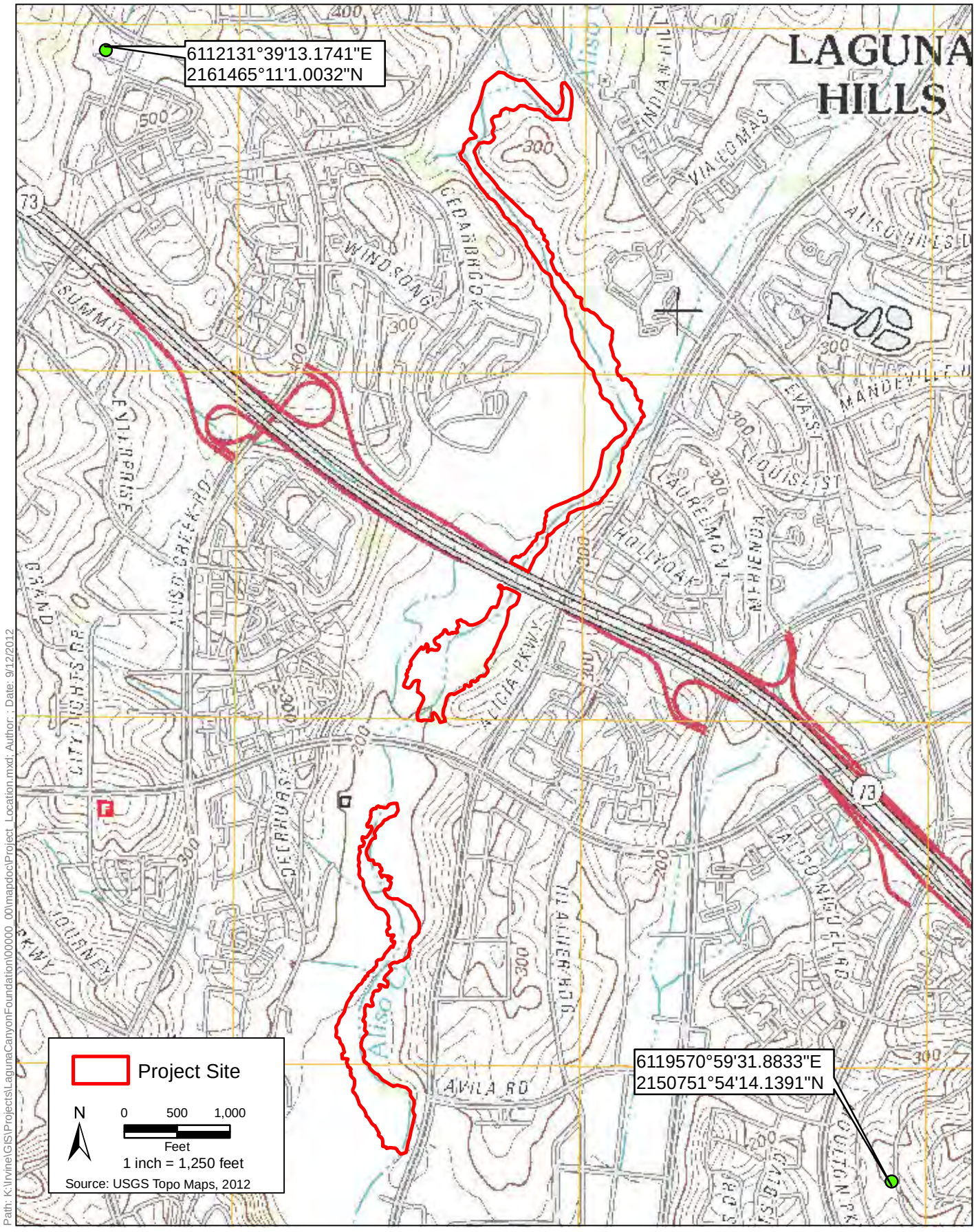
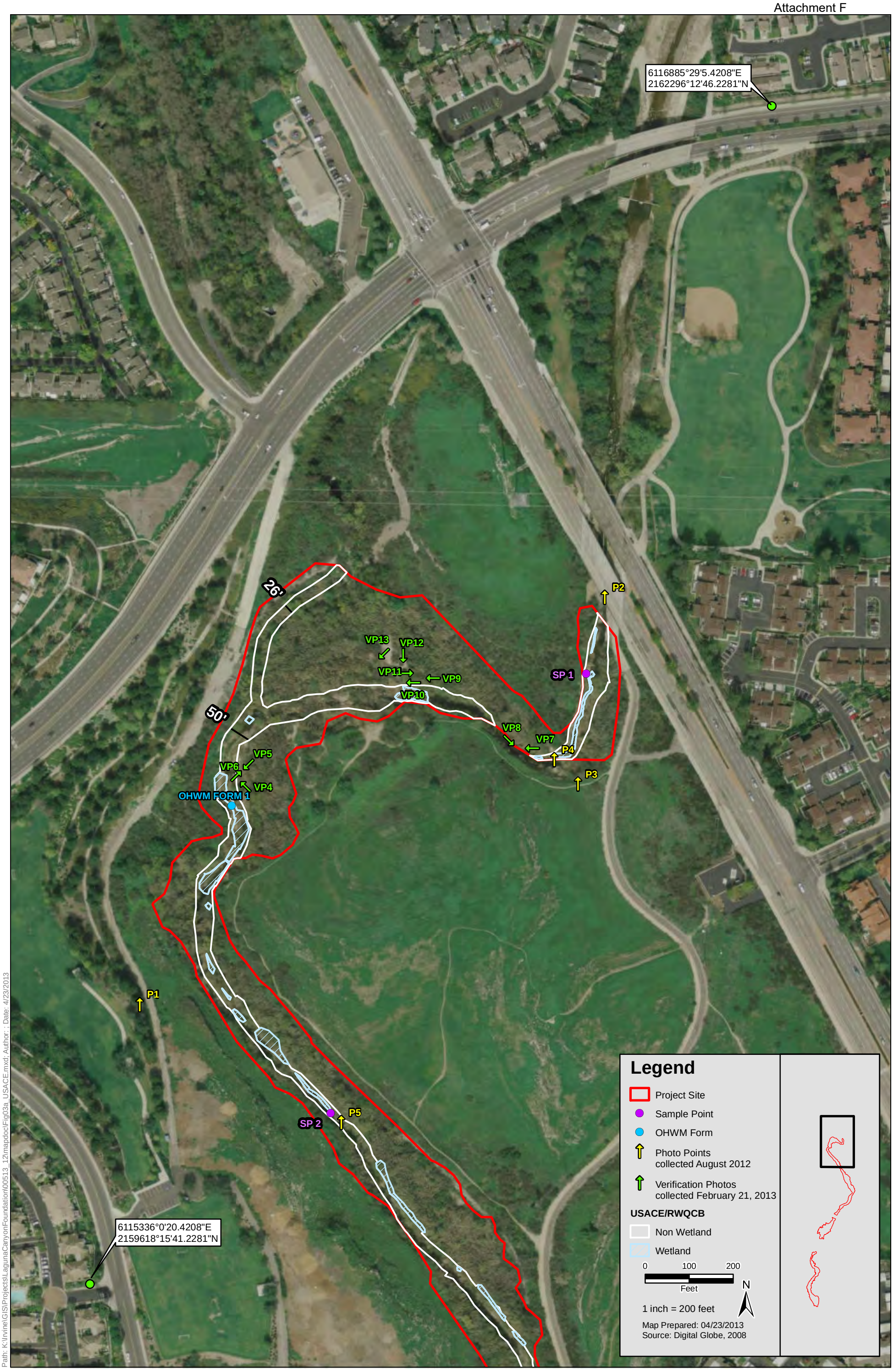


Figure 2
Project Vicinity Map
Aliso Creek Jurisdictional Delineation



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Figure 3a Sheet 1
USACE/ RWQCB
Aliso Creek Jurisdictional Delineation



Path: K:\Irvine\GIS\Projects\LagunaCanyonFoundation\00513_12\mapdoc\Fig03a_USACE.mxd; Author: ; Date: 4/23/2013

Figure 3a Sheet 2
USACE/ RWQCB
Aliso Creek Jurisdictional Delineation



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Figure 3a Sheet 3
USACE/ RWQCB
Aliso Creek Jurisdictional Delineation



Path: K:\Irvine\GIS\Projects\LagunaCanyonFoundation\00513_12\mapdoc\Fig03a_USACE.mxd; Author: ; Date: 4/23/2013

Figure 3a Sheet 4
USACE/ RWQCB
Aliso Creek Jurisdictional Delineation

6116885°29'5.4208"E
2162296°12'46.2281"N

P1
P2
P3
P4
P5

6115336°0'20.4208"E
2159618°15'41.2281"N

Legend

- Photo Point
- Project Site
- CDFW

0 100 200
Feet

1 inch = 200 feet

Map Prepared: 09/06/2012
Source: Digital Globe, 2008

N

Path: K:\Irvine\GIS\Projects\LagunaCanyonFoundation\00513_12\mapdoc\Fig03b_DFG.mxd; Author: ; Date: 4/24/2013

Figure 3b Sheet 1
CDFW
Aliso Creek Jurisdictional Delineation



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Figure 3b Sheet 2
CDFW
Aliso Creek Jurisdictional Delineation

6116117°15'20.4212"E
2156106°58'36.228"N

6114485°18'40.4208"E
2154453°19'51.228"N

Legend
Photo Point
Project Site
CDFW

0 100 200
Feet
N
1 inch = 200 feet
Map Prepared: 09/06/2012
Source: Digital Globe, 2008

Path: K:\Irvine\GIS\Projects\LagunaCanyonFoundation\00513_12\mapdoc\Fig03b_DFG.mxd; Author: ; Date: 4/24/2013

Figure 3b Sheet 3
CDFW
Aliso Creek Jurisdictional Delineation



Figure 3b Sheet 4
CDFW
Aliso Creek Jurisdictional Delineation



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Figure 4
NHD Map
Aliso Creek Jurisdictional Delineation

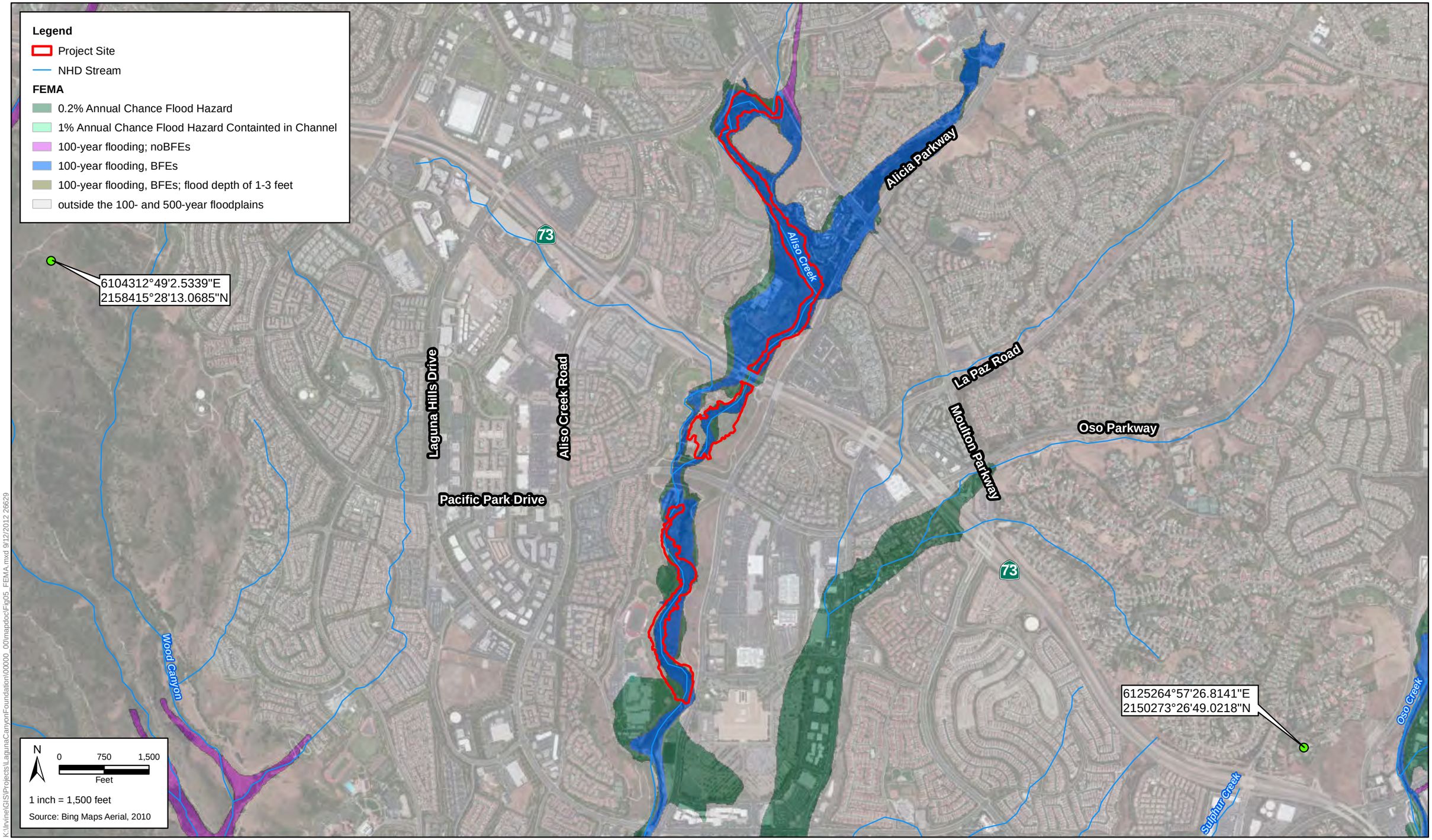


Figure 5
FEMA 100-year Floodplain Map
Aliso Creek Jurisdictional Delineation



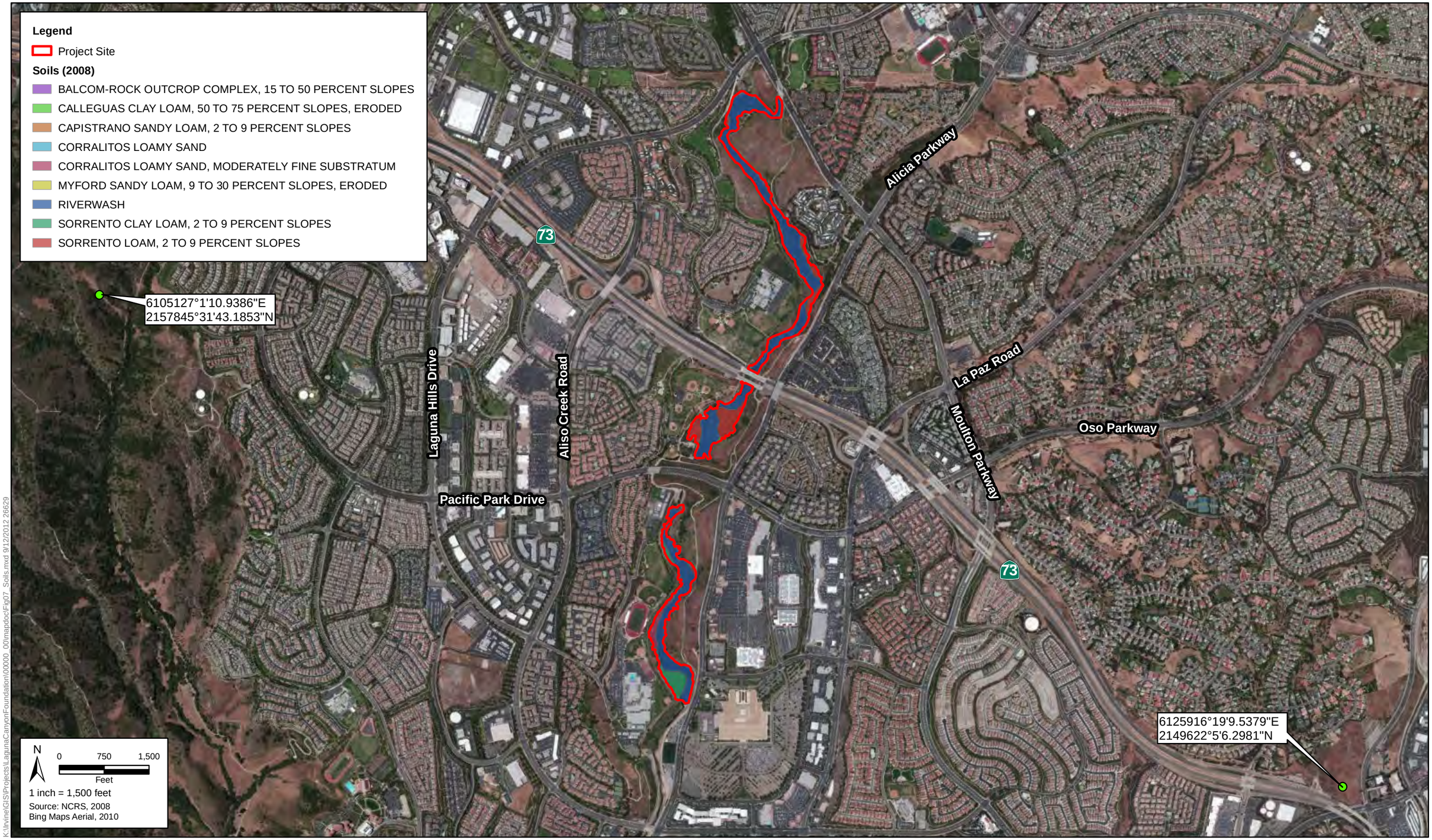
K:\Irvine\GIS\Projects\LagunaCanyonFoundation\00000_00\mapdoc\Fig06a_Watersheds.mxd 9/12/2012 26629

Figure 6a
Watersheds - HUC 10
Aliso Creek Jurisdictional Delineation



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Figure 6b
Watersheds - HUC 8
Aliso Creek Jurisdictional Delineation



K:\Irvine\GIS\Projects\LagunaCanyonFoundation\00000_00\mapdoc\Fig07_Soils.mxd 9/12/2012 26629

Figure 7
NRCS Soils Survey Map
Aliso Creek Jurisdictional Delineation



Figure 8
National Wetlands Inventory Map
Aliso Creek Jurisdictional Delineation

Appendix B
Ordinary High Water Mark Data Sheets

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Aliso Creek
Project Number:
Stream: Aliso Creek - OHWM 1
Investigator(s):

Date: 8/28/12 **Time:** 11:15
Town: Aliso Viejo **State:** CA
Photo begin file#: **Photo end file#:**

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

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Aliso Creek near Creekside Park

Projection: **Datum:**
Coordinates:

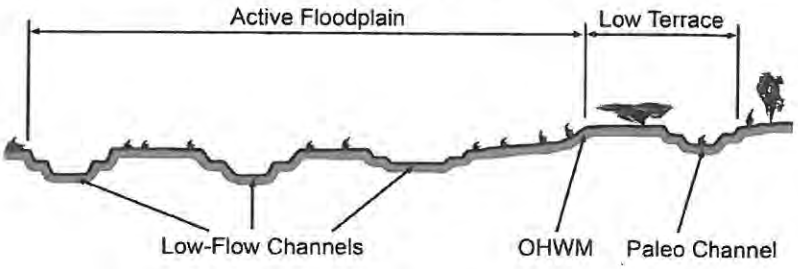
Potential anthropogenic influences on the channel system:
potential for urban runoff to enter the flow regime. Proliferation of Arundo Donax

Brief site description: perrenial reach of Aliso Creek, containing riparian scrub canopy.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2008
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

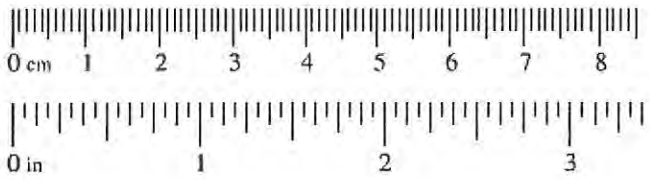


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

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

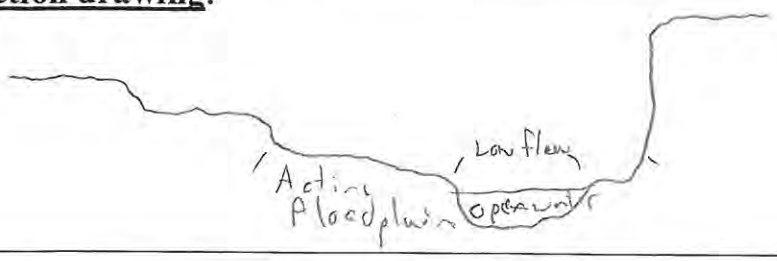
Wentworth Size Classes

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00		
0.039	1.00	Very coarse sand	
		Coarse sand	
0.020	0.50	Medium sand	Sand
0.0098 (1/2)	0.25	Fine sand	
0.005 (1/4)	0.125	Very fine sand	
0.0025 (1/8)	0.0625		
0.0012 (1/16)	0.031	Coarse silt	
		Medium silt	
0.00061 (1/32)	0.0156	Fine silt	Silt
0.00031 (1/64)	0.0078	Very fine silt	
0.00015 (1/128)	0.0039		
		Clay	Mud



Project ID: Alsea Creek **Cross section ID:** OHWM-1 **Date:** 8/28/12 **Time:** 11:15

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: 0 % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [x] Other: Open water
- [ ] Other: _____
- [ ] Other: _____

Comments:

Project ID: Aliso Creek **Cross section ID:** OHWM-1 **Date:** 5/28/12 **Time:** 11:15

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

GPS point: _____

Characteristics of the floodplain unit:
Average sediment texture: Silt to small pebbles
Total veg cover: 60 % Tree: ____ % Shrub: 60 % Herb: ____ %
Community successional stage:
- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

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

Comments:

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

GPS point: _____

Characteristics of the floodplain unit:
Average sediment texture: Silt
Total veg cover: 100 % Tree: 60 % Shrub: 40 % Herb: ____ %
Community successional stage:
- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

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

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Aliso Creek
Project Number:
Stream: Aliso Creek-OHWM-2
Investigator(s): Z. Wood, D. Cordova

Date: 5/29/12
Town: Aliso Viejo
Photo begin file#:

Time: 12:45
State: CA
Photo end file#:

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Downstream of armored crossing

Projection: **Datum:**
Coordinates:

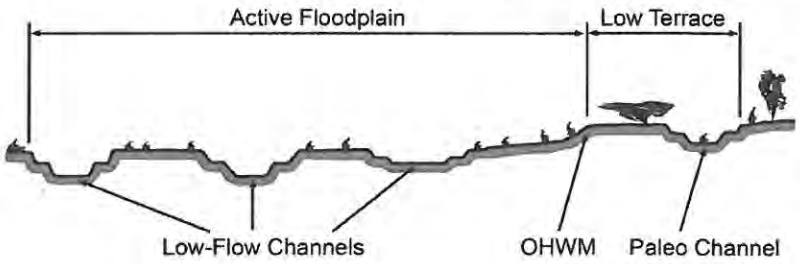
Potential anthropogenic influences on the channel system: Contribution of urban runoff. Proliferation of Arundo Donax.

Brief site description: Perennial stretch of Aliso Creek, containing Riparian scrub canopy.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2008
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
- [ ] History of recent effective discharges
- [ ] Results of flood frequency analysis
- [ ] Most recent shift-adjusted rating
- [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

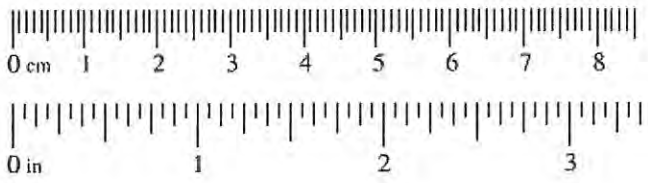


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

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

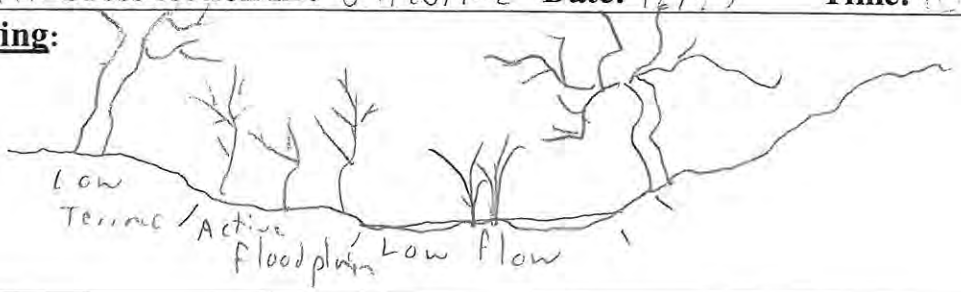
Wentworth Size Classes

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00		
0.039	1.00	Very coarse sand	
		Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625		
1/16 0.0012	0.031	Coarse silt	
		Medium silt	Silt
1/32 0.00061	0.0156	Fine silt	
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039		
		Clay	Mud



Project ID: Miso Creek **Cross section ID:** OHWM-2 **Date:** 12/19 **Time:** 11:45

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☒ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Small-medium pebbles

Total veg cover: 40 % Tree: ____ % Shrub: ____ % Herb: 40 %

Community successional stage:

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

Indicators:

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

Comments:

Project ID: Alsea Creek **Cross section ID:** CHwm-2 **Date:** 12/20/12 **Time:** 12:45

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt to small. medium pebbles

Total veg cover: 90 % Tree: 50 % Shrub: 40 % Herb: ____ %

Community successional stage:

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

Indicators:

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

Comments:

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Fine silt - fine sand

Total veg cover: 95 % Tree: 35 % Shrub: 60 % Herb: ____ %

Community successional stage:

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

Indicators:

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

Comments:

Appendix C
Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Aliso Creek City/County: Aliso Viejo, Orange Sampling Date: 5/25/12
Applicant/Owner: LCF State: CA Sampling Point: SP-1
Investigator(s): LK, ZW Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR): Channel bank Lat: Long: Datum:
Soil Map Unit Name: NWI classification: Freshwater forested/shrub
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	30	Y	FACW
2. Alnus rhombifolia	20	Y	FACW
3. Washingtonia robusta	2	N	NI
4.			
	52	= Total Cover	

Sapling/Shrub Stratum (Plot size: 16')			
1. Baccharis salicifolia	10	N	FAC
2. Rubus ursinus	2	N	FAC
3. Artemisia douglasiana	15	Y	FAC
4. Alnus rhombifolia	25	Y	FACW
5.			
	52	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Cynodon dactylon	20	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20	= Total Cover	

Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 75	x 2 =	150
FAC species 27	x 3 =	81
FACU species 20	x 4 =	80
UPL species	x 5 =	
Column Totals: 122 (A)		311 (B)

Prevalence Index = B/A = 2.54

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y 3/2	100					Loamy sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: No hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Aliso Creek City/County: Aliso Viejo/Orange Sampling Date: 8/28/12
Applicant/Owner: LCF State: CA Sampling Point: SP-2
Investigator(s): Z West, P Schwartz Section, Township, Range:
Landform (hillslope, terrace, etc.): In-channel bar Local relief (concave, convex, none): convex Slope (%): 1
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: NWI classification: Freshwater Forested/Shrub
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1. Salix bonplandiana	50	Y	FACW
2.			
3.			
4.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10)			
1. Salix bonplandiana	5	Y	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Schoenoplectus americanus	60	Y	OBL
2. Baccharis salicifolia	5	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

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

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 60	x 1 = 60
FACW species 55	x 2 = 110
FAC species 5	x 3 = 15
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 120 (A)	185 (B)

Prevalence Index = B/A = 1.54

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: SP-2

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

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

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: Vegetated sand and gravel bar. Hydric per Section 5 of the Arid West Manual. Hydrogen sulfide odor observed upon disturbing soil surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 36"

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

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

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Aliso Creek City/County: Aliso Viejo/Orange Sampling Date: 8/29/12
Applicant/Owner: LCF State: CA Sampling Point: SP-3
Investigator(s): Z West, D Cardoza Section, Township, Range:
Landform (hillslope, terrace, etc.): In-channel bar Local relief (concave, convex, none): convex Slope (%): 2
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: NWI classification: Freshwater Forested/Shrub
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1. Salix bonplandiana	40	Y	FACW
2.			
3.			
4.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10)			
1. Arundo donax	60	Y	FACW
2.			
3.			
4.			
5.			
	60 = Total Cover		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species 100	x 2 = 200
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 100 (A)	200 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: SP-3

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

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

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks: Vegetated gravel bar. Predominance of hydrophytic vegetation. Soils assumed hydric per Section 5 of the Arid West manual.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 10

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

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

Wetland Hydrology Present? Yes X No ____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Aliso Creek City/County: Aliso Viejo/Orange Sampling Date: 8/29/12
Applicant/Owner: LCF State: CA Sampling Point: SP-4
Investigator(s): Z West, D Cardoza Section, Township, Range:
Landform (hillslope, terrace, etc.): Stream bank Local relief (concave, convex, none): Slope (%): 7
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: NWI classification: Freshwater forested/shrub
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix bonplandiana	35	Y	FACW
2.			
3.			
4.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10)			
1. Arundo donax	45	Y	FACW
2. Baccharis salicifolia	2	N	FAC
3. Pluchea palu	3	N	FACW
4.			
5.			
	50 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Cyperus eragrostis	2	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	2 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

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

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species 82	x 2 = 164
FAC species 2	x 3 = 6
FACU species 3	x 4 = 12
UPL species	x 5 =
Column Totals: 87 (A)	182 (B)

Prevalence Index = B/A = 2.17

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: SP-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
24	2.5Y 3/2	100					Loamy sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Appendix D-1
Site Photographs, August 2012



Photograph #	1
Photo Date	08/23/2012
Location	Aliso Creek
Direction	Facing Northeast
Comment	Overview of northern boundary of project site.



Photograph #	2
Photo Date	08/23/2012
Location	Aliso Creek
Direction	Facing South
Comment	Northern boundary of project site.



Photograph #	3
Photo Date	08/23/2012
Location	Aliso Creek
Direction	Facing North
Comment	Overview of riparian canopy in northern portion of project site.



Photograph #	4
Photo Date	08/23/2012
Location	Aliso Creek
Direction	Facing North
Comment	View of OHWM/ streambed and in-channel wetland. Note staining and scouring denotes OHWM.



Photograph #	5
Photo Date	08/28/2012
Location	Aliso Creek
Direction	Facing Northwest
Comment	View of in-channel wetland and riparian canopy. View of sample point 2.



Photograph #	6
Photo Date	08/28/2012
Location	Aliso Creek
Direction	Facing South
Comment	View of in-channel wetland and riparian canopy.



Photograph #	7
Photo Date	08/29/2012
Location	Aliso Creek
Direction	Facing Southeast
Comment	View of in-channel wetland and riparian canopy.



Photograph #	8
Photo Date	08/29/2012
Location	Aliso Creek
Direction	Facing South
Comment	View of in-channel wetland and sample point 3.



Photograph #	9
Photo Date	08/29/2012
Location	Aliso Creek
Direction	Facing West
Comment	View of OHWM/ streambed. Note limit of OHWM at base of arundo patch. View of sample point 4.



Photograph #	10
Photo Date	08/29/2012
Location	Aliso Creek
Direction	Facing South
Comment	View of in-channel wetland and riparian canopy.

Appendix D-2
Site Photographs, February 2013



Photograph #	1
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	Included in updated mapping of non-wetland WoUS as Area 1. View of naturalized *Arundo donax* and the OHWM associated with a historic channel located on the low terrace on low terrace landform.



Photograph #	2
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	Included in updated mapping of non-wetland WoUS as Area 1. View of riparian vegetation and the OHWM associated with a historic channel located on the low terrace on low terrace landform.



Photograph #	3
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	Included in updated mapping of Non-wetland WoUS as Area 1. View of naturalized *Arundo donax* and the OHWM associated with a historic channel located on the low terrace on low terrace landform.



Photograph #	4
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Northwest
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* in a paleo channel located on the low terrace.



Photograph #	5
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southwest
Comment	No OHWM indicators were observed at this location. View of riparian vegetation and bare ground located on the low terrace.



Photograph #	6
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Northeast
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* in a paleo channel located on the low terrace.



Photograph #	7
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing West
Comment	No additional areas exhibiting OHWM indicators were observed at this location. View of the active flood plain/low terrace boundary, OHWM, located along the cut bank in the lower left corner of the photo.



Photograph #	8
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southeast
Comment	No additional areas exhibiting OHWM indicators were observed at this location. View of the active flood plain/low terrace boundary, OHWM, located along the cut bank in the center-left portion of the photo.



Photograph #	9
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing West
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* in a paleo-channel located on the low terrace.



Photograph #	10
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing West
Comment	No OHWM indicators were observed at this location. View of riparian vegetation in a paleo channel located on the low terrace.



Photograph #	11
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing East
Comment	No OHWM indicators were observed at this location. View of riparian vegetation in a paleo channel located on the low terrace.



Photograph #	12
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located on the low terrace.



Photograph #	13
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southwest
Comment	No OHWM indicators were observed at this location. View of riparian vegetation and bare ground in a paleo channel located on the low terrace.



Photograph #	14
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Northeast
Comment	No OHWM indicators were observed at this location. View of a clearing created and maintained by human disturbance on the historic floodplain.



Photograph #	15
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	No OHWM indicators were observed at this location. View of dense riparian vegetation on the historic floodplain.



Photograph #	16
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southwest
Comment	No OHWM indicators were observed at this location. View of a foot path created and maintained by human disturbance on the historic floodplain.



Photograph #	17
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing East
Comment	No OHWM indicators were observed at this location. View of a historic erosional feature with naturalized upland vegetation on the upper limits of the historic floodplain.



Photograph #	18
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southwest
Comment	No OHWM indicators were observed at this location. View of a historic erosional feature with naturalized upland vegetation on the upper limits of the historic floodplain.



Photograph #	19
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southwest
Comment	No additional areas exhibiting OHWM indicators were observed at this location. View of the upper limit of the OHWM, with no current evidence of flow beyond the existing active flood plain boundary.



Photograph #	20
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southwest
Comment	No OHWM indicators were observed at this location. View of riparian vegetation, naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace.



Photograph #	21
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southwest
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace.



Photograph #	22
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace.



Photograph #	23
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Northeast
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace.



Photograph #	24
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace.



Photograph #	25
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southeast
Comment	No OHWM indicators were observed at this location. View of riparian vegetation and bare ground in a paleo channel located on the low terrace.



Photograph #	26
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Northeast
Comment	No OHWM indicators were observed at this location. View of riparian vegetation in a paleo channel located on the low terrace.



Photograph #	27
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Northwest
Comment	No OHWM indicators were observed at this location. View of riparian vegetation in a paleo channel located on the low terrace.



Photograph #	28
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	No OHWM indicators were observed at this location. View of riparian vegetation and bare ground in a paleo channel located on the low terrace.



Photograph #	29
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace.



Photograph #	30
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Northwest
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace.



Photograph #	31
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Northwest
Comment	No OHWM indicators were observed at this location. View of riparian vegetation, naturalized *Arundo donax*, and bare ground in a paleo channel located on the low terrace.



Photograph #	32
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* located in a paleo channel on the low terrace.



Photograph #	33
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* in a paleo channel on the low terrace.



Photograph #	34
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace after a recent fire event.



Photograph #	35
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace after a recent fire event.



Photograph #	36
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	No OHWM indicators were observed at this location. View of naturalized *Arundo donax* and bare ground located in a paleo channel on the low terrace after a recent fire event.



Photograph #	37
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	No OHWM indicators were observed at this location. View of dense riparian vegetation and naturalized *Arundo donax* located in a paleo channel on the low terrace.



Photograph #	38
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southwest
Comment	No OHWM indicators were observed at this location. View of dense naturalized *Arundo donax* located in a paleo channel on the low terrace.



Photograph #	39
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the active flood plain/low terrace boundary, OHWM, with evidence of a recent flow event.



Photograph #	40
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the active flood plain/low terrace boundary, OHWM, with evidence of a recent flow event.



Photograph #	41
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the OHWM associated with historic flows located on the active flood plain/low terrace boundary.



Photograph #	42
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the active flood plain/low terrace boundary, OHWM, with evidence of a recent flow event.



Photograph #	43
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing Southeast
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the OHWM associated with a historic channel located on the low terrace.



Photograph #	44
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the OHWM associated with a historic channel located on the low terrace.



Photograph #	45
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the OHWM associated with a historic channel located on the low terrace.



Photograph #	46
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing South
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the OHWM associated with a historic channel located on the low terrace.



Photograph #	47
Photo Date	02/21/2013
Location	Aliso Creek
Direction	Facing North
Comment	Included in updated mapping of non-wetland WoUS as Area 2. View of the OHWM associated with a historic channel located on the low terrace.

Appendix E
Preliminary Jurisdictional Determination Form

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office: Los Angeles District | File/ORM #: SPL-2012-00830-VCC | PJD Date:

State: CA | City/County: Aliso Viejo/Orange County

Nearest Waterbody: Aliso Creek

Location: TRS, LatLong or UTM: Upstream Limit 33.589690°N, -117.712290°W; Downstream Limit 33.561450°N, -117.716877°W

Name/ Address of Person Requesting PJD: Lesley Hill, Orange County Transportation Authority, 550 South Main Street, Orange, CA 92863

Identify (Estimate) Amount of Waters in the Review Area:

Non-Wetland Waters: 12,612 linear ft | width 9.51 acres | Stream Flow: Perennial

Wetlands: 1.95 acre(s) | Cowardin Class: Riverine

Name of Any Water Bodies on the Site Identified as Section 10 Waters: Tidal: | Non-Tidal:

☐ Office (Desk) Determination
☐ Field Determination: Date of Field Trip:

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☑ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☑ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps
- ☐ Corps navigable waters' study:
- ☑ U.S. Geological Survey Hydrologic Atlas:
  - ☑ USGS NHD data.
  - ☑ USGS 8 and 12 digit HUC maps.
- ☑ U.S. Geological Survey map(s). Cite quad name: San Juan Capistrano
- ☑ USDA Natural Resources Conservation Service Soil Survey. Citation: http://soils.usda.gov/survey/geography/ssurgo/
- ☑ National wetlands inventory map(s). Cite name: http://www.fws.gov/wetlands/Data/Mapper.html
- ☐ State/Local wetland inventory map(s):
- ☑ FEMA/FIRM maps: https://msc.fema.gov/webapp/wcs/stores/servlet/Fe
- ☐ 100-year Floodplain Elevation is:
- ☑ Photographs: ☑ Aerial (Name & Date): Bing Maps 2012, Digital Globe 2008
  - ☑ Other (Name & Date): Site Photographs 8/23, 28-29
- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Lesley Hill 4/25/2013

Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Appendix A - Sites

District Office: Los Angeles District | File/ORM #: SPL-2012-00830-VCC | PJD Date:

State: CA | City/County: Aliso Viejo/Orange County | Person Requesting PJD: Lesley Hill

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
1	33.574344	-117.715325	Riverine	1.95	Non-Section 10 wetland
2	33.574414	-117.715362	Riverine	9.51	Non-Section 10 non-wetland

Notes:

APPENDIX D

GLENN LUKOS ASSOCIATES
Regulatory Services



September 5, 2014

Derek Ostensen
Laguna Canyon Foundation
384 Legion Street
Laguna Beach, California 92652

SUBJECT: Results of Southwestern Pond Turtle and Focused Special-Status Plant Surveys for the Aliso Creek Restoration Project, an Approximately 55-Acre Project Site Located in Aliso Viejo, Orange County, California.

Dear Mr. Ostensen:

On May 12, 19, 20, 21, and 27, and June 5, 10, 11, 16, and 17, 2014, Glenn Lukos Associates (GLA) biologists Jeff Ahrens and Jason Fitzgibbon conducted surveys for southwestern pond turtle, and focused surveys for special-status plant species at the approximately 55-acre Aliso Creek Restoration Project site. The surveys were conducted to establish the baseline at the Project site so that future monitoring may be compared to the pre-restoration condition as a means of tracking the success of the restoration project, and to determine whether any avoidance and minimization measures may be necessary to avoid impacts to special-status species.

1.0 PROJECT LOCATION AND SITE DESCRIPTION

The Project site comprises approximately 55 acres in the City of Aliso Viejo, California [Exhibit 1 – Regional Map] and is located within an unsectioned portion of Township 7 South, Range 8 West, of the U. S. Geological Survey (USGS) 7.5" quadrangle map San Juan Capistrano (dated 1968 and photorevised in 1981) [Exhibit 2 – Vicinity Map]. The Project is bordered by Aliso Creek Riding and Hiking Trail to the west, the intersection of Aliso Viejo Parkway and Moulton Parkway to the north, Alicia Parkway to the east, and Aliso Creek Road to the south. The Project is bisected by both Pacific Park and State Route 73.

Aliso Creek, a perennial stream, runs the length of the site and in most areas supports a dense riparian canopy consisting of black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), western sycamore (*Platanus racemosa*), western cottonwood (*Populus fremontii*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*). The understory is dense in these areas and comprised of various species including mulefat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), poison oak (*Toxicodendron diversilobum*), California bulrush (*Schoenoplectus californicus*), and southern cattail (*Typha domingensis*). Numerous large

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monotypic stands of giant reed (*Arundo donax*) also occur within riparian areas throughout the length of the site, as well as other non-native species including tree of heaven (*Ailanthus altissima*), and Mexican fan palm (*Washingtonia robusta*).

The majority of upland areas adjacent to Aliso Creek exhibit signs of past disturbance and as a result are dominated by weedy, non-native species including black mustard (*Brassica nigra*), tocalote (*Centaurea melitensis*), western ragweed (*Ambrosia psilostachya*), slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), cheat grass (*Bromus tectorum*), horehound (*Marrubium vulgare*), and wild radish (*Raphanus raphanistrum*). Some areas immediately adjacent to the riparian habitat support small stands of disturbed coastal sage scrub comprised of widely spaced shrubs of California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum californicum*), coyote brush (*Baccharis pilularis*), bush monkey flower (*Mimulus aurantiacus*), Menzie's goldenbush (*Isocoma menziesii*), and bush sunflower (*Encelia californica*), interspersed by various non-native and weedy species.

2.0 METHODOLOGY

2.1 Southwestern Pond Turtle (*Actinemys marmorata pallida*)

GLA biologists Jeff Ahrens and Jason Fitzgibbon visited the site on May 12, 19, 20, 21, and 27, and June 5, 10, 11, 16, and 17, 2014 to conduct visual surveys for southwestern pond turtle. Potentially suitable habitat for southwestern pond turtle was determined based on the presence of multiple characteristics including the presence of deep pools, slow moving water, basking sites, aquatic refugia, streamside refugia, and upland nesting habitat.

All areas of suitable habitat were scanned thoroughly from accessible locations along the banks of Aliso Creek with or without binoculars, for the presence of basking or underwater pond turtles. Open pools and potential basking areas were observed initially from a distance, then approached slowly and quietly to avoid disturbing basking turtles. In addition to visually scanning the habitat, surveyors carefully listened for the splashing sounds of unseen basking turtles entering the water. If a splash was heard, additional time was spent observing the area, waiting for turtles to resurface. The locations of all observed southwestern pond turtles were logged in the field using a handheld GPS device [Exhibit 3]. Site photographs are included as Exhibit 4.

2.2 Special-Status Plants

A literature search was conducted to obtain a list of special-status plants with the potential to occur within the Project site. The California Natural Diversity Data Base (CNDDB)[1] was initially consulted to determine well-known occurrences of plants and habitats of special concern in the region. Other sources used to develop a list of target species for the survey program included the California Native Plant Society (CNPS) online inventory (2010[2]), and the Aliso Creek Habitat Mitigation and Monitoring Plan (2014[3]).

Based on this information, vegetation profiles and a list of target sensitive plant species and habitats that could occur within the Project site were developed and incorporated into a mapping and survey program to achieve the following goals: (1) characterize the vegetation associations and land use; (2) identify the potential for any special-status plants that may occur within the Project site; and (3) prepare a map showing the distribution of any sensitive botanical resources associated with the Project site, if applicable.

GLA biologist Jason Fitzgibbon visited the site on May 12, 19, 21, and 27, and June 5, 2014 to conduct focused surveys for special-status plant species. Surveys were conducted in accordance with accepted botanical survey guidelines (CDFG 2009[4], CNPS 2001[5], USFWS 2002[6]). As applicable, surveys were conducted at appropriate times based on precipitation and flowering periods. An aerial photograph, soil map, and/or topographic map were used to determine the community types and other physical features that may support sensitive and uncommon taxa or communities within the Project site. Surveys were conducted by following meandering transects within target areas of suitable habitat. Scientific nomenclature and common names used in this report follow Baldwin et al (2012[7]), and Munz (1974[8]).

[1] California Department of Fish and Wildlife. 2014. California Natural Diversity Database: RareFind 5. Records of occurrence for U.S.G.S. 7.5- minute Quadrangle map: San Juan Capistrano. California Department of Fish and Wildlife, State of California Resources Agency. Sacramento, California.
[2] California Native Plant Society. 2010. Inventory of Rare and Endangered Plants of California. (Eighth Edition). Accessible online at <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>
[3] Laguna Canyon Foundation. 2014. Aliso Creek Habitat Mitigation and Monitoring Plan. Laguna Beach, California.
[4] California Department of Fish and Game. 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (Revision of 1983 guidelines.) Sacramento, California.
[5] California Native Plant Society. 2001. California Native Plant Society Botanical Survey Guidelines. Sacramento, California.
[6] U.S. Fish and Wildlife Service. 2002. General Rare Plant Survey Guidelines. Bakersfield, California.
[7] Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken. 2012. The Jepson Manual: Vascular Plants of California. University of California Press. 1,568 pp.
[8] Munz, P.A. 1974. A Flora of Southern California. University of California Press. 1,086 pp.

3.0 RESULTS

3.1 Southwestern Pond Turtle Survey Results

GLA biologists observed a total of four southwestern pond turtles at three locations during surveys [Exhibit 3]. Two additional southwestern pond turtles were observed offsite, approximately 1,000 feet north of the Project site, just downstream of the Aliso Viejo Parkway bridge.

The first southwestern pond turtle (WPT 1) was observed basking on the bank of a large pool in the northern portion of the Project site. A red-eared slider (*Trachemys scripta elegans*) was observed utilizing the same pool and basking nearby. Other aquatic species documented at the pool included bluegill (*Lepomis macrochirus*), mosquito fish (*Gambusia affinis*), red shiner (*Cyprinella lutrensis*), and red swamp crayfish (*Pacifastacus leniusculus*).

The second and third southwestern pond turtles (WPT 2 and WPT 3) were observed near the middle of the Project site, just upstream of State Route 73. WPT 2 was observed basking on a submerged log in the middle of a pool feature. WPT 3 was observed utilizing the same pool feature, basking and foraging on the eastern side of Aliso Creek approximately fifty feet to the south of WPT 2. A red-eared slider was also observed basking within the same pool, atop a partially submerged bicycle. Other aquatic species observed in the pool included mosquito fish, red shiner, and fathead minnow (*Pimephales promelas*).

The fourth southwestern pond turtle (WPT 4) was observed swimming in a slow-moving portion of Aliso Creek near the southern boundary of the Project site. Other aquatic species observed in this location included mosquito fish, red shiner, and red swamp crayfish.

3.2 Special-Status Plants

No special-status plants were detected at the Project site. Table 1 includes all of the listed and non-listed species that were evaluated for the Project site.

Table 1. Special-Status Plants Evaluated for the Project Site

Status

Federal
FE – Federally Endangered
FT – Federally Threatened
FC – Federal Candidate

State
SE – State Endangered
ST – State Threatened

CNPS
Rank 1B – Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A – Plants rare, threatened, or endangered in California, but more common elsewhere.
Rank 2B – Plants rare, threatened, or endangered in California, but more common elsewhere.
Rank 3 – Plants about which more information is needed.
Rank 4 – Plants of limited distribution (a watch list).

Threat Code extension
.1 – Seriously endangered in California (over 80% occurrences threatened)
.2 – Fairly endangered in California (20-80% occurrences threatened)
.3 – Not very endangered in California (<20% of occurrences threatened or no current threats known)

Species Name	Status	Habitat Requirements	Observed During Focused Surveys
Allen's pentachaeta *Pentachaeta aurea ssp. allenii*	Federal: None State: None CNPS: 1B.1	Openings in coastal sage scrub, and valley and foothill grasslands.	Not observed during focused plant surveys.
Big-leaved crownbeard *Verbesina dissita*	Federal: FT State: ST CNPS: 1B.1	Southern maritime chaparral, coastal sage scrub.	Does not occur on site. Site is outside of known range for the species.
Catalina mariposa-lily *Calochortus catalinae*	Federal: None State: None CNPS: 4.2	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland.	Not observed during focused plant surveys.
Cliff malacothrix *Malacothrix saxatilis var saxatilis*	Federal: None State: None CNPS: 4.2	Coastal bluff scrub and coastal scrub.	Not observed during focused plant surveys.
Cliff spurge *Euphorbia misera*	Federal: None State: None CNPS: 2B.2	Coastal bluff scrub and coastal sage scrub. Occurring on rocky soils.	Does not occur on site due to a lack of suitable habitat.

Species Name	Status	Habitat Requirements	Observed During Focused Surveys
Coulter's saltbush *Atriplex coulteri*	Federal: None State: None CNPS: 1B.2	Coastal bluff scrub, coastal dunes, coastal sage scrub, valley and foothill grassland. Occurring on alkaline or clay soils.	Not observed during focused plant surveys.
Fish's milkwort *Polygala cornuta var fishiae*	Federal: None State: None CNPS: 4.3	Chaparral, cismontane woodland, riparian woodland.	Does not occur on site due to a lack of suitable habitat.
Intermediate mariposa-lily *Calochortus weedii var intermedius*	Federal: None State: None CNPS: 1B.2	Rocky soils in chaparral, coastal sage scrub, valley and foothill grassland.	Not observed during focused plant surveys.
Laguna Beach dudleya *Dudleya stolonifera*	Federal: FT State: FT CNPS: 1B.1	Chaparral, cismontane woodland, coastal sage scrub, valley and foothill grassland. Occurring on rocky soils.	Does not occur on site. Site is outside of known range for the species.
Many-stemmed dudleya *Dudleya multicaulis*	Federal: None State: None CNPS:1B.2	Chaparral, coastal sage scrub, valley and foothill grassland. Often occurring in clay soils.	Not observed during focused plant surveys.
Nuttall's scrub oak *Quercus dumosa*	Federal: None State: None CNPS: 1B.1	Closed-cone coniferous forest, chaparral, and coastal sage scrub. Occurring on sandy, clay loam soils.	Not observed during focused plant surveys.
Orcutt's pincushion *Chaenactis glabriuscula var. orcuttiana*	Federal: None State: None CNPS: 1B.1	Coastal bluff scrub (sandy soils) and coastal dunes.	Does not occur on site due to a lack of suitable habitat.
Paniculate tarplant *Deinandra paniculata*	Federal: None State: None CNPS: 4.2	Usually in vernally mesic, sometimes sandy soils. Coastal scrub, valley and foothill grassland, vernal pools.	Not observed during focused plant surveys.
Small-flowered morning-glory *Convolvulus simulans*	Federal: None State: None CNPS: 4.2	Clay and serpentinite seeps in chaparral (openings), coastal scrub, valley and foothill grassland.	Does not occur on site due to a lack of suitable habitat.
Summer holly *Comarostaphylis diversifolia ssp. diversifolia*	Federal: None State: None CNPS: 1B.2	Chaparral.	Does not occur on site due to a lack of suitable habitat.
Thread-leaved brodiaea *Brodiaea filifolia*	Federal: FT State: SE CNPS: 1B.1	Clay soils in chaparral (openings), cismontane woodland, coastal sage scrub, playas, valley and foothill grassland, vernal pools.	Not observed during focused plant surveys.

Species Name	Status	Habitat Requirements	Observed During Focused Surveys
Vernal barley *Hordeum intercedens*	Federal: None State: None CNPS: 3.2	Coastal dunes, coastal scrub, valley and foothill grasslands (saline flats and depressions), vernal pools.	Does not occur on site due to a lack of suitable habitat.
Western dichondra *Dichondra occidentalis*	Federal: None State: None CNPS: 4.2	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland.	Not observed during focused plant surveys.
White rabbit-tobacco *Pseudognaphalium leucocephalum*	Federal: None State: None CNPS: 2B.2	Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian woodland.	Not observed during focused plant surveys.

Source: ESRI World Street Map



N

0 2 4 8 Miles

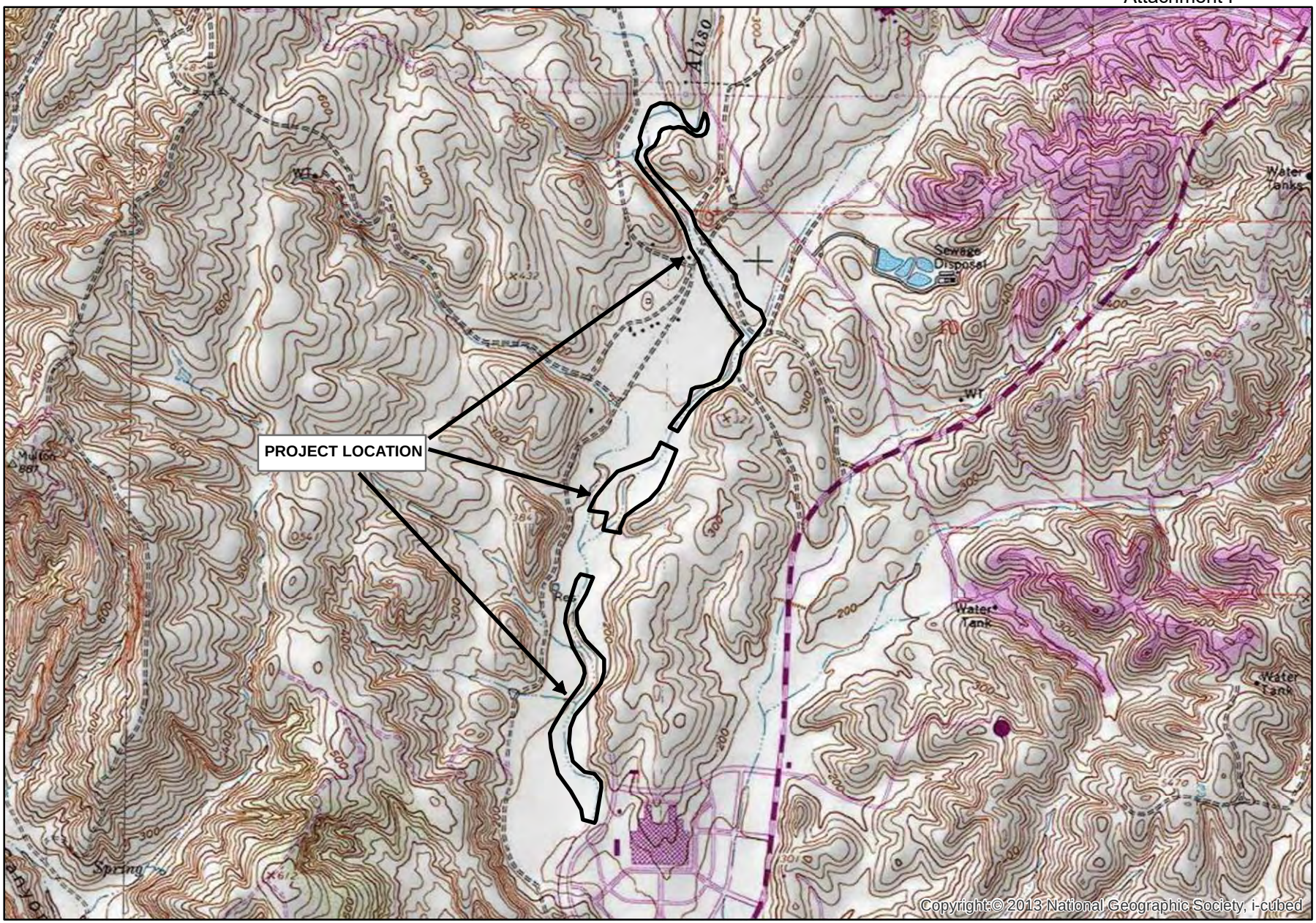
ALISO CREEK RESTORATION PROJECT

Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1

Adapted from USGS San Juan Capistrano, CA quadrangle



N

0 1,000 2,000 4,000 Feet

ALISO CREEK RESTORATION PROJECT

Vicinity Map

GLENN LUKOS ASSOCIATES



Legend

Study Area

Southwestern Pond Turtle Occourrence

N

ALISO CREEK RESTORATION PROJECT

Southwestern Pond Turtle Occurrence Map

GLENN LUKOS ASSOCIATES

Exhibit 3

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Exhibit 4

Photograph 1: View of a southwestern pond turtle (*Actinemys marmorata pallida*) basking on a concrete ledge of Aliso Creek. Date: 05-20-14



ALISO CREEK RESTORATION PROJECT

Site Photographs

Photograph 2: View of a southwestern pond turtle basking on large woody debris in Aliso Creek. Date: 05-20-14



GLENN LUKOS ASSOCIATES

Exhibit 4

Photograph 3: View of a red-eared slider (*Trachemys scripta elegans*) in Aliso Creek. Date: 05-20-14



ALISO CREEK RESTORATION PROJECT

Site Photographs

Photograph 4: View of Aliso Creek habitat. Date: May 19, 2014



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Exhibit 4

Photograph 5: View of Aliso Creek habitat. Date: May 19, 2014



ALISO CREEK RESTORATION PROJECT

Site Photographs

Photograph 6: View of Aliso Creek habitat. Date: May 12, 2014

GLENN LUKOS ASSOCIATES
Regulatory Services

September 9, 2014

Stacey Love
U.S. Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

SUBJECT: Submittal Report for Southwestern Willow Flycatcher and Least Bell's Vireo Surveys at the Aliso Creek Restoration Project, an Approximately 55-Acre Property Located in Aliso Viejo, Orange County

Dear Ms. Love:

This letter report summarizes the methodology and findings of presence/absence surveys for the federally-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*) ("SWFL") and least Bell's vireo (*Vireo bellii pusillus*) ("LBV") conducted by Glenn Lukos Associates, Inc. (GLA) within the above referenced property located in the City of Aliso Viejo, Orange County, California.

A component of the restoration project includes sensitive species monitoring throughout implementation of the program to document any increases in occurrences and/or nesting. The specific monitoring program has not been established but may occur bi-annually for up to 10 years. The purpose of the focused surveys is to establish the baseline for the SWFL and LBV, so that future monitoring may be compared to the pre-restoration condition as a means of tracking the success of the restoration project. Note that the restoration work will be conducted in compliance with the Biological Opinion issued for invasive plant removal in the San Juan Hydrologic Unit, Orange County, California (FWS-OR-08B0013-09F0147).

Focused surveys were conducted on site from May 20 through July 17, 2014 in all areas of suitable habitat in accordance with U.S. Fish and Wildlife Service (USFWS) guidelines. The SWFL and LBV were not detected on site. Five willow flycatchers (*Empidonax traillii*) ("WIFL") were detected on site during the May 20 and May 21 surveys, but based on behavior and time of year of detection were determined to be migrants.

29 Orchard ▪ Lake Forest ▪ California 92630-8300
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INTRODUCTION

Southwestern Willow Flycatcher (SWFL)

The SWFL is a small, migratory songbird, which inhabits riparian habitats throughout southern California and is one of four subspecies of willow flycatcher (WIFL) currently recognized. It was officially designated as a state-endangered species on January 2, 1991 and federally designated as endangered on March 29, 1995. The SWFL measures about 5.75 inches (15 cm) in length, and weighs only about 0.4 ounces (12 g). Overall, it is roughly the size of a small sparrow. Both sexes look alike. Its appearance is overall greenish or brownish gray above, with a white throat that contrasts with a pale olive breast. The belly is pale yellow. Two white wing bars are visible, but the eye ring is faint or absent. The upper mandible is dark and the lower mandible light (USGS). It closely resembles the other races of willow flycatcher, and several other species of the *Empidonax* genus, particularly the closely related Alder flycatcher (*Empidonax alnorum*). The SWFL is generally the palest in coloration of the WIFL subspecies (Unitt 1987), but this difference in color is extremely subtle and is not recommended as a reliable way to distinguish between the subspecies in the field (Hubbard 1999).

The SWFL breeds in relatively dense riparian habitats in all or parts of seven southwestern states, from near sea level to over 2,000 m (6,100 ft). More specifically, the SWFL breeds in riparian habitats along rivers, streams, or other wetlands, where relatively dense growths of trees and shrubs are established, near or adjacent to surface water or underlain by saturated soil (McCabe 1991). Common tree and shrub species comprising nesting habitat include willow (*Salix* sp.), boxelder (*Acer negundo*), tamarisk (*Tamarix ramosissima*), and Russian olive (*Eleagnus angustifolia*) (USFWS 2002).

Habitat characteristics such as plant species composition, size and shape of habitat patch, canopy structure, vegetation height, and vegetation density vary across the subspecies range. However, regardless of the plant species composition or height, occupied sites usually consist of dense vegetation in the patch interior, or an aggregate of dense patches interspersed with openings. In most cases this dense vegetation occurs within the first 3-4 m (10-13 ft) above ground. These dense patches are often interspersed with small openings, open water or marsh, or shorter/sparser vegetation creating a mosaic that is not uniformly dense (USFWS 2002). The SWFL winters in Mexico and Central America and northern South America (Phillips 1948, Gorsiki 1969, McCabe 1991, Koronkiewicz et al. 1998, Unitt 1999).

Least Bell's Vireo (LBV)

The LBV is a small, migratory songbird, which inhabits riparian habitats throughout southern California. The LBV is one of four subspecies of Bell's Vireo recognized by the American

Ornithologist's Union (AOU 1957) and is the western-most subspecies, breeding entirely within California and northern Baja California. The LBV was officially designated as a state-endangered species on October 2, 1980 and achieved federally endangered status on May 2, 1986 (USFWS 1986).

The LBV generally begins arriving to its breeding grounds during the third week in March. The height of the breeding season generally extends from April 10 through July 31, although it can begin before and end later than these dates. During the breeding season, the LBV primarily occupies riverine riparian habitats that typically feature dense cover within 1-2 meters of the ground and a dense, stratified canopy. It inhabits low, dense riparian growth along water or along dry parts of intermittent streams. Typically, the species is associated with southern willow scrub, cottonwood forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, wild blackberry, or mesquite in desert localities.

The LBV primarily nests in small, remnant segments of vegetation typically dominated by willows and mule fat but may also use a variety of shrubs, trees, and vines. The birds forage in riparian and adjoining chaparral or scrub habitat (Salata 1983). Nests are typically built within one meter of the ground in the fork of willows (*Salix* sp.), mule fat (*Baccharis salicifolia*), wild rose (*Rosa californica*), or other understory vegetation (Franzreb 1989). Cover surrounding nests is moderately open midstory, with an overstory of willow, cottonwood, sycamore, or oak. Crown cover is usually more than 50 percent and contains occasional small openings. The most critical structural component to LBV breeding habitat is a dense shrub layer at one to three meters (three to 10 feet) above the ground (Goldwasser 1981, Franzreb 1989).

During the spring and fall migration, the LBV occupies a wider range of habitats including coastal sage scrub and woodland habitats. The LBV generally departs to its wintering grounds during August and September. The LBV winters in southern Baja California and central Mexico. Winter range habitat includes thorn scrub vegetation adjacent to watercourses or in riparian gallery forests along the west coast of north and central Mexico. The LBV generally does not occur within California during its wintering season, but some occurrences near San Diego have been documented. Decreases in populations of least Bell's vireo have been attributed to habitat degradation/destruction and cowbird parasitism.

SITE LOCATION AND DESCRIPTION

The project site is located in the City of Aliso Viejo, Orange County, California [Exhibit 1 – Regional Map]. The project site is located in an unsectioned portion of Township 7S and Range 8W of the USGS 7.5' San Juan Capistrano topographical map [Exhibit 2 – Vicinity Map]. The property is generally bound by Aliso Viejo Parkway to the north, Moulton Parkway and Alicia

Parkway to the east, Aliso Creek Road to the south, and Aliso Creek riding and hiking trail to the west. The Universal Transverse Mercator (UTM) coordinates approximately corresponding to the study area are 433710.84 mE and 3715259.75 mN.

Focused SWFL and LBV surveys were conducted in areas of suitable riparian habitat located in Aliso Creek from Moulton Parkway south to just below Avila Road [Exhibit 3 – Survey Area Map]. Aliso Creek is generally vegetated with an even mixture of native and non-native vegetation. Aliso Creek supports a mixture of southern cottonwood-willow riparian forest, mule fat scrub, disturbed mule fat scrub, southern willow scrub, disturbed willow scrub, arundo riparian forest, and coastal and valley freshwater marsh. Aliso Creek supported surface water throughout the focused surveys. The willow riparian vegetation on site ranged between 6.1 meters (20 feet) and 10.6 meters (35 feet) in height.

Dominant riparian vegetation on site includes giant reed (*Arundo donax*), arroyo willow (*Salix lasiolepis*), black willow (*Salix gooddingii*), mule fat (*Baccharis salicifolia*), and black cottonwood (*Populus fremontii*).

Other species include coyote brush (*Baccharis pilularis*), mugwort (*Artemisia douglasiana*), Mexican fan palm (*Washingtonia robusta*), jimsonweed (*Datura wrightii*), black mustard (*Brassica nigra*), blue elderberry (*Sambucus cerulea*), salt heliotrope (*Heliotropium curassavicum*), California croton (*Croton californicus*), tocalote (*Centaurea melitensis*), poison hemlock (*Conium maculatum*), broad-leaved cattail (*Typha latifolia*), California bulrush (*Schoenoplectus californicus*), spiny rush (*Juncus acutus*), horehound (*Marrubium vulgare*), poison oak (*Toxicodendron diversilobum*), red brome (*Bromus madritensis* ssp. *rubens*), ripgut brome (*Bromus diandrus*), California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and western sycamore (*Platanus racemosa*).

METHODOLOGY

Because a Biological Opinion (FWS-OR-08B0013-09F0147) has been issued for the subject restoration project activities, an abbreviated survey program was appropriate to inform baseline conditions for monitoring and tracking restoration success. As such, protocol SWFL surveys (three survey protocol) were conducted by GLA biologist Jeff Ahrens (TE 052159-4) within two survey polygons, and were conducted as outlined in the U.S. Fish and Wildlife Service (USFWS) June 22, 2010 Survey Guidelines.[1] One survey was conducted during the first survey period (May 15 to May 31). One survey was conducted during the second survey period (June 1 to June 24), and one survey was conducted during the third survey period (June 25 to July 17). In

[1] *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher,* prepared by the USGS.

addition, three LBV surveys were conducted for each polygon in conjunction with the baseline SWFL surveys.

GLA biologist Jeff Ahrens (TE052159-4) conducted LBV and SWFL surveys concurrently for polygon A on May 20, June 11, and July 17 and polygon B on May 21, June 10, and July 16, 2014. All surveys were conducted during the morning hours and were completed before 11:00 A.M. No surveys were conducted during extreme weather conditions (i.e., winds exceeding 15 miles per hour, rain, or temperatures in excess of 95ºF). All areas of suitable habitat were surveyed on foot by walking slowly and methodically. Taped vocalizations primarily using the WIFL's main contact call "fitz-bew" were used to elicit responses from WIFLs that might be present on site. The detection of WIFLs on site was based on both sight and call. The presence/absence of LBV was determined by identifying all birds by sight and call, aided by the use of binoculars. No taped vocalizations were used to elicit response from LBV or any other species potentially present.

Weather conditions during the surveys were conducive to a high level of bird activity. Temperatures ranged from approximately 57 degrees Fahrenheit to 79 degrees Fahrenheit. Wind speeds ranged from 1-4 miles per hour during the surveys. Table 1 summarizes the survey dates and weather information for each survey date.

Table 1. Summary of Survey Dates and Weather Conditions

Date	Start Time	End Time	Surveyor	Temp ºF, (start/end)	Wind Speed (MPH) (start/end)	% Cloud Cover (start/end)
Polygon A						
5/20/14	0605	1100	JA	60 - 68	3 - 4	70 - 60
6/11/14	0540	1040	JA	67 - 73	4 - 2	100 - Clear
7/17/14	0610	0930	JA	68 - 79	1 - 1	70 - 50
Polygon B						
5/21/14	0625	1035	JA	57 - 71	2 - 2	Clear - 30
6/10/14	0535	1030	JA	68 - 69	2 - 1	100 - 100
7/16/14	0600	0950	JA	70 - 72	1 - 1	100 - 70

JA – Jeff Ahrens

RESULTS

GLA biologists did not detect the SWFL or LBV on site during the focused surveys. Five migrant WIFLs (*Empidonax traillii*) were detected on site during the focused surveys. All five WIFLs were detected during survey period 1, when migrant WIFL subspecies are generally

expected to pass through on their way to northern breeding grounds, and were not detected again during subsequent surveys. Each WIFL detected is discussed further below. Other sensitive species detected on site during the focused surveys included the yellow warbler (*Setophaga petechia*), yellow-breasted chat (*Icteria virens*), and southwestern pond turtle *(Actinemys marmorata pallida).*

WIFL 1 – WIFL 1 was detected on May 20, 2014 in the northern most section of Polygon A. The WIFL responded very briefly to tape playback with several "fitz-bews" and a couple soft "whit" notes. Dominant habitat included arroyo willow, coyote brush, black mustard, mugwort, and giant reed. The WIFL did not exhibit any evidence of nesting. The flycatcher was not detected during subsequent surveys and is therefore presumed to be a migrant.

WIFL 2 – WIFL 2 was detected on May 20, 2014 in Polygon A near Alica Parkway. This flycatcher responded very briefly to tape playback with a few "fitz-bews" and one "whit" note and did not exhibit any nesting behavior. The WIFL was observed foraging in arroyo willow and mulefat. The flycatcher was not detected during subsequent surveys and is therefore presumed to be a migrant.

WIFL 3 – WIFL 3 was detected on May 21, 2014 in Polygon B. The flycatcher responded to tape playback with several "fitz-bews" and then was quiet. The flycatcher was briefly observed foraging in an open area of riparian habitat. The flycatcher was not detected during subsequent surveys and is therefore presumed to be a migrant.

WIFL 4 – WIFL 4 was detected on May 21, 2014 in Polygon B. WIFL 4 was detected in close proximity to WIFL 3 but appeared to be independent. WIFL 4 was briefly heard faintly in response to either tape playback or WIFL's 3 initial response. WIFL 4 was observed approximately 70 to 100 feet south of WIFL 3 and did not physically interact with WIFL 3. The flycatcher was not detected during subsequent surveys and is therefore presumed to be a migrant.

WIFL 5 - WIFL 5 was detected on May 21, 2014 in Polygon B. The flycatcher responded to tape playback with several "fitz-bews' and a numerous "whit" notes, but was not assertive and did not appear aggravated. The WIFL was observed foraging in arroyo willow. Additional plants in proximity included mulefat, giant reed, black mustard, horehound and tocolote. The flycatcher was not detected during subsequent surveys and is therefore presumed to be a migrant.

Common birds identified on or in close proximity to the site include mourning dove (*Zenaida macroura*), lesser goldfinch (*Carduelis psaltria*), common towhee (*Melozone crissalis*), black phoebe (*Sayornis nigricans*), common yellowthroat (*Geothlypis trichas*), song sparrow (*Melospiza melodia*), American crow (*Corvus brachyrhynchos*), house finch (*Carpodacus mexicanus*), cliff swallow (*Petrochelidon pyrrhonota*), northern rough-winged swallow

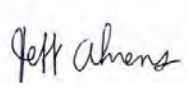
(*Stelgidopteryx serripennis*), Anna's hummingbird (*Calypte anna*), American crow (*Corvus brachyrhynchos*), and mallard (*Anas platyrhynchos*).

Representative site photos are included as Exhibit 5. A compendium listing all avian species detected during the focused surveys is included at the end of the report.

If you have any questions regarding the methodology or findings of this report, please contact me at (949) 837-0404, ext 40.

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

GLENN LUKOS ASSOCIATES, INC.



TE 052159-4		September 9, 2014
Jeff Ahrens Biologist	Permit #	Date

s: 1065-2a_WIFL&LBV_Rpt.docx

APPENDIX A

AVIAN COMPENDIUM

The avian compendium lists bird species identified on the Site.

* = non-native species

ACCIPITERIDAE	**Hawks, Old World Vultures and Harriers**
Buteo jamaicensis	red-tailed hawk
AEGITHALIDAE	**Bushtit**
Psaltriparus minimus	bushtit
ANATIDAE	**Ducks, Geese, and Swans**
Anas platyrhynchos	mallard
APODIDAE	**Swifts**
Aeronautes saxatilis	white-throated swift
ARDEIDAE	**Herons and Egrets**
Ardea alba	great egret
Butorides virescens	green heron
Egretta thula	snowy egret
Nycticorax nycticorax	black-crowned night heron
CARDINALIDAE	**Cardinals, Grosbeaks, and Allies**
Pheucticus melanocphalus	black-headed grosbeak
CHARADRIIDAE	**Plovers And Relatives**
Charadrius vociferus	killdeer
COLUMBIDAE	**Pigeons and Doves**
* *Columba livia*	Rock pigeon
Zenaida macroura	mourning dove

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CORVIDAE		**Jays, Magpies and Crows**
	Aphelocoma californica	western scrub jay
	Corvus brachyrhynchos	American crow
	Corvus corax	common raven
CUCULIDAE		**Cuckoos, Roadrunners, And Anis**
	Geococcyx californianus	greater roadrunner
EMBERIZIDAE		**Emberizines**
	Melospiza melodia	song sparrow
	Melozone crissalis	California towhee
	Pipilo maculates	spotted towhee
ESTRILIDIDAE		**Weaver-finches**
*	*Lonchura punctulata*	nutmeg mannakin
FALCONIDAE		**Caracaras and Falcons**
	Falco sparverius	American kestrel
FRINGILLIDAE		**Finches**
	Carduelis psaltria	lesser goldfinch
	Carpodacus mexicanus	house finch
HIRUNDINIDAE		**Swallows**
	Petrochelidon pyrrhonota	cliff swallow
	Stelgidopteryx serripennis	northern rough-winged swallow
ICTERIDAE		**Blackbirds**
	Molothrus ater	brown-headed cowbird
MIMIDAE		**Mockingbirds and Thrashers**
	Mimus polyglottos	northern mockingbird
	Toxostoma redivivum	California thrasher
PARULIDAE		**Wood Warblers and Relatives**
	Geothlypis trichas	common yellowthroat
	Oreothlypis celata	orange-crowned warbler
	Setophaga petechial	yellow warbler
	Vermivora ruficapilla	Nashville warbler

PICIDAE		**Woodpeckers**
	Colaptes auratus	northern flicker
	Melanerpes formicivorus	acorn woodpecker
	Picoides nuttallii	Nuttall's woodpecker
PODICIPEDIDAE		**Grebes**
	Podilymbus podiceps	pied-billed grebe
PTILOGONATIDAE		**Silky Flycatchers**
	Phainopepla nitens	phainopepla
STURNIDAE		**Starlings**
*	*Sturnus vulgaris*	European starling
TROCHILIDAE		**Hummingbirds**
	Calypte anna	Anna's hummingbird
	Selasphorus sasin	Allen's hummingbird
TROGLODYTIDAE		**Wrens**
	Thryomanes bewickii	Bewick's wren
	Troglodytes aedon	house wren
TYRANNIDAE		**Tyrant Flycatchers**
	Empidonax difficilis	Pacific-slope flycatcher
	Empidonax traillii	willow flycatcher
	Myiarchus cinerascens	Ash-throated flycatcher
	Sayornis nigricans	black phoebe
	Sayornis saya	Say's phoebe
	Tyrannus vociferans	Cassin's kingbird
VIREONIDAE		**Vireos**
	Vireo gilvus	warbling vireo

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Aliso Creek Restoration Project (Polygon A) State CA County Orange
USGS Quad Name San Juan Capistrano Elevation 78-66 (meters)
Creek, River, Wetland, or Lake Name Aliso Creek
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes* X *No* ___

Survey Coordinates: Start: E 433951.34 N 3716815.23 UTM Datum 83 (See instructions)
Stop: E 433826.55 N 3715444.59 UTM Zone 11
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
*** Fill in additional site information on back of this page ****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
Survey # 1 Observer(s) JA	Date 5/20/14 Start 0605 Stop 1100 Total hrs 4hr 55 min	2	0	0	N	No nesting behavior	# Birds 1 1	Sex M M	UTM E 433686.27 434182.32	UTM N 3716649.12 3715907.97
Survey # 2 Observer(s) JA	Date 6/11/14 Start 0540 Stop 1040 Total hrs 5.0	0	—	—	—		# Birds	Sex	UTM E	UTM N
Survey # 3 Observer(s) JA	Date 7/17/14 Start 0610 Stop 0930 Total hrs 3hr 20 min	0	—	—	—		# Birds	Sex	UTM E	UTM N
Survey # 4 Observer(s) N/A	Date Start Stop Total hrs ___						# Birds	Sex	UTM E	UTM N
Survey # 5 Observer(s) N/A	Date Start Stop Total hrs ___						# Birds	Sex	UTM E	UTM N

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs 13hr 15 min	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No X If yes, report color combination(s) in the comments section on back of form and report to USFWS.
	0	0	0	0	

Reporting Individual Jeff Ahrens Date Report Completed Sept 9, 2014
US Fish and Wildlife Service Permit # TE 052159-4 State Wildlife Agency Permit # SCP-5820
Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Jeff Ahrens Phone # _____
Affiliation Glenn Lukos Associates E-mail wildlife-biologist@yahoo.com
Site Name Aliso Creek Restoration Project (Polygon A) Date Report Completed Sept 9, 2014
Was this site surveyed in a previous year? Yes X No ___ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes X No ___ Not Applicable ___
If site name is different, what name(s) was used in the past? Aliso Creek
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County X State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) OC Parks

Length of area surveyed: ~1.97 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

___ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

X Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Arundo donax, Salix lasiolepis, Baccharis Salicifolia

Average height of canopy (Do not include a range): 7.6 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Aliso Creek Restoration Project (Polygon B) State CA County Orange
USGS Quad Name San Juan Capistrano Elevation 65-54 (meters)
Creek, River, Wetland, or Lake Name Aliso Creek
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No ___

Survey Coordinates: Start: E 433801.42 N 3715375.02 UTM Datum 83 (See instructions)
Stop: E 433477.50 N 3713732.70 UTM Zone 11
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
*** Fill in additional site information on back of this page ****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
Survey # 1 Observer(s) JA	Date 5/21/14 Start 0625 Stop 1035 Total hrs 4hr, 10min	3	0	0	N	No nesting behavior	# Birds	Sex	UTM E	UTM N
							1	U	433464.29	3714297.67
							1	U	433462.52	3714286.52
							1	U	433378.04	3714140.33
Survey # 2 Observer(s) JA	Date 6/10/14 Start 0535 Stop 1030 Total hrs 4hr, 55min	0	-	-	-		# Birds	Sex	UTM E	UTM N
Survey # 3 Observer(s) JA	Date 7/16/14 Start 0600 Stop 0950 Total hrs 3hr, 50min	0	-	-	-		# Birds	Sex	UTM E	UTM N
Survey # 4 Observer(s) N/A	Date Start Stop Total hrs ___						# Birds	Sex	UTM E	UTM N
Survey # 5 Observer(s) N/A	Date Start Stop Total hrs ___						# Birds	Sex	UTM E	UTM N

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests	
Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs 12hr, 55min	0	0	0	0	Were any Willow Flycatchers color-banded? Yes ___ No X If yes, report color combination(s) in the comments section on back of form and report to USFWS.

Reporting Individual Jeff Ahrens Date Report Completed Sept 9, 2014
US Fish and Wildlife Service Permit # TE 052594 State Wildlife Agency Permit # SCP-5820
***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Jeff Ahrens Phone # (949)322-998
Affiliation Glenn Lukos Associates E-mail wildlife-biologist@yahoo.com
Site Name Aliso Creek Restoration Project (Plan B) Date Report Completed Sept 9, 2014
Was this site surveyed in a previous year? Yes X No ___ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes X No ___ Not Applicable ___
If site name is different, what name(s) was used in the past? Aliso Creek
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County X State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) OC Parks

Length of area surveyed: 1.67 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

___ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

X Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Arundo donax, Salix lasiolepis, Baccharis salicifolia

Average height of canopy (Do not include a range): 7.6 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Source: ESRI World Street Map



N

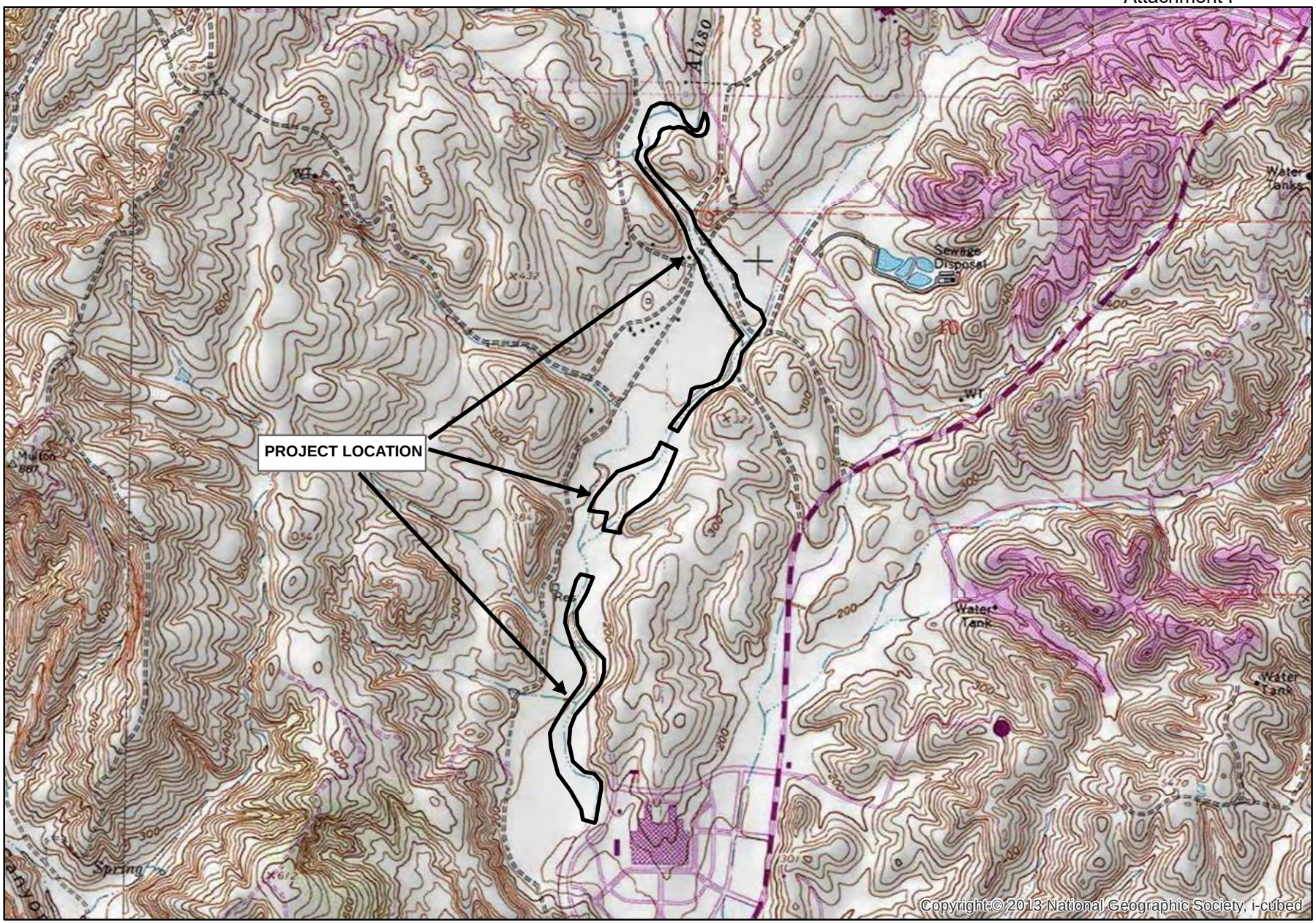
0 2 4 8 Miles

ALISO CREEK RESTORATION PROJECT

Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1



Adapted from USGS San Juan Capistrano, CA quadrangle

N

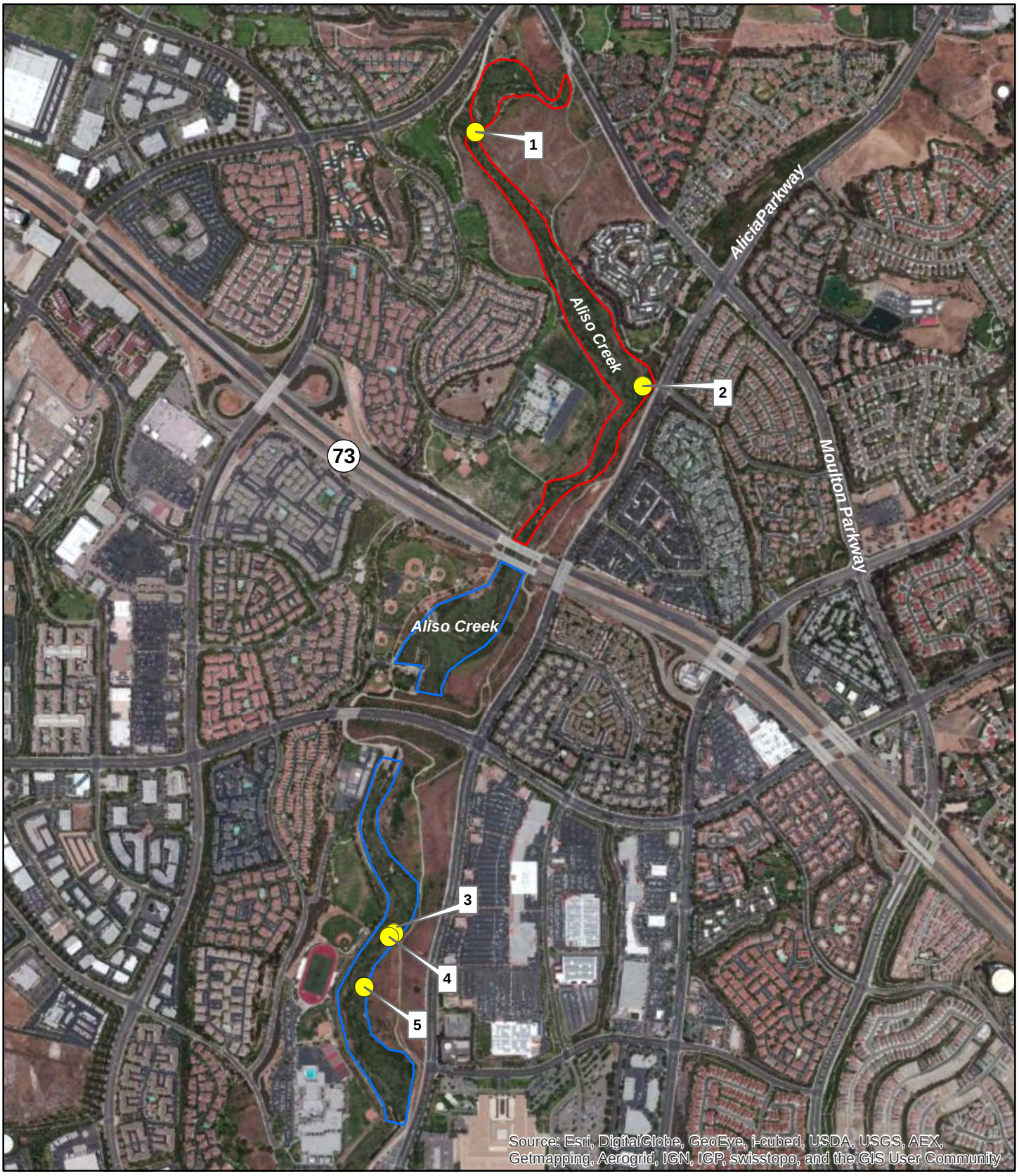
0 1,000 2,000 4,000 Feet

ALISO CREEK RESTORATION PROJECT

Vicinity Map

GLENN LUKOS ASSOCIATES

Exhibit 2



Legend

- Polygon A
- Polygon B
- Willow Flycatcher

N

0 650 1,300 2,600

Feet

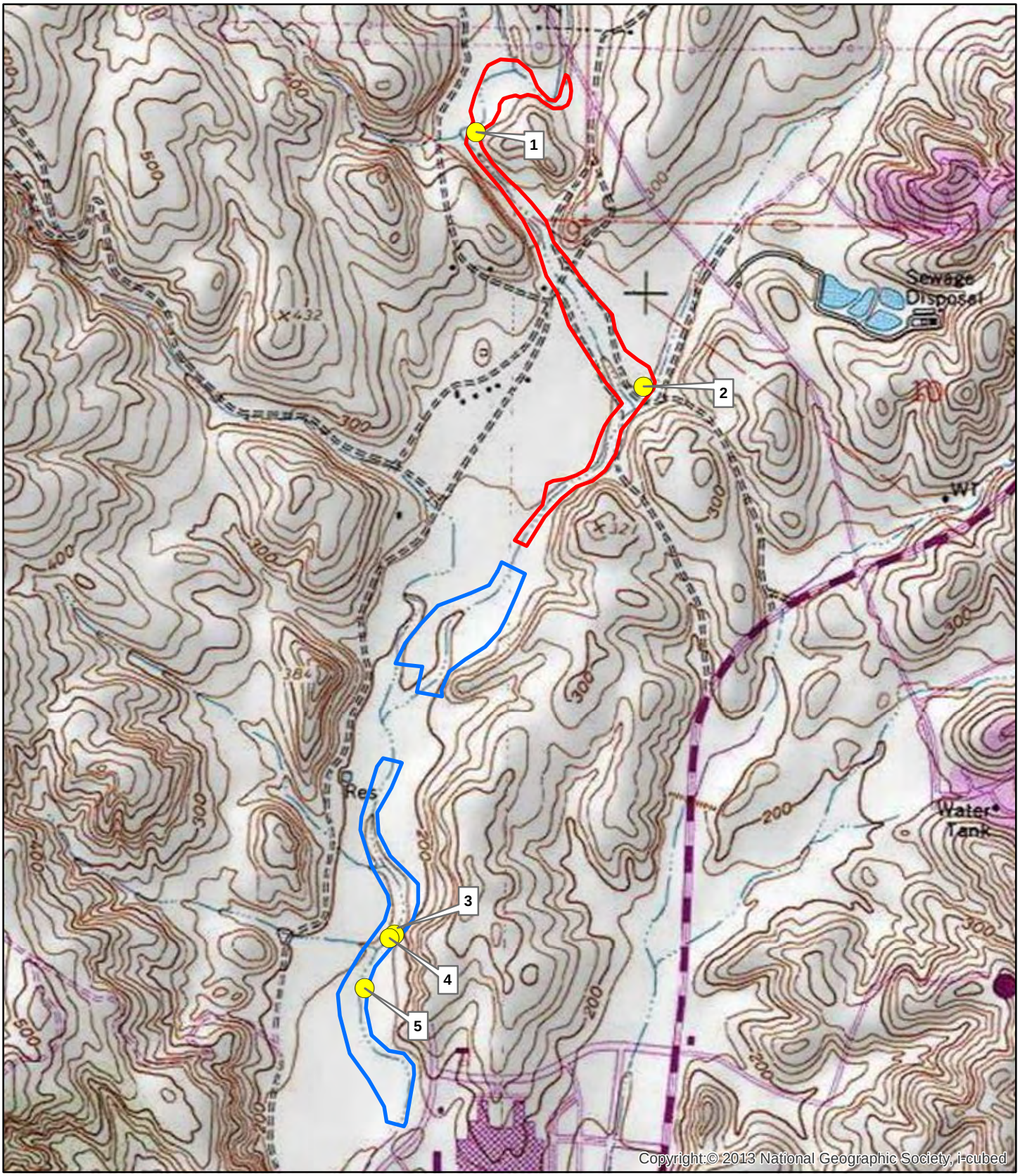
ALISO CREEK RESTORATION PROJECT

Willow Flycatcher Location (Aerial Map)

GLENN LUKOS ASSOCIATES

Exhibit 3

X:\0363-THE REST\1065-02CREE\1065-2[illegible]WILFLY_2018_Exh3_WFL Aerial.mxd



Legend

- Polygon A
- Polygon B
- Willow Flycatcher

N

0 650 1,300 2,600

Feet

ALISO CREEK RESTORATION PROJECT

Willow Flycatcher Location (USGS Quadrangle)

GLENN LUKOS ASSOCIATES

Exhibit 4

X:\0363-THE REST\1065-02CREE\1065-2[illegible]WILLFLY_1065_8x11FL USGS.mxd



Photograph 1: View looking near the northern survey limit of Polygon A.



Photograph 2: View looking at the general area where WIFL #1 was detected on May 20, 2014 in Polygon A.



Photograph 3: View looking at the general area near Alica Parkway where WIFL #2 was detected on May 20, 2014 in Polygon A.



Photograph 4: View looking north at Aliso Creek from the southern limit of Polygon A.

GLENN LUKOS ASSOCIATES

Exhibit 5

ALISO CREEK RESTORATION PROJECT

Site Photographs



Photograph 5: View looking north at willow and cottonwood riparian forest near the northern limit of Polygon B.



Photograph 6: View looking southwest in the general area where WIFL #3 and #4 were detected in Polygon B.

GLENN LUKOS ASSOCIATES

Exhibit 5



Photograph 7: View looking at the general area where WIFL #5 was detected in the southern area of Polygon B. A close-up of WIFL #5 is depicted in Photograph 8.



Photograph 8: View looking at WIFL #5 perched on a giant reed on May 21, 2014 in polygon B.

ALISO CREEK RESTORATION PROJECT

Site Photographs

APPENDIX E

MODIFIED METHOD FOR QUANTITATIVE MONITORING
THE RELEVÉ METHOD

The relevé method as described in ***A Manual of California Vegetation*** (Sawyer and Keeler-Wolf 1995), published by the California Native Plant Society (CNPS), is a vegetation sampling protocol that uses an ocular estimation technique called a relevé to classify and map stands of vegetation[1].

Vegetation Stand Selection for Sampling

In the context of the relevé sampling method, a stand is defined as the basic physical unit of vegetation in a landscape. It has no net size, and different stands may be of varying sizes. Stands must be homogenous and have compositional and structural integrity, meaning that the species composition and environmental setting and history throughout each stand should be similar and distinct from adjacent stands. This method is appropriate for invasive removal polygons, since the removal areas can be characterized as distinct stands within the larger existing riparian habitat matrix, which have had the same treatment, namely invasive species removal through both mechanical and chemical means.

Stands to be sampled are selected by assessment prior to a site visit (e.g. delineated from aerial photos or satellite images), or on site (during reconnaissance to determine extent and boundaries, location of other similar stands, etc.). Stands selected for sampling are representative of the overall treatment areas in as many ways as possible, including size, species composition, structural condition, and type of invasive species removed.

Plot Shape

A relevé has no fixed shape, rather the plot shape should reflect the character of the stand. If the stand is about the same size as a relevé, the entire stand is surveyed. Species present along the edges of the plot that are clearly part of the adjacent stand are excluded. When sampling broad homogeneous stands, the relevé plot is circular in shape.

Plot Identification

Stands selected for assessment are identified on a recently flown color aerial photograph, and labeled with a polygon or relevé number. Plot size is determined using GIS software and UTM coordinates for each plot are recorded. Notes describing elevation, slope, aspect, and microtopography are to be taken at each plot during the assessment.

Vegetative Cover Characterization

The first step of a relevé plot sample is the identification of the dominant vegetative layer (herb, shrub, tree) and community type. Then surface cover including bare or organic litter, rocks, etc. is estimated. It is assumed that all of the components of surface cover will add up to 100-percent. Data are recorded for five layers (tree canopy, tree understory, shrub, herb, and non-vascular). The layer a species occupies is determined by life-form. The estimates need not be

[1] California Native Plant Society Relevé Protocol CNPS Vegetation Committee, October 20, 2000 (Revised 8/23/2007); retrieved from http://www.cnps.org/cnps/vegetation/pdf/cnps_releve_protocol_20070823.pdf

overly precise and will vary among vegetation types. A young tree, if shrub sized, is considered an understory tree.

Species List

The collection of vegetation data continues with making a comprehensive species list of all vascular plants within the relevé. This list is achieved by meandering through the plot to note all existing species. Each individual plant species is recorded in only one layer, the layer in which the tallest portion of the individual is found.

Estimating Cover

CNPS offers many ways to estimate cover, and allows for the combination of methods to be utilized as needed, depending on site-specific conditions. To perform useful and repeatable analysis of vegetation data, the estimation of the exact percent value the cover of a given plant species in a given stand is not always necessary, but the estimation of a "cover class" according to the CNPS, as described below, may also be used. Any of the following methods are described as acceptable to estimate cover. Each method described below is appropriate for estimating cover within varying vegetation heights, therefore a different method may be used depending on the growth stage of vegetation within each plot in any given monitoring year.

Method 1: The invisible point-intercept transect

This method works well in relatively low, open vegetation types such as grasslands and scrub habitats where the major stand components can be easily seen. An imaginary transect line is envisioned starting the monitor's vantage point and running for 50m (or however many meters are appropriate, depending on the size of the plot within the stand). A visual line is drawn and a note of each species hitting the line at 0.5 m or at any other regular interval is taken until the end of the plot. This is repeated in different directions several times until all the visible species have been estimated throughout the site, and then the results are averaged.

Method 2: Subdivision of sample plot into quadrants

Many plots, whether they are square, circular, or rectangular, may be "quartered" and the quadrant's plant cover can be estimated separately. Then, the number of plants is counted in each size class and multiplied by the estimated size for the cover in a given quadrant. Then the four quadrants are average together for average cover value. This method works well in vegetation with open-to-dense cover of low species such as grasses or low shrubs, in open woodlands, and desert scrubs.

Method 3: "Squash" all plants into a continuous cover in one corner of the plot

Another way to estimate how much of the plot is covered by a particular species is to mentally group (or "march", or "squash") all members of that species into a corner of the plot and estimate the area covered by that species. Then calculate that area as a percentage of the total plot area. This technique works well in herb and shrub dominated plots but is not very useful in areas with trees.

Method 4: How to estimate tree cover

Cover estimates of tall trees can be achieved with consistency and reliability using the following guidelines: 1) have regular sized and shaped plots that you can easily subdivide; 2) estimate

average crown spread of each tree species separately by pacing the crown diameter of representative examples of trees of each species and then roughly calculating the crown area of each representative species; and 3) add together the estimated crown area of each individual of each species of tree on the plot for total cover.

Method 5: The process of elimination technique:
This method is generally recommended for estimating cover on sparsely vegetated areas where bare ground, rocks, or cobbles cover more area than vegetation. In such a situation it is advised to first estimate the area of ground not covered by plants and then subdivide the portion that is covered by plants into rough percentages proportional to the different plant species present.

Any of these techniques may be used in combination with one another for a system of checks and balances, or in stands that have characteristics lending themselves for a different technique for each layer of vegetation. In a traditional relevé, cover is estimated in "cover classes," not percentages, because of the variability of plant populations over time and from one point to another, even within a small stand. This protocol uses the following 6 cover classes:

Cover Class 1: the taxon in that layer covers < 1 % of the plot area
Cover Class 2: the taxon in that layer covers 1 % - 5 % of the plot area
Cover Class 3a: the taxon in that layer covers >5 - 15 % of the plot area
Cover Class 3b: the taxon in that layer covers >15 - 25 % of the plot area
Cover Class 4: the taxon in that layer covers >25 - 50 % of the plot area
Cover Class 5: the taxon in that layer covers >50 - 75 % of the plot area
Cover Class 6: the taxon in that layer covers > 75% of the plot area

Percentages
The CNPS protocol also encourages observers to estimate percentages if they feel confident in their estimation abilities. This optional step allows the data to be compared more easily to data collected using different methods, such as a line or point intercept.

Overall Cover of Vegetation
In addition to cover of individual taxa described above, total cover can also be estimated for each vegetation layer. This is done using the same cover classes as described above but combines all taxa of a given category.

APPENDIX F

BOARD OF DIRECTORS

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Director

Ryan Chamberlain
Ex-Officio Member

CHIEF EXECUTIVE OFFICE

Darrell Johnson
Chief Executive Officer

October 2, 2017

Mrs. Veronica Li
Project Manager, Transportation and Special Projects Branch
U.S. Army Corps of Engineers
Regulatory Division
915 Wilshire Boulevard, Suite 930
Los Angeles, California 90017

RE: Letter of Commitment for Mitigation Sites Associated with the OCTA Renewed Measure M (M2) Freeway Program Projects; SPL-2012-00830-VCL

Dear Mrs. Li:

The Orange County Transportation Authority (OCTA) Measure M2 (M2) Freeway Program was approved by Orange County voters in November 2006. M2 established an Environmental Mitigation Program (EMP) to provide programmatic mitigation to offset impacts from the M2 Freeway Program. The M2 Freeway Program consists of thirteen (13) capital highway improvement projects [1] described in the Transportation Investment Plan (TIP) (http://www.octa.net/pdf/investmentplanb.pdf). OCTA is currently coordinating with the U.S. Army Corps of Engineers (Corps) to develop Letter of Permission (LOP) procedures which are expected to be established via issuance of a Clean Water Act Section 404 Individual Permit.

OCTA is committed to implementing all appropriate avoidance, minimization, and/or mitigation measures required to complete the M2 projects. The conservatively estimated permanent impacts to waters of the U.S consist of 2.62 acres. This letter reaffirms OCTA's commitment to implement the following compensatory mitigation within the Corps' geographic jurisdiction (waters of the U.S.): rehabilitation and enhancement of 11.19 acres (of which 1.80 acre is wetland) at Aliso Creek; enhancement of 1.13 acres at Agua Chinon (no wetland); and preservation of 1.75 acre (of which 0.14 acre is wetland) at the Ferber Ranch Preserve. Therefore, the total compensatory mitigation commitment is 14.07 acres. Appropriate long-term site protection documents will be recorded, or existing documents will be amended to ensure the sites are protected in perpetuity, over each mitigation site.

With the recent OCTA Board of Directors (Board) approval on September 11, 2017, OCTA will have invested a total of $16,700,756 for implementation of the mitigation sites. These investments are broken down by project below.

[1] While the M2 Freeway Program includes 13 improvement projects, two of these projects (H and J), as identified in the Transportation Investments Plan [TIP]) are under construction. The discharges of dredged or fill material into waters of the U.S. associated with these two projects were authorized separately under the Corps' Nationwide Permit program.

Orange County Transportation Authority
550 South Main Street / P.O. Box 14184 / Orange / California 92863-1584 / (714) 560-OCTA (6282)

Mitigation Project Name	Acquisition Cost/ Restoration Funding	Long-Term Management Funding Needed[1]
Ferber Ranch Preserve	$12,760,576[2]	$543,520[5]
Aliso Creek Restoration Project	$1,105,000[3]	$718,500
Agua Chinon Restoration Project	$1,497,160[3,4]	$76,000[6]
Total	**$15,362,736**	**$1,338,020**

[1]Includes one-time initial costs and endowment needed to fund annual management tasks in perpetuity.
[2]The Ferber Ranch Preserve was purchased in 2011 for $12,760,576; however, the cost of this site is included in the financial commitment total since a Conservation Easement has not been recorded.
[3]Amount required for implementation of restoration activity.
[4]OCTA Board originally approved $1,450,000 for the project. Subsequent contract amendments resulted in a slightly increased amount as shown.
[5]$533,520 is the amount estimated for the endowment cost for the Corps mitigation associated with this property which is within the overall M2 endowment amount that was previously approved by the OCTA Board for all seven Preserves. In addition, an amount of up to $10,000 was approved in the September 11, 2017 Board action for legal defense fund.
[6]The Corps-approved Property Analysis Record (PAR) for Agua Chinon is $77,391. The OCTA Board approved up to $805,000 for the long-term management of Aliso Creek, Agua Chinon and legal defense funding for Ferber Ranch. The total that is required for the two restoration projects (as detailed in the PARs) and legal defense fund for Ferber Ranch is $802,411. Therefore, the Board-approved amount is more than adequate to fund the Corps' long term management requirements.

The attached staff reports include OCTA Board actions on: Early Action Plan expenditures, two restoration projects funding authorizations, and long-term land management funding allocation. Funding will be allocated from the M2 tax revenue stream. OCTA has identified the costs in the annual and forecasted operating budget and is committed to implementing successful mitigation.

We appreciate your partnership and your assistance in expediting the processing of the anticipated M2 Individual Permit and Letter of Permission procedures. OCTA's commitment is to both the successful implementation of the mitigation and freeway improvements. After years of coordination with the Corps, OCTA believes sufficient mitigation has been provided to offset impacts of the freeway projects. This mitigation has already been implemented in advance of M2 freeway project impacts. As you are aware, the construction of our freeway projects is fast approaching and our intent is to utilize the anticipated LOP procedures to cover all project impacts. This includes OCTA's I-405 design build project which is now underway. Any further delays in issuance of the LOPs could result in financial impacts to this and other freeway projects.

If you have any questions, please contact Lesley Hill, Project Manager, Environmental Mitigation Program at (714) 560-5759 or lhill@octa.net.

Sincerely,

Dan Phu
Environmental Programs Manager

Attachments: provided on a CD

c: Spencer MacNeil, Corps

August 13, 2007

Final Renewed Measure M Early Action Plan

Staff Report

OCTA

BOARD COMMITTEE TRANSMITTAL

August 13, 2007

To: Members of the Board of Directors

From: Wendy Knowles, Clerk of the Board

Subject: Final Renewed Measure M Early Action Plan

Transportation 2020 Committee — July 16, 2007

Present: Directors Amante, Brown, Campbell, Cavecche, Dixon, and Pringle
Absent: Director Buffa

Committee Vote

This item was passed by all Committee Members present.

Director Dixon was not present to vote on this item.

Committee Recommendations

A. Adopt the Final Renewed Measure M Early Action Plan as shown on the attached item to this report, "Final Renewed Measure M Early Action Plan".

B. Initiate the process to amend the Measure M Expenditure Plan to:

1. Modify the description of the Orange Freeway (State Route 57) project, consistent with Project G in the Renewed Measure M Transportation Investment Plan, and increase the funding allocation by $22 million.

2. Expand the limits of the Garden Grove Freeway (State Route 22) project to include the West County Connection improvements and increase the funding allocation by $10 million.

C. Set a date of September 24, 2007, for a public hearing and Board of Directors action to approve proposed amendments to the Measure M Expenditure Plan.

D. Authorize funding of expenditures for Renewed Measure M projects in the period from November 8, 2006, to June 30, 2007, using proceeds from the Orange County Unified Transportation Trust Fund, to be reimbursed with interest when Renewed Measure M funds become available in 2011.

E. Direct staff to develop a detailed plan of finance to meet the anticipated cash flow requirements of the Early Action Plan in accordance with the financing policy guidelines on page 6-7 of the Renewed Measure M Early Action Plan and return for review and approval within 90 days.

F. Direct staff to report quarterly on progress in implementing the Early Action Plan; seek and recommend opportunities to improve project delivery times; and annually review and make recommendations on opportunities to add or substitute projects in the Early Action Plan based upon progress made.

Committee Discussion

Director Campbell requested that Renewed Measure M Project I to improve the Riverside (State Route 91) Freeway between the Orange (State Route 57) Freeway and the Costa Mesa (State Route 55) Freeway be advanced by starting conceptual engineering in fiscal year 2007-08.

Director Campbell requested that the Members of the Transportation 2020 Committee be provided with a list of the projects and programs that could be included in the plan of finance.

Director Cavecche requested that the plan of finance be brought back sooner than 90 days if at all possible.

OCTA

July 16, 2007

To: Transportation 2020 Committee

From: Arthur T. Leahy, Chief Executive Officer

Subject: Final Renewed Measure M Early Action Plan

Overview

On May 29, 2007, the Orange County Transportation Authority Board of Directors approved the release of the Renewed Measure M Draft Early Action Plan for public review and for the development of additional recommendations regarding budget and funding. A Final Renewed Measure M Early Action Plan is presented for adoption.

Recommendations

A. Adopt the Final Renewed Measure M Early Action Plan as shown on the attached item to this report, "Final Renewed Measure M Early Action Plan."

B. Initiate the process to amend the Measure M Expenditure Plan to:

   1. Modify the description of the Orange Freeway (State Route 57) project, consistent with Project G in the Renewed Measure M Transportation Investment Plan, and increase the funding allocation by $22 million.

   2. Expand the limits of the Garden Grove Freeway (State Route 22) project to include the West County Connection improvements and increase the funding allocation by $10 million.

C. Set a date of September 24, 2007, for a public hearing and Board of Directors action to approve proposed amendments to the Measure M Expenditure Plan.

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reimbursed with interest when Renewed Measure M funds become available in 2011.

E. Direct staff to develop a detailed plan of finance to meet the anticipated cash flow requirements of the Early Action Plan in accordance with the financing policy guidelines on page 6-7 of the Renewed Measure M Early Action Plan and return for review and approval within 90 days.

F. Direct staff to report quarterly on progress in implementing the Early Action Plan; seek and recommend opportunities to improve project delivery times; and annually review and make recommendations on opportunities to add or substitute projects in the Early Action Plan based upon progress made.

Background

On May 29, the Board of Directors authorized the release of the Renewed Measure M Draft Early Action Plan (EAP) for review and comment. A Final Renewed Measure M Early Action Plan (Attachment A) has been prepared for consideration by the Transportation 2020 Committee and the Board of Directors.

A summary of outreach efforts and findings is presented. Recommendations for funding of the EAP are also presented, including proposed amendments to the Measure M (M1) Expenditure Plan and policy guidelines for preparation of a finance plan to complete the EAP funding picture.

Recommendations for staffing and resource needs are presented under a separate accompanying staff report outlining a Fiscal Year (FY) 2007-08 Orange County Transportation Authority (OCTA) Budget amendment.

Discussion

Outreach Findings and Recommendations

Outreach activities in support of the development of the EAP have been underway since shortly after the November 2006 election. Since May 29, these efforts have focused on distribution of the Draft EAP and providing briefings to city officials and the key stakeholders who participated in the development of Renewed Measure M (M2). The principal message to cities has been the need to plan for the increased workload to concurrently close out M1 and prepare for the M2. All stakeholders have been encouraged to provide comments and suggestions on the EAP.

The Draft EAP was distributed to over 400 key stakeholders including:

- Mayors, City Managers, and Public Works Directors of all Orange County cities
- State Delegation
- County of Orange
- League of Cities' Executive Steering Committee
- Water District Boards of Directors
- Orange County Business Council
- Building Industry Association
- OCTA Citizen's Advisory Committee
- OCTA Technical Advisory Committee and Technical Steering Committee
- Environmental Organizations
- Various Business Organizations

Accompanying the EAP was a transmittal memo that provided stakeholders the opportunity to provide feedback on the plan as well as information to request that OCTA make a presentation to their organization. Per the recommendation of the Transportation 2020 Committee, the Chairman sent a follow-up email to all Orange County mayors with copies to city managers extending again the opportunity for cities to receive a presentation or briefing. Since preparation of the EAP began, presentations have been made to over 50 city and community stakeholders, including city councils, chambers of commerce, and transportation, engineering and business associations. As of preparation of this report, ten more presentations are scheduled. Pages 8-10 of the EAP summarize the outreach efforts to date.

The responses received from the outreach efforts can generally be summarized as follows:

- Find ways to reduce project delivery times and bring more projects into the EAP.
- Provide better geographic balance in the freeway program. This comment was heard most often in regard to south Orange County, particularly with respect to accelerating various Santa Ana Freeway (Interstate 5) and interchange projects, many of which are currently being evaluated as part of the South Orange County Major Investment Study (SOCMIS).
- Too much front loading of projects will drive up costs and tax project management and oversight capabilities. Plan for a steady, sustainable stream of work that minimizes cost and project management risks.

- Too much front loading of freeways may create a capacity surge that will induce more demand. Resources won't be available later to cope with the needs.
- There is too much early emphasis on freeways. There should be more focus on transit investment to address environmental and energy issues.
- There is not enough emphasis on non-motorized transportation.

No significant changes to the Draft EAP are recommended now in response to the comments received to date. The current state of project readiness and the schedule requirements tied to the Corridor Mobility Improvement Account (CMIA) matching funds do not offer much flexibility in this regard. However, pending work such as the completion of the SOCMIS, conceptual engineering for freeway projects, the M1 Go Local transit program, and signal coordination pilot projects will create new opportunities to add to or modify the EAP Plan in the future.

It is recommended that as an overarching policy, staff be directed to seek opportunities to improve project delivery times, to report regularly on progress in implementing the EAP, and to provide annual reviews with recommendations on the potential for addition or substitution of projects.

Outreach will continue subsequent to adoption of the EAP to provide information and guidance to local jurisdictions and progress reports to all stakeholders. In addition, significant upgrades are planned to the OCTA website to provide improved access to status and progress on implementing Renewed Measure M and the EAP.

Funding and Financing

The EAP has a strong funding foundation of matching state, federal, and local funds that have already been committed. For example, approximately $267 million, principally from Proposition 1B CMIA and State Transportation Improvement Program (STIP) funds, are currently available for M2 EAP freeway projects. Nearly all of the M2 transit, roads, and environmental programs have matching requirements, which will eventually leverage additional funds to deliver the EAP.

Beyond these known commitments and requirements, there are three steps that must be taken to complete the funding and financing picture for the EAP.

Step 1: OCTA has existing commitments to M1 and CMIA funded freeway projects that must be addressed in the short term. This includes providing a match for CMIA funds that are available only for construction on the M2

Orange Freeway (State Route 57) project (Project G), and the completion of existing M1 freeway projects on Interstate 5 (I-5) and State Route 22 (SR-22). In addition, the SR-22 Phase II West County Connections Project (not part of M2) is funded with a combination of federal Congestion Mitigation Air Quality (CMAQ) funds (available only via reimbursement), and state CMIA funds (available only for construction). Working capital is needed on this project for initial investment in design and right-of-way.

Currently, the M1 freeway mode is projected to have an ending unspent balance of $172 million. It is recommended that two amendments to the M1 Expenditure Plan be initiated as follows:

1. Allocate $22 million of the unprogrammed funds in the M1 freeway mode to pay for preconstruction costs on the M2 State Route 57 (SR-57) widening (Project G).

2. Allocate $10 million from unprogrammed funds in the M1 freeway mode as working capital for design and right-of-way on the SR-22 Phase II West County Connections with the San Gabriel Freeway (Interstate 605) and the San Diego Freeway (Interstate 405).

This would leave a current estimated balance of $140 million in the M1 freeway mode as a prudent reserve for economic uncertainties and project closeout costs.

The process for amending M1 is shown below:

Actions	**Date (2007)**
OCTA Transportation 2020 Committee recommendation to initiate amendment and set public hearing	**July 16**
Potential amendment discussed with Taxpayers Oversight Committee	**July 24**
OCTA Board of Directors initiates amendment and sets public hearing date	**August 13**
Proposed amendment sent to local agencies (at least 30 days prior to public hearing)	**August 15**
Taxpayers Oversight Committee considers/acts on amendment (requires 2/3 vote)	**September 11**
Public hearing on amendment and roll call vote by Board of Directors	**September 24**
Amendment transmitted to local agencies	**September 24**
Amendment effective 45 days following transmittal to local agencies	**November 8**

The actual text of the proposed amendments is shown as Attachment B.

Step 2: Costs already incurred for M2 project and program development must be funded. Project and program development activities have been underway since the November 7, 2006, election. These costs are estimated at $3 million, for the period beginning November 8, 2006, through the end of the current fiscal year. This includes contracts for conceptual engineering on Costa Mesa Freeway (State Route 55) (Project F); conceptual engineering and environmental studies on the Riverside Freeway (State Route 91) (Projects J and H), and the development of the EAP.

It is recommended that these M2 project and program development activities be funded from the Orange County Unified Transportation Trust (OCUTT) fund to be reimbursed with interest by M2 when funds become available in 2011. OCUTT funds can be used for any transportation purpose as designated by the Board of Directors. The current OCUTT fund balance is approximately $10 million.

Step 3: A plan of finance is needed to ensure that the cash flow requirements from FY 2007-08 through FY 2011-12 for the EAP are met. Significant expenditures are anticipated for highway project development, design, right-of-way, and construction and the programming of road, transit, and environmental funds. Detailed year-by-year cash flow needs for all of these elements are still being compiled and refined, but the aggregate financing needed to deliver the EAP is currently estimated to be less than $500 million.

It is recommended that a finance plan for the EAP be prepared and presented to the Transportation 2020 Committee and the Board of Directors for review and approval. This can be completed within 90 days.

The finance plan will consist of the following:

- Best available cost estimates for each EAP project and program, including annual cash flow estimates;
- Adjustment of all cost and revenue estimates to year-of-expenditure values;
- Refinement of revenue estimates for state, federal, and other non-M2 revenue sources;
- Analysis of financing options, including major risk factors, and recommendation of a preferred strategy.

The finance plan will not be a static document. Project costs and schedules and revenue estimates will be continuously monitored. The financing strategy will be refined and adjustments brought back to the Board of Directors for action as circumstances change.

Following are the recommended policies to guide the preparation and maintenance of the finance plan:

1. Aggressively seek and utilize first, all available local, state, and federal matching funds and grants.

2. Annually review and recommend the level of M1 reserves needed to assure the completion of all M1 projects. First priority for unprogrammed M1 funds not needed for reserves should be to fund eligible M2 projects.

3. Utilize internal borrowing to the extent that it is the lowest cost option and does not jeopardize other non-M funding commitments.

4. Utilize debt financing subject to the following conditions:

   - Conservative, independently validated assumptions and projections indicate the ability to deliver the full 30-year M2 plan is not compromised.
   - Debt financing can be shown to be either the lowest cost option, or the only available option, to meet the need.
   - Financing costs accrue appropriately to the M2 project or program for which borrowing occurs.

5. Investigate the opportunities and the potential benefits of interest rate management strategies

Staffing and Resources

Recommendations for staffing and resources needed to implement the EAP in FY 2007-08 are made in a separate staff report to the Transportation 2020 Committee and the Board of Directors. A budget adjustment of approximately $19.3 million and addition of eleven positions is recommended. Also included in the budget are resources for an organizational readiness review and a market conditions analysis to assess and manage cost risks for delivery of the EAP.

Next Steps

Subsequent to adoption by the Board of Directors, the EAP will be distributed to local jurisdictions and key stakeholders. The new Taxpayers Oversight Committee will begin meeting in July 2007. Quarterly status reports on implementation of the EAP will be integrated with the Measure M Quarterly

Reports beginning in the fall 2007. Also in the fall, the finance plan for the EAP will be presented for review and adoption.

By the end of calendar year 2007, detailed strategic plans outlining scope, sequencing, milestones, cost estimates, cash flow and funding allocation for the freeway and transit programs will be completed. On the same timetable, upgrades to the OCTA website will be phased in to improve the accessibility and transparency of information available to stakeholders and the public.

Summary

The Final Renewed Measure M Early Action Plan is presented for approval by the Transportation 2020 Committee and the Board of Directors.

Attachments

A. Final Renewed Measure M Early Action Plan
B. Proposed Measure M Expenditure Plan Amendments

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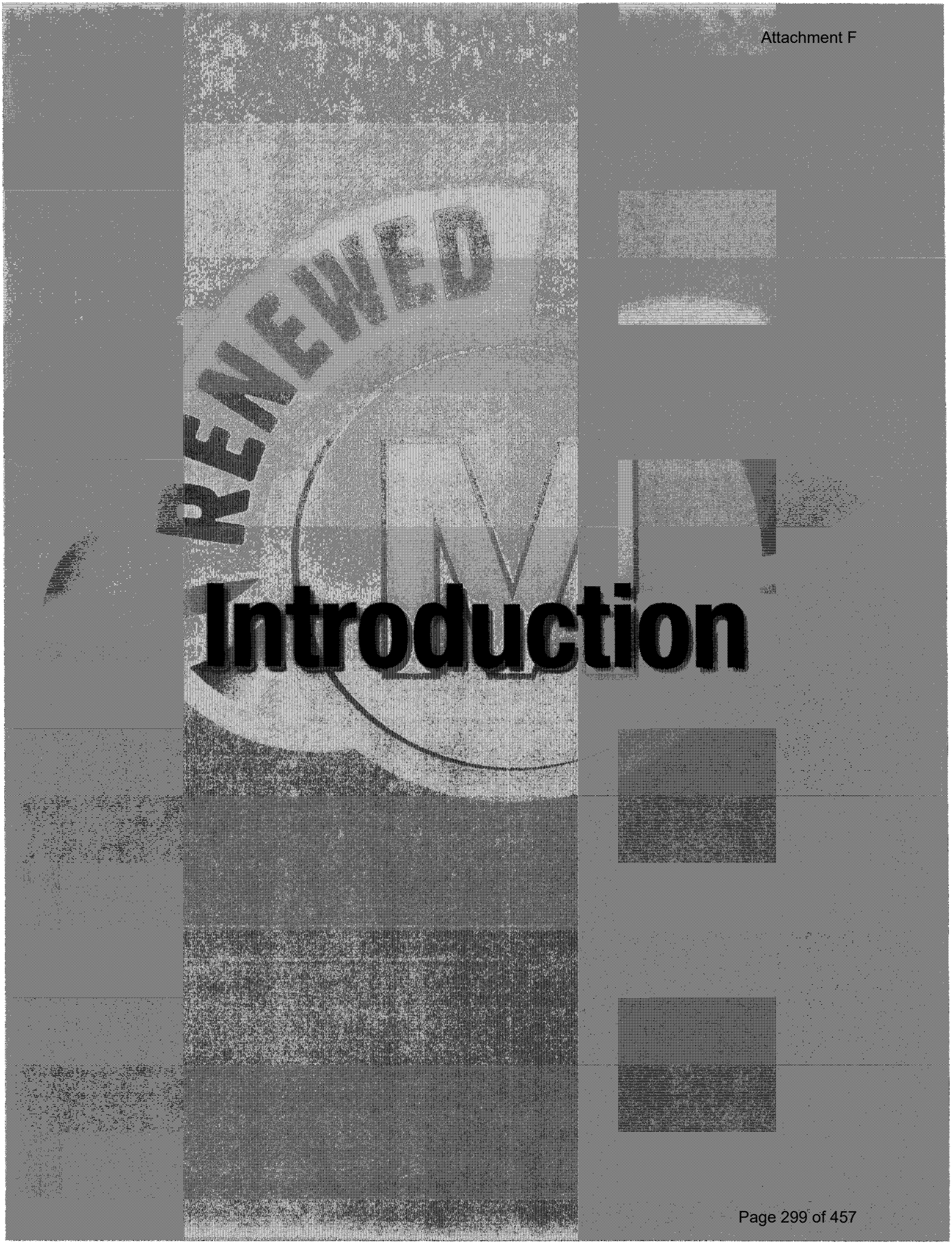
Orange County Transportation Authority

Renewed Measure M Early Action Plan

OCTA

Renewed Measure M Early Action Plan
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Introduction

Renewed Measure M Early Action Plan (EAP)

Introduction

On November 7, 2006, Orange County voters, by a vote of 69.7 percent, approved the renewal of the Measure M one-half cent sales tax for transportation improvements. Measure M was originally passed in 1990 (M1) with a sunset in 2011. With the approval of the Renewed Measure M, the voters agreed to continued investment of local tax dollars in Orange County's transportation infrastructure for another 30 years to 2041.

A primary reason for the voters' willingness to renew Measure M (M2) was that they saw and experienced tangible results. Since 1990, most of Orange County's freeway system has been improved, including a major overhaul of the I-5 right through the heart of the County; major roads and local streets have been upgraded; and a new Metrolink commuter rail system has been added, linking Orange County with jobs and housing in the surrounding counties.

Owing to careful stewardship and strategic early action, Orange County has also been able to meet the promises made to the voters in M1, and then some. Completing the bulk of the freeway program within ten years contributed to the ability to add an entirely new project – widening the Garden Grove Freeway (State Route 22) – to the list of accomplishments.

Although both M1 and M2 express a strong preference for pay-as-you-go project financing, they both also permit debt financing under the proper conditions. In the case of the M1 freeway program, the benefits of early action are obvious and tangible – projects cost less, traffic relief was delivered sooner and, the opportunity was created for additional projects to be delivered.

The Transportation 2020 Committee directed the preparation of a five-year plan, covering the years 2007 to 2012, to advance the implementation of M2. A Draft Early Action Plan outlining the projects and programs that could be advanced along with anticipated schedules and major milestones was approved by the Board of Directors and released on May 29, 2007. Input was actively sought from city officials and key stakeholders, and recommendations on financing and budget needs were added before approval of the Final Early Action Plan by the Board of Directors on August 13, 2007.

Key Objectives

The renewal of Measure M offers the opportunity to replicate, and perhaps exceed, the performance in delivering on the original. This report presents a blueprint for early action on the Renewed Measure M Transportation Investment Plan for the five-year period from 2007 to 2012. That blueprint commits to meeting the following nine objectives in the next five years:

1. Complete the first major milestone – conceptual engineering -- for every freeway project in the Plan; ensuring that all projects are eligible for matching funds and ready to enter into environmental review, design and construction.
2. Start construction on five major M2 freeway projects on SR-91, SR-57 and I-5 valued at $445 million. Two other projects will also be under construction at the I-405/SR-22 and I-405/I-605 interchanges, valued at $400 million and paid for by Proposition 1B and federal funds.
3. Enable every Orange County city and the County to meet eligibility requirements for M2 funds, including new pavement management and signal synchronization programs.
4. Award up to $165 million to cities and the County for signal synchronization and road upgrades.
5. Implement high-frequency Metrolink service within Orange County with associated railroad crossing safety and quiet zone improvements completed or under construction. Begin project development for at least five major grade separation projects.
6. Award up to $200 million in competitive funding for transit projects.
7. Complete development work and allocate funds for transit fare discounts and improved services for seniors and persons with disabilities.
8. Complete an agreement between OCTA and resource agencies detailing environmental mitigation of freeway improvements and commitments for project permitting. Begin allocation of funds for mitigation.
9. Complete program development for road runoff/water quality improvements; Begin allocation of funds to water quality projects.

In all, more than $1.6 billion in transportation improvements, promised to the voters in M2 could be underway by 2012.

To put the magnitude of this effort in perspective, two M1 freeway projects were under construction within the two years after revenues began to be collected in 1991. The EAP will enable five M2 projects to be under construction before revenues begin to be collected in 2011.

Oversight and Safeguards

Early action on M2 will take place with the full oversight and regular reporting promised to the voters. Beginning in August 2007, the independent Taxpayers Oversight Committee will be appointed and begin its job of monitoring and reviewing all M1 and M2 expenditures. In addition, updated accounting, auditing and reporting protocols will be implemented. Before the end of the 2007 calendar year, new systems for document controls, archiving and public access to documents will be in place so that public access to original records and information regarding M2 can be assured.

Subsequent to the Board adoption of the EAP, more specific strategic implementation plans for the freeway and transit components of M2 will be prepared. These will provide detailed plans for the delivery of each project and/or program, including project or program scope, sequencing, milestones, cost estimates, cash flow and funding allocation. It is anticipated that the Freeway Strategic Plan could be completed by Fall 2007 and the Transit Strategic Plan by late 2007. These strategic plans will guide resource needs and allocation and provide the means to measure project and/or program development progress against established benchmarks.

Beginning in Fall 2007, regular progress reports on implementing the EAP will be incorporated into the Measure M Quarterly Report that is prepared for the Taxpayers Oversight Committee and the Board of Directors. To improve accessibility and transparency of the information, the quarterly progress report will be presented principally in a web-based on-line form, showing progress on all projects and programs against the timelines and benchmarks in the Action Plan and associated strategic plans. Contact information for the OCTA staff member responsible for each program or project will be included.

Some Risks

Early action of this magnitude is not without risks. Similar efforts in surrounding counties as well as implementation of recently passed State infrastructure and other spending measures (Propositions 1A-1E and 84) will likely result in increased regional competition and costs for the human and capital resources needed to design and implement transportation projects. Global competition from rapid development and infrastructure spending in countries like India and China has already impacted the costs of construction and is also expected to continue to be a factor.

OCTA will undertake a market analysis/risk management study in the next fiscal year to assess the competitive environment for labor and materials, refine the model for project cost estimates and develop strategies to manage project cost risks.

Also, the impacts of multiple construction projects on traffic operations, the traveling public, and adjacent businesses and residents must be carefully evaluated and managed. Project phasing and implementation must be planned to avoid concurrent impacts on alternate routes or parallel facilities and to minimize extended disruption to businesses and residents.

Project scheduling and phasing to manage local impacts will be specifically addressed as part of the proposed freeway and transit strategic plans.

Another key concern is the capacity of local jurisdictions, OCTA and Caltrans and federal agencies to effectively manage the work that needs to be done. Over the

next five years, a significant increase in program development, planning, environmental, design, oversight and construction management work will be overlaid on the ongoing responsibilities of operating, maintaining, and improving the existing road, highway and transit network. Project planning and phasing will need to account for this increased workload and the capacity of staff and the private sector to respond. OCTA will need to review and rethink its procurement, contract management, project management, staffing and training needs to make best use of and to avoid overburdening the available public and private resources.

An organizational review, conducted by an external, objective third party, will be undertaken in FY 2007-08 to ensure that OCTA management and staff are well positioned and prepared to meet the challenges of the Plan.

Funding and Financing

The fact that the voters approved a renewal of Measure M nearly four and one-half years before the revenues become available is both an opportunity and a challenge. This lead-time enables significant project development work to be undertaken and projects to be delivered early, but only if sufficient funding is made available in a timely manner. Pay-as-you-go project funding is de-facto not possible for any M2 projects until after April 1, 2011. However, early action on M2 projects prior to April 1, 2011 can be undertaken using some combination of four principal funding sources:

1. Federal, State and local grants and/or matching funds

2. Unallocated M1 funds, in excess of what is needed to complete the M1 Expenditure Plan

3. Internal loans of qualifying non-M funds held by OCTA

4. Debt financing repaid by future M2 revenues

These funding sources all have certain qualifying requirements in order to be available for M2 purposes. Grants and matching funds must generally be won through a competitive application or eligibility process, or through an earmarked appropriation. Allocation of M1 funds requires approval of the Board of Directors to amend the M1 Expenditure Plan, with concurrence by the Taxpayers Oversight Committee, and in some cases the voters. Internal loans require that the funds are not otherwise needed over the short term and payment of interest. Debt financing can be used only if pay-as-you-go is deemed infeasible, and if the costs of financing do not imperil delivery of the balance of the voter-approved M2 Investment Plan.

The EAP has a strong funding foundation of matching state, federal and local funds that have already been committed. For example, approximately $267 million, principally from Proposition 1B Corridor Mobility Improvement Account (CMIA) and State Transportation Improvement Program (STIP) funds, are currently available for M2 EAP freeway projects. Nearly all of the M2 transit, roads and environmental programs have matching requirements, which will eventually leverage additional funds to deliver the EAP.

Beyond these known commitments and requirements, there are three steps that must be taken to complete the funding and financing picture for the EAP.

Step 1: Near Term Commitments

OCTA has existing commitments to M1 and CMIA funded freeway projects that must be addressed in the short term. This includes providing a match for CMIA funds that are available only for construction on the M2 SR-57 project (Project G), and the completion of existing M1 freeway projects on I-5 and SR-22. In addition, the SR-22 Phase II Project (not part of M2) is funded with a combination of federal Congestion Mitigation Air Quality (CMAQ) funds (available only via reimbursement), and state CMIA funds (available only for construction). Working capital is needed on this project for initial investment in design and right of way.

Currently the M1 freeway mode is projected to have an ending unspent balance of $172 million. It is recommended that two amendments to the M1 Expenditure Plan freeway mode be approved as follows:

1. Allocate $22 million of the un-programmed funds in the M1 freeway mode to pay for pre-construction costs on the M2 SR-57 widening (Project G).

2. Allocate $10 million from un-programmed funds in the M1 freeway mode as working capital on the SR-22 Phase II design and right of way.

This leaves an estimated balance of $140 million in the M1 freeway mode as a prudent reserve for economic uncertainties and project closeout costs.

Step 2: Costs Since the Election

Costs already incurred for M2 project and program development must be funded. Project and program development activities have been underway since the November 7, 2006 election. These costs are estimated at $3 million, for the period beginning November 8, 2006 through the end of the current fiscal year. This includes contracts for conceptual engineering on SR-55 (Project F); conceptual engineering and environmental studies on SR-91 (Projects J and H), and the development of the EAP.

It is recommended that these M2 project and program development activities be funded from the Orange County Unified Transportation Trust (OCUTT) fund to be reimbursed with interest by M2 when funds become available in 2011. OCUTT funds can be used for any transportation purpose as designated by the Board of Directors. The current OCUTT fund balance is approximately $10 million.

Step 3: Plan of Finance

A plan of finance is needed to ensure that the cash flow requirements from FY 2007-08 through FY 2011-12 for the EAP are met. Significant expenditures are anticipated for highway project development, design, right-of-way, and construction and the programming of road, transit and environmental funds. Detailed year-by-year cash flow needs for all of these elements are still being compiled and refined, but the aggregate financing needed to deliver the EAP is currently estimated to be less than $500 million.

It is recommended that a plan of finance for the EAP be prepared and presented to the Transportation 2020 Committee and the Board of Directors for review and approval. This can be completed within 90 days.

The plan of finance will consist of the following:

- Best available cost estimates for each EAP project and program, including annual cash flow estimates;
- Adjustment of all cost and revenue estimates to year-of-expenditure values;
- Refinement of revenue estimates for state, federal and other non-M2 revenue sources;
- Analysis of financing options, including major risk factors, and recommendation of a preferred strategy.

The plan of finance will not be a static document. Project costs and schedules and revenue estimates will be continuously monitored. The financing strategy will be refined and adjustments brought back to the Board of Directors for action as circumstances change.

Financing Policy Guidelines

Following are the recommended policies to guide the preparation and maintenance of the plan of finance:

1. Aggressively seek and utilize first all available local, state and federal matching funds and grants.

2. Annually review and recommend the level of M1 reserves needed to assure the completion of all M1 projects. First priority for M1 funds not needed for reserves should be to fund eligible M2 projects.

3. Utilize internal borrowing to the extent that it is the lowest cost option and does not jeopardize other non-M funding commitments.

4. Utilize debt financing subject to the following conditions:

   - Conservative, independently validated assumptions and projections indicate the ability to deliver the full 30-year M2 plan is not compromised.
   - Debt financing can be shown to be either the lowest cost option, or the only available option, to meet the need.
   - Financing costs accrue appropriately to the M2 project or program for which borrowing occurs.

5. Investigate the opportunities and the potential benefits of interest rate management strategies.

Staffing and Resources

Recommendations for staffing and resources needed to implement the EAP in fiscal year 2007-08 are made in a separate report to the Board of Directors. A budget adjustment of approximately $20 million and addition of eleven positions is recommended.

Next Steps

Subsequent to adoption by the Board of Directors, the EAP will be distributed to local jurisdictions and key stakeholders. The new Taxpayers Oversight Committee will begin meeting in July 2007. Quarterly status reports on implementation of the Plan will be integrated with the Measure M Quarterly Report beginning in the Fall 2007. Also in the Fall, the plan of finance for the EAP will be presented for review and adoption.

By the end of calendar year 2007, detailed strategic plans outlining scope, sequencing, milestones, cost estimates, cash flow and funding allocation for the freeway and transit programs will be completed. On the same timetable, upgrades to the OCTA website will be phased in to improve the accessibility and transparency of information available to stakeholders and the public.

Renewed Measure M Early Action Plan Outreach Summary

OCTA began outreach to local government and community stakeholders involved in the development of the Renewed Measure M Investment Plan (M2) shortly after its approval by the voters in November 2007. The principal message of these briefings was the need to plan for the increased workload that accompanied the close out of the current M1, what the passage of M2 meant for Orange County as well as the development of the M2 Early Action Plan.

In January 2007, OCTA staff began meeting with city and community groups, including city councils, chambers of commerce and transportation, business and development/engineering associations. All stakeholders were encouraged to provide suggestions and comments on the Early Action Plan.

Upon the Board's approval of the Draft Early Action Plan in late May, the Plan was distributed to over 400 stakeholders including:

- Mayors, city managers and public works directors of all Orange County cities
- State Legislative Delegation
- County of Orange
- League of Cities' Executive Steering Committee
- Water District Boards of Directors
- Orange County Business Council
- Building Industry Association
- OCTA Citizen's Advisory Committee
- OCTA Technical Advisory Committee and Technical Steering Committee
- Environmental Organizations
- Various Business Organizations

Accompanying the Early Action Plan was a transmittal memo that provided stakeholders the opportunity to provide feedback on the Plan as well as information to request that OCTA make a presentation to their organization. Since January, over 55 presentations to city councils and community/business organizations have been completed and, as of preparation of this report, seven more are scheduled. In addition to presentations, the Early Action Plan was also posted on the OCTA website with a field for the public to provide comments on the Plan. This effort will continue up until Board consideration of the Plan and, once approved, there will be a transition from presentations seeking input to informing stakeholders about what is included in the Final Early Action Plan.

In addition, significant upgrades are planned for the OCTA website to provide improved access to status and progress on implementing Renewed Measure M and the Early Action Plan.

The following chart depicts all organizations that received briefings on the Renewed Measure M Early Action Plan:

M2 Early Action Plan Outreach Summary
January – August 2007

Date	Organization
January	Irvine Chamber of Commerce
	Orange County Business Council Infrastructure Committee
	Women in Transportation Seminar
	American Society of Civil Engineers
	League of Cities' Executive Steering Committee
	Santa Ana ComLink
	National Association of Industrial Office Properties
	Tustin Chamber of Commerce
February	Building Industry Association Infrastructure Committee
	League Newly Elected Officials seminar
	Irvine City Council
	Orange County Association of Realtors
	Orange County Taxpayers Association
	South Orange County Regional Chambers of Commerce
March	GMA 7&8 Elected Officials
	Orange County City Managers Association
	National Association of Industrial Office Properties
	Cypress City Council
	Santa Ana Kiwanis
	Newport City Council
	Huntington Beach Kiwanis
	Brea City Council
	Aliso Viejo City Council
	Construction Management Association of America
	Consulting Engineers and Land Surveyors of OC
	Orange City Council
	Garden Grove City Council
	Villa Park City Council
	Dana Point Mayor
April	Costa Mesa City Council
	Los Alamitos City Council
	Placentia City Council
	Women in Transportation Seminar
	Costa Mesa Leadership Tomorrow
	Orange County Planning Director Association
May	Yorba Linda City Council
	Fountain Valley Mayor's Meeting
	Laguna Hills Mayor

May 29	**Adoption of Draft Renewed M Early Action Plan**

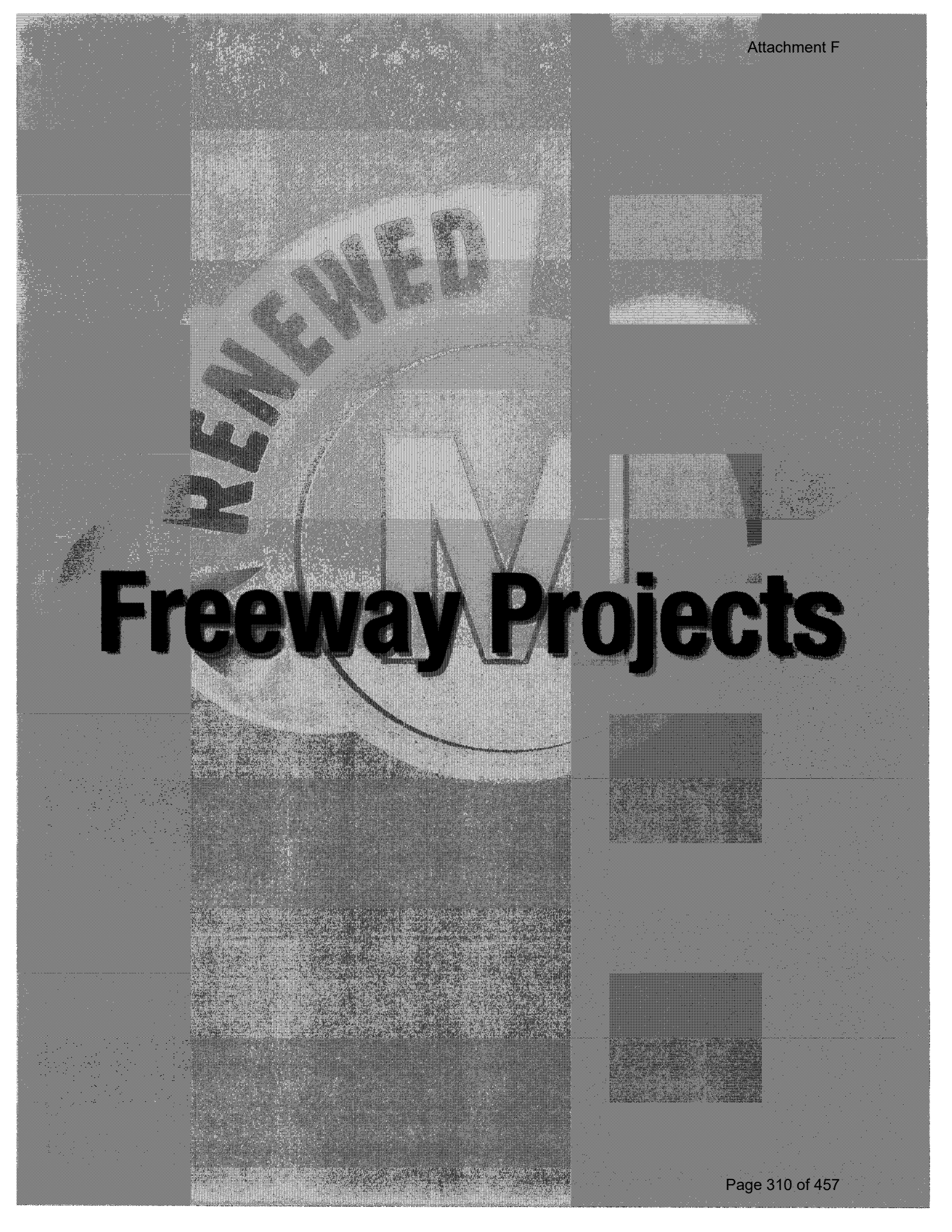
June	Mission Viejo City Council GMA 2 Elected Officials League of Cities' Executive Steering Committee South County Technical Advisory Committee Workshop San Juan Capistrano Chamber of Commerce Orange County Council of Governments American Society of Civil Engineers, Transportation Technical Committee OCTA Citizens' Advisory Committee OCTA Technical Advisory Committee Orange County Business Council, Infrastructure Committee
July	Laguna Hills City Council Anaheim City Council La Palma City Council Los Alamitos City Council Seal Beach City Council Cypress City Council Stanton City Council Santa Ana Environmental and Transportation Advisory Committee South Orange County Mayor's Association OCTA Special Needs in Transit Advisory Committee
August	Orange County City Managers Association

Scheduled:

August 7	Buena Park City Council San Juan Capistrano City Council Tustin City Council Placentia City Council
August 10	Orange County Council of Governments Technical Advisory Committee
August 22	Santa Margarita Water District
August 30	Orange County Taxpayers Association

Total Meetings*: 66

* Current as of August 1, 2007



Freeway Projects

EARLY ACTION PROJECTS 2007-2012

Freeways



Project Descriptions

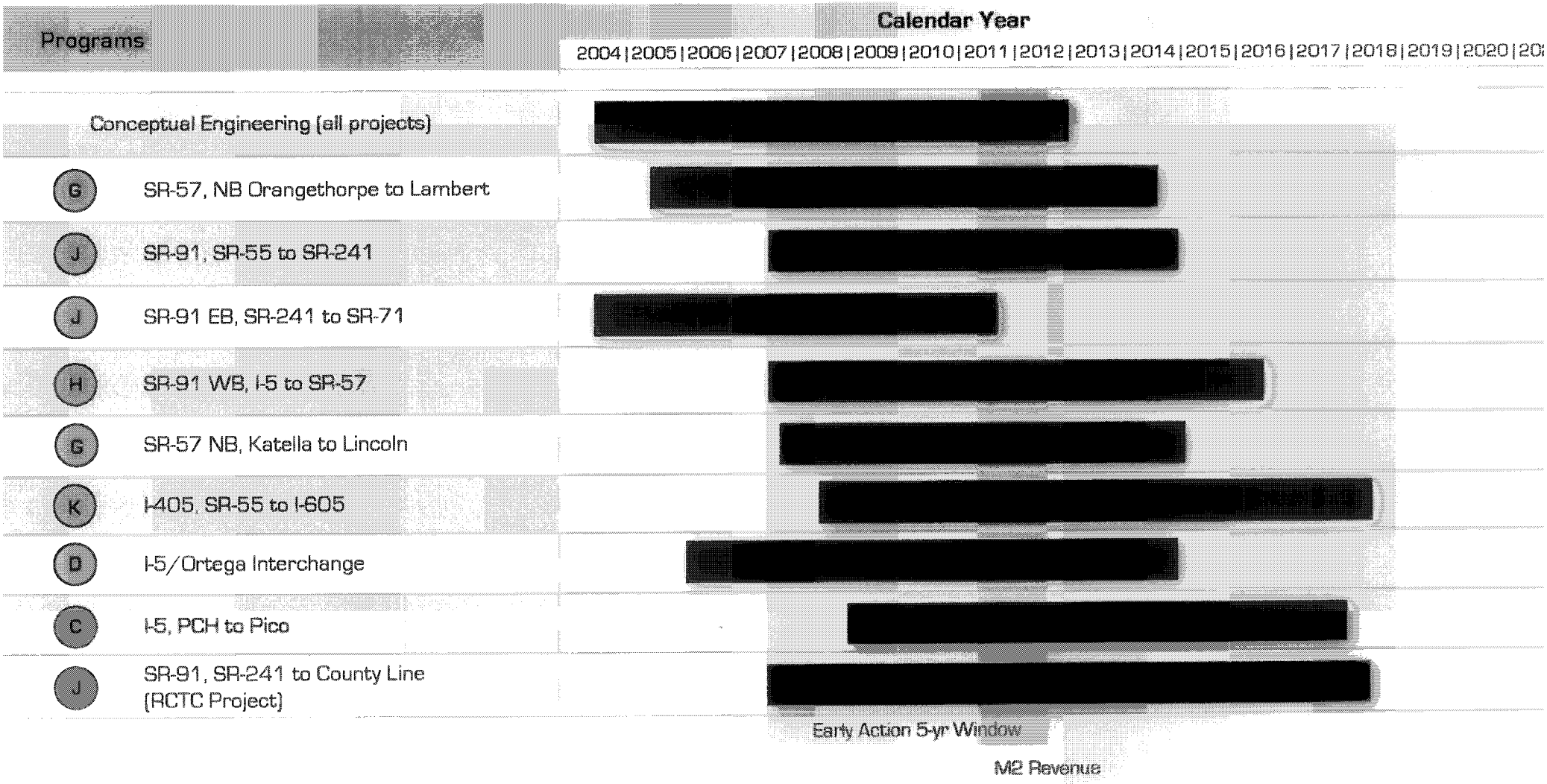
Early Action Projects

- (C) I-5, PCH to Pico
- (D) I-5/Ortega Interchange
- (G) SR-57 NB, Katella to Lincoln; SR-57 NB, Orangethorpe to Lambert
- (H) SR-91 WB, I-5 to SR-57
- (J) SR-91, SR-55 to SR-241; SR-91 EB, SR-241 to SR-71; SR-91, SR-241 to County Line (91 TIE Project)
- (K) I-405, SR-55 to I-605

Conceptual Engineering Projects

- (A) (B) I-5, SR-57 to SR-55; I-5, SR-55 to El Toro Y
- (E) I-5, El Toro Y to SR-73
- (I) South OC Freeway Interchanges
- (M) SR-22 Access Improvements
- (F) SR-55, SR-22 to I-405
- (N) SR-57 NB, Lambert to County Line
- (O) SR-91, SR-57 to SR-55
- (L) I-405, SR-55 to I-5

EARLY ACTION FREEWAY PROJECTS TIMELINE



The remaining freeway projects listed below will be implemented subsequent to the 2007-2012 Early Action Plan period. Priorities, schedules and project phasing will be presented for Committee and Board of Directors' action as conceptual engineering is completed and more information is known about each project.

- A I-5, SR-57 to SR-55
- B I-5, SR-55 to El Toro Y
- C I-5, El Toro Y to SR-73
- D South OC Freeway Interchanges
- E SR-22 Access Improvements
- F SR-55, SR-22 to I-405
- G SR-57 NB, Lambert to CL
- I SR-91, SR-57 to SR-55
- J SR-91, SR-241 to County line (OCTA Project)
- L I-405, SR-55 to I-5
- M I-605 Access Improvements

EARLY ACTION PROJECTS TIMELINE

Freeways

Projects	Category	Start*	End*
SR-57, Orangethorpe to Lambert	Environmental	June 05	Dec 07
	Design/Engineering	Dec 07	June 10
	Right of Way & Utilities	June 08	June 10
	Construction	June 10	July 14
SR-91, SR-55 to SR-241	Environmental	July 07	July 09
	Design/Engineering	Jan 09	Dec 11
	Right of Way & Utilities	July 09	Dec 11
	Construction	Dec 11	Dec 14
SR-91 EB, SR-241 to SR-71	Environmental	May 04	Dec 07
	Design/Engineering	July 07	Aug 09
	Right of Way & Utilities	Jan 08	Aug 09
	Construction	Aug 09	Sep 11
SR-91 WB, I-5 to SR-57	Environmental	July 07	June 10
	Design/Engineering	June 10	June 13
	Right of Way & Utilities	Dec 10	June 13
	Construction	June 13	June 16
SR-57 NB, Katella to Lincoln	Environmental	Oct 07	July 09
	Design/Engineering	June 08	May 11
	Right of Way & Utilities	Dec 08	May 11
	Construction	May 11	Jan 15
I-405, SR-55 to I-605	Environmental	July 08	June 11
	Design/Engineering	June 11	June 14
	Right of Way & Utilities	Jan 12	June 14
	Construction	June 14	June 18
I-5/Ortega Interchange	Environmental	Jan 06	Nov 08
	Design/Engineering	Nov 08	Nov 11
	Right of Way & Utilities	May 09	Nov 11
	Construction	Nov 11	Nov 14
I-5, PCH to Pico	Environmental	Dec 08	Dec 11
	Design/Engineering	Dec 11	Dec 14
	Right of Way & Utilities	June 12	Dec 14
	Construction	Dec 14	Dec 17
SR-91, SR-241 to County Line (RCTC Project)	Environmental	July 07	Apr 12
	Design/Engineering	Apr 12	Apr 15
	Right of Way & Utilities	Oct 12	Apr 15
	Construction	Apr 15	Apr 18

*The dates shown here are preliminary and represent typical or average durations for the various project stages. As the projects

C. San Diego Freeway (I-5) Improvements South of the El Toro "Y"

Description:
Add new lanes to I-5 from the vicinity of the El Toro Interchange in Lake Forest to the vicinity of SR-73 in Mission Viejo. Also add new lanes on I-5 between Coast Highway and Avenida Pico interchanges to reduce freeway congestion in San Clemente. Regional plans also include construction of a new freeway access point between Crown Valley Parkway and Avery Parkway as well as new off ramps at Stonehill Drive using federal and state funds.

Status:
Project Study Report under way now for Coast Highway to Avenida Pico section (Caltrans lead). Analysis to date has focused on this segment as an HOV lane. Initiate Project Study Report for El Toro Interchange to SR-73 area by 2011 contingent upon funding availability and future Board action following completion of the South Orange County Major Investment Study (SOCMIS).

Present Day Congestion:
Today, I-5 near the El Toro "Y" carries about 342,000 vehicles per day and has about 5,300 daily vehicle hours of delay. Segments of the freeway currently operate at level of service "F" (over capacity) in the morning and afternoons. On-ramps are significantly congested in the mornings at Crown Valley and Oso Parkways.

Benefits:
The project will increase freeway capacity and reduce congestion. Travel volumes are expected to increase in the future by 35 percent (118,000 vehicles), bringing it up to 460,000 vehicles per day in the future.

Cost (2005 $):
$627.0 million.

Issues:
Contingent on findings from Project Study Reports (estimated 2008 completion for Coast Highway to Pico section).

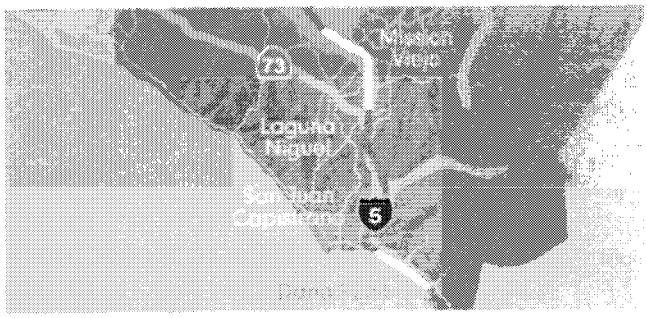
External Funding:
Potential linkages to non-Measure M funded local interchange projects such as Crown Valley Parkway area.

Risks:
Limited right-of-way in certain sections may require non-standard shoulder and lane widths to minimize right-of-way acquisition. Major Investment Study currently under way may modify proposed plans. Major interchange improvements (Project D) will need to be integrated into the mainline widening.

Related Projects:
I-5 local interchange improvements (Project D); new freeway access point between Crown Valley Parkway and Avery Parkway.

Involved Agencies:
Caltrans, Laguna Hills, Mission Viejo, Laguna Niguel, San Juan Capistrano, Dana Point, San Clemente, Lake Forest, TCA

References:
Caltrans District 12 Proposed Projects (2004)



D. Santa Ana Freeway / San Diego Freeway (I-5) Local Interchange Upgrades

Description:
Update and improve key I-5 interchanges such as Avenida Pico, Ortega Highway, Avery Parkway, La Paz Road, El Toro Road, and others to relieve street congestion around older interchanges and on ramps. In addition to the project described above, regional plans also include improvements to the local interchanges at Camino Capistrano, Oso Parkway, Alicia Parkway and Barranca Parkway using federal and state funds.

Status:
Projects at various stages. Ortega Highway EIR under way.

Present Day Congestion:
Varies by location. Each local interchange suffers from high, recurrent congestion in morning and afternoon peak periods.

Benefits:
Varies by location. Each local interchange offers community benefits including congestion relief and improved freeway access.

Cost (2005 $):
$258.0 million.

Issues:
Contingent on findings from Project Study Reports (estimated 2008 to 2012 completion).

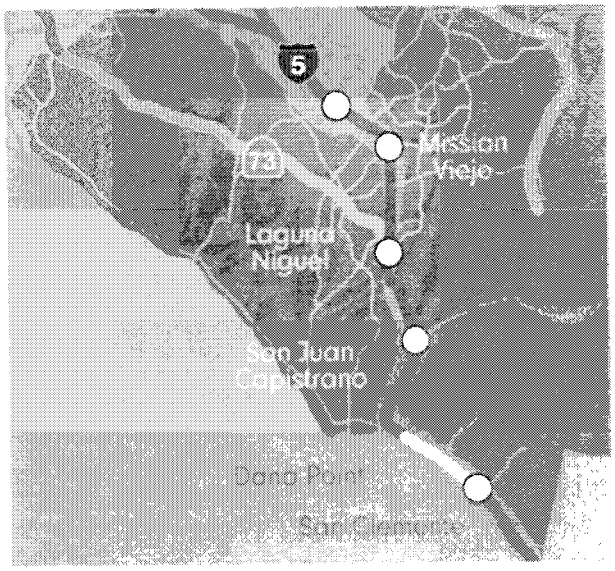
External Funding:
Potential linkages to non-Measure M funded local interchange projects such as Culver Drive and Ortega Highway.

Risks:
Limited right-of-way in certain locations may require right-of-way acquisition. Major Investment Study currently underway may modify proposed plans. Project C needs to be integrated with the local interchange upgrades.

Related Projects:
I-5 widening, south of the El Toro "Y"

Involved Agencies:
Caltrans, Irvine, Laguna Hills, Mission Viejo, Laguna Niguel, San Juan Capistrano, San Clemente, Lake Forest, TCA

References:
Caltrans District 12 Proposed Projects (2004); 2006 Long Range Transportation Plan; I-5/SR-74 PSR



G. Orange Freeway (SR-57) Improvements

Description:
Build a new northbound lane between Orangewood Avenue and Lambert Road. Other projects include improvements to the Lambert interchange and the addition of a northbound truck climbing lane between Lambert and the county line. In addition to the project described above, regional plans include new carpool ramps at Cerritos Avenue using federal and state funds.

Status:
Environmental document under way from Orangethorpe to Lambert with expected completion by 2008. Initiate Project Report for Orangewood to Orangethorpe segment by 2008 contingent upon funding availability and future Board action. Initiate environmental document for northbound truck climbing lane between Lambert and Tonner Canyon Road by 2011.

Present Day Congestion:
Today, this segment of SR-57 carries about 315,000 vehicles and has about 3,300 daily vehicle hours of delay in the northbound direction. High, recurrent congestion southbound in the morning and northbound in the evening.

Benefits:
The project will increase freeway capacity and reduce congestion. By 2030, this volume will increase by 15 percent, bringing it up to 363,000 vehicles per day.

Cost (2005 $):
$258.7 million.

Issues:
Contingent on findings from environmental documents. Coordination with local interchange projects such as Lambert, and ARTIC related freeway access improvements.

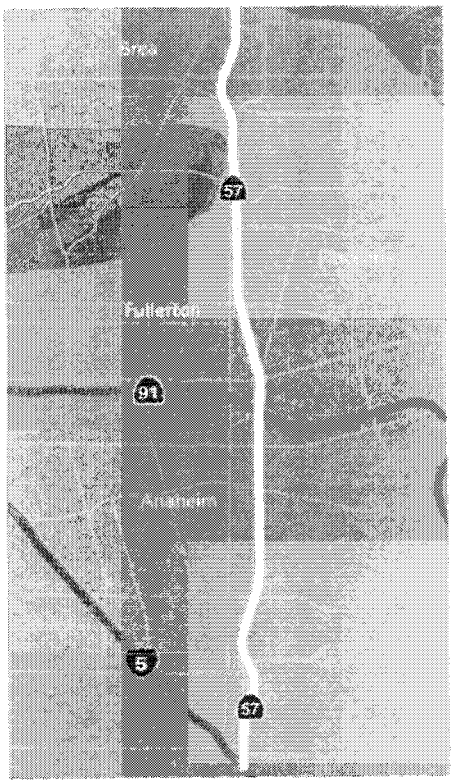
External Funding:
CMIA, possible Measure M1

Risks:
Limited right-of-way in certain sections may require non-standard shoulder and lane widths to minimize right-of-way acquisition.

Related Projects:
SR-91 improvements, SR-57 to I-5; SR-57 to SR-55

Involved Agencies:
Caltrans, Orange, Anaheim, Placentia, Fullerton, Brea

References:
Orangethorpe to Lambert PSR (2004); Katella to Lincoln PSR (2003); Caltrans District 12 Proposed Projects (2004); Lambert interchange PSR; 2006 Long-Range Transportation Plan



H. Riverside Freeway (SR-91) Improvements from the Santa Ana Freeway (I-5) to the Orange Freeway (SR-57)

Description:
Add capacity in the westbound direction and provide operational improvements at on and off ramps to the SR-91 between I-5 and the Orange Freeway (SR-57).

Status:
Initiate environmental document by summer 2007.

Present Day Congestion:
Today, this segment of SR-91 carries about 256,000 vehicles and has about 3,800 daily vehicle hours of delay.

Benefits:
The project will increase freeway capacity and reduce congestion. By 2030, this volume is expected to increase by nearly 13 percent, bringing it up to 289,900 vehicles per day.

Cost (2005 $):
$140.0 million.

Issues:
Contingent on findings from environmental document (estimated 2010 completion).

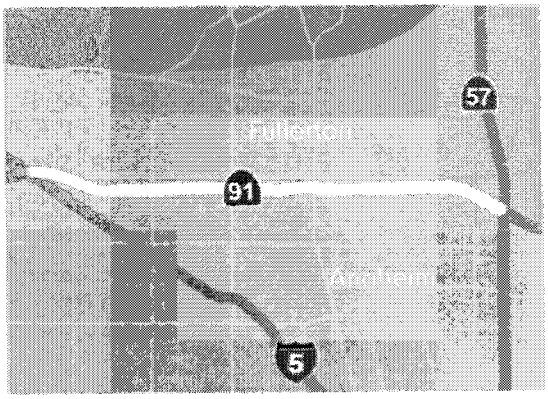
External Funding:
None at this time.

Risks:
Limited right-of-way in certain sections may require non-standard shoulder and lane widths to minimize right-of-way acquisition.

Related Projects:
N/A

Involved Agencies:
Caltrans, Anaheim, Fullerton

References:
Caltrans District 12 Proposed Projects (2004); 2006 Long Range Transportation Plan; SR-91 westbound lane PSR (I-5 to SR-57)



J. Riverside Freeway (SR-91) Improvements from Costa Mesa Freeway (SR-55) to the Orange/ Riverside County Line

Description:
This project adds capacity on SR-91 beginning at SR-55 and extending to I-15 in Riverside County. The first priority will be to improve the segment of SR-91 east of SR-241. The goal is to provide up to four new lanes of capacity between SR-241 and Riverside County Line by making best use of available freeway property, adding reversible lanes, building elevated sections and improving connections to SR-241. This project also includes improvements to the segment of SR-91 between SR-241 and SR-55. The concept is to generally add one new lane in each direction and improve the interchanges.

Status:
Environmental document under way for new eastbound lane east of SR-241. Initiate study of ultimate improvements between SR-241 and Riverside County Line by Fall 2007. PSR for added lanes from SR-55 to SR-241 completed in May 2004.

Present Day Congestion:
Today, this freeway carries about 314,000 vehicles every day and has about 5,500 daily vehicle hours of delay.

Benefits:
The project will increase freeway capacity and reduce congestion. Traffic volumes are expected to increase by 36 percent, bringing it up to 426,000 vehicles by 2030.

Cost (2005 $):
$925.0 million.

Issues:
Contingent on findings from EIR for new eastbound lane (estimated 2007 completion). Other environmental issues contingent on future Project Study Reports. Improvements east of SR-241 are coordinated with SR-91/SR-241 interchange improvements (non-Measure M funded) and Riverside County's Measure A widening of SR-91.

External Funding:
CMIA and potential 2006 STIP funding

Risks:
Limited right-of-way in certain sections may require non-standard shoulder and lane widths to minimize right-of-way acquisition.

Related Projects:
EB auxiliary lane, SR-241 to SR-71; Riverside County Measure A 5th lane (SR-241 to I-15)

Involved Agencies:
Caltrans, RCTC, Anaheim, Yorba Linda

References:
Caltrans District 12 Proposed Projects (2004); 2006 Long Range Transportation Plan; 5th lane SR-55 to SR-241 PSR, SR-91 implementation plan



K. San Diego Freeway (I-405) Improvements between the I-605 Freeway in Los Alamitos area and Costa Mesa Freeway (SR-55)

Description:
Add new lanes to the San Diego Freeway between I-605 and SR-55. The project will make best use of available freeway property, update interchanges and widen all local overcrossings according to city and regional master plans. The improvements will be coordinated with other planned I-405 improvements in the I-405/SR-22/I-605 interchange area to the north and I-405/SR-73 improvements to the south. Near-term regional plans also include the improvements to the I-405/ SR-73 interchange as well as a new carpool interchange at Bear Street using federal and state funds.

Status:
Complete the draft Project Study Report by 2008.

Present Day Congestion:
Today, I-405 carries about 430,000 vehicles daily and has about 11,400 daily vehicle hours of delay. Segments of the freeway operate at level of service "F" (over capacity) in the morning and afternoon.

Benefits:
The project will increase freeway capacity and reduce congestion. Traffic volumes are expected to increase by nearly 23 percent, bringing it up to 528,000 vehicles daily by 2030.

Cost (2005 $):
$500 million.

Issues:
Contingent on findings from Project Study Report (estimated 2008).

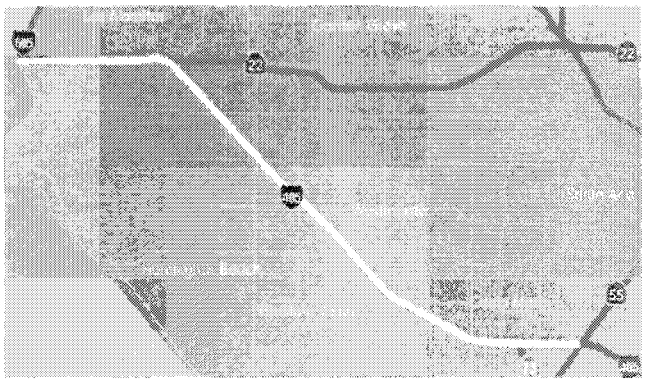
External Funding:
Federal funds have been earmarked for improvements to the Beach Boulevard interchange that will need to be coordinated with this project.

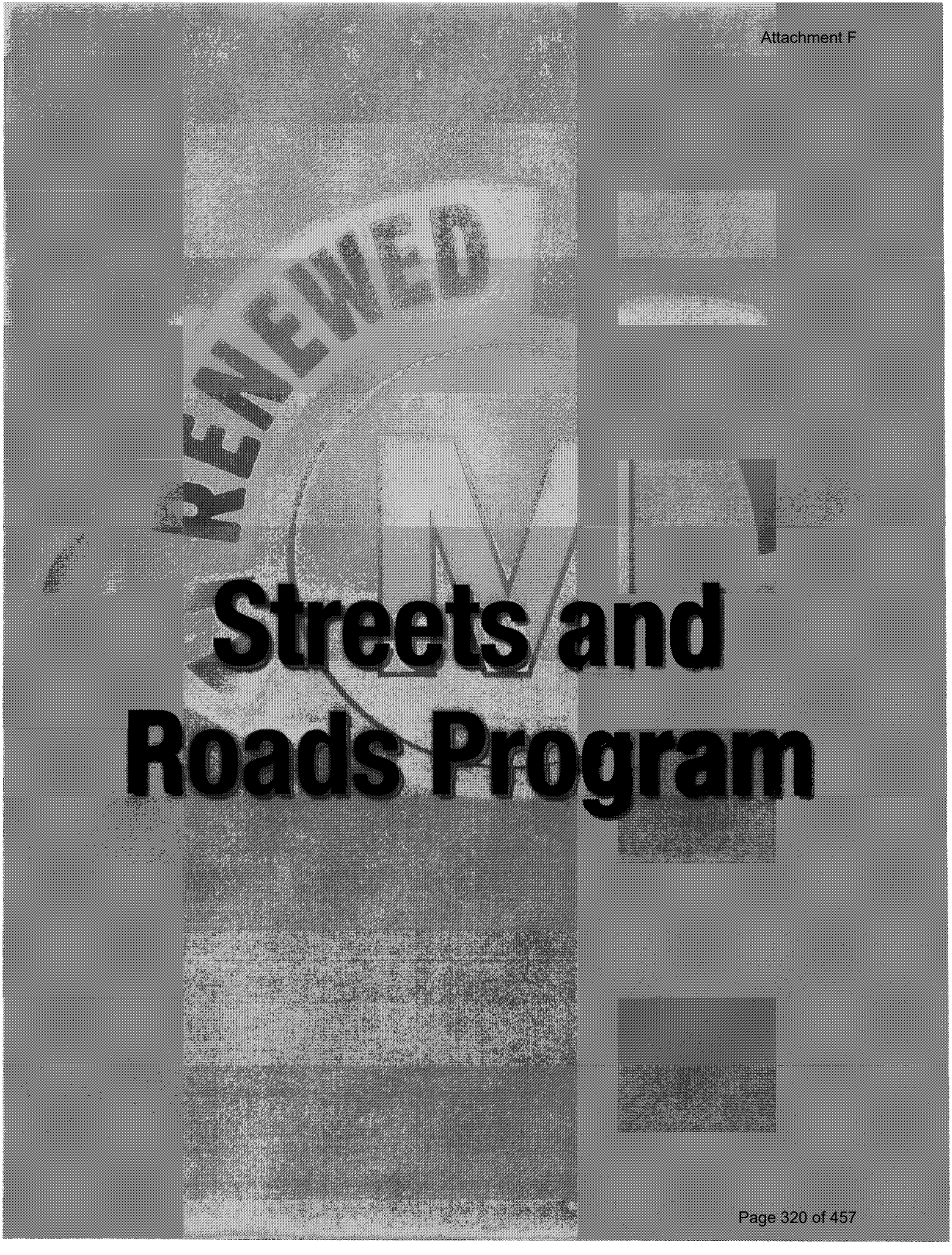
Risks:
Limited right-of-way in certain sections may require non-standard shoulder and lane widths to minimize right-of-way acquisition. Re-building local interchanges may require right-of-way to accommodate existing and future traffic.

Related Projects:
SR-22 west, Valley View to I-605, Bear street HOV ramps, I-405/SR-73 HOV direct connectors

Involved Agencies:
Caltrans, Seal Beach, Los Alamitos, Garden Grove, Westminster, Huntington Beach, Fountain Valley, Costa Mesa

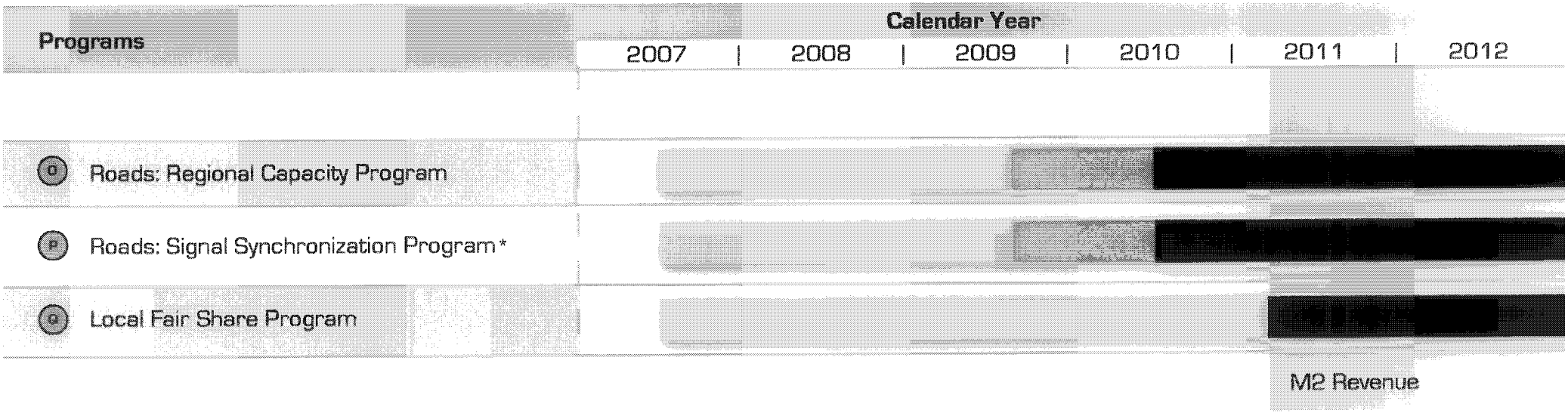
References:
Caltrans District 12 Proposed Projects (2004); 2006 Long Range Transportation Plan; I-405 MIS





Streets and Roads Program

EARLY ACTION STREETS & ROADS PROGRAM TIMELINE



Legend

- Program Development
- Call For Projects
- Program Implementation

Notes

* Renewed M eligibility requirement and funding program

Requirements for Eligible Jurisdictions
M1 and M2

	M1 Eligibility Requirements	M2 Eligibility Requirements
1	Comply with M1 Growth Management Plan (GMP) requirements generally based on maintaining certain traffic level of service standards	Comply with State requirements for Orange County Congestion Management Program (CMP) generally based on maintaining certain traffic level of service standards
2	Institute development mitigation as part of GMP to ensure new development pays its share of the associated costs	Require new development to pay a fair share of needed transportation improvements
3	Adopt a General Plan Circulation Element consistent with the Master Plan of Arterial Highways (MPAH)	Adopt a General Plan Circulation Element consistent with the Master Plan of Arterial Highways (MPAH)
4	Adopt a 7-Year Capital Improvement Plan (CIP) that includes all M1 funds	Adopt a 6-Year Capital Improvement Plan (CIP) that includes all M2 funds
5	Participate in Growth Management Area (GMA) interjurisdictional forums	Participate in Traffic Forums
6	Adopt a local Transportation Demand (TDM) program/ordinance or alternative mitigation to reduce single occupancy vehicle travel	Adopt a local Signal Synchronization Plan consistent with a countywide Master Plan
7	Adopt a local Pavement Management Plan and adequately fund the same	Adopt a local Pavement Management Plan; measure pavement conditions against a standard and show or maintain improvement of pavement condition
8	No comparable requirement	Provide an annual Expenditure Report of all M2 spending
9	No comparable requirement	Provide a Project Final Report for all completed M2 projects
10	Agree to spend all M1 revenues within 3 years	Agree to time limits for expenditures; generally 3 years
11	Meet Maintenance of Effort (MOE) standard	Meet Maintenance of Effort (MOE) standard with a Construction Cost Index (CCI) escalation every three years
12	No supplanting of private developer funding	No supplanting of private developer funding
13	Address jobs/housing balance as part of GMP	Consider land use planning strategies that accommodate transit and non-motorized transportation

M2 Precursors for Local Funding Eligibility and Allocations

1. **Traffic Forums**: Eligible Jurisdictions and Caltrans, in participation with County of Orange and the Orange County Division of League of Cities shall establish boundaries for Traffic Forums.
2. **Regional Traffic Signal Synchronization Program**: OCTA, in consultation with Eligible Jurisdictions and Caltrans, shall adopt and maintain a Traffic Signal Synchronization Master Plan that shall be part of the Master Plan of Arterial Highways (MPAH).
3. **Local Traffic Signal Synchronization Plan**: Eligible Jurisdictions shall adopt and maintain a Local Traffic Signal Synchronization Plan consistent with the Traffic Signal Synchronization Master Plan. The Signal Synchronization Plan must be part of the General Plan Circulation Element.
4. **Pavement Management**: OCTA, in consultation with Eligible Jurisdictions, shall define a countywide management method to inventory, analyze and evaluate road pavement conditions, and a common method to measure improvement of road pavement conditions.
5. **Pavement Management Plan**: Eligible Jurisdictions shall biennially adopt and update a Pavement Management Plan, using a common format approved by OCTA, and issue a report every two years regarding status of pavement conditions and implementation of the Plan.
6. **Capital Improvement Program**: Eligible Jurisdictions shall develop a 6-Year Capital Improvement Program that includes all proposed M2 expenditures, including Signal Synchronization and Pavement Management.
7. **Competitive Procedures**: OCTA, in consultation with Eligible Jurisdictions, shall develop competitive procedures for allocation of funds for Regional Capacity (Project O), Signal Synchronization (Project P), Metrolink Extensions (Project S), Metrolink Gateways (Project T), and Community Based Transit/Circulators (Project V).
8. **Environmental Cleanup/Water Quality**: OCTA shall appoint an Environmental Cleanup/Water Quality Allocation Committee as specified in M2 Ordinance #3. The Committee shall recommend to OCTA a competitive grant process; maintenance of effort provisions; annual reporting and benefit assessment methods; and funding allocations for M2 Environmental Cleanup revenues.

O. Regional Capacity Program

Description:
This program, in combination with local matching funds, provides a funding source to complete the Orange County Master Plan of Arterial Highways (MPAH). The program also provides for intersection improvements and other projects to help improve street operations and reduce congestion. This program also provides funding for construction of railroad grade separations where high volume streets are impacted by freight trains along the Burlington Northern Santa Fe railroad in northern Orange County. The program allocates funds through a competitive process and targets projects that help traffic the most by considering factors such as degree of congestion relief, cost effectiveness, and project readiness.

Cost (2005 $):
$1,132.8 million.

Status:
Initiate development of program procedures, guidelines and eligibility requirements by 2007. Call for projects estimated by 2009.

Present Day:
Roughly 1,000 miles of new street lanes remain to be completed, mostly in the form of widening existing streets to their ultimate planned width. Completion of the system will result in a more even traffic flow and efficient system.

Benefits:
Improvements to be funded by this program, when combined with local arterial projects, are projected to improve peak period arterial speeds by nearly 27% by 2030 compared to not constructing those projects.

Issues:
Right-of-way may be difficult to obtain for widening projects in some older, more densely developed sections of the county.

External Funding:
A local jurisdiction match equivalent to 50% of project costs is required to qualify for Measure M funding. Match can be reduced contingent on participation in pavement and signal synchronization programs as well as use of non-Measure M funds for local match and developer contributions.

Risks:
Jurisdictions must meet eligibility requirements to receive funding.

Related Projects:
Regional Traffic Signal Synchronization Program; Local Fair Share Program

Involved Agencies:
All local jurisdictions (cities and the County)

References:
2006 Long Range Transportation Plan; Orange County Master Plan of Arterial Highways

P. Regional Traffic Signal Synchronization Program

Description:
This program targets over 2,000 signalized intersections across the County for coordinated operation. The goal is to improve the flow of traffic by developing and implementing regional signal coordination programs that cross jurisdictional boundaries. The goal is development of a coordinated signal system that is corridor based rather than just city or agency based.

Cost (2005 $):
$453.1 million

Status:
The development of a county-wide Signal Master Plan and local signal plans will be initiated by the end of 2007. Goal is to have call for projects by 2009.

Present Day:
Most traffic signal synchronization programs today are limited to segments of roads within individual cities or under the control of specific agencies, such as Caltrans agencies. For example, signals at intersections of freeways with arterial streets are controlled by Caltrans, while nearby signals at local street intersections are under the control of cities.

Benefits:
The projects in this program will maximize the effectiveness of the existing arterial system and will improve arterial corridor speeds. When completed, this project can increase the capacity of the street grid and reduce the delay by over six million hours annually.

Issues:
Some cities may be reluctant to give up local control of signals. Requires development of local signal synchronization plans and coordination with area traffic forums.

External Funding:
Local jurisdiction match equivalent to 20% of project costs is required to qualify for this program.

Risks:
Jurisdictions must meet eligibility requirements to receive funding. This includes a local signal synchronization plan and participation in traffic forums to resolve traffic operations issues with neighboring jurisdictions.

Related Projects:
Regional Capacity Program; Local Fair Share Program

Involved Agencies:
All local jurisdictions (cities and the County); Caltrans

References:
2006 Long Range Transportation Plan; 2006 Orange County Traffic Signal Coordination Program

Q. Local Fair Share Program

Description:
This element of the program will provide flexible funding to help cities and the County of Orange keep up with the rising cost of repairing the aging street system. In addition, cities can use these funds for other local transportation needs such as residential street projects, traffic and pedestrian safety near schools, signal priority for emergency vehicles, etc.

This program is intended to augment, rather than replace, existing transportation expenditures and therefore cities must meet specific eligibility requirements to receive the funds.

Cost (2005 $):
$2,039.1 million.

Status:
Initiate development of program procedures, guidelines and eligibility requirements by 2007.

Present Day:
This program is a continuation of the existing Measure M "turnback" program.

Benefits:
This program provides an augmentation to local general fund monies used for transportation purposes that will not be sufficient alone to maintain streets and improve local/residential streets.

Issues:
Eligibility requirements include local jurisdiction consistency with the MPAH, developer impact fees, Pavement Management Plan, Signal Synchronization Plan, participation in traffic forums, compliance with CMP requirements and annual reporting of expenditures in addition to maintenance of effort requirements.

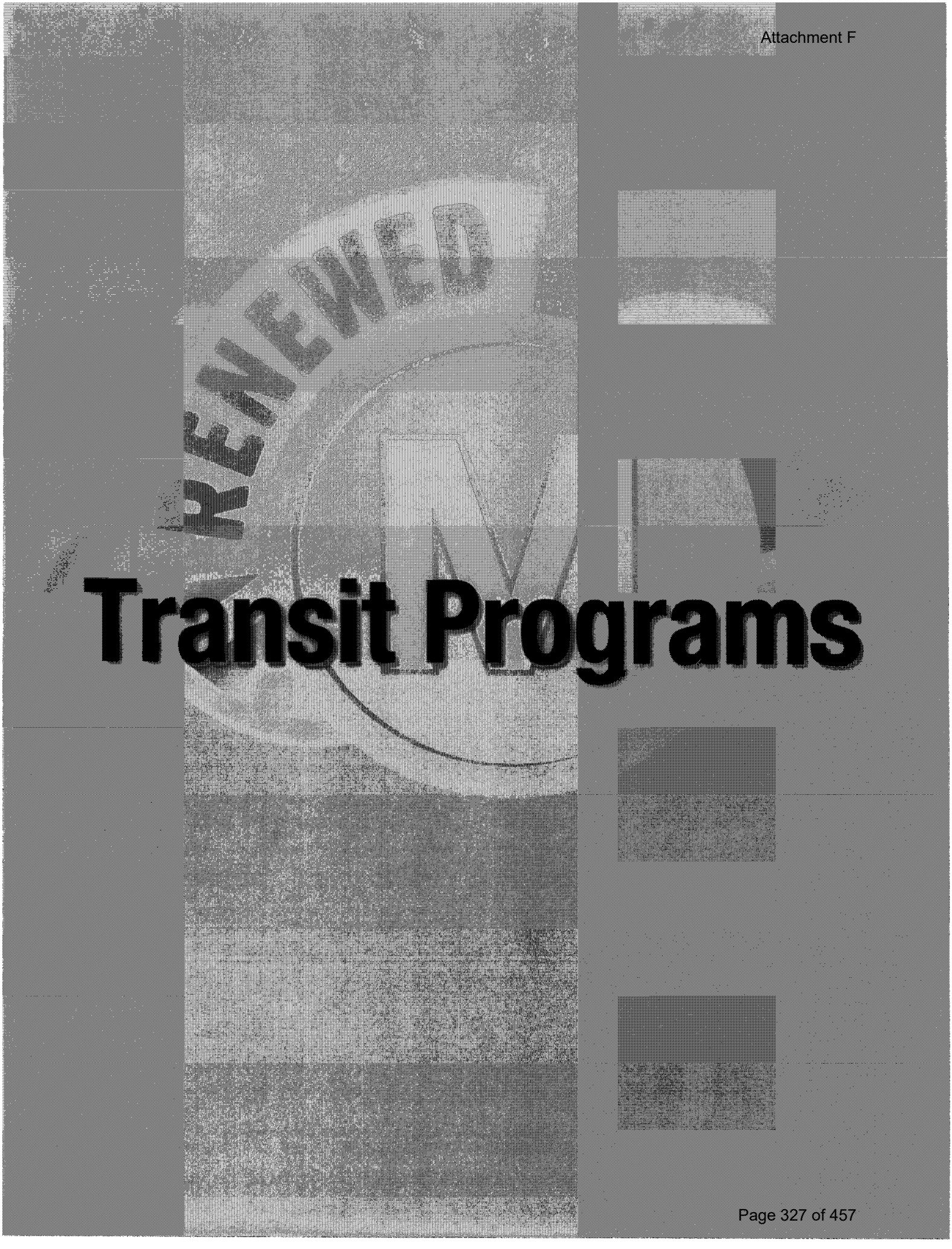
External Funding:
Local jurisdictions must maintain current general fund level of effort for transportation. Maintenance of effort to be increased annually to keep pace with inflation.

Risks:
Jurisdictions must meet eligibility requirements to receive funds.

Related Projects:
Regional Capacity Program; Regional Traffic Signal Synchronization Program

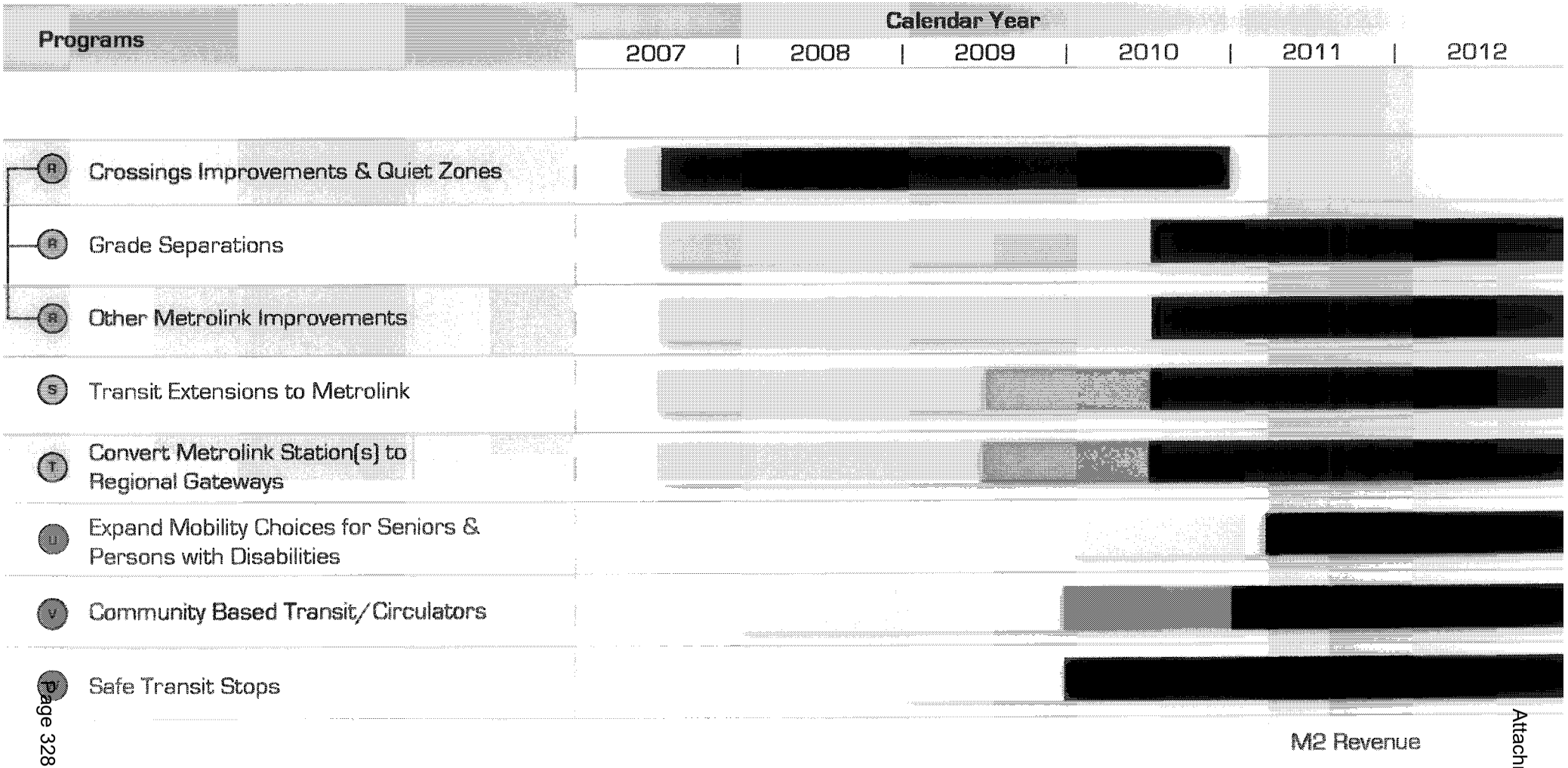
Involved Agencies:
All local jurisdictions (cities and the County)

References:
2006 Long Range Transportation Plan



Transit Programs

EARLY ACTION TRANSIT PROGRAM TIMELINE



R. High Frequency Metrolink Service

Description:
This project will increase rail services within the county and provide frequent Metrolink service north of Fullerton to Los Angeles. The project will provide for track improvements, more trains, and other related needs to accommodate the expanded service.

This project is designed to build on the successes of Metrolink and complement service expansion made possible by the current Measure M. The service will include upgraded stations and added parking capacity, safety improvements and quiet zones along the tracks, and frequent shuttle service and other means to move arriving passengers to nearby destinations.

The project also includes funding for improving grade crossings and constructing over or underpasses at high volume arterial streets that cross the Metrolink tracks.

Cost (2005 $):
$1,014.1 million

Status:
- Operations cost for service through 2041 is currently being developed
- Quiet Zone policy development underway
- Grade Separation prioritization to commence in 2007/08

Present Day:
Three Metrolink lines serve Orange County today, providing 44 daily trains and carrying more than 3.5 million annual riders.

Benefits:
High frequency Metrolink service will allow for additional capacity parallel to I-5 (Orange County Line) and SR-91 (Inland Empire-Orange County Line and 91 Line). Frequent service 7 days per week, throughout the day will allow for more flexible home to work trips as well as other non-commuter hour trips.

Issues:
- Funding continued operation of Metrolink service developed and funded under Measure M1 must be a top priority.
- Coordination with Los Angeles and Riverside Counties on inter-county priorities.
- Relationship to goods movement policies.
- Role of Metrolink in South Orange County

External Funding:
State Transportation Improvement Program (STIP) and Federal Congestion Mitigation and Air Quality (CMAQ), and Federal New Starts funds are eligible for commuter rail capital improvements.

Risks:
Moderate risk associated with expansion on OCTA owned rail right-of-ways. Significantly more risk associated with Burlington Northern Santa Fe (BNSF) railroad owned right-of-way.

Goods Movement related capacity and mitigation programs may impact service

expansion plans north and east of Fullerton.

Program Development:
2007-2010

Program Implementation:
2010 and beyond

Related Projects:
Metrolink Expansion Plan (Measure M1 funded)

Project "S" – Transit Extensions to Metrolink

Project "T" – Convert Metrolink Station(s) to Regional Gateways that connect Orange County with High-Speed Rail Systems.

Project "V" – Community Based Transit Circulators

California High Speed Rail Authority Project

Involved Agencies:
Metrolink, Caltrans, California High Speed Rail Authority, BNSF, Buena Park, Fullerton, Anaheim, Orange, Santa Ana, Tustin, Irvine, Laguna Niguel, Mission Viejo, San Juan Capistrano, Dana Point, San Clemente.

S. Transit Extensions to Metrolink

Description:
Frequent service in the Metrolink corridor provides a high capacity transit system linking communities within the central core of Orange County. This project will establish a competitive program for local jurisdictions to broaden the reach of the rail system to other activity centers and communities. Proposals for extensions must be developed and supported by local jurisdictions and will be evaluated against well-defined and well-known criteria as follows:

- Traffic congestion relief
- Project readiness, with priority given to projects that can be implemented within the first five years of the Plan
- Local funding commitments and the availability of right-of-way
- Proven ability to attract other financial partners, both public and private
- Cost-effectiveness
- Proximity to jobs and population centers
- Regional as well as local benefits
- Ease and simplicity of connections
- Compatible, approved land uses
- Safe and modern technology
- A sound, long-term operating plan

This project shall not be used to fund transit routes that are not directly connected to or that would be redundant to the core rail service on the Metrolink corridor. The emphasis shall be on expanding access to the core rail system and on establishing connections to communities and major activity centers that are not immediately adjacent to the Metrolink corridor. It is intended that multiple transit projects be funded through a competitive process and no single project may be awarded all of the funds under this program.

These connections may include a variety of transit technologies such as conventional bus, bus rapid transit or high capacity rail transit systems as long as they can be fully integrated and provide seamless transition for the users.

Cost (2005 $):
$1,000.0 million.

Status:
Step 1* of this program is underway with $3.4 million in Measure M1 grants made available to cities to study options for connections to Metrolink.

Step 2* of this program is expected to begin in 2008. $26.6 million in Measure M1 funds have been approved for Step 2.

*Go Local Program funded by M1.

Present Day:
Connections to and from Metrolink stations are provided by OCTA operated "Station link" bus service and OCTA operated fixed route bus service.

Benefits:
The goal of this program is to make Metrolink more convenient to more people in Orange County. The program also seeks to provide traffic congestion relief, and access to job and population centers.

The program is expected to build upon the baseline improvements provided

under the Measure M1 funded Metrolink Expansion Plan as well as Project "R", High Frequency Metrolink Service.

Individual project benefits will be established in Step 1 and 2 of the program.

Issues:
Coordination and consistency with Step 1 and Step 2 of the program funded under Measure M1.

Coordination with Metrolink Expansion Plan and Project "R"

Coordination with Project "V" – Community Based Transit Circulators

External Funding:
Potential capital funding from the State Transportation Improvement Program (STIP), Federal Congestion Mitigation and Air Quality (CMAQ), Federal New Starts funds and state bond funds (Proposition 116).

Risks:
Risk associated with 34 separate local transit plans and proposals.

Potential risk associated with selection of most promising projects.

Need to fully understand operating costs and plans of proposed systems.

Program Development:
Go Local Studies 2006-2009

Program Development 2007-2009

Program Implementation:
2010 and beyond

Related Projects:
Metrolink Expansion Plan (Measure M 1 funded)

Project "R" – High Frequency Metrolink Service

Project "T" – Convert Metrolink Station(s) to Regional Gateways that connect Orange County with High-Speed Rail Systems.

Project "V" – Community Based Transit Circulators

California High Speed Rail Authority Project

Involved Agencies:
All Orange County cities, Federal Transit Administration, Caltrans, California Transportation Commission

T. Convert Metrolink Station(s) to Regional Gateways that Connect Orange County with High-Speed Rail Systems

Description:
This program will provide the local improvements that are necessary to connect planned future high-speed rail systems to stations on the Orange County Metrolink route.

The State of California is currently planning a high-speed rail system linking northern and southern California. One line is planned to terminate in Orange County. In addition, several magnetic levitation (MAGLEV) systems that would connect Orange County to Los Angeles and San Bernardino Counties, including a link from Anaheim to Ontario airport, are also being planned or proposed by other agencies.

Cost (2005 $):
$226.6 million.

Status:
The California High Speed Rail Authority (CAHSRA) is currently in the project level Environmental Impact Report / Environmental Impact Statement phase of a planned high-speed rail system that will connect Southern California to the San Francisco Bay Area and Sacramento.

The CAHSRA and OCTA have entered into a Memorandum of Understanding that provides $7 million in Measure M1 funds towards this effort. The Los Angeles to Orange County segment is anticipated to follow the existing Metrolink alignment and terminate in Anaheim.

OCTA has recently purchased 13.5 acres in the City of Anaheim next to the railroad right-of-way. This site is planned for future transportation use as the Anaheim Regional Transportation Intermodal Center (ARTIC). Preliminary planning is currently underway for this site.

Present Day:
Currently there are not any high speed rail systems operating in California. Existing rail service consists of Metrolink and Amtrak.

Benefits:
When high speed rail systems develop, Orange County will need a gateway station or stations so that residents of Orange County will have convenient access. Future connections will be made by Metrolink, Amtrak, local bus, and automobile. The high speed rail system(s) is planned to relieve freeway congestion, airport congestion and allow for fast, frequent service throughout the state.

Issues:
Coordination with Metrolink Expansion Plan and Project "R"

Coordination with Project "V" – Community Based Transit Circulators

External Funding:
Potential funding from the State Transportation Improvement Program (STIP), Federal Congestion Mitigation and Air Quality (CMAQ), and Federal New Starts funds.

Risks:
Coordination with multiple agencies, many outside the County.

Long term operating costs of facilities.

Program Development:
2007-2009

Program Implementation:
2010 and beyond

Related Projects:
Metrolink Expansion Plan (Measure M 1 funded)

Project "R" – High Frequency Metrolink Service

Project "S" – Transit Extensions to Metrolink.

Project "V" – Community Based Transit Circulators

California High Speed Rail Authority Project

Involved Agencies:
All Orange County cities, Federal Transit Administration, Caltrans, California Transportation Commission

U. Expand Mobility Choices for Seniors and Persons with Disabilities

Description:
This project will provide services and programs to meet the growing transportation needs of seniors and persons with disabilities as follows:

- One percent of net revenues will stabilize fares and provide fare discounts for bus services, specialized ACCESS services and future rail services
- One percent of net revenues will be available to continue and expand local community van service for seniors through the existing Senior Mobility Program
- One percent will supplement existing countywide senior non-emergency medical transportation services
- Over the next 30 years, the population age 65 and over is projected to increase by 93 percent. Demand for transit and specialized transportation services for seniors and persons with disabilities is expected to increase proportionately.

Cost (2005 $):
$339.8 million.

Status:
Program Development Needed

Present Day:
A similar program currently exists under Measure M 1 (elderly and handicapped fare stabilization). The Senior Mobility Program and non-emergency medical transportation services currently exist as well.

Benefits:
This program is expected to provide assistance to seniors and persons with disabilities through fare discounts, a senior mobility van program, and senior non-emergency transportation services. Can divert trips from more expensive ACCESS paratransit services.

External Funding:
None

Risks:
Future demand for senior and disabled transportation could exceed program revenues

Program Development:
2010-2011

Program Implementation:
2011 and beyond

Related Projects:
Measure M 1 program for elderly and handicapped fare stabilization

OCTA Senior Mobility Program

County of Orange non-emergency medical transportation

Metrolink Expansion Plan (Measure M 1 funded)

Project "R" – High Frequency Metrolink Service

Project "S" – Transit Extensions to Metrolink

Project "V" – Community Based Transit Circulators

Involved Agencies:
All Orange County cities, Federal Transit Administration, Local Agencies

V. Community Based Transit/Circulators

Description:
This project will establish a competitive program for local jurisdictions to develop local bus transit services such as community based circulators, shuttles and bus trolleys that complement regional bus and rail services, and meet needs in areas not adequately served by regional transit. Projects will need to meet performance criteria for ridership, connection to bus and rail services, and financial viability to be considered for funding. All projects must be competitively bid, and they cannot duplicate or compete with existing transit services.

Cost (2005 $):
$226.5 million

Status:
Program Development Needed

Present Day:
Some Orange County cities have studied and / or expressed interest in the development of local transit circulators. About half of the cities operate local senior mobility services.

Benefits:
This program is expected to provide local access to activity and employment centers. Reductions in localized traffic congestion is an anticipated benefit.

External Funding:
Potential Federal Transit Administration (FTA) funds.

Risks:
Moderate – associated with ridership and operating costs forecasting.

Program Development:
2008-2010

Program Implementation:
2011 and beyond

Related Projects:
Metrolink Expansion Plan (Measure M 1 funded)

Planned Bus Rapid Transit Program

Project "R" – High Frequency Metrolink Service

Project "S" – Transit Extensions to Metrolink

Involved Agencies:
All Orange County cities, Federal Transit Administration

W. Safe Transit Stops

Description:
This project provides for passenger amenities at 100 of the busiest transit stops across the County. The stops will be designed to ease transfer between bus lines and provide passenger amenities such as improved shelters, lighting, current information on bus and train timetables and arrival times, and transit ticket vending machines.

Cost (2005 $):
$25 million

Status:
Program Development Needed

Present Day:
The Bus Stop Accessibility Program (BSAP) is nearing completion (2007). 6,500 bus stops were enhanced through this program.

Benefits:
This program is expected to provide significantly enhanced transit stops at the most heavily used transit stops in the OCTA system. A focus will be placed on intermodal connections, transfers and integration with the planned Bus Rapid Transit program.

External Funding:
Potential Federal Transit Administration (FTA) funds.

Risks:
Low risk associated with this program. Some risk associated with potential local right-of-way needs for enhanced transit stops.

Program Development:
2009-2010

Program Implementation:
2010 and beyond

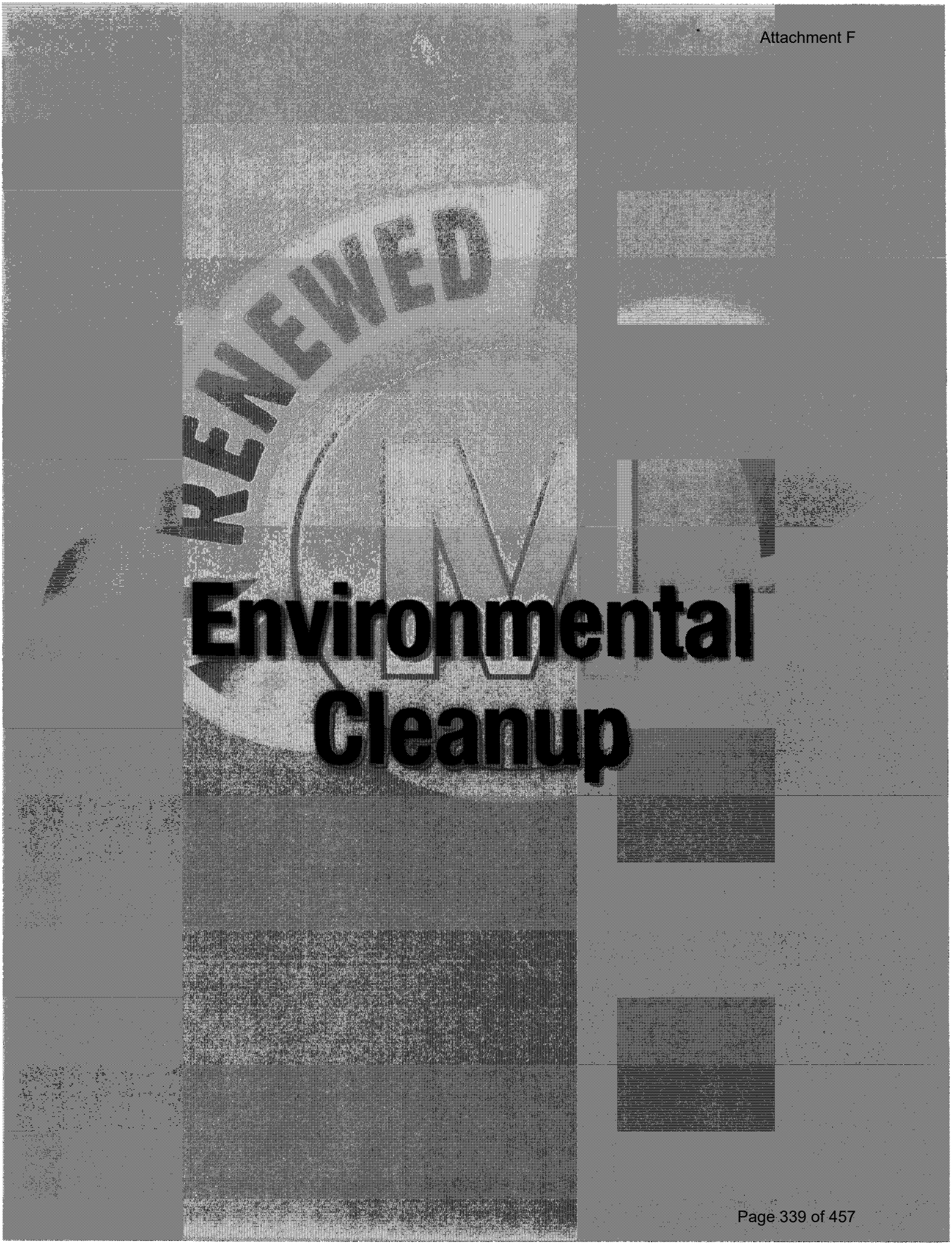
Related Projects:
Metrolink Expansion Plan (Measure M 1 funded)

Planned Bus Rapid Transit Program

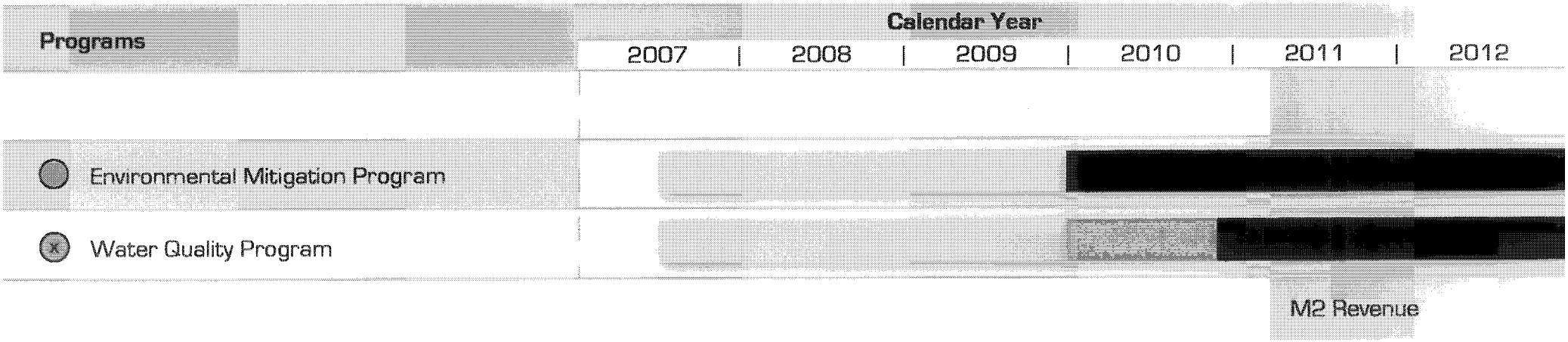
Project "R" – High Frequency Metrolink Service

Project "S" – Transit Extensions to Metrolink

Involved Agencies:
All Orange County cities, Federal Transit Administration


REFINED
Environmental
Cleanup

EARLY ACTION ENVIRONMENTAL PROGRAM TIMELINE



Legend

- Program Development
- Call For Projects
- Program Implementation

Freeway Mitigation Master Agreement

Description:
Subject to a Master Agreement negotiated between OCTA and federal and state resource agencies, provide for high-value environmental benefits such as habitat protection and resource preservation, in exchange for streamlined project approvals for the freeway program as a whole.

Cost:
A minimum of 5 percent of total Freeway expenditures ($243.5 million)

Status:
Renewed Measure M Ordinance #3 calls for development of the Master Agreement "as soon as practicable" following approval by the voters. Negotiations can commence as soon as Board of Directors authorization is given for an Early Action Plan.

Benefits:
The project has the potential to minimize or reduce regulatory delays in the implementation of freeway projects and to result in greater environmental benefits than could be achieved through traditional project-by-project mitigation.

Issues:
The Board must appoint a Mitigation and Resource Protection Program Oversight Committee. An application and selection process will be needed. Freeway impacts and mitigation opportunities must be inventoried and assessed, in some cases prior to completion of environmental documents. Resource agencies will need to make commitments in advance of permit issuance.

External Funding:
Potential for matching funds from state bonds.

Risks:
Over time, mitigation opportunities can be lost and costs can increase. Competing conservation/mitigation priorities may make reaching agreement more difficult. Resource agencies may have difficulty making necessary commitments.

Related Projects:
Can benefit all freeway projects. Some mitigation opportunities may mesh with those under Project X – Environmental Cleanup funds for road runoff.

Involved Agencies:
Caltrans, Corps of Engineers, Fish and Wildlife, Fish and Game, FHWA

References:
Renewed Measure M Transportation Investment Plan
Orange County Local Transportation Authority Ordinance No. 3

X. Environmental Cleanup

Description:
Competitive grant process designed to clean up highway and street runoff and to supplement current road runoff efforts. Program will help local agencies meet Clean Water Act standards.

Cost:
$ 237.2 million

Status:
Work is underway by local agencies to develop scope/cost to meet standards. Program policies and guidelines must be developed.

Benefits:
The program enables larger-scale, high impact projects. Early implementation could result in more benefits at lower cost. Funds may be used for water quality improvements related to both existing and new transportation infrastructure.

Issues:
The OCTA Board must appoint an Allocation Committee. Allocation committee will recommend a competitive grant process for the allocation of environmental cleanup revenues. The recommended process should give priority to cost-effective projects and programs that offer opportunities to leverage other funds. An application and selection process will be needed to fill the Allocation Committee.

External Funding:
Matching requirements can leverage other funds.

Risks:
Projects and programs that are recommended for funding may not be equitably distributed geographically. Potential for conflicting geographic and jurisdictional interests. Water quality standards and best practices can change rapidly.

Related Projects:
Existing and new transportation infrastructure may benefit from this program. May also work with Freeway Mitigation Master Agreement.

Involved Agencies:
County, cities, Caltrans, Regional Water Quality Control Boards, scientific/ academia, private/non-profit.

References:
Renewed Measure M Transportation Investment Plan
Orange County Local Transportation Authority Ordinance No. 3

Proposed Measure M Expenditure Plan Amendments

Orange Freeway (SR 57) from the Los Angeles County Line to Interstate 5

Description:

The 20-Year Master Plan for Transportation Improvements calls for the addition of one carpool lane in each direction to the Orange Freeway for its entire length within Orange County. This covers a distance of about 12 miles. In addition, soundwalls and other environmental amenities will be added. In 1988, this freeway carried over 210,000 vehicles per day and forecasts estimate this demand to grow to over 280,000 daily. Los Angeles County plans for additional lanes that extend the improvements north to Route 60 in Diamond Bar.

The 2007 Renewed Measure M Transportation Investment Plan lists additional improvements for this corridor under "Project G – Orange Freeway Improvements." Use of available Measure M funds will enable Orange County to leverage state funds and deliver the improvements earlier.

Costs:

The 1988 capital cost estimate for this improvement is $22 million. The cost of pre-construction work on early-action Renewed Measure M improvements on the Orange Freeway is $16 million (in 1988 dollars).

Implementation:

The current schedule slates the Orange Freeway improvements for the first five-year period of the plan. Design of the early-action Orange Freeway improvements will begin in 2007 and construction is scheduled to begin in 2010.

References:

1. Renewed Measure M Transportation Investment Plan, July 2006.
2. Renewed Measure M Early Action Plan, Draft Report, Orange County Transportation Authority, July 16, 2007.

Garden Grove Freeway (State Route 22) from State Route 55 to Interstate 605 including West County Connection improvements

Description:

State Route 22 is the last major freeway in Orange County slated for Measure M-funded improvements. In 2000, over 174,000 vehicles a day traveled on this freeway and forecasts show demand increasing to over 212,000 daily. At the west end, SR-22 connects with Interstate 405 and Interstate 605 – "West County Connection." This freeway segment carries over 430,000 cars today and future demand is projected to reach 526,000. Plans call for the addition of carpool lanes in each direction along with auxiliary lanes, freeway-to-freeway carpool connectors, interchange improvements, and environmental mitigation.

Costs:

The Measure M contribution for this project shall not exceed $ 303 million in 1988 dollars. These funds will leverage existing Federal, State, and Local sources that are providing over $235 million for improvements. In 2007, an additional $400 million of new state and federal funds were made available to the West County Connection.

Implementation:

Design of the project will begin immediately. Construction is targeted to begin by 2004. Sales Tax revenues would be used to augment funding from other sources. Design of the West County Connection improvements will begin in 2007 and construction is scheduled to begin on 2009.

References:

State Route 22/West County Connection Project Report, Caltrans, March 2003.

September 27, 2010

Measure M2 Freeway Environmental Mitigation Program
Draft Restoration Funding Guidelines and Restoration Projects
Staff Report

OCTA

BOARD COMMITTEE TRANSMITTAL

September 27, 2010

To: Members of the Board of Directors

From: Wendy Knowles, Clerk of the Board

Subject: Measure M2 Freeway Environmental Mitigation Program Draft Restoration Funding Guidelines and Restoration Projects

Transportation 2020 Committee Meeting of September 20, 2010

Present: Directors Brown, Buffa, Cavecche, Pringle, and Pulido
Absent: Directors Amante, Campbell, and Dixon

Committee Vote

This item was passed by all Committee Members present.

Committee Recommendations

A. Approve the Measure M2 Environmental Mitigation Program Draft Restoration Funding Guidelines.

B. Approve the six primary and three secondary (contingency) restoration projects for funding taking into consideration the recommendations of the Environmental Oversight Committee as presented in this report.

C. Authorize the Chief Executive Officer, or his designee, to negotiate and execute grant agreements consistent with the funding amounts and restoration funding guidelines.

Committee Discussion

The Chairman inquired whether all of the proposed restoration projects were in a conservation reserve owned by a city or a non-profit conservation lands entity. Staff was asked to check into the ownership status of the Big Bend restoration project proposed by the City of Laguna Beach.

The City of Laguna Beach owns the entire 4.5 acres proposed Big Bend restoration area and several hundred acres of open space immediately adjacent to the project area. They purchased the 4.5 acre parcel with open space funds approximately ten years ago. The proposed restoration area provides a crucial wildlife corridor, and it is the only wildlife corridor not obstructed by development in that area.

OCTA

September 20, 2010

To: Transportation 2020 Committee

From: Will Kempton, Chief Executive Officer

Subject: Measure M2 Freeway Environmental Mitigation Program Draft Restoration Funding Guidelines and Restoration Projects

Overview

Measure M2 provides funding for programmatic mitigation to off-set impacts of Measure M2 freeway projects. This program includes both acquisition and restoration projects. Draft restoration funding guidelines which outline the monitoring and reporting requirements throughout the restoration process have been prepared. A program of projects for restoration funding has been identified based on Board of Directors-approved biological and non-biological criteria and are recommended for approval.

Recommendations

A. Approve the Measure M2 Environmental Mitigation Program Draft Restoration Funding Guidelines.

B. Approve the six primary and three secondary (contingency) restoration projects for funding taking into consideration the recommendations of the Environmental Oversight Committee as presented in this report.

C. Authorize the Chief Executive Officer, or his designee, to negotiate and execute grant agreements consistent with the funding amounts and restoration funding guidelines.

Background

Measure M2 (M2) includes a Freeway Environmental Mitigation Program (Mitigation Program), which provides mitigation for the 13 M2 freeway projects. The Mitigation Program is designed to streamline the permit process through partnerships with the California Department of Transportation (Caltrans), the California Department of Fish and Game (CDFG), and the United States Fish and Wildlife Service (USFWS).

In early 2010, staff from the Orange County Transportation Authority (OCTA), Caltrans, CDFG, and USFWS completed the preliminary evaluation of properties available for restoration based on the biological criteria using the Board of Directors (Board)-approved acquisition, restoration, and management criteria. There were 25 total restoration proposals, including those within core habitat areas. The evaluation of these restoration projects resulted in four hierarchical groups which were presented to the Board in May 2010.

In anticipation of the monitoring and reporting requirements that will be needed to ensure success of the restoration projects, staff developed restoration funding guidelines which outline the expectations of OCTA, CDFG, and USFWS for the funding of restoration projects.

With an allocation goal of 80 percent of funds for acquisition and 20 percent for restoration over the life of the freeway mitigation program, the first tranche of funding will yield approximately $5.5 million towards restoration projects.

Discussion

The draft restoration funding guidelines outline the mitigation requirements for restoration including success criteria, species protection, restoration site preparation, maintenance and monitoring, and status reporting and documentation. Restoration project sponsors must submit a restoration plan to OCTA for review and approval prior to being granted funding and commencing restoration activities. Staff has presented the draft restoration funding guidelines to the members of the Environmental Oversight Committee (EOC) and has received feedback. The draft restoration funding guidelines are included in Attachment A.

Following the May 24, 2010 Board approval of the list of restoration projects, staff worked with Caltrans, CDFG, and USFWS to identify restoration projects that best fit the needs of the Mitigation Program. Of the 11 restoration projects from Groups 1 and 2, six primary restoration projects are recommended for funding, with four projects from Group 1 and two from Group 2. It is recommended that three additional projects (two from Group 1 and one from Group 2) be included as contingency projects, should any of the six primary projects fall out of the process. Each project in the contingency group has a restoration cost similar to that of at least one of the primary group projects to facilitate comparable replacement, if necessary, without the need for additional funds.

The following were factors based on discussions with CDFG and USFWS in evaluating the restoration projects:

- The biological benefits of the restoration projects can be tied back to the 13 M2 freeway project impacts.

- Benefits to watersheds were considered to satisfy the needs of the Regional Water Quality Control Boards (Santa Ana and San Diego) and the Army Corps of Engineers permitting requirements.

- The recommended restoration projects will be "shovel ready" by spring 2011. This timeline aligns with the anticipated availability of the first tranche of funding.

- Since the project sponsors requested more funds than what is available in the first tranche, staff has worked with CDFG and USFWS to determine the appropriate amount of funding for each project. Staff then communicated with the project sponsors regarding the proposed funding amount.

The other restoration projects were not recommended for one or more of the following reasons: the project will not be ready to commence by spring 2011, the project scope is not clearly defined, the project requires further planning development and engineering, and/or the proposed restoration components are not considered as high priority as those of the primary group.

The tables below show the primary and secondary groups of restoration projects recommended for funding, as well as the biological justifications and the proposed restoration cost for each project. The EOC supports funding the six primary and three secondary (contingency) restoration projects. On September 1, 2010, the EOC recommended the Transportation 2020 Committee and the Board "remain open to creative solutions to maximize funding of acquisition opportunities without compromising the commitment to the restoration projects." Attachment B includes the restoration map depicting the Group 1 and 2 project locations.

Table 1: Primary Funding Group

Restoration Project	Geographic Area/ Sponsors	Biological Justification		Proposed Cost	
		Watershed	Habitats		
City Parcel (aka Shea Restoration)	San Juan Capistrano	San Juan Creek	riparian, upland coastal sage scrub (CSS), oak woodland, and native grassland	$1,500,000	Group 1 Projects
Fairview Park	Costa Mesa	Talbert Channel/ Greenville Banning	wetlands, native grassland, CSS, willow scrub, oak woodland	$2,000,000	
Irvine Ranch Conservancy (Agua Chinon and Bee Flat Canyon)	Irvine / Irvine Ranch Conservancy	San Diego Creek	chaparral, CSS, coast live oak/sycamore, oak woodland, native grassland, and riparian	$1,450,000	
UCI Ecological Reserve	Irvine / Nature Reserve of Orange County	San Diego Creek	cactus scrub	$325,000	
Big Bend	Laguna Beach	Laguna Canyon Channel	upland CSS, riparian woodland	$87,500	Group 2 Projects
Imperial Highway/SR-91 Proposal (Pelanconi Park)	Anaheim	Santa Ana River	riparian sycamore/willow, upland native plant communities	$100,000	
			Total for Primary Group	$5,462,500	

Table 2: Secondary Funding Group (Contingency)

Restoration Project	Geographic Area/ Sponsors	Biological Justification		Proposed Cost	
		Watershed	Habitats		
Chino Hills State Park	Chino Hills State Park	Lower Santa Ana River	CSS, cactus scrub, sycamore/willow riparian	$2,000,000	Group 1 Projects
Irvine Ranch Conservancy (Agua Chinon and Loma Ridge)	Irvine / Irvine Ranch Conservancy	Santa Ana River	CSS, oak woodland, native grassland, riparian	$1,500,000	
Upper Buck Gully	Newport Beach	Los Trancos/ Muddy Creek	CSS, riparian corridor	$350,000	Group 2 Projects

Next Steps

Upon approval of the draft requisition funding guidelines and the program of restoration projects proposed for funding, staff will move forward with the restoration process by requesting restoration plans from project sponsors in the primary funding group. Prior to the issuance of funds, project sponsors will be required to provide a complete restoration plan per the restoration funding guidelines that will be reviewed and approved by OCTA, CDFG, and USFWS. Upon approval by the Board, staff will negotiate and execute grant agreements consistent with the funding amounts and restoration funding guidelines. The project sponsors in the primary funding group will be expected to complete the restoration plan and the grants agreement by spring 2011. If any of the project sponsors fail to complete these documents by the prescribed timeframe, the projects in the secondary funding or contingency group will be used to backfill the primary funding group accordingly.

Summary

Draft restoration funding guidelines have been prepared which outline the requirements of restoration project sponsors throughout the restoration process. In coordination with Caltrans, USFWS, and CDFG, staff has identified six primary and three secondary (or contingency) restoration projects for funding. Based on biological and non-biological criteria, the projects recommended for funding possess the most cost-effective means to offset impacts for the M2 freeway program.

Attachments

A. Draft Measure M2 Environmental Mitigation Program Restoration Funding Guidelines
B. Restoration Projects Map

Prepared by:

for

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Executive Director, Planning
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Measure M2 Freeway Environmental Mitigation Program Draft Restoration Funding Guidelines and Restoration Projects

Attachment A

DRAFT

Measure M2
Environmental Mitigation Program
Restoration Funding Guidelines

September 20, 2010

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1 INTRODUCTION & BACKGROUND

1.1 INTRODUCTION

The Orange County Transportation Authority's (OCTA) Mitigation and Resource Protection Program (Mitigation Program) provides for allocation of at least five percent of the total Renewed Measure M (M2) freeway budget for comprehensive environmental mitigation for the impacts from freeway improvements.

The Mitigation Program was approved by Orange County voters under the M2 half-cent sales tax for transportation improvements in 2006. In August 2007, the OCTA Board of Directors (Board) approved a five-year M2 Early Action Plan, covering the years 2007 to 2012, to advance the implementation of key M2 projects, including the freeway mitigation program. The mitigation program will be implemented under a master agreement between OCTA, Caltrans, and state and federal resources agencies.

This will offer higher-value environmental benefits such as habitat protection, connectivity and resource preservation in exchange for streamlined project approvals for the 13 M2 freeway projects. The Environmental Oversight Committee (EOC), subcommittee created by the OCTA Board of Directors (Board), is responsible for making recommendations to the Board on matters related to the Mitigation Program, including the Master Agreement. Comprised of 12 members, the EOC has been meeting on a monthly basis since November 2007. In March 2009, the EOC and the Board approved the draft Master Agreement and draft Planning Agreement to establish the process, roles, responsibilities and commitments for the preparation of the Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). The Master Agreement and Planning Agreement were approved by the Board in November 2009. The NCCP/HCP process examines habitat resources within broad geographic areas and identifies conservation and mitigation measures to protect habitat and species. This process could take 18 to 24 months to complete. However, the Master Agreement includes an "advance credit" provision that could allow funds to be allocated prior to completion of the NCCP/HCP.

1.2 RESTORATION PROJECT FUNDING

The M2 Mitigation Program will provide approximately $27.5 million for acquisition and restoration projects for the first tranche of funding, available beginning in Fiscal Year 2009/10. With a current allocation goal of 80 percent of funds for acquisition and 20 percent for restoration over the life of the freeway mitigation program, the first tranche of funding will yield approximately $5.5 million towards restoration projects.

The second tranche of funding is approximately $25 million for acquisition and restoration and is expected to be available during Fiscal Year 2011/12. Future tranches of funding have yet to be determined beyond the second tranche.

The Project Sponsor shall disclose in the Restoration Plan any and all other funding sources which have been utilized for current maintenance and/or will be used for the restoration of the proposed project.

1.3 SUMMARY OF OVERALL PROJECT

In conjunction with Caltrans, California Department of Fish and Game (CDFG), and United States Fish and Wildlife Service (USFWS), all restoration proposals have been evaluated based on biological merits. There were 25 restoration proposal submittals during the first tranche of funding, including those within core habitat areas. The evaluation of these restoration properties resulted in four hierarchical groups with the following characteristics:

Group 1	typically possess the highest potential to support similar vegetative communities lost to freeway projects, restore habitat for species that are considered sensitive, and provide connectivity/contiguity opportunities
Group 2	typically possess good potential to support similar vegetative communities lost to freeway projects, restore habitat for species that are considered sensitive, and provide connectivity/contiguity opportunities
Group 3	generally possess lower potential to support similar vegetative communities lost to freeway projects, fewer sensitive species, and fewer connectivity/contiguity opportunities
Group 4	generally possess very low potential to support vegetative communities lost to freeway projects, very few species considered sensitive, and very low connectivity/contiguity opportunities

See Attachment—Preliminary Results Restoration Proposals: Biological Factors

Through preliminary discussions with CDFG and USFWS (Wildlife Agencies), restoration proposals within the first two groups (11 total proposals) possess the necessary biological value that would enable OCTA to obtain mitigation credits for the M2 freeway projects.

1.4 GOALS AND OBJECTIVES OF THE NCCP

The M2 Mitigation Program has the potential to minimize or reduce regulatory delays in the implementation of the 13 M2 freeway improvement projects. The specific type of mitigation will be determined by OCTA working in conjunction with various stakeholders. The various forms of mitigation may include acquisition and/or restoration of land for conservation.

OCTA is developing a NCCP/HCP Joint Programmatic Environmental Impact Report/Environmental Impact Statement (EIR/EIS), which is to include a Master Streambed Alteration Agreement (MSAA) for the 13 freeway improvement projects under M2.

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The EIR/EIS/MSAA will be prepared to ensure that the following planning goals are met:

- Conservation and management of covered species within the planning area;
- The preservation, restoration and enhancement of aquatic, riparian and terrestrial natural communities and ecosystems that support covered species within the planning area;
- A means to implement Covered Activities in a manner that complies with applicable state and federal fish and wildlife protection laws and other environmental laws, inclusive of the California and Federal Endangered Species Acts (CESA and ESA), the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA);
- A basis for permits necessary to lawfully take covered species;
- A comprehensive means to coordinate and standardize mitigation and compensation requirements for covered activities within the planning area;
- An accounting process that will document net environmental benefit from regional, programmatic mitigation in exchange for net benefit in the delivery of transportation improvements through streamlined and timely approvals an permitting;
- A less costly, more efficient project review process that results in greater conservation values than project-by-project, species-by-species review; and
- Clear expectations and regulatory assurances regarding covered activities occurring within the planning area.

2 RESTORATION PLAN OVERVIEW

The Project Sponsor(s) shall submit a Restoration Plan to OCTA for review and written approval at least 30 days prior to commencing restoration activities. Plans shall be prepared by persons with expertise in restoration and monitoring of Southern California ecosystems. Restoration plans shall include the following elements:

- Land ownership/land management
- Property Analysis Record
- Restoration strategy
- Goals and objectives
- Success criteria
- Site assessment
- Planting plan
- Source materials
- Species protection
- Site preparation and installation
- Maintenance program
- Monitoring program
- Contingency measures
- Reporting and documentation

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2.1 LAND OWNERSHIP AND LAND MANAGEMENT

The Project Sponsor(s) shall provide a description of the land ownership status including the name and address of the land owner(s), the total acreage of the property, the proposed restoration acreage. Where the property is managed by a different entity than the land owner, the Project Sponsor(s) shall include the name, address, and organizational status (e.g., private company, non-profit organization) of the land management entity, including years of experience managing habitat lands and/or conducting habitat restoration.

The protection status of the land shall also be provided including any documentation indicating the project sponsor has permission to restore habitat with the appropriate conservation easement or deed restrictions (see Section 7.1).

2.2 PROPERTY ANALYSIS RECORD

The Property Analysis Record (PAR), developed by The Center for Natural Lands Management (http://cnlm.org/), is a tool to allow land managers identify long-term land management tasks and associated costs, including site monitoring, maintenance, and administrative fees. Assigning realistic costs allows establishment of an estimate of the level of effort required to successfully complete and maintain the restoration. Prior to project funding, the Project Sponsor(s) shall prepare a site-specific PAR, or PAR-like equivalent analysis, for review and approval by OCTA and the Wildlife Agencies.

2.3 RESTORATION STRATEGY

The Project Sponsor(s) shall provide a description of the restoration strategy or strategies to be used for the proposed project. Restoration strategies include habitat enhancement, restoration, or creation, and can be defined as follows:

- *Enhancement* refers to improving the functions and values of existing (but marginal or degraded habitat) to benefit species and/or landscape integrity or connectivity. Enhancement typically does not result in a net gain in habitat acres, but has a high potential for success.
- *Restoration* focuses on re-establishing or rehabilitating former or degraded habitat so that it is capable of supporting native species and/or landscape functions. Restoration may or may not result in a net gain in habitat acres.
- *Creation* creates habitat where none currently exists, and often involves site manipulations such as grading. Creation may result in a net gain in one or more types of habitat acres, but may have a lower potential for success than enhancement or restoration. Creation also has the potential to impact existing habitats.

Although all strategies will have similar goals of improving the structure, composition, and overall function of the system, they will vary in methods, cost,

potential for success, and possibly, maintenance and monitoring requirements. In the following sections, these strategies are referred to collectively as 'restoration.'

2.4 GOALS AND OBJECTIVES

The Project Sponsor(s) shall identify specific goals and objectives for the proposed project. Establishing goals and objectives is an essential component of any restoration effort. Goals and objectives provide a framework against which to measure the overall success of the project and ensure that implementation and monitoring is sufficiently tailored to assess project progress. Goals and objectives should be clear, understandable, measurable, feasible, and sufficiently detailed to avoid interpretation regarding the intent of the project. Goals focus on overall project results, while objectives list the steps or tasks that will be used to attain the goal(s). An example of an appropriate project-specific restoration goal with objectives might be:

- Goal: Improve habitat quality for riparian birds by increasing native plant species diversity, density, and structure within XX feet (acres) of a streambed channel.
  - Objective 1: Remove XX acres of fill within the restoration area to improve hydrological flows (specify timeframe)
  - Objective 2: Remove XX acres of the non-native, invasive Pampas grass (*Cortaderia selloana)* within the restoration area (specify timeframe)
  - Objective 3: Plant XX acres of willows, cottonwoods, and sycamores within the restoration area at a density of XX trees per acre (specify timeframe)

2.5 SUCCESS CRITERIA

The Project Sponsor(s) shall identify appropriate success criteria prior to project implementation. Success criteria provide a standard by which to (1) measure the progress of the restoration effort and (2) allow for remedial actions or adaptive management if milestones are not achieved. Criteria should evaluate specific attributes of the target habitat or ecosystem that are tied to ecological functioning *and* linked to the project-specific goals and objectives. In addition, species responses to habitat improvements will also be evaluated, where appropriate.

General and selected habitat-specific criteria are provided in Sections 2.5.1 and 2.5.2, below. However, OCTA recognizes that there may be instances where site conditions and/or operational or ecological parameters preclude attainment of these success criteria. Therefore, the Project Sponsor(s) may establish alternative site-specific success criteria based on historic and/or existing conditions at reference sites on or near the restoration site(s). In these cases, proposed alternative success criteria must be scientifically defensible and supported by scientific evidence, including but not limited to published reports or papers, quantitative field studies, or long-term monitoring data that is relevant to the proposed effort. Documentation to

support alternative success criteria must be included in the Restoration Plan and will be subject to approval by OCTA.

2.5.1 General Success Criteria

Success criteria are often defined in terms of percent cover by native and non-native species and species diversity within restored habitat. For restoration projects that involve planting trees, the survival rate of individual trees is also a success criterion. Habitat-specific success criteria are included below. If survival and/or cover requirements have not been met, the Project Sponsor(s) shall be responsible for replacement plantings or additional weed control efforts to achieve these results. Replacement plantings shall be subject to the same survival, growth, and monitoring requirements as initial plantings, and the monitoring period shall begin *after* re-planting. Irrigation shall stop two years prior to achieving the success criteria.

2.5.2 Habitat-specific Success Criteria

Oak, Walnut and Sycamore Woodlands Orange County supports a variety of oak, walnut, and sycamore woodlands, and these habitats may be included in restoration projects. The monitoring period for oak and walnut restoration will be a minimum of 10 years, and the monitoring period for sycamore restoration will be a minimum of 5 years. For these and other tree-dominated woodlands, the following success criteria shall be used.

Restoration plantings shall attain a minimum of 80% survival the first year, 95% the second year, and 100% survival thereafter. By the end of the monitoring period, cover by non-native species will be less than 5%, and none of the non-native invasive species identified in Section 2.10.3 will be present within the restoration site. Because non-native annual grasses have become naturalized in upland environments in Southern California, the performance criteria for non-native annual grasses will be less than 10% cover at the end of the monitoring period.

All tree plantings should achieve measurable annual growth in height and trunk girth and no loss of the primary growth leader. Loss of the primary growth leader shall require tree replacement if this occurs in years 1-3. Replacement plantings shall be subject to the same survival, growth, and monitoring requirements as initial plantings, and the monitoring period shall begin *after* re-planting (e.g., 5 years after replanting for sycamores, 10 years for oaks and walnuts).

The planting plan for woodlands (Section 2.6.1) should specify the targeted planting density. Surviving trees should be well-distributed spatially across the planting area and any area greater than 400 square feet lacking surviving trees with measurable growth in years 1-3 shall receive replacement plantings. The maintenance and monitoring period shall be extended an additional 5 years *after* replacement plantings for sycamores, and 10 years for oaks and walnuts.

If survival and/or cover requirements have not been met, the Project Sponsor(s) shall be responsible for replacement plantings to achieve these results. Replacement plants shall be monitored with the same survival and growth requirements for 5 years after replacement planting for sycamores and 10 years after replacement planting for oaks and walnuts. Irrigation shall be stopped two years prior to achieving the success criteria (minimum of 5 years prior to achieving the success criteria for oak and walnut restoration sites).

Willow Woodland and Riparian Scrub Restoration plantings shall attain a minimum of 75% native cover after 3 years and 90% cover after 5 years with less than 5% cover by non-native species and 0% cover by non-native invasives. The site shall have 90% of the species diversity of a nearby reference site.

Coastal Sage Scrub Restoration plantings shall attain 50% native shrub cover after 3 years, and 75% native shrub cover after 5 years, with less than 5% cover by non-native species (except annual grassland, which will have less than 10% cover), and 0% cover by non-native invasives. The site shall have 90% of the species diversity of a nearby reference site.

Native Grasslands If the proposed restoration site will include native grasslands, success criteria should be proposed by the Project Sponsor in the Restoration Plan for concurrence by OCTA and the Wildlife Agencies.

Open Water and Emergent Wetland If the proposed restoration site will include open water and/or emergent wetlands, success criteria should be proposed by the Project Sponsor in the Restoration Plan for concurrence by OCTA and the Wildlife Agencies.

2.5.3 Species Success Criteria

Assessing species responses to habitat restoration will focus on demonstrating upward trends in presence, abundance, nesting/breeding activity, and/or diversity of selected target species or groups of species (e.g., riparian birds). Target species selection shall focus on species that are indicators of habitat conditions, and may include covered species (as appropriate) and/or non-sensitive common species.

2.6 SITE ASSESSMENT

A site assessment shall be conducted to (1) identify the basic opportunities and constraints for successful restoration and (2) establish existing or baseline conditions *prior* to initiation of restoration activities. The latter will allow for a comparison of pre- and post-restoration conditions and thus, a measure of the overall success of the restoration effort. The assessment of baseline conditions may assist in establishing realistic success criteria.

In many cases, existing data will be available for use in completing all or a portion of this assessment. It is anticipated that the site assessment will utilize a combination

of existing data and surveys, including (but not limited to) technical reports, plant and animal surveys, vegetation and species mapping, field sampling, aerial photography, photos of existing conditions, and historic records. At a minimum, the site assessment shall document:

- Existing and historic habitat conditions on the restoration site(s)
- Sensitive species mapping (distribution) on or near the restoration site(s)
- Invasive species mapping (abundance and distribution) on the restoration site(s)
- Soil suitability, as appropriate to the specific restoration effort
- Topography
- Hydrology
- Reference sites for alternative success criteria (if applicable)

2.7 PLANTING PLAN

For those projects that propose to introduce plant materials into restoration sites, the Project Sponsor(s) shall include a detailed planting plan in the Restoration Plan. At a minimum, the planting plan shall include:

- Location (with map) of the restoration site(s)
- Schematic depicting the restoration site(s), including identification of suitable planting locations based on soils, aspect, and other site features
- Detailed irrigation plan (if applicable)
- Plant palette (list of all species proposed to be used in the restoration area)
- Size and number of container plantings or cuttings (by species) and amount of seed (by species)
- Planting density (including on-center spacing for each tree and shrub species)
- Planting methodology
- Planting schedule
- Plant protection methods (e.g., invasive species control, herbivory control)
- Photos of existing condition
- Videography (if possible) of existing condition

The following guidelines are provided for additional clarification on the planting plan.

2.7.1 Woodlands

Woodland habitats with multiple canopy layers shall include detailed plans for both the canopy (tree) layer and the associated understory layers (including early successional native species); all structural layers shall be monitored to ensure restoration of viable habitat, and all layers shall be subject to general or habitat-specific success criteria, as outlined sections 2.5.1 and 2.5.2.

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2.7.2 Tree Relocation

Tree relocation is not anticipated for most restoration projects; however, the following conditions must be met where tree relocation is deemed feasible and appropriate.

- Prior to relocation, the Project Sponsor(s) shall prepare a complete inventory of trees to be relocated, including species and diameter-at-breast-height (dbh); results of this inventory shall be included in the Restoration Plan.
- The Project Sponsor(s) shall only relocate trees that are in good health, less than 30 inches dbh, *and* that will otherwise be removed as a result of project activities. The trees shall be boxed and relocated to an appropriate location within the restoration site. If a tree is damaged or destroyed during boxing or relocation, it will not be suitable for use in the restoration area.
- Relocation of trees shall be conducted by a certified arborist experienced with transplanting oaks and other native trees.
- If tree relocation is tied to mitigation credit, any damaged or destroyed trees shall be replaced onsite and in-kind. For oak and walnut trees that are less than 5" dbh, replacement ratios shall be 3:1; for trees from 5-12" dbh, the replacement ratio shall be 5:1; and for trees that are 12" or greater dbh, the replacement ratio shall be 10:1. All sycamores shall be replaced in-kind at a 10:1 ratio.
- In the event that relocated trees need to be replaced, Project Sponsor(s) shall use acorns or walnuts, plants rooted in liners, or one gallon containers to increase the likelihood of survival.
- Relocated trees shall be monitored for survival annually by a biologist according to the schedule in Section 2.5.2. Any relocated tree that does not survive shall be replaced in-kind, at the ratios specified above. Any relocated trees that do not survive or appear unhealthy due to transplanting during the 10 year monitoring period shall be replaced. Replacement plantings shall be monitored with the same survival and growth requirements as initial plantings, for 10 years *after* re-planting.
- All replacement tree stock shall be obtained from a native plant nursery, using locally adapted stock, and shall not be inoculated to prevent heart rot.

2.8 SOURCE MATERIALS

While source materials typically refer to materials used for restoration plantings, guidelines are also provided to ensure that plant materials used in areas adjacent to the restoration site(s) are compatible with the restoration program.

2.8.1 Restoration Plants

Appropriate selection of restoration plant materials (seed, cuttings, container stock) will have a direct bearing on the overall success of the restoration effort. Locally collected material will be better-adapted to site conditions and thus, have a greater potential for survival. Equally important is maximizing genetic diversity of restoration

materials; genetically diverse populations are better able to adapt to changing conditions.

In many cases, procurement of source materials from the restoration site or general vicinity will provide adequate material if the source population(s) is large and collection methods include an adequate number of parental plants. In some cases (e.g., relatively common plants or plants with small, local populations), collection from a wider zone (e.g., South Coast ecoregion) may be appropriate. The Project Sponsor(s) shall include a list of all plant sources in the Restoration Plan. The plant source refers to the geographic area where the material was collected, which may be different from the nursery or facility where the restoration material is grown.

2.8.2 Invasive Plants

The use of invasive plants in or adjacent to restoration area(s) is prohibited. The Project Sponsor(s) shall not plant, seed, or otherwise introduce invasive plant species into the restoration area(s) *or* into adjacent landscaped areas. Invasive plant species include those on the California Native Plant Council's (Cal-IPC) California Invasive Plant Inventory (Cal-IPC 2006) and updates (e.g., Cal-IPC 2007). The Invasive Plant Inventory replaces the earlier Exotic Pest Plants of Greatest Ecological Concern in California (Cal-EPPC 1999).

2.8.3 Landscape Plants

The Project Sponsor(s) shall not use plants that require intensive irrigation, fertilizers, or pesticides in landscaped areas adjacent to restoration area(s). In addition, runoff from adjacent areas shall be routed away from restoration site(s) unless specifically intended to augment flows onsite. Any runoff allowed into the restoration area(s) shall be treated prior to entering the site to remove debris or pollutants. The Project Sponsor(s) shall submit a list of plants proposed for use in areas adjacent to the restoration site to OCTA for review and approval. This list shall be submitted with the Restoration Plan or at least 30 days prior to acquiring and/or use of any plant materials in adjacent areas.

2.9 SPECIES PROTECTION

A key objective of restoration projects is to improve habitat for the benefit of native species, including sensitive plants and animals. However, the process of restoration has the potential to directly or indirectly impact species during implementation. For this reason, the Restoration Plan shall incorporate sensitive species protection measures. Species protection measures include (1) focused surveys to identify sensitive species that may be impacted during project implementation, (2) permits and authorizations for take of listed species and Species Protection Plans for listed species, and (3) restoration activities restrictions to limit or minimize impacts to sensitive species.

2.9.1 Sensitive Species Surveys

Where the site assessment indicates the presence or potential for occurrence of sensitive species and these species may be directly or indirectly impacted by restoration activities, the Project Sponsor(s) or a qualified biologist under direction of the Project Sponsor(s), shall conduct appropriately timed surveys prior to initiation of restoration activities. Where sensitive species are documented, the Project Sponsor(s) shall adhere to conditions in sections 2.9.2 and 2.9.3, as applicable.

Focused surveys may include (but are not limited to) surveys for threatened, rare, or endangered species, breeding/nesting birds, southwestern pond turtle, and bats. The Project Sponsor(s) shall use survey guidelines provided below or agency-approved survey protocols. Findings shall be included in the Restoration Plan (if timing allows) or documented in a letter report to OCTA prior to the onset of restoration activities.

Federally or state-listed species. The restoration site(s) (or suitable habitat within the restoration site[s]) shall be surveyed for listed species prior to the onset of restoration activities to ensure that no direct or indirect impacts will occur from project implementation. Surveys shall be conducted by a qualified biologist using agency-approved, species-specific survey protocols. If listed species are detected, the Project Sponsor(s) shall adhere to conditions in sections 2.8.2 and 2.8.3, as appropriate, including the preparation of a Species Protection Plan.

If restoration activities occur subsequent to site preparation (e.g., remedial grading in year 2 or 3), a qualified biologist shall re-survey for listed species using agency-approved, species-specific survey protocols. If listed species are detected, the Project Sponsor(s) shall adhere to conditions in sections 2.8.2 and 2.8.3, as appropriate, including the preparation of a Species Protection Plan.

Breeding/nesting birds. If vegetation removal or other activities that may result in the destruction of nests and death or injury of nestlings and fledglings will be conducted during the bird breeding season (March 15th to September 15th in riparian habitat and February 15th through August 31st in upland habitat), breeding bird surveys will be conducted. These surveys will consist of at least three surveys conducted the week prior to conducting activities, with the last survey occurring within 2 days prior to commencement of work activities. If no breeding/nesting birds are observed and concurrence has been received from OCTA, work activities may begin. If breeding/nesting birds are observed, the measures described in 2.9.3 will be implemented.

Southwestern pond turtle. Suitable habitat within the restoration site(s) (i.e., drainages that contain standing water and adjacent uplands) shall be surveyed for southwestern pond turtle (*Actinemys marmorata)* prior to the onset of restoration activities to ensure that no direct or indirect impacts will occur from project implementation. Presence/absence surveys shall be conducted by a qualified turtle

biologist. The biologist shall survey both aquatic habitat and potential breeding areas or existing nests in adjacent uplands.

Bats. If the restoration project includes any work at a bridge site, a qualified bat biologist shall survey the bridge structure for bats prior to the onset of restoration activities. The biologist shall conduct a minimum of 3 surveys, 7 days apart; unless a positive presence is determined, the surveys can be ended.

2.9.2 Permitting

If federally or state-listed species are documented on or adjacent to the restoration site(s) during the site assessment and/or focused surveys, the following conditions shall apply:

- The Project Sponsor(s) shall consult with the appropriate agencies, as prescribed in Federal and State Endangered Species Acts, and obtain any necessary federal and/or state permits/authorizations prior to the onset of any restoration activities. Any unauthorized take of listed species may result in prosecution.
- The Project Sponsor(s) shall be required to prepare a Species Protection Plan that contains specific measures to avoid, minimize, or mitigate impacts to listed species. The plan shall be submitted to OCTA with the Restoration Plan (if timing allows) or prior to initiation of any restoration activities, and will require OCTA review and approval prior to commencing work.

If federally and/or state-listed species are found on or near the restoration area *after* the project has been initiated, the following conditions shall apply:

- The Project Sponsor(s) shall cease work in the affected area and consult with the appropriate agencies, as prescribed in Federal or State Endangered Species Acts.
- If the work requires that the species be removed, disturbed, or otherwise impacted, the Project Sponsor(s) shall obtain the appropriate federal and/or state permits/authorizations prior to re-starting work in the affected area. In addition, the Project Sponsor(s) shall submit a Species Protection Plan to OCTA for review and approval.

The Project Sponsor(s) shall also be responsible for obtaining any other resource agency permits applicable to any work related to restoration activities. Such permits may include compliance with CDFG Section 1600, and/or Army Corps of Engineers (ACOE) and Regional Water Quality Control Board Sections 401 and 404.

2.9.3 Restoration Activities Restrictions

Where sensitive species may be directly or indirectly impacted by project implementation, the following species protection measures shall be implemented, as appropriate:

- If threatened or endangered bird species are present in or adjacent to the restoration area, no work shall occur during the breeding season (March 15th through September 15th in riparian habitat and February 15th to August 31st in upland habitat) to avoid direct or indirect (e.g., noise) impacts to listed species *except* as authorized by state and/or federal threatened/endangered species permits/authorizations which may be required prior to commencing restoration activities.
- If breeding activities and/or active bird nests of unlisted bird species are located and concurrence has been received from OCTA, the breeding habitat/nest site shall be fenced or otherwise marked a minimum of 50 feet (250 feet for raptors) in all directions, and this area shall not be disturbed until the nest becomes inactive, or the young have fledged, are no longer being fed by the parents, have left the area, or will no longer be impacted by the project.
- Where restoration activities may disturb nesting swallows on bridges, the Project Sponsor(s) shall avoid work March 15th through September 15th. If such a condition cannot be met, then prior to March 1st of each year, the Project Sponsor(s) shall remove all existing nests which would be impacted by the project. The Project Sponsor(s) shall continue to discourage new nest building in places where they would be disturbed using methods approved by OCTA. Nest removal and hazing must be repeated at least weekly until restoration activities begin or until a swallow exclusion device is installed. The exclusion device must provide a space of four to six inches for the passage of snakes at the bottom edge. Nests must be discouraged throughout the restoration implementation phase. At no time shall occupied nests be destroyed as a result of project implementation.
- If southwestern pond turtles are present in or adjacent to the restoration area, impacts to turtle habitat in wetlands or uplands from project implementation shall take place outside the breeding period (April-August).
- If bats are present in or adjacent to the restoration area, OCTA shall be notified and provisions for their protection/conservation will be discussed. If loss of significant bat roosting habitat occurs due to the implementation of the project, the Project Sponsor(s) shall institute protection measures including the installation of roosting structures below the deck at OCTA approved locations.
- If work is performed within any stream channel during the winter storm period, the Project Sponsor(s) shall monitor the five day weather forecast. Where the forecast indicates precipitation, the Project Sponsor(s) shall secure the site to prevent materials from entering the stream or washing downstream. The site shall be completely secured one day prior to precipitation, unless prior written approval has been provided by OCTA. During precipitation events, restoration activities are prohibited *except* for those activities necessary to secure the site. No work shall occur in areas containing flowing water until the flows have receded and the soil moisture content has stabilized.

2.10 SITE PREPARATION AND INSTALLATION

2.10.1 Grading

Where grading is necessary to achieve an appropriate planting surface for restoration, the Project Sponsor(s) shall prepare a pre-grading plan which will include final contours, hydrological testing and anticipated flow regime (as appropriate), and schedule for implementation. The pre-grading plan shall be included in the Restoration Plan.

Grading activities shall be subject to the following conditions:

- Grading of restoration sites(s) shall be completed no later than December 31st. To the extent feasible, grading should be conducted when soil moisture is relatively low.
- Heavy machinery used in grading may result in soil compaction. Therefore, grading activities shall avoid the dripline of oaks and other areas where compaction may limit restoration success. If necessary, protective fencing shall be placed around the oak dripline to prevent compaction of the root zone from equipment.

2.10.2 Soil Testing

For restoration strategies that focus on restoring or creating habitat, soil testing may be required prior to and during installation to determine soil suitability and prescribe appropriate soil amendments (if necessary) to ensure adequate growing conditions. Soil testing may occur during the site assessment, site preparation, or restoration monitoring phases, and shall include an assessment of soil texture, nutrients, pH, and compaction, among other factors.

2.10.3 Pre-planting Weed Control

Weed control at restoration sites must be addressed at least 3 months before planting activities are initiated. Sites with a significant weed population may require one or more seasons of weed control before native plantings can be installed. While many methods of weed control are available, weed control strategies shall be site-specific and consider target weed species (including extent and abundance of infestation), existing native vegetation, presence of sensitive species, proximity to water sources, and in some cases, importance of maintaining an intact soil profile.

Methods for controlling many perennial invasive weeds (e.g., Pampas grass, tamarisk, eucalyptus) are relatively standard and include removal and/or herbicide treatment. Refer to Cal-IPC (http://www.cal-ipc.org/ip/management/index.php) for sources on specific treatment methods. In all cases, treated plant material shall be removed from the site and disposed of at an appropriate offsite facility.

Effective herbaceous weed eradication requires initial stimulation of weed growth. This allows a larger crop of weeds to be eradicated and reduces the weed seed

bank in the soil. This 'weed farming' method of removal is recommended for restoration sites where target herbaceous weeds are established *and* where irrigation is feasible. Weed farming includes a cycle of irrigation, weed germination, and weed removal that may be repeated up to 12 times or more as a means of reducing the weed seed bank. Mechanical clearing, mowing, and non-residual herbicides (e.g., Rodeo and/or Roundup) may be used to remove weed and exotic species, either in combination with weed farming or as an alternative where weed farming is not feasible. The weed farming process is described below:

- The site will be cleared of weeds by mechanical mowing. Cut vegetation (including stems and flowering heads) will be removed from the site and disposed of at an appropriate offsite facility.
- In the absence of natural rainfall, the restoration area will be irrigated two times per week for a two week period using a temporary irrigation system. Soils shall be saturated to a depth of at least 3 inches during each irrigation cycle.
- Germinated weeds will be mowed and/or treated with an appropriate post-emergent herbicide at the end of the first two week irrigation cycle. Dead vegetation will be removed from the site and disposed of at an appropriate offsite location.
- The cycle of irrigation and weed removal, as described above, will be repeated at least 3 times, including the initial cycle. The cycle will be repeated during different seasons to ensure the removal of both annuals and perennials. The Project Sponsor(s) shall determine if further treatment is required to reduce the weed seed bank.

At the time of planting, the Project Sponsor(s) shall assess whether any undesirable vegetation has become established in the restoration area(s) and whether additional eradication is necessary. Wherever feasible, pre-planting weed control will use mechanical methods such as removal by hand or string trimmers. If effective weed control cannot be attained through mechanical means, appropriate systemic non-residual herbicides may be applied by a licensed applicator under the supervision of the Project Sponsor(s). In some cases, herbicide application may be preferable to mechanical control, particularly where the latter results in excessive impacts to the soil profile. Weed species to be removed may include, but are not limited to the following species listed in Table 1:

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Table 1
Invasive Species

Common Name	Scientific Name
Tamarisk	*Tamarix ramossissima*
Eucalyptus	*Eucalyptus* spp.
Castor Bean	*Ricinus communis*
Pepper trees	*Schinus* spp.
Mustards	*Brassica* spp.
Tree tobacco	*Nicotiana glauca*
Fennel	*Foeniculum vulgare*
Arundo	*Arundo donax*
Ailanthus	*Ailanthus altissima*
Perennial pepper weed	*Lepidium latifolium*
Russian thistle	*Salsola tragus*
Mexican fan palm	*Washingtonia robusta*
Italian thistle	*Carduus pycnocephalus*
Milk thistle	*Silybum marianum*
Non-native weedy thistles	*Cirsium* spp.
Non-native annual grasses: Wild Oats Slender wild oats Foxtail chess Ripgut brome Soft chess Mediterranean barley Italian ryegrass Annual beard grass	 *Avena fatua* *Avena barbata* *Bromus madritensis* ssp. *rubens* *Bromus diandrus* *Bromus hordeaceus* *Hordeum murinum* *Lolium multiflorum* *Polypogon monspeliensis*
Non-native perennial grasses: Pampas grass Bermuda grass Fountain grass Smilo grass	 *Cortaderia selloana* *Cynodon dactylon* *Pennisetum setaceum* *Piptatherum miliaceum*

It should be noted that some non-native species (e.g., annual grasses) are naturalized in southern California and reducing their levels to <5% cover may not be practicable in all situations.

Invasive species consisting of, but not limited to, Arundo (*Arundo donax*), tree tobacco (*Nicotiana glauca*), pepper tree (*Schinus* sp.), Ailanthus (*Ailanthus altissima*), tamarisk (*Tamarix* sp.), perennial pepperweed (*Lepidium latifolium*),

Russian thistle (*Salsola tragus*), Mexican fan palm (*Washingtonia robusta*), and castor bean (*Ricinus communis*) shall comprise 0% of the cover at the end of the 5-year monitoring period.

2.10.4 Irrigation

Many (but not all) restoration projects will require a supplemental source of irrigation for following plant installation. The irrigation system utilized will depend on site conditions (including access and sources of water) and target plant species. Potential irrigation systems include (but are not limited to) drip or bubbler systems, or water trucks. The Project Sponsor(s) shall include a detailed irrigation plan in the Restoration Plan. The irrigation plan shall identify the irrigation system and materials, water source, and irrigation schedule.

2.10.5 Planting

All plantings shall occur between October 1st and April 30th to take advantage of winter rains. If supplemental irrigation will be provided for container stock, planting (but not seeding) may occur into early spring. Container stock shall be installed no later than April 30th, cuttings shall be installed no later than February 1st, and seed shall be planted no later than December 31st. The plant palette, as well as planting density and methodology, shall follow specifications set forth in the detailed Planting Plan (Section 2.6).

3 RESTORATION MAINTENANCE PROGRAM

Maintenance of the restoration site(s) shall be performed by the Project Sponsor(s) or a qualified restoration contractor ('Maintenance Contractor') under direction of the Project Sponsor(s). The individual conducting maintenance inspections shall be a professional (e.g., biologist, landscape architect, horticulturist) knowledgeable of the physical requirements of native vegetation and experienced in the installation and maintenance of native habitats.

3.1 SCHEDULE AND DURATION

Restoration site(s) shall be maintained on a regular basis throughout the maintenance period. The frequency of maintenance activities will depend on a variety of factors, including (but not limited to) restoration site size, type of plantings, use of irrigation, weed control requirements, and herbivore issues. Typically, maintenance will occur more frequently in the year following plant installation and will taper off as plantings become established and success criteria are met. The maintenance period shall begin upon completion of plant installation.

During the maintenance period, sufficient personnel and equipment shall be allocated to perform maintenance of all planted areas. Maintenance of the restoration site(s) shall occur for 5 years (10 years for oak and walnut restoration sites) following plant installation (sections 2.5.1 and 2.5.2). Maintenance visits shall be conducted a minimum of once monthly during the first year after installation and

quarterly thereafter. The need for additional maintenance visits shall be determined by OCTA and the Wildlife Agencies depending on site conditions.

3.2 MAINTENANCE ACTIVITIES

The Project Sponsor(s) or Maintenance Contractor shall be responsible for implementing maintenance activities in Sections 3.2.1-3.2.9, as appropriate, according to the schedule and duration in Section 3.1.

3.2.1 Erosion Control

Drainage and sedimentation control devices shall be routinely cleaned, maintained, and repaired, as necessary. The Project Sponsor(s) or Maintenance Contractor shall install additional erosion control devices where necessary, as indicated by OCTA. Once sufficient vegetative cover has developed to prevent erosion, the erosion control devices shall be removed at the direction of OCTA.

3.2.2 Weed Control

Weeds shall be controlled in the restoration area(s) for a minimum of 5 years (10 years for oak and walnut restoration sites). Weeds shall be removed mechanically, to the degree feasible. Where mechanical removal is ineffective or detrimental to the soil profile, herbicides shall be applied utilizing appropriate methodologies and application rates, as determined by the Project Sponsor(s) and/or Maintenance Contractor.

Follow-up foliar application of herbicide shall be applied to any resprouting stems of invasive species in the restoration area(s) approximately 5 to 7 weeks after the initial treatment. At a minimum, quarterly inspections and reapplication of herbicide, if necessary, shall be conducted for a period of 5 years (10 years for oak and walnut restoration sites) to ensure weed control.

Weed control activities shall occur prior to seed set to prevent weed seed from contributing to the soil seed back. Care should be taken to avoid native plantings during weed control activities. Spraying shall not be done under windy conditions to avoid herbicide drift.

3.2.3 Plant Protection

In restoration areas where plant loss or damage from herbivores (e.g., rabbits, gophers, ground squirrels, deer) is high, individual plants may need protective barriers. The need for plant protection shall be assessed on a site-specific basis. Plant protection may include (but is not limited to) wire cages lining planting holes for root protection (e.g., oaks, walnuts); shields or protective sleeves around trunks (trees) or entire plants (e.g., herbaceous perennials, shrubs) for sapling or shoot protection; or fencing of all or a portion of the restoration site(s) to exclude herbivores completely. Above-ground plant protectors shall be removed once plants

are sufficiently large to withstand herbivore damage. After removal, plant protection devices shall be disposed of at an appropriate offsite facility.

3.2.4 Trash and Debris Removal

Although trash and debris will be removed from the restoration area during initial site preparation, it is anticipated that ongoing trash and debris removal will be required (e.g., following rain events or weed control activities). The Project Sponsor(s) or Maintenance Contractor shall be responsible for removing trash and debris during the maintenance period. Garbage, debris, and noxious weed biomass shall be removed from the restoration site(s) and disposed of at an appropriate offsite facility. Dead or downed wood of native species shall not be removed except as required for safety or flood control purposes.

3.2.5 Irrigation

The Project Sponsor(s) or Maintenance Contractor shall be responsible for ensuring proper irrigation of plantings and maintaining all components of the temporary irrigation system at the restoration site(s). The irrigation system shall be maintained and repaired as necessary during the period of use. When irrigation is discontinued, all irrigation equipment shall be removed from the site and disposed of at an appropriate offsite facility.

For restoration projects that use supplemental irrigation, irrigation shall be discontinued 2-5 years before the end of the maintenance period. Projects with a 5-year maintenance program may utilize irrigation for a maximum of 3 years after planting, while projects with a 10-year program may utilize irrigation for up to 5 years following planting. For 5-year projects, it is anticipated that in the first year following installation, plants will be irrigated at a frequency sufficient to keep soil within the root zone moist during the active growing season. In year 2, irrigation is anticipated to lessen, with frequency based on specific plant requirements. In year 3, it is anticipated that little to no irrigation shall be required. This schedule shall be tailored, as appropriate for 10-year projects. In all cases, the timing and frequency of irrigation shall be adjusted, as necessary, based on climatic conditions.

3.2.6 Vandalism

The Project Sponsor(s) or Maintenance Contractor should note any instance of vandalism and report occurrences to OCTA within 24 hours. Recommendations for the replacement of damaged plants and their protection shall be developed by the Project Sponsor(s) and submitted to OCTA for review and approval. Remedial measures will be undertaken in a timely manner by the Project Sponsor. A description of all remedial actions will be included in the annual reports.

3.2.7 Replacement Plantings

Any portion of the restoration area that is bare or exhibits cover significantly below the success criteria due to low seed germination or establishment shall be reseeded.

Prior to reseeding, soil compaction and soil chemical analyses may be required to identify site-specific characteristics that may inhibit plant establishment and thus, require specialized site preparation methods or seed mixes.

Dead container plants shall be recorded by the Maintenance Contractor and replaced on an annual basis to ensure that project success criteria are met. Prior to replanting, the Project Sponsor(s) shall assess the cause of mortality to determine whether the same or alternative (native) species shall be re-installed. All reseeding and replanting shall be conducted from October through December of each year, unless irrigation is provided.

3.2.8 Fire Suppression

Wildfires are an integral component of the Mediterranean ecosystem of southern California and will likely affect some restoration sites. Although native vegetation is generally fire-dependent, recovery from fire depends on a variety of factors, including the age and health of pre-fire native vegetation, presence of an established native species soil seed bank, and fire intensity and frequency. Preventing overly frequent fires (particularly for young or establishing vegetation) will assist in achieving a diverse age structure of vegetation, while promoting natural fire cycles will prevent habitat from becoming too mature and dense. This, in turn, will reduce the fuel load and the chances of large, uncontrollable fire events.

Although prevention of fire is not possible, the damaging effects can be minimized by maintaining the overall health of the restoration plantings *and* reducing invasive species to the degree feasible. Many invasive species, such as grasses, are highly flammable and capable of spreading fire quickly across the landscape. Further, they often exhibit higher post-fire establishment rates than native species, thereby perpetuating the cycle of increased fire frequency and intensity at the expense of native plant establishment.

In addition to appropriate site maintenance, the Project Sponsor(s) shall develop a Fire Management Plan that addresses wildland fire suppression and pre-fire vegetation management for the restoration site(s). If the restoration site(s) is part of a larger property for which a Fire Management Plan already exists, it shall be subject to guidelines in the existing plan. The Fire Management Plan shall identify the following elements:

- Fire management objectives and general guidelines
- Fire management units (if appropriate, depending on size of site)
- Restricted uses onsite to help prevent catastrophic wildfires
- Prevention and suppression tactics, including fuelbreaks and targeted fuel management
- Sensitive resource areas to be avoided
- Staging areas for trucks and equipment
- Road repair and maintenance requirements for specified fire access roads

In developing the Fire Management Plan, the Project Sponsor(s) shall coordinate with the appropriate fire agencies (e.g., CalFire, Orange County Fire Authority).

3.2.9 Flood Control

Flooding is a natural occurrence along stream channels. However, severe flooding that uproots establishing vegetation within restoration site(s) and causes excessive erosion may hinder achievement of restoration-specific success criteria. The Project Sponsor(s) shall implement erosion control measures (Section 3.2.1) in advance of flooding events to minimize damage.

4 RESTORATION MONITORING PROGRAM

The purpose of restoration monitoring is to evaluate progress towards achieving success criteria and ultimately, project goals and objectives, through repeated observations or measurements. Where monitoring indicates that the project is under-performing, maintenance or management activities can be modified or adapted in a timely fashion to correct the deficiency (i.e., adaptive management).

4.1 FREQUENCY AND DURATION

Restoration monitoring shall begin prior to project implementation with the establishment of baseline conditions during the site assessment. Thereafter, monitoring to assess project success shall commence subsequent to installation of plant materials or initiation of specific maintenance activities (e.g., invasive weed control). At a minimum, restoration monitoring will be conducted yearly during the life of the restoration project (e.g., 5- or 10-year maintenance and monitoring period plus any extensions due to replacement plantings).

4.2 ADAPTIVE MANAGEMENT PLAN

Adaptive management is a structured approach to resource management that includes (1) establishing objectives, (2) monitoring to determine whether objectives have been met, and (3) using monitoring results to update and/or alter management activities to achieve objectives. The Project Sponsor(s) shall develop an Adaptive Management Plan for restoration monitoring which will:

- Document the ranges of natural variation within the targeted restoration habitats (i.e., baseline conditions)
- Collect and continuously update information that will inform adaptive management (e.g., qualitative and quantitative data collection)
- Measure the success of specific restoration activities (e.g., vegetative growth, non-native species removal)
- Measure species response to restoration activities (e.g., distribution and abundance of target species)

Sections 4.2.1 – 4.2.4 identify potential monitoring methods, with the understanding that these may be refined or altered based on expert input and monitoring results. In general, monitoring for restoration success should focus on assessing both habitat condition and species responses to restored habitat.

4.2.1 Photo-monitoring

The Project Sponsor(s) or designated biologist(s) under direction of the Project Sponsor(s) shall establish photo-monitoring stations (points, plots), as appropriate, within the restoration site(s). Photo stations allow a photographic record to be developed over time, and are a valuable tool for monitoring change, as well as re-locating transect or plot locations. For monitoring change, the ability to replicate conditions (e.g., location, direction, camera lens and angle) between years is particularly important; therefore, photo stations and photographs need to be well-marked and documented, as follows:

- Photo stations shall be marked in the field with metal stakes or posts, and triangulated or otherwise referenced to permanent landmarks (e.g., large boulders, roads, structures) so that the photo station can be reestablished if the marker is lost or destroyed.
- Photo station locations shall be recorded using a GPS device; in addition, the location shall be marked on a map and included with the annual and final reports.
- A photo log form shall be used for all photo documentation. The log shall include (but is not limited to) the following information:
  - Photographer name
  - Date of photo documentation
  - Photo station location (including GPS point)
  - Camera type and lens
  - Film type
  - Compass direction for each photograph
  - Height and angle or camera for each photograph
- Both the photo log for each photo station and all photographs taken at the station shall be included in the annual and final reports. Photographs shall be labeled and cross-referenced to the photo log.

As an option, video-monitoring to demonstrate the restoration progress and to make comparisons between before and after conditions is also recommended.

4.2.2 Habitat Monitoring

This section provides general guidelines on monitoring methodologies for those habitats expected to be the focus of most restoration efforts. Additional habitats not included here (e.g., coastal wetlands) may require alternative methodologies. In those cases, the Project Sponsor(s) shall develop habitat-specific monitoring methods for review and approval by OCTA.

Habitat monitoring methods outlined below are largely quantitative in nature, and shall be supplemented by plant survival data collected by the Maintenance Contractor (Section 3.2.7). When developing or refining methodologies for habitat monitoring, the Project Sponsor(s) shall:

- Define the type and number of sampling units (e.g., transects, plots, points)
- Describe the sampling unit size and shape
- Determine the placement of sampling units and whether they will be temporary or permanent
- Provide sample data collection forms

Oak, Walnut, and Sycamore Woodlands. The Project Sponsor(s) or designated biologist(s) shall establish permanent vegetation transects within the restoration site(s), and collect quantitative data on species composition and structure (e.g., cover, height, development of multiple vertical layers) along each transect. Monitoring should quantify recruitment of trees and shrub species within 2 x 2-m plots along each transect, and measure heights and girths for the dominant tree and shrub species along each transect. In addition, the biologist(s) should qualitatively assess trees for evidence of damage or disease.

Riparian Habitat. The Project Sponsor(s) or designated biologist(s) shall establish permanent vegetation transects perpendicular to the riparian corridor, and collect quantitative data on species composition and structure (e.g., cover, height, development of multiple vertical layers) along each transect. Monitoring should measure foliage volume at 1-m height intervals within 2 x 2-m plots, identify species contributing to the foliage volume, quantify recruitment of woody riparian tree and shrub species within 2 x 2-m plots along each transect, and measure heights and girths for the dominant riparian tree and shrub species along each transect.

Coastal Sage Scrub. The Project Sponsor(s) or biologist(s) shall establish transects within scrub habitat, and collect quantitative data (e.g., species richness, cover) along each transect and in quadrats. Number and size of transects/plots may vary depending on the site; however, a relatively efficient and effective sampling design has been demonstrated using a combination of 10 50-m point-intercept transects with 1 m x 1-m quadrats placed on alternate sides of the transect at 5 m intervals. Cover data is collected at 1 m intervals along the transect line; species richness data is collected within the quadrats and should be correlated with climatic conditions, particularly for annual species (Deutschman and Strahm 2009).

Grasslands. The Project Sponsor(s) or biologist(s) shall collect quantitative data on vegetation species distribution, abundance, composition, and structure (e.g., cover, height, amount of thatch), using randomly allocated transects and/or randomly placed 1-m^2 quadrats. Monitoring shall record percent vegetative cover (categorized by native versus non-native species cover), species abundance, and amount of thatch for each quadrat. Quadrat size may need to be adjusted based on the size of the restoration area and/or results of initial monitoring studies.

4.2.3 Native Species Monitoring

While habitat monitoring provides an indication of the structure and composition of restored habitat, species monitoring can determine the functionality of the habitat for wildlife species. Species monitoring shall focus on sensitive and/or non-sensitive species, as appropriate. Although some sensitive species (e.g., California gnatcatcher, least Bell's vireo) can act as indicators of habitat condition, these species are not always present, even if suitable habitat is available. Therefore, monitoring increases or changes in species diversity (including common species), particularly where these changes can be correlated to habitat improvement or successional stages, may be a more useful measure of restoration success.

Based on restoration goals and objectives, the Project Sponsor(s), in coordination with OCTA and the wildlife agencies, shall identify suitable target species or species groups for monitoring (e.g., California gnatcatcher, arroyo toad, riparian birds, coastal sage scrub birds). The Project Sponsor(s) or designated biologist(s) shall monitor target species annually to assess their distribution, relative abundance, and/or breeding activity. Surveys shall be conducted according to standard survey protocols, where available.

Surveys for riparian birds shall be conducted along systematic survey routes, monitoring all portions of the riparian habitat. Monitoring shall identify species using the habitat and their relative abundance, and quantify the number of nesting pairs of any sensitive riparian bird species (e.g., least Bell's vireo, southwestern willow flycatcher, yellow-breasted chat, Cooper's hawk) using the habitat for nesting. Surveys shall be conducted at varying times of day between visits. The stream reach shall be monitored three times during January through mid-March, with at least a 7-day interval between site visits. Surveys shall begin within 1 hour after sunrise and end by noon, and should not be conducted under extreme conditions (i.e., during heavy rain or when the temperature is >95°F or <40°F or with winds >10 mph). Taped vocalizations shall be used, as needed. Territories (singing males) and nest locations shall be mapped, and the nest fate recorded (i.e., determine number of eggs laid, nest parasitism rates, eggs or nests lost to nest predators, and number of chicks fledged).

Surveys for upland birds (exclusive of those conducted using protocol surveys) shall be conducted by point counts 4 times per year (according to season), with each site visited 2 times per season. Point count monitoring shall record species and relative abundance within a given area, and counts shall begin at dawn.

4.2.4 Invasive Species Monitoring

Invasive Plant Species. Invasive plant species shall be monitored by the Project Sponsor(s) or Maintenance Contractor as part of the Maintenance Program (Section 3.2.2) and by the Project Sponsor(s) or designated biologist during habitat monitoring (Section 4.2.2). Where invasive plant species are determined to pose a

threat to restoration success, remedial actions will be implemented, as discussed in Sections 3.2.2, and documented in the appropriate reports.

Invasive Animal Species. The Project Sponsor(s) or biologist(s) shall survey annually for bullfrogs, cowbirds, and other invasive animal species that have the potential to significantly and negatively affect native wildlife. Surveys shall be conducted by walking through suitable habitat and mapping their distribution and relative abundance. Where invasive animals are determined to pose a threat to native species, recommendations for management will be included in the appropriate reports.

5 CONTINGENCY MEASURES

If at any time, the restoration project appears to be under-performing according to the established success criteria, the Project Sponsor(s) shall conduct remedial actions in a timely fashion to ensure that goals and objectives of the project are met. In addition, the Project Sponsor(s) may consult with the agencies regarding adaptive management that may result in alterations to the Restoration Plan. Potential remedial actions have been addressed throughout this document and include (but are not limited to):

- Replacement plantings
- Remedial reseeding
- Soil testing
- Invasive control
- Supplemental irrigation

In the event of a major fire or flood or other disturbance that substantially damages the restoration project, post-disturbance site conditions will be assessed as soon as the area is safe to access (e.g., the threat has passed). This site assessment shall be conducted by the Project Sponsor(s) and results shall be documented in a letter report to OCTA with accompanying photographs. At a minimum, invasive species abatement practices will likely be initiated or increased to encourage natural recovery processes. If evidence of natural recovery, as defined by native species regeneration (e.g., seedlings, stump sprouting), is not observed within three months or one growing season of the disturbance, or if the recovery is deemed inadequate to meet the stated goals and objectives of the project, the Project Sponsor(s) shall prepare an analysis detailing the cause of the failure and shall enter into consultation with the agencies to determine an appropriate course of action, including (but not limited to) remedial actions, adaptive management, and/or modified project goals and objectives.

Where fire or flood damages the restoration site(s), the Project Sponsor(s) shall work with OCTA and the Wildlife Agencies to develop an adaptive management strategy that allows the restoration effort to move forward. This strategy may include

(but is not limited to) post-disturbance monitoring, re-planting, and modified success criteria.

6 REPORTING AND DOCUMENTATION

Reporting is an important tool to assess project success and determine the need for remedial actions or adaptive management. Documentation provides a permanent record of the restoration project, and informs long-term site management and/or other restoration or research efforts.

6.1 REPORTS

The Project Sponsor(s) shall be responsible for submitting reports to OCTA for review and approval according to the schedules below. In addition, the Project Sponsor(s) shall be responsible for any other reporting requirements necessitated by federal or state permits or authorizations.

6.1.1 Maintenance Reports

The Project Sponsor(s), with input from appropriate contractors, shall be responsible for preparing maintenance reports during the entire maintenance period. Maintenance reports shall be prepared and submitted to OCTA and the Wildlife Agencies following each maintenance visit. As set forth in Section 3.1, maintenance visits shall be conducted a minimum of once monthly during the first year after installation and quarterly thereafter. Maintenance reports shall be letter reports (unless specific issues dictate a longer report) and shall include:

- Person or person(s) conducting the maintenance
- Date(s) of maintenance visits
- General site conditions
- Description of maintenance activities (e.g., irrigation maintenance, weed control, trash removal) and actions taken
- Issues or problems requiring follow-up attention
- Recommendations

Maintenance activities shall be summarized in the annual status report (Section 6.1.2) and final report (Section 6.1.3). In addition, those reports shall review the Maintenance Program budget, project schedule, and restoration site viability. Any proposed changes and/or recommendations shall be subject to review and approval by OCTA.

6.1.2 Annual Status Reports

The Project Sponsor(s) shall provide OCTA and the Wildlife Agencies with an Annual Status Report (ASR) no later than January 31 of every year after project initiation and continuing until OCTA accepts the Final Report. The ASR shall present an overview of the restoration effort, focusing on year-to-date activities, and

shall specifically address maintenance activities, monitoring methodologies and results, success criteria (as measured by plant survival, percent cover, or other parameters), remedial actions (including but not limited to replanting or reseeding), and recommendations for the following year. The ASR shall include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year
- a description of the existing conditions of the site
- the results of focused wildlife surveys
- an analysis of all qualitative and quantitative vegetation monitoring data
- the method used to assess these parameters
- the number by species of plants replaced
- copies of all photo documentation
- maps identifying monitoring areas, transects, and planting zones
- GPS points of all transect locations and photo documentation points
- discussion and recommendations
- copies of all permits, and any special conditions or letters modifying the original permit conditions
- a description of the status of the restoration site and restoration activities, including actual or projected completion dates, if known
- a table showing the implementation status of each restoration task
- an assessment of the effectiveness (e.g., success criteria) of each completed or partially completed restoration task

6.1.3 Final Report

Upon completion of the maintenance and monitoring programs, the Project Sponsor(s) shall prepare a Final Report that summarizes methods, results, remedial actions, and adaptive management from all monitoring years (see elements in Section 4.2, above); appendices shall include all pertinent data and photo documentation. The Final Report shall serve as the complete record of the restoration project. The Final Report shall also include recommendations for long-term management of the restoration site(s).

6.1.4 Data Documentation

The Project Sponsor(s) shall be responsible for maintaining and submitting project documentation to OCTA with all reports. Data to be submitted shall include maps (including GIS-generated maps where possible), quantitative monitoring data (including forms and field notes), photo documentation (photographs and accompanying photo logs) and video documentation (if applicable). Data shall be provided in an electronic format, to the degree feasible.

The Project Sponsor(s) shall maintain a record of maintenance and monitoring activities to assist in evaluating changes in resource status, and responses to remedial or adaptive management actions. Restoration status should be reviewed

annually to inform the next year's restoration maintenance and management activities.

7 LONG-TERM RESTORATION SITE PROTECTION

While the restored habitat will be presumed to be self-sufficient once maintenance and monitoring obligations are met, some level of post-restoration site protection and monitoring may be required to ensure long-term habitat viability. In the Final Report, the Project Sponsor(s) shall document site-specific conservation mechanisms and long-term land management tasks and costs.

7.1 SITE CONSERVATION MECHANISMS

The Project Sponsor(s) shall provide information on site-specific strategies for long-term land protection of restoration site(s). Strategies should include conservation easements or Deed restrictions.

Prior to sign off, the Project Sponsor will place a conservation easement, or other Wildlife Agencies approved conservation mechanism, in favor of the Wildlife Agencies (or an approved third party), over the project site specifying that the area will be retained in perpetuity as open space for the sole purpose of native habitat conservation. The conservation easement or mechanism language should be approved by the Wildlife Agencies and OCTA prior to its execution. The conservation easement or mechanism shall disclose the obligations of future owners/tenants of the property.

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California Invasive Plant Council (Cal-IPC). 2007. New weeds added to Cal-IPC inventory. Cal-IPC News. Spring.

Deutschman, D. and S. Strahm. 2009. Improving statistical sampling and vegetation monitoring for the NROC reserves in central Orange County: Year 2. 2008 Final Report. Prepared for The Nature Reserve of Orange County (NROC). Addendum #1 to research agreement #07-03. January.

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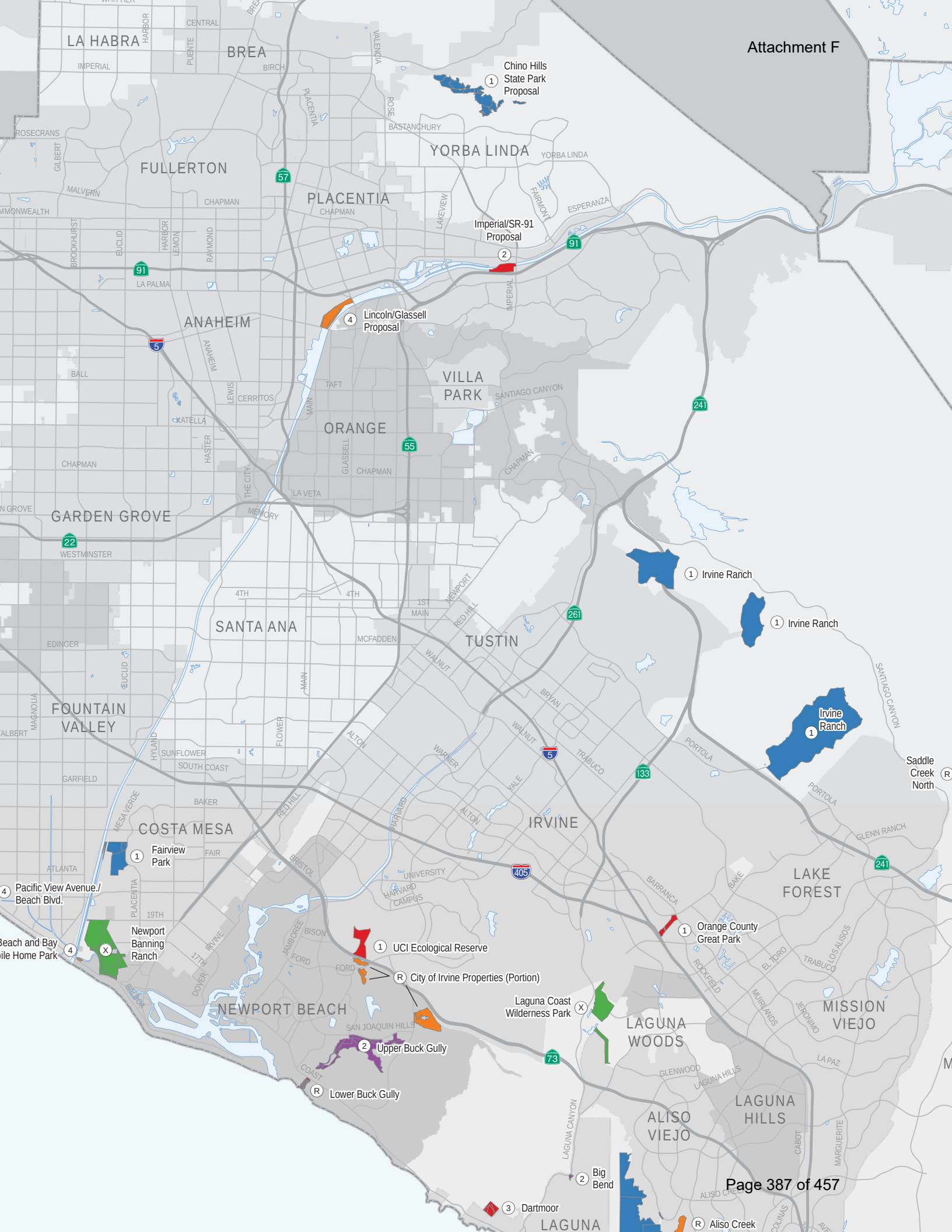
Preliminary Results Restoration Proposals: Biological Factors*

Property Number	Acquisition / Restoration	Property	Sponsor	Geographic Area	Watershed	Acreage	Project Information	Cost / Acre	Est. Total Cost		
8	Restoration	Chino Hills State Park	Chino Hills State Park	Chino Hills State Park	Lower Santa Ana River	180.0	150 acres of CSS & cactus scrub	$50,000	$7,500,000	GROUP 1	General Biological Characteristics: high potential to support similar vegetative communities lost to freeway projects, restores habitat for species that are considered sensitive under the California Natural Diversity Database (CNDDB), high potential net benefit in ecological value for target species, and high connectivity/contiguity opportunities
								$75,000	$11,250,000		
							30 acres of sycamore/willow riparian	$25,000	$750,000		
								$35,000	$1,050,000		
10/74	Restoration	City Parcel Restoration (aka Shea Restoration)	San Juan Capistrano	San Juan Capistrano	San Juan Creek	53.0	Riparian corridor, upland CSS, oak woodlands, native grassland habitats, artichoke thistle, mustard invasives, arundo	$25,000	$1,325,000		
								$35,000	$1,855,000		
21	Restoration	Fairview Park	Costa Mesa	Costa Mesa	Talbert Channel/Greenville Banning	23	6 acres Wetland Pond Planting	$107,666	$646,000		
							5 acres Native Grasslands Planting	$20,000	$100,000		
							9 acres Coastal Sage Scrub, Willow Scrub	$26,666	$240,000		
							3 acres Oak Woodland	$28,333	$85,000		
							Total request (23 acres of restoration, water deliver system, amenities, and plant est.)	**$139,130**	**$3,200,000**		
36	Restoration	Irvine Ranch	Irvine Ranch Conservancy	Irvine	San Diego Creek & Lower Santa Ana Creek	500.0	2.2 acres chaparral, 362.4 CSS, 138.4 CSS/native grassland mix, 108.3 native grassland, 47.4 oak/sycamore woodland, 81.5 passive restoration (est. total of 740.5 acres, but proposing 500 acres for restoration)	$11,000	$5,500,000		
57	Restoration	Orange County Great Park	Orange County Great Park Corporation	Irvine	San Diego Creek	176.4	88 acres of CSS, 45 acres of grasslands, 34 acres of riparian thickets and wetlands, 5.4 acres of oak, 4 acres of cactus scrub	sponsor assumes prevailing market rate per acre			
89	Restoration	UCI Ecological Reserve	Nature Reserve of Orange County	Irvine	San Diego Creek	8.5	8.5 acres cactus scrub	$38,235	$325,000		
6	Restoration	Big Bend	Laguna Beach	Laguna Beach	Laguna Canyon Channel	5.0	3.5 acres of native habitat	$20,000	$70,000	GROUP 2	General Biological Characteristics: good potential to support similar vegetative communities lost to freeway projects, restores habitat for species that are considered sensitive under CNDDB, good potential net benefit in ecological value for target species, and good connectivity/contiguity opportunities
								$25,000	$87,500		
27	Restoration	Harriett Wieder Regional Park (aka Bolsa Chica Conservancy)	Bolsa Chica Conservancy	Bolsa Chica	Los Alamitos/E Garden Grove/Bolsa Chica	25.0	coastal wetlands, coastal dune, upland/mesa habitats	$50,000	$1,250,000		
35	Restoration	Imperial/SR-91 Proposal (Pelanconi Park)	Anaheim	Anaheim	Lower Santa Ana River	5-10	Est. five to ten acres to establish riparian, transitional, and upland native plan communities	$45,000	$225,000		
80	Restoration	Southern Open Space (OS) Restoration	San Juan Capistrano	San Juan Capistrano	San Juan Creek	39.7	Upland CSS	$27,000	$812,927		
90	Restoration	Upper Buck Gully	Newport Beach	Newport Beach	Los Trancos/Muddy Creek	68.3	Active restoration (47.7 acres)	$7,000	$333,900		
							Passive restoration (20.6 acres)	$1,500	$30,900		
								$5,400/acre avg.			
							Total request ($500,000 [BARRIERS] & $367.000 [RESTORATION])		**$867,000**		
13	Restoration	Dartmoor	Laguna Beach	Laguna Beach	Los Trancos/Muddy Creek/Laguna Canyon Channel	39.7	High quality CSS, sensitive plants	$27,000	$812,927	GROUP 3	General Biological Characteristics: lower potential to support similar vegetative communities lost to freeway projects, fewer species that are considered sensitive under CNDDB, lower net benefit in ecological value for target species, and fewer connectivity/contiguity opportunities
19	Restoration	Driftwood Restoration	Laguna Beach	Laguna Beach	Laguna Canyon Channel/Aliso Creek/Salt Creek	6.0	ESHA replanting, monitoring; high quality CSS	$120,000	$720,000		
39	Restoration	Laguna Heights HOA	San Juan Capistrano	San Juan Capistrano	San Juan Creek	20-30	Upland CSS, native grasslands	$27,000	$540,000		
									$810,000		

* The restoration proposals are based primarily on the biological criteria. It may be possible their placement will change upon further information that are obtained for the non-biological factors. For instance, the type of habitats to be restored; price per acre for restoration; and leveraging partnership may change the overall ranking of the restoration proposals.

Preliminary Results Restoration Proposals: Biological Factors*

Property Number	Acquisition / Restoration	Property	Sponsor	Geographic Area	Watershed	Acreage	Project Information	Cost / Acre	Est. Total Cost		
5	Restoration	Beach and Bay Mobile Home Park	Newport Beach	Newport Beach		3.0	purchase and/or habitat improvement			GROUP 4	General Biological Characteristics: very low potential to support similar vegetative communities lost to freeway projects, very few species that are considered sensitive under CNDDB, very low net benefit in ecological value for target species, and very low connectivity/contiguity opportunities
43	Restoration	Lincoln/Glassel Proposal	Anaheim	Anaheim		1.6	Est. one acre to establish ruparian, transitional, and upland native plan communities				
59	Restoration	Pacific View Avenue/Beach Blvd.	Huntington Beach	Huntington Beach		1.0	Wetland retoration				
60	Restoration	Pacific View Avenue/Beach Blvd.	Huntington Beach	Huntington Beach		2.0	Wetland retoration				
38	Restoration	Laguna Coast Wilderness Park	Laguna Beach	Laguna Beach	Laguna Canyon Channel	6,000.0	Laguna Lakes/wetlands, upland habitat meadows			DOES NOT ALIGN WITH M2 FUNDING CYCLE	
55	Restoration	Newport Banning Ranch	Newport Beach	Newport Beach	Santa Ana River	80.0	coastal mesa, bluffs, arroyos, and wetlands; cactus wren, maritime succulent scrub, southern coastal bluff scrub, tidal coastal salt marsh, southern willow forest, vernal pools, southern tarplant				
2	Restoration	Aliso & Wood Canyons Wilderness Park	County of Orange	Laguna Niguel	Aliso and Sulphur Creeks	4,000.0	CSS; riverine habitat			REMOVED BY PROJECT SPONSOR	
3	Restoration	Aliso Creek	County of Orange	Laguna Niguel	Aliso and Sulphur Creeks	4.0	ecosystem restoration and streambed stabilization				
9	Restoration	City of Irvine Properties	Irvine	Irvine		203.0					
49	Restoration	Lower Buck Gully	Newport Beach	Newport Beach		50.0	habitat improvements				
65	Restoration	Saddle Creek North	Conservation Fund	Trabuco (Unincorporated County)		30.0	upland and riparian restoration	$24,733	$741,990		


Chino Hills State Park Proposal
Imperial/SR-91 Proposal
Lincoln/Glassell Proposal
Irvine Ranch
Irvine Ranch
Irvine Ranch
Saddle Creek North
Fairview Park
Pacific View Avenue./ Beach Blvd.
Newport Banning Ranch
UCI Ecological Reserve
City of Irvine Properties (Portion)
Orange County Great Park
Laguna Coast Wilderness Park
Upper Buck Gully
Lower Buck Gully
Big Bend
Dartmoor
Aliso Creek
LA HABRA
BREA
YORBA LINDA
FULLERTON
PLACENTIA
ANAHEIM
VILLA PARK
ORANGE
GARDEN GROVE
SANTA ANA
TUSTIN
FOUNTAIN VALLEY
COSTA MESA
IRVINE
LAKE FOREST
NEWPORT BEACH
LAGUNA WOODS
MISSION VIEJO
ALISO VIEJO
LAGUNA HILLS
LAGUNA

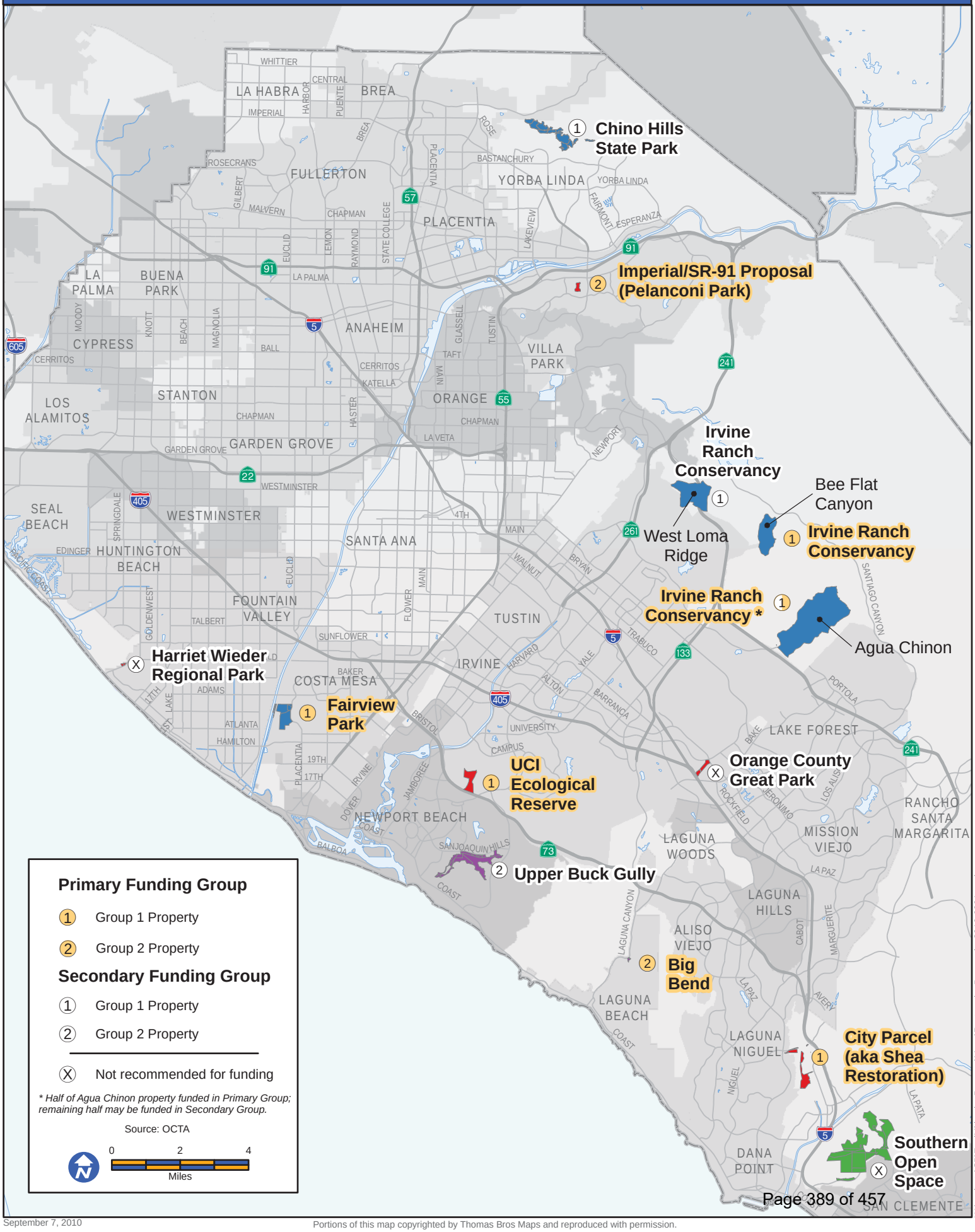
Measure M2 Freeway Environmental Mitigation Program Draft Restoration Funding Guidelines and Restoration Projects

Attachment B

Restoration Projects Map

ATTACHMENT B

Attachment F



September 7, 2010

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May 14, 2012

Measure M2 Freeway Environmental Mitigation Program Round 2 Restoration Projects Recommendations and Restoration Program Policy Guidance

Staff Report

OCTA

BOARD COMMITTEE TRANSMITTAL

May 14, 2012

To: Members of the Board of Directors

From: Wendy Knowles, Clerk of the Board

Subject: Measure M2 Environmental Mitigation Program Round 2 Restoration Project Recommendations and Restoration Program Policy Guidance

Executive Committee meeting of May 7, 2012

Present: Chairman Glaab, Vice Chairman Winterbottom, and Directors Amante, Bates, Hansen, and Nguyen
Absent: Director Campbell

Committee Vote

This item was passed by the Committee Members present.

Committee Recommendations

A. Approve the six restoration projects for funding, taking into consideration the recommendations of the Environmental Oversight Committee.

B. Approve the draft revised Measure M2 Environmental Mitigation Program Restoration Funding Guidelines.

C. Authorize the Chief Executive Officer to negotiate and execute grant agreements consistent with the funding amounts and revised restoration funding guidelines.

D. Authorize the Chief Executive Officer to issue a revised call for projects for remaining funds from Round 2 with a focus on watersheds affected by early action Measure M2 freeway projects, specifically: Bolsa Chica Channel-Frontal Huntington Harbor, lower Santa Ana River, San Diego Creek, and San Juan Creek. This action would also include authorization to conduct outreach to seek and inform landowners/ sponsors for restoration projects within these watershed areas.

Note: Correction to the staff report on page three, project "West Loma/City of Irvine" acreage is 80 instead of 160 acres.

OCTA

May 7, 2012

To: Executive Committee

From: Will Kempton, Chief Executive Officer

Subject: Measure M2 Environmental Mitigation Program Round 2 Restoration Project Recommendations and Restoration Program Policy Guidance

Overview

Measure M2 provides funding for programmatic mitigation to off-set impacts of Measure M2 freeway projects. This program includes both acquisition and restoration projects. A program of projects for restoration funding has been identified based on Board of Directors-approved biological and non-biological criteria and are recommended for approval. Revised draft restoration funding guidelines which outline the monitoring and reporting requirements throughout the restoration process have been prepared.

Recommendations

A. Approve the six restoration projects for funding, taking into consideration the recommendations of the Environmental Oversight Committee.

B. Approve the draft revised Measure M2 Environmental Mitigation Program Restoration Funding Guidelines.

C. Authorize the Chief Executive Officer to negotiate and execute grant agreements consistent with the funding amounts and revised restoration funding guidelines.

D. Authorize the Chief Executive Officer to issue a revised call for projects for remaining funds from Round 2 with a focus on watersheds affected by early action Measure M2 freeway projects, specifically: Bolsa Chica Channel-Frontal Huntington Harbor, lower Santa Ana River, San Diego Creek, and San Juan Creek. This action would also include authorization to conduct outreach to seek and inform landowners/ sponsors for restoration projects within these watershed areas.

Background

Measure M2 (M2) includes a Freeway Environmental Mitigation Program (Mitigation Program), which provides mitigation for the 13 M2 freeway projects. The Mitigation Program is designed to streamline the permit process through partnerships with the California Department of Transportation (Caltrans), the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and the United States Army Corps of Engineers (ACOE).

As part of the Early Action Plan, approximately $55 million is estimated to be available for the Mitigation Program. This allocation was to be used for property acquisitions, habitat restoration, land management, and support of the program. Support of the program included the preparation of the Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) and technical consultant support.

With a current Board of Directors (Board) allocation goal of 80 percent of funds for acquisition and 20 percent for restoration, approximately $42 million and $10.5 million was available for acquisitions and restoration, respectively. The first round of funding yielded approximately $5.5 million towards restoration projects. In September 2010, the Board approved six primary and three secondary (contingency) restoration projects for funding (Round 1). Orange County Transportation Authority (OCTA) staff coordinated and executed contracts with five restoration project sponsors, in a total amount of $5,362,500. One of the projects dropped out during the development process.

The second round of funding provided approximately $5 million for restoration projects and included the remaining amount from the first round of funding ($137,500). This combined total equates to approximately $5,137,500.

In anticipation of the design, monitoring, and reporting requirements that will be needed to ensure success of the restoration projects, staff has prepared revisions to the restoration funding guidelines. These guidelines previously outlined the expectations of OCTA, CDFG, and USFWS in regards to the implementation of the restoration projects. The proposed revisions capture the additional requirements of the ACOE.

Discussion

A second call for projects was issued in June 2011. Nineteen new restoration proposals were evaluated and considered for the second round of funding

(Attachment A). The restoration projects previously evaluated, but not funded (21 total) during the first round were also considered for the second cycle of funding. This amounted to a total of 40 projects that were evaluated and considered within the second round review.

In conjunction with Caltrans, ACOE, and the USFWS and CDFG (collectively referred to as wildlife agencies), all restoration proposals were evaluated based on biological and non-biological merits utilizing the Board-approved evaluation criteria. The evaluation of these restoration properties resulted in four hierarchical groups. Group 1 restoration proposals typically possess the highest potential to support similar vegetative communities lost to freeway projects, restore habitat for species that are considered sensitive, provide connectivity/contiguity opportunities, and provide the highest potential to successfully replace resources lost within the watershed of those at the impact site. Group 2 restoration proposals typically possess good potential for the same criteria. Groups 3 and 4 restoration proposals typically possess low to very low potential for the same criteria.

Based on the Board-approved criteria, 11 restoration projects were ranked within Group 1 and Group 2. Of the 11 restoration projects from Groups 1 and 2, six restoration projects are recommended for funding, with five projects from Group 1, and one from Group 2.

The restoration projects focused on impacts which are related to the 13 M2 freeway projects. Benefits to specific watersheds were considered to address the needs of the Regional Water Quality Control boards and the ACOE in relation to Sections 401 and 404 of the Clean Water Act.

Through preliminary discussions with the wildlife agencies, these six restoration proposals possess the necessary biological value that would enable OCTA to obtain mitigation assurances for the M2 freeway projects.

The remaining restoration projects were not recommended for one or more of the following reasons: the project will not be ready to commence by 2013, the project scope is not clearly defined, the project requires further planning development and engineering, the project does not cover the impacted watershed needs, and/or the proposed restoration components are not considered as high priority as those of the selected projects. All restoration projects considered for funding through the OCTA Mitigation Program can be found in the fiscal year 2009-12 call for restoration projects.

The recommended Round 2 restoration projects are listed in the table below. Attachment B includes the restoration map depicting the specific locations of the six projects.

Restoration Projects/ Location	Proposed Funding	Watershed HUC* 8/ HUC 10	Habitat Type/Estimated Acreage
Aliso Creek/ City of Laguna Niguel	$1,105,000	San Juan/ Aliso Creek - Frontal Gulf of Santa Catalina	55 acres of riparian (30 acres of invasives removal and 55 acres of native plant installation)
Chino Hills State Park/ City of Brea	$193,000	Santa Ana/ Lower San Gabriel River	15 acres of willow riparian and Oak-Walnut woodland and six acres of cactus scrub
Harriett Weider Regional Park/ City of Huntington Beach	$475,000	Santa Ana/ Bolsa Chica Channel - Frontal Huntington Harbor	7.7 acres of native grassland and coastal sage scrub (CSS) as well as 0.5 acre riparian
Lower Silverado Canyon/ City of Irvine	$1,399,580	Santa Ana/ Santiago Creek	44 acres of mostly riparian
North Coal Canyon/ City of Yorba Linda	$247,500	Santa Ana	5.5 acres of Riversidian Alluvial fan sage scrub (CSS)
West Loma/ City of Irvine	$1,296,000	Santa Ana/ Santiago Creek	160 acres of mostly upland, three acres of riparian
Total	$4,716,080		

*HUC - Hydrologic unit code. The HUC system is a standardized watershed classification system developed by the United States Geological Survey. Hydrologic units are watershed boundaries organized in a nested hierarchy by size. They range in size from regions, to the smaller cataloging units (HUCs), which are roughly equivalent to a local watershed.

Changes to Funding Guidelines

The draft revised Measure M2 Environmental Mitigation Program Restoration Funding Guidelines, dated February 2012 (Attachment C), outline the mitigation requirements for restoration including success criteria, species

protection, restoration site preparation, maintenance and monitoring, and status reporting and documentation. Restoration project sponsors must submit a restoration plan to OCTA for review and approval prior to being granted funding and commencing restoration activities. The initial restoration funding guidelines were approved by the Board in September 2010. Staff is proposing revisions to the restoration funding guidelines based on additional needs of the ACOE, as well as the needs of the Regional Water Quality Control boards.

Some keys revisions/edits to the document include:

- Definition of the four groups of projects – added language to cover aquatic habitat/watershed concerns (section 1.4)
- Goals and objectives of the NCCP/HCP – added permitting strategy and intent (section 1.5)
- Enhanced existing deed restrictions or easements language (section 2.1)
- Added language in relation to the ACOE jurisdictional waters as well as the 2008 Mitigation Rule (sections 2.3 and 2.4)
- Included jurisdictional delineations and functional assessments (per ACOE guidelines) for all projects with a riparian or wetland restoration component (section 2.6)

Under the proposed revisions, restoration project sponsors will need to submit a restoration plan to OCTA for review and approval prior to finalizing the contractual agreement and commencing restoration activities. These revisions have been conducted in collaboration with the ACOE, as well as a subset of the Environmental Oversight Committee (EOC), wildlife agencies, and Caltrans, and were endorsed by the EOC in February 2012. OCTA will not proceed with the execution of the contracts until the wildlife agencies and ACOE are in concurrence with the restoration plan.

Future Call for Projects

Funding the six identified restoration projects would leave approximately $400,000 of remaining funds. The EOC reviewed options for uses of these funds, including:

a) Funding an additional project (or projects) from the current call;
b) Rolling the funds over to a future call; or
c) Issuing a new call for projects targeted to restoration needs in specific watersheds affected by early action M2 freeway projects.

Consultation with the ACOE and Regional Water Quality Control boards as part of the evaluation process for this round of restoration funding indicates the need for restoration within four specific watershed areas in Orange County related to the mitigation needs of early action projects funded by M2. These watersheds are:

- Bolsa Chica Channel-Frontal Huntington Harbor
- Lower Santa Ana River
- San Diego Creek
- San Juan Creek

Based upon this information, the EOC recommends that a new call for projects be issued for the $400,000 in remaining restoration funds targeting projects within these four watersheds and conduct outreach to seek and inform landowners/sponsors for potential restoration projects within these specified areas.

This recommendation foreshadows an emerging dimension to the Mitigation Program. Acquisition and restoration efforts to date have shown substantial overall progress in meeting mitigation needs, particularly those identified by the wildlife agencies. However, going forward there will more likely be specific types of mitigation required, especially as regards to impacts to waterways, wetlands, and water quality. A more targeted approach to mitigation investments and perhaps a greater emphasis on restoration within specific watersheds focused on riparian and wetland habitats may be called for in future rounds of funding.

Next Steps

Upon approval of the program of restoration projects proposed for funding and the revised draft restoration funding guidelines, staff will proceed with requesting restoration plans from project sponsors. Project sponsors will be requested to provide a complete restoration plan per the revised restoration funding guidelines that will be reviewed and approved by OCTA staff, wildlife agencies, and ACOE. Upon approval of these six restoration projects by the Board, staff will negotiate and execute grant agreements consistent with the funding amounts. The project sponsors will be expected to complete the restoration plan and the grants agreement, and initiate the restoration work by early 2013. If any of the project sponsors fail to complete these documents by the prescribed timeframe, the funding will remain in the restoration account for future restoration project use.

Staff will also develop, in consultation with the wildlife agencies and ACOE, a targeted outreach and call for projects for the four specific watersheds as recommended by the EOC and return to the Board with additional project recommendations for the remaining funds.

Future calls for projects are anticipated for the M2 program. Since the source of funds are derived from a sales tax measure, the revenue stream will dictate how much funding will be available for each call. Furthermore, there will be bonding costs should there be a decision to finance any future round(s) of funding. The anticipated availability of funds on a pay-as-you-go basis is anticipated to occur in the 2015/16 funding cycle.

Summary

In coordination with Caltrans, USFWS, CDFG, and ACOE, staff has identified six restoration projects for funding. Based on biological and non-biological criteria, the projects recommended for funding possess the most cost-effective means to offset impacts for the M2 Freeway Program. Revised draft restoration funding guidelines have been prepared which outline the requirements of restoration project sponsors throughout the restoration process.

Attachments

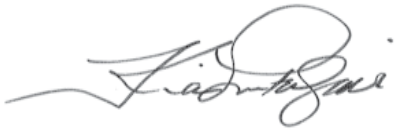
A. FY 2009 – 12 Call for Restoration Projects
B. Restoration Projects with Watershed Boundaries
C. Draft Revised Measure M2 Environmental Mitigation Program Restoration Funding Guidelines, dated February 2012

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ORANGE COUNTY TRANSPORTATION AUTHORITY

Measure M2 Environmental Mitigation Program Round 2 Restoration Project Recommendations and Restoration Program Policy Guidance

Attachment A

	Approximate Acreage of Proposed Restoration Project	Geographic Area/ Sponsors	Biological Justification		Proposed Cost	Matching Funds
			Watershed (HUC 10/8)	Habitat Types		
n)	53	San Juan Capistrano/ City of San Juan Capistrano	San Juan Creek/ San Juan	Riparian, coastal sage scrub (CSS), oak woodland, and native grassland	$1,500,000	Contributions from: Orange County Conservation Corps - $241,920, San Juan Capistrano Open Space Foundatio $200,000, Saddleback College Ecological Restoration Program - $2,000, City of San Jua
	23	Costa Mesa/ City of Costa Mesa	Lower Santa Ana River/ Santa Ana	Wetlands, native grassland, CSS, riparian, oak woodland	$2,000,000	Contributions from: Miocean Foundation - $350,000 Federal Transit Administration Grant - $500,0 State of California Department of Parks and Recreation, Habitat Cons State of California Department of Parks and Recreation, Recreatio City of Costa Mesa - $300,000
en)	94.9	Irvine/ Irvine Ranch Conservancy	Santiago Creek/ Santa Ana	Chaparral, CSS, coast live oak/sycamore; oak woodland, native grassland, and riparian	$1,450,000	In-kind contibutions estimated at $350,000 from IRC including staff time, equip
ve	8.5	Irvine/ Nature Reserve of Orange County	Upland	Cactus scrub	$325,000	In-kind contributions from NROC estimated at $42,500 (project management, restoration planning
	3.7	Laguna Beach/ Laguna Canyon Foundation	Aliso Creek/ San Juan	CSS and riparian woodland	$87,500	Contributions from: City of Laguna Beach (approximately $3 million land contribution), Orange County Co INK Advertising $2,000, Richard Lamsey $2,000, SOKA University Environmental Studies Internsh
	30	Laguna Niguel/ Laguna Canyon Foundation	Aliso Creek/ San Juan	7 acres transitional/23 acres of riparian (30 acres invasive removal and native planting)	$770,000	The Orange County Conservation Corps has offered a matchin (State of California Workforce Investment Board) as well as $486,000 (State of C
	55			7 acres transitional/23 acres of riparian (30 acres invasive removal and native planting) and an additional 25 acres of native planting (totaling 55 acres for project) (costs include jurisdictional delineation {JD} and California rapaid assessment method {CRAM})	$1,105,000	
	20	San Juan Capistrano/Laguna Heights HOA	Upland	20 acres of CSS	$550,000	The Orange County Conservation Corps has offered a matching grant of 1:1 for
	44	Irvine/ Irvine Ranch Conservancy	Santiago Creek/ Santa Ana	44 acres of riparian (costs include JD and CRAM)	$1,399,580	In-kind match of $150,000 from IRC (staffing, equipment, and materials) and $50,000 in volu
				328 acres coordinated targeted invasive control (riparian)		
	5.5	Yorba Linda/ California Deptartment of Parks and Recreation	Upland	5.5 acres of CSS	$247,500	The Orange County Conservation Corps has offered a matching grant of 1:1 for
	52	Laguna Niguel/ City of Laguna Niguel	Aliso Creek/ San Juan	9.9/7.0 acres of riparian (costs include JD and CRAM)	$2,123,814	None identified
	35			13.7/10.6 acres of transitional 28.3/17.3 acres of CSS/grassland	$1,832,397	
	160	Irvine/ Irvine Ranch Conservancy	Santiago Creek/Santa Ana	132 acres of CSS/3 acres of riparian/20 acres of elderberry /1 acre of riparian passive restoration and fence realignment	2,541,000	In-kind match of $150,000 from IRC (staffing, equipment, and materials) and $50,000 in volu
				80 acres of CSS/3 acres of riparian/19 acres of elderberry /1 acre of riparian passive restoration and fence realignment	1,669,000	
				58 acres of CSS/2 acres of riparian/19 acres of elderberry /1 acre of riparian passive restoration and fence realignment	1,296,000	
	115	Brea and Yorba Linda/ Chino Hills State Park	Lower San Gabriel River/Los Angeles-San Gabriel River	115 acres of CSS	$5,750,000 to $8,625,000	1 to 1 funding match from Orange County Conserva
	6			6 acres of cactus scrub	$193,000	
	15			15 acres of riparian (costs include JD and CRAM)		
	71.8	Irvine/ Irvine Ranch Conservancy	San Diego Creek/Santiago Creek//Santa Ana	~1.3 acres of riparian	$1,259,735	In-kind match of $100,000 from IRC (staffing, equipment, and materials) and $25,000 in volu
				~54.3 (active)/16.2 (passive) acres of CSS		
	4	Laguna Beach/ Laguna Canyon Foundation	Upland	4 acres of CSS	$140,000	In-kind contributions towards restoration labor for invasive removal and native planting would be prov
	10	Huntington Beach/ Bolsa Chica Conservancy	Bolsa Chica Channel/ Santa Ana	7.7 acres of native grassland and CSS	$475,000 (no Coastal Terrace Ecotone)	The Griswold Foundation has committed $20,000, the National Fish and Wildlife Service has awa has awarded $50,000, and approximately $ 000 has be
				.5 acre of riparian (costs include JD and CRAM)		
				1.8 acres of coastal terrace ecotone		
	39.7	San Juan Capistrano/ San Juan Capistrano	Upland	Upland CSS	$812,927	

ecommended for funding

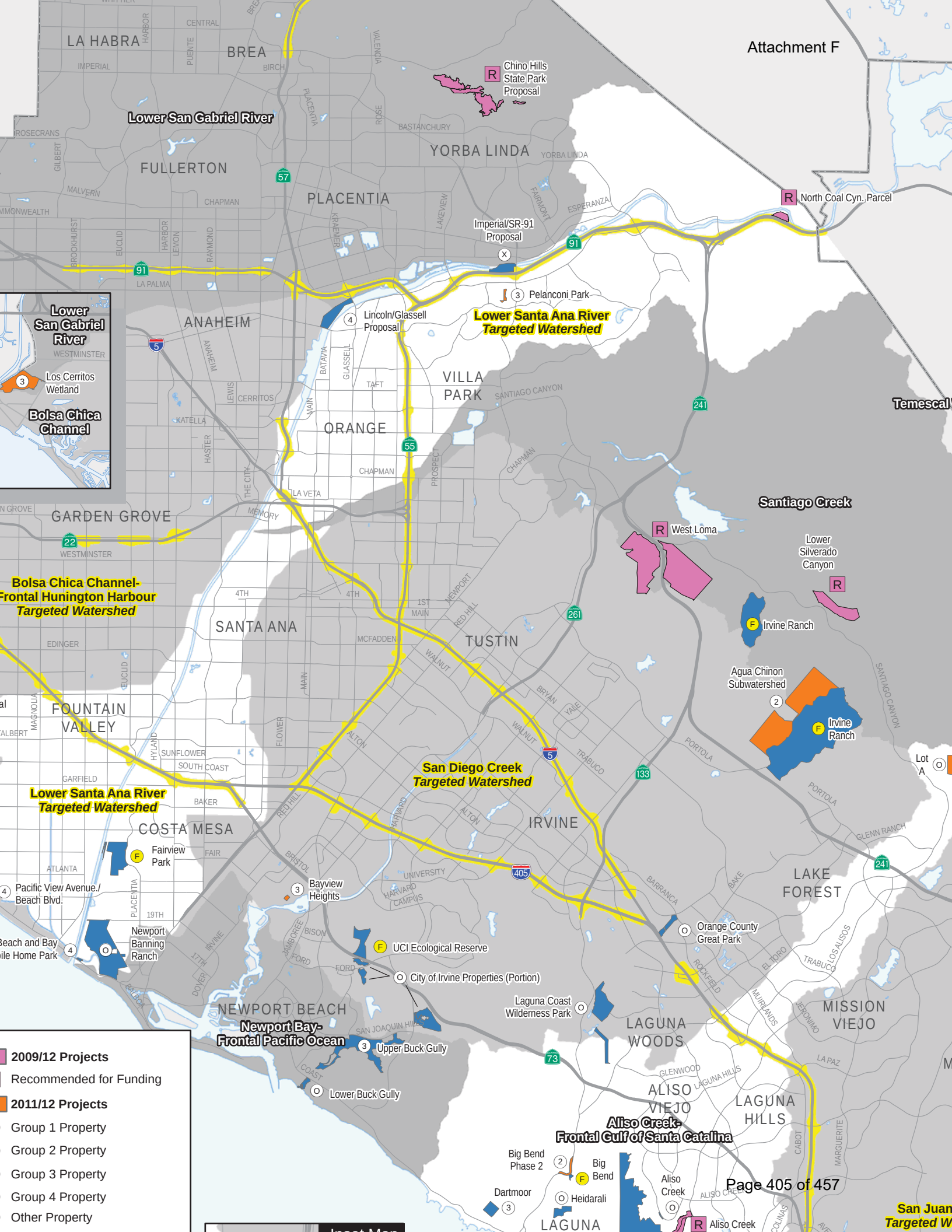
Approximate Acreage of Proposed Restoration Project	Geographic Area/ Sponsors	Biological Justification		Proposed Cost	Matching Funds
		Watershed (HUC 10/8)	Habitat Types		
0.2	Newport Beach/ Newport Bay Conservancy	San Diego Creek/ Santa Ana	Riparian and CSS 20 yr maintainance fund	$350,000	
33	Huntington Beach/ City of Huntington Beach	Bolsa Chica Channel/ Santa Ana	15.15 acres ornamental 17.53 acres of wetland vegetation	$5,500,000	
4.5	San Juan Capistrano/ Trout Unlimited, South Coast Chapter #923	San Juan Creek/ San Juan	Southern California Steelhead	$4,000,000	
20.8	Dana Point/ Azure Property Management for site owner	Aliso Creek/ San Juan			
3	San Juan Capistrano/ Trout Unlimited, South Coast Chapter #923	San Juan Creek/ San Juan	Southern California Steelhead	$4,300,000	
100	Seal Beach/ Los Cerritos Wetlands Authority	Lower San Gabriel/ San Gabriel	Tidal channel, wetlands, salt marsh	$200,000	
3	Anaheim/ City of Anaheim	Lower Santa Ana River/ Santa Ana	3 acres of riparian	$450,000	
39.7	Laguna Beach/ Laguna Beach	Upland	High-quality CSS, sensitive plants	$812,927	
6	Laguna Beach/ Laguna Beach	Upland	ESHA replanting, monitoring; high-quality CSS	$720,000	
20-30	San Juan Capistrano/ San Juan Capistrano	Upland	Upland CSS, native grassland	$540,000- $810,000	
68.3	Newport Beach/ Newport Beach	Newport Bay/ Santa Ana	Active restoration (47.7 acres) Passive restoration (20.6 acres) Total request ($500,000 [BARRIERS] and $367,000 [RESTORATION])	$867,000	
3	Newport Beach/ Newport Beach	Santa Ana	Purchase and/or habitat improvement		
1.6	Anaheim/ Anaheim	Santa Ana	Estimate one acre to establish riparian, transitional, and upland native plan communities		
1	Huntington Beach/ Huntington Beach	Santa Ana	Wetland restoration		
2.4	Huntington Beach/ Huntington Beach	Santa Ana	Wetland restoration		
43.3	Trabuco Canyon, Live Oak Canyon, County Home Road	San Juan			
4.5	San Juan Capistrano/ Trout Unlimited, South Coast Chapter #923	San Juan Creek/ San Juan	Southern California Steelhead		
2.5	San Juan Capistrano/ City of San Juan Capistrano	San Juan			

	Approximate Acreage of Proposed Restoration Project	Geographic Area/ Sponsors	Biological Justification		Proposed Cost	Matching Funds
			Watershed (HUC 10/8)	Habitat Types		
k) ®	4	Laguna Niguel/ County of Orange	Santa Ana	Ecosystem restoration and streambed stabilization		
)	4,000	Laguna Niguel/ County of Orange	Santa Ana	CSS, riverine habitat		
	203	Irvine/ Irvine	Santa Ana			
	25	Bolsa Chica/ Bolsa Chica Conservancy	Bolsa Chica Channel/ Santa Ana	Coastal wetlands, coastal dune, upland/mesa habitats		
	38	Laguna Beach/ Heidarali Sahebekhtiari	San Juan			
	6,000	Laguna Beach/ Laguna Beach	Santa Ana/ San Juan	Laguna Lakes/wetlands, upland habitat meadows		
	50	Newport Beach/ Newport Beach	Santa Ana	Habitat improvements		
	80	Huntington Beach/ Huntington Beach	Santa Ana	Coastal mesa, bluffs, arroyos, and wetlands; cactus wren, maritime succulent scrub, southern coastal bluff scrub, tidal coastal salt marsh, southern willow forest, vernal pools, southern tarplant		
	176.4	Irvine/ Orange County Great Park Corporation	San Diego Creek/ Santa Ana	88 acres CSS, 45 acres grasslands, 34 acres riparian and wetlands, 5.4 acres oak, 4 acres cactus scrub		
	30	Trabuco (Unincorporated County)/ Conservation Fund	San Juan	Upland and riparian restoration		
	5-10	Anaheim/ City of Anaheim	Santa Ana	Estimate 5 to 10 acres to establish riparian, transitional, and upland native plan communities		

ORANGE COUNTY TRANSPORTATION AUTHORITY

Measure M2 Environmental Mitigation Program Round 2 Restoration Project Recommendations and Restoration Program Policy Guidance

Attachment B



- 2009/12 Projects
- Recommended for Funding
- 2011/12 Projects
- Group 1 Property
- Group 2 Property
- Group 3 Property
- Group 4 Property
- Other Property

ORANGE COUNTY TRANSPORTATION AUTHORITY

Measure M2 Environmental Mitigation Program Round 2 Restoration Project Recommendations and Restoration Program Policy Guidance

Attachment C

Draft Revised
Measure M2
Environmental Mitigation Program
Restoration Funding Guidelines

~~September 27, 2010~~ February 2012

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Appendices

~~1~~ A FY 2009 – 12 Call for Restoration Projects

~~2~~1 INTRODUCTION & BACKGROUND

~~2.1~~1.1 INTRODUCTION

The Orange County Transportation Authority's (OCTA) Mitigation and Resource Protection Program (M2 Mitigation Program) provides for allocation of at least five percent of the total Renewed Measure M (M2) freeway budget for comprehensive environmental mitigation for the impacts from freeway improvements.

The Mitigation Program was approved by Orange County voters under the M2 half-cent sales tax for transportation improvements in 2006. In August 2007, the OCTA Board of Directors (Board) approved a five-year M2 Early Action Plan, covering the years 2007 to 2012, to advance the implementation of key M2 projects, including the freeway M2 Mitigation Program. The M2 Mitigation Program will be implemented under a master agreement between OCTA, Caltrans, and state and federal resources agencies.

This will offer higher-value environmental benefits such as habitat protection, connectivity and resource preservation in exchange for streamlined project approvals for the 13 M2 freeway projects. The Environmental Oversight Committee (EOC), subcommittee created by the OCTA Board of Directors (Board), is responsible for making recommendations to the Board on matters related to the M2 Mitigation Program, including the Master Agreement. Comprised of 12 members, the EOC has been meeting on a monthly basis since November 2007. In March 2009, the EOC and the Board approved the draft Master Agreement and draft Planning Agreement to establish the process, roles, responsibilities and commitments for the preparation of the Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). The Master Agreement and Planning Agreement were approved by the Board in November 2009. The NCCP/HCP process examines habitat resources within broad geographic areas and identifies conservation and mitigation measures to protect habitat and species. This process is anticipated to take 30 months to complete. However, the Master Agreement includes an "advance credit" provision that could allow funds to be allocated prior to completion of the NCCP/HCP.

These restoration funding guidelines are intended to assist the restoration project sponsors/local entities (Project Sponsor) to better understand the specific technical needs of the OCTA funded restoration projects. These technical needs have been developed in cooperation with the United States Fish and Wildlife Service (USFWS) , the California Department of Fish and Game (CDFG), and the Army Corps of Engineers (ACOE). This document includes general guidance for the Project Sponsors receiving OCTA environmental mitigation funding. The Project Sponsors are expected to act as OCTA's agents in regards to the development and implementation of the selected restoration projects at the project level. OCTA is ultimately responsible for the success of the restoration projects and will be receiving mitigation "credit" from the applicable resource and regulatory agencies. In addition to these guidelines, the Project Sponsor is

expected to enter into a contract with OCTA to further clarify the roles and responsibilities of each party for each specified restoration project. Some of these roles and responsibilities are included below.

~~2.2~~1.2 ROLES AND RESPONSIBILITIES

This section describes the roles and responsibilities of the Project Sponsors and OCTA.

~~2.2.1~~1.2.1 OCTA

OCTA will be responsible for providing funding to the Project Sponsor as well as approving the final restoration and implementation plan for the selected restoration projects. OCTA will also be responsible for leading the coordination for the approval of the restoration plan by the applicable resource and regulatory agencies. OCTA is ultimately responsible for the success of the restoration projects but will be relying on the Project Sponsor to act on its' behalf through the design, implementation, and monitoring of the project. The Project Sponsor will be responsible through the contract to perform the restoration activities in accordance to the Restoration Plan. OCTA will receive mitigation credit for the restoration project by the applicable resource/regulatory agencies.

~~2.2.2~~1.2.2 Project Sponsor

The Project Sponsor will consist of those entities that are approved and receive OCTA environmental mitigation funding for the selected restoration projects. The Project Sponsor is expected to accept the specified funds from the OCTA M2 Mitigation Program and use those funds to finalize, implement and monitor the agreed upon restoration project. The Project Sponsor will be responsible for developing the restoration plans in compliance with the guidelines set forth in this document, obtaining all State and Federal permits as well as complying with all State and Federal laws required for restoration implementation, and for obtaining the qualified individuals/entities to provide as-needed support for restoration plan development and implementation. Qualified individuals and entities may consist of, but are not be limited to: Biologists, Cultural Resource Specialists, Hydrologists/Engineers, and Restoration Contractors.

~~2.3~~1.3 RESTORATION PROJECT FUNDING

The M2 Mitigation Program will provide approximately ~~$27.5 million for acquisition and restoration projects for the first tranche of funding, available beginning in Fiscal Year 2009/10. With a current allocation goal of 80 percent of funds for acquisition and 20 percent for restoration over the life of the freeway mitigation program, the first tranche of funding will yield approximately $5.5~~ $5 million towards restoration projects for the second tranche of restoration funding. An additional $137,500 will be added to the second tranche, as this was the remaining amount from the first tranche in 2009/10. The total amount for current

restoration projects is $5,137,500. Future tranches of funding have yet to be determined beyond the second tranche.

The Project Sponsor shall disclose in the Restoration Plan any and all other funding sources which have been utilized for current maintenance and/or will be used for the restoration of the proposed project.

~~2.4~~1.4 SUMMARY OF OVERALL PROJECT

In conjunction with Caltrans, ~~California Department of Fish and Game (~~CDFG~~)~~, ~~and United States Fish and Wildlife Service (~~USFWS~~)~~, and the ~~United States Army Corps of Engineers (~~ACOE~~)~~ all restoration proposals have been evaluated based on biological merits. There were ~~25 restoration proposal submittals during the first tranche of funding,~~ 20 restoration proposal submittals during the second tranche of funding, including those within core habitat areas. Core habitat areas are defined as areas that support high or very high landscape integrity (intact habitat) and biodiversity (vegetation and sensitive species) in a configuration that promotes the long-term persistence of these biological values.

The evaluation of these restoration properties resulted in four hierarchical groups with the following characteristics:

Group 1	typically possess the highest potential to support similar vegetative communities lost to freeway projects, restore habitat for species that are considered sensitive, ~~and~~ provide connectivity/contiguity opportunities, provide the highest potential to successfully replace lost functions and services of aquatic resources lost within the watershed of those at the impact site
Group 2	typically possess good potential to support similar vegetative communities lost to freeway projects, restore habitat for species that are considered sensitive, ~~and~~ provide connectivity/contiguity opportunities, possess a good potential to successfully replace lost functions and services to aquatic resources within the watershed of those at the impact site
Group 3	generally possess lower potential to support similar vegetative communities lost to freeway projects, fewer sensitive species, ~~and~~ fewer connectivity/contiguity opportunities, and possess lower potential to replace or restore aquatic functions and services lost as result of freeway projects.
Group 4	generally possess very low potential to support vegetative communities lost to freeway projects, very few species considered sensitive, very low connectivity/contiguity opportunities, and possess a very low potential to replace or restore aquatic functions and services lost as a result of the freeway projects

See Attachment—Preliminary Results Restoration Proposals: Biological Factors

Through preliminary discussions with CDFG and USFWS (Wildlife Agencies), and the ACOE restoration proposals within the first two groups (14 total proposals) possess the necessary biological value that would enable OCTA to obtain mitigation credits for the M2 freeway projects. A list of all of the proposed restoration projects from 2009 to 2012 are attached as Appendix A.

~~Five~~Six restoration projects were previously funded during the fiscal years 200~~9~~10/11~~0~~ and 2011/12. ~~-~~The ~~five~~six projects that received funding are included in the following table. These projects totaled $5,~~3~~462,500. The sixth project, Imperial/SR-91 Proposal (Pelanconi Park), dropped out during the Restoration Plan development process. Hence, the total amount funded was reduced by $100,000, totaling $5,362,500.

Restoration Projects 201~~009~~/11~~0~~	Project Sponsor	Funded
Big Bend	Laguna Canyon Foundation	$87,500
2C Ranch/Trabuco Creek Restoration	City of San Juan Capistrano	$1,500,000
Fairview Park	City of Costa Mesa	$2,000,000
Bee Flat Canyon and Aqua Chinon	Irvine Ranch Conservancy	$1,450,000
UCI Ecological Preserve	University of California, Irvine	$325,000
Imperial/SR-91 Proposal (Pelanconi Park)	Anaheim	$100,000
	Total Amount	**$5,462,500**

~~2.5~~1.5 GOALS AND OBJECTIVES OF THE NCCP/HCP AND REGULATORY PERMITTING

The M2 Mitigation Program has the potential to minimize or reduce regulatory delays in the implementation of the 13 M2 freeway improvement projects. The specific type of mitigation will be determined by OCTA working in conjunction with various stakeholders. The various forms of mitigation may include acquisition and/or restoration of land for conservation.

OCTA is developing a NCCP/HCP Joint Programmatic Environmental Impact Report/Environmental Impact Statement (EIR/EIS), which is to include a ~~Master~~ Streambed Alteration Agreement (~~M~~SAA) as well as programmatic level permitting from the ACOE and State Water Resources Control Board (SWRCB) for the 13 freeway improvement projects under M2.

The EIR/EIS/~~M~~SAA will be prepared to ensure that the following planning goals are met:

- Conservation and management of covered species within the planning area;
- The preservation, restoration and enhancement of aquatic, riparian and terrestrial natural communities and ecosystems that support covered species within the planning area;
- A means to implement Covered Activities in a manner that complies with applicable state and federal fish and wildlife protection laws and other environmental laws, inclusive of the California and Federal Endangered

Species Acts (CESA and ESA), the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA);
- A basis for permits necessary to lawfully take covered species;
- A comprehensive means to coordinate and standardize mitigation and compensation requirements for covered activities within the planning area;
- An accounting process that will document net environmental benefit from regional, programmatic mitigation in exchange for net benefit in the delivery of transportation improvements through streamlined and timely approvals an permitting;
- A less costly, more efficient project review process that results in greater conservation values than project-by-project, species-by-species review; and
- Clear expectations and regulatory assurances regarding covered activities occurring within the planning area.

OCTA is also working with the ACOE and the SWRCB to obtain permits for these 13 freeway improvement projects. This process will most likely include the execution of a Section 404 (Clean Water Act) Master Individual Permit (MIP) from the ACOE as well as a Programmatic Section 401(Clean Water Act) Permit from SWRCB. The funded restoration projects may become a part of an OCTA Mitigation Bank or an In Lieu Fee Program established for OCTA through coordination with the ACOE and an identified Interagency Review Team (IRT). The goal is that these restoration projects will adequately mitigate the impacts to jurisdictional waters potentially caused by the 13 freeway improvement projects.

~~3~~2 RESTORATION PLAN OVERVIEW

The Project Sponsor(s) shall submit a Restoration Plan to OCTA for review and written approval at least 30 days prior to commencing restoration activities. OCTA will then coordinate with the resource and regulatory agencies to obtain acceptance of this plan. Plans shall be prepared by persons with expertise in restoration and monitoring of Southern California ecosystems. A qualified Restoration Contractor shall be responsible for site preparation, plant species installation, and long-term maintenance. Restoration plans shall include the following elements, as described in this section:

- Land ownership/land management
- Property Analysis Record
- Restoration strategy
- Goals and objectives
- Success criteria/Performance Standards
- Site assessment
- Planting plan
- Source materials
- Species protection
- Functions and services to any applicable aquatic resources

- Site preparation and installation
- Maintenance program
- Monitoring program
- Contingency measures
- Reporting and documentation

2.1 LAND OWNERSHIP AND LAND MANAGEMENT

The Project Sponsor(s) shall provide a description of the land ownership status including the name and address of the land owner(s), the total acreage of the property, the proposed restoration acreage. Where the property is managed by a different entity than the land owner, the Project Sponsor(s) shall include the name, address, and organizational status (e.g., private company, non-profit organization) of the land management entity, including years of experience managing habitat lands and/or conducting habitat restoration.

The protection status of the land shall also be provided including any documentation indicating the Project Sponsor has permission to restore habitat with the appropriate conservation easement or deed restrictions (see Section 7.1). Any current deed restrictions or easements on the land should also be stated. If easements are recorded, those easements should be discussed as to how they are applicable to the restoration project activities (i.e. easement for flood control and known maintenance activities).

The history of the proposed restoration site should also be included. It should be clearly stated, if the land was obtained through federal or local funding that has stipulations for restoring specified resources. If this is the case, restoration activities must be over and above the requirements of the condition expected or anticipated by that previous funding. This discussion should also include if the site was previously used for mitigation or if there are mitigation sites adjacent to the proposed project area.

2.2 PROPERTY ANALYSIS RECORD

The Property Analysis Record (PAR), developed by The Center for Natural Lands Management (http://cnlm.org/), is a tool to allow land managers to identify long-term land management tasks and associated costs, including site monitoring, maintenance, and administrative fees. Assigning realistic costs allows establishment of an estimate of the level of effort required to successfully complete and maintain the restoration. Prior to project funding, the Project Sponsor(s) shall prepare a site-specific PAR, or PAR-like equivalent analysis, for review and approval by OCTA and the Wildlife Agencies.

2.3 RESTORATION STRATEGY

The Project Sponsor(s) shall provide a description of the restoration strategy or strategies to be used for the proposed project. Restoration strategies include

habitat enhancement, restoration, or establishment (creation), and can be defined as follows:

- *Enhancement* refers to improving the functions and values of existing (but marginal or degraded habitat) to benefit species and/or landscape integrity or connectivity. Enhancement typically does not result in a net gain in habitat acres, but has a high potential for success.

  In relation to jurisdictional waters, enhancement is defined in the ACOE 2008 Mitigation Rule as the manipulation of the physical, chemical, or biological characteristics of an aquatic resource/habitat to heighten, intensify, or improve a specific resource function(s). Enhancement results in the gain of selected aquatic resource function(s), it does not result in a gain in aquatic resource area.

- *Restoration* focuses on re-establishing or rehabilitating former or degraded habitat so that it is capable of supporting native species and/or landscape functions that historically occurred within the site. Restoration may or may not result in a net gain in habitat acres.

  In relation to jurisdictional waters, restoration is defined in the ACOE 2008 Mitigation Rule as the manipulation of the physical, chemical, or biological characteristics of the physical, chemical, or biological characteristic of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource/habitat. For the purpose of tracking net gains in aquatic resource areas, restoration is divided into two categories: re-establishment and rehabilitation;

  - Rehabilitation means the manipulation of physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.
  - Re-establishment means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and function.

- *Establishment/Creation* creates habitat where none currently exists, and often involves site manipulations such as grading. Creation may result in a net gain in functions and values by developing one or more types of habitat acres in areas where the habitat type did not exist before. Creation

may have a lower potential for success than enhancement or restoration and also has the potential to impact existing habitats.

In relation to jurisdictional waters, establishment is defined in the ACOE 2008 Mitigation Rule as the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource/habitat that did not previously exist at an upland area. Establishment results in a gain of aquatic resource area and functions.

Although all strategies will have similar goals of improving and increasing the structure, composition, and overall function of the system, they will vary in methods, cost, potential for success, and possibly, maintenance and monitoring requirements. In the following sections, these strategies are referred to collectively as 'restoration.'

2.4 GOALS AND OBJECTIVES

The Project Sponsor(s) shall identify specific goals and objectives for the proposed project. Establishing goals and objectives is an essential component of any restoration effort. Goals and objectives provide a framework against which to measure the overall success of the project and ensure that implementation and monitoring is sufficiently tailored to assess project progress. Goals and objectives should be clear, understandable, measurable, feasible, and sufficiently detailed to avoid interpretation regarding the intent of the project. Goals focus on overall project results, while objectives list the steps or tasks that will be used to attain the goal(s). An example of an appropriate project-specific restoration goal with objectives might be:

- Goal: Improve habitat quality for riparian birds by increasing native plant species diversity, density, and structure within XX feet (acres) of a streambed channel.
  - Objective 1: Remove XX acres of fill within the restoration area to improve hydrological flows (specify timeframe)
  - Objective 2: Remove XX acres of the non-native, invasive Pampas grass (*Cortaderia selloana)* within the restoration area (specify timeframe)
  - Objective 3: Plant XX acres of willows, cottonwoods, and sycamores within the restoration area at a density of XX trees per acre (specify timeframe)

In the case of restoration targeting jurisdictional waters, the objective should also describe the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, preservation, establishment, or enhancement), and the manner in which the resource functions of the compensatory mitigation project will address the needs of the watershed (pursuant to the ACOE 2008 Mitigation Rule).

2.5 SUCCESS CRITERIA/PERFORMANCE STANDARDS

The Project Sponsor(s) shall identify appropriate success criteria prior to project implementation. Success criteria provide a standard by which to (1) measure the progress of the restoration effort and (2) allow for remedial actions or adaptive management if milestones are not achieved. Criteria should evaluate specific attributes of the target habitat or ecosystem that are tied to ecological functioning *and* linked to the project-specific goals and objectives. In addition, species responses to habitat improvements will also be evaluated, where appropriate. Performance standards should be listed in table format and clearly document the interim and final performance requirements of the mitigation site.

General and selected habitat-specific criteria are provided in Sections 2.5.1 and 2.5.2, below. However, OCTA recognizes that there may be instances where site conditions and/or operational or ecological parameters preclude attainment of these success criteria. Therefore, the Project Sponsor(s) may establish alternative site-specific success criteria based on historic and/or existing conditions at reference sites on or near the restoration site(s). In these cases, proposed alternative success criteria must be scientifically defensible and supported by scientific evidence, including but not limited to published reports or papers, quantitative field studies, or long-term monitoring data that is relevant to the proposed effort. Documentation to support alternative success criteria must be included in the Restoration Plan and will be subject to approval by OCTA.

2.5.1 General Success Criteria

Success criteria are often defined in terms of percent cover by native and non-native species and species diversity within restored habitat. For restoration projects that involve planting trees, the survival rate of individual trees is also a success criterion. Habitat-specific success criteria are included below. If survival and/or cover requirements have not been met, the Project Sponsor(s) shall be responsible for replacement plantings or additional weed control efforts to achieve these results. Replacement plantings shall be subject to the same survival, growth, and monitoring requirements as initial plantings, and the monitoring period shall begin *after* re-planting. Irrigation shall stop two years prior to achieving the success criteria.

2.5.2 Habitat-specific Success Criteria

Oak, Walnut and Sycamore Woodlands Orange County supports a variety of oak, walnut, and sycamore woodlands, and these habitats may be included in restoration projects. The monitoring period for oak and walnut restoration will be a minimum of 10 years, and the monitoring period for sycamore restoration will be a minimum of 5 years. For these and other tree-dominated woodlands, the following success criteria shall be used.

Restoration plantings shall attain a minimum of 80% survival the first year, 95% the second year, and 100% survival thereafter. By the end of the monitoring period, cover by non-native species will be less than 5%, and none of the non-native invasive species identified in Section 2.10.3 will be present within the restoration site. Because non-native annual grasses have become naturalized in upland environments in Southern California, the performance criteria for non-native annual grasses will be less than 10% cover at the end of the monitoring period.

All tree plantings should achieve measurable annual growth in height and trunk girth and no loss of the primary growth leader. Loss of the primary growth leader shall require tree replacement if this occurs in years 1-3. Replacement plantings shall be subject to the same survival, growth, and monitoring requirements as initial plantings, and the monitoring period shall begin *after* re-planting (e.g., 5 years after replanting for sycamores, 10 years for oaks and walnuts).

The planting plan for woodlands (Section 2.6.1) should specify the targeted planting density. Surviving trees should be well-distributed spatially across the planting area and any area greater than 400 square feet lacking surviving trees with measurable growth in years 1-3 shall receive replacement plantings. The maintenance and monitoring period shall be extended an additional 5 years *after* replacement plantings for sycamores, and 10 years for oaks and walnuts.

If survival and/or cover requirements have not been met, the Project Sponsor(s) shall be responsible for replacement plantings to achieve these results. Replacement plants shall be monitored with the same survival and growth requirements for 5 years after replacement planting for sycamores and 10 years after replacement planting for oaks and walnuts. Irrigation shall be stopped two years prior to achieving the success criteria (minimum of 5 years prior to achieving the success criteria for oak and walnut restoration sites).

Willow Woodland and Riparian Scrub Restoration plantings shall attain a minimum of 75% native cover after 3 years and 90% cover after 5 years with less than 5% cover by non-native species and 0% cover by non-native invasives. The site shall have 90% of the species diversity of a nearby reference site.

Coastal Sage Scrub Restoration plantings shall attain 50% native shrub cover after 3 years, and 75% native shrub cover after 5 years, with less than 5% cover by non-native species (except annual grassland, which will have less than 10% cover), and 0% cover by non-native invasives. Non-native and non-native invasive species are defined in Section 2.10.3. The site shall have 90% of the species diversity of a nearby reference site.

Native Grasslands If the proposed restoration site will include native grasslands, success criteria should be proposed by the Project Sponsor in the Restoration Plan for concurrence by OCTA and the Wildlife Agencies.

Open Water and Emergent Wetland If the proposed restoration site will include open water and/or emergent wetlands, success criteria should be proposed by the Project Sponsor in the Restoration Plan for concurrence by OCTA, the Wildlife Agencies, and the regulatory agencies. Additionally, habitat function-based success criteria will be used based on project-specific requirements. This may include criteria based on the California Rapid Assessment Method (CRAM) method of evaluation or a similar method that evaluates and scores landscape/buffer, physical, hydrological, and biotic attributes within the restoration site.

2.5.3 Species Success Criteria

Assessing species responses to habitat restoration will focus on demonstrating upward trends in presence, abundance, nesting/breeding activity, and/or diversity of selected target species or groups of species (e.g., riparian birds). Target species selection shall focus on species that are indicators of habitat conditions, and may include covered species (as appropriate) and/or non-sensitive common species.

2.6 SITE ASSESSMENT

A site assessment shall be conducted by qualified individuals to (1) identify the basic opportunities and constraints for successful restoration and (2) establish existing or baseline conditions *prior* to initiation of restoration activities. The latter will allow for a comparison of pre- and post-restoration conditions and thus, a measure of the overall success of the restoration effort. The assessment of baseline conditions may assist in establishing realistic success criteria. It is anticipated that the term "qualified individuals" will consist of one or more of the following, depending on project-specific needs: biologist/ecologist; cultural resource specialist; and hydrologist.

In many cases, existing data will be available for use in completing all or a portion of this assessment. It is anticipated that the site assessment will utilize a combination of existing data and surveys, including (but not limited to) technical reports, plant and animal surveys, vegetation and species mapping, field sampling, aerial photography, photos of existing conditions, land use maps, USEPA 303(d) listings, and historic records. At a minimum, the site assessment shall document:

- Existing or historic land uses within and adjacent to the site (including easements)
- Potential for cultural resources issues
- Site access and proximity to water sources
- Fuel management issues
- Existing and historic habitat conditions on and adjacent to the restoration site(s)

- Sensitive species mapping (distribution) on or near the restoration site(s)
- Invasive species mapping (species specific, abundance, acreage, and distribution/map with polygons) on the restoration site(s)
- Soil suitability, as appropriate to the specific restoration effort
- Topography
- Jurisdictional delineation, as appropriate to the specific restoration effort
- Functional assessment (aquatic habitat), as appropriate to the specific restoration effort
- Hydrology (including aquatic resource concerns such as flooding or poor water quality)
- Water balance study (creation of riparian or wetland habitat), as appropriate to the specific restoration effort
- Compatibility with adjacent land uses and watershed management plans.
- Reference sites for alternative success criteria, as applicable (this should also include a delineation of jurisdictional waters and a functional assessment)

2.7 PLANTING PLAN

For those projects that propose to introduce plant materials into restoration sites, the Project Sponsor(s) shall include a detailed planting plan in the Restoration Plan. At a minimum, the planting plan shall include:

- Location (with map) of the restoration site(s)
- Schematic depicting the restoration site(s), including identification of suitable planting locations based on soils, aspect, and other site features
- Detailed irrigation plan (if applicable)
- Plant palette (list of all species proposed to be used in the restoration area)
- Size and number of container plantings or cuttings (by species) and amount of seed (by species)
- Planting density (including on-center spacing for each tree and shrub species)
- Planting methodology
- Planting schedule
- Plant protection methods (e.g., invasive species control, herbivory control)
- Photos (with photo point locations/maps) of existing condition
- Videography (if possible) of existing condition

The following guidelines are provided for additional clarification on the planting plan.

2.7.1 Woodlands

Woodland habitats with multiple canopy layers shall include detailed plans for both the canopy (tree) layer and the associated understory layers (including early successional native species); all structural layers shall be monitored to ensure restoration of viable habitat, and all layers shall be subject to general or habitat-specific success criteria, as outlined sections 2.5.1 and 2.5.2.

2.7.2 Tree Relocation

Tree relocation is not anticipated for most restoration projects; however, the following conditions must be met where tree relocation is deemed feasible and appropriate.

- Prior to relocation, the Project Sponsor(s) shall prepare a complete inventory of trees to be relocated, including species and diameter-at-breast-height (dbh); results of this inventory shall be included in the Restoration Plan.
- The Project Sponsor(s) shall only relocate trees that are in good health, less than 30 inches dbh, *and* that will otherwise be removed as a result of project activities. The trees shall be boxed and relocated to an appropriate location within the restoration site. If a tree is damaged or destroyed during boxing or relocation, it will not be suitable for use in the restoration area.
- Relocation of trees shall be conducted by a certified arborist experienced with transplanting oaks and other native trees.
- If tree relocation is tied to mitigation credit, any damaged or destroyed trees shall be replaced onsite and in-kind. For oak and walnut trees that are less than 5" dbh, replacement ratios shall be 3:1; for trees from 5-12" dbh, the replacement ratio shall be 5:1; and for trees that are 12" or greater dbh, the replacement ratio shall be 10:1. All sycamores shall be replaced in-kind at a 10:1 ratio.
- In the event that relocated trees need to be replaced, Project Sponsor(s) shall use acorns or walnuts, plants rooted in liners, or one gallon containers to increase the likelihood of survival.
- Relocated trees shall be monitored for survival annually by a biologist according to the schedule in Section 2.5.2. Any relocated tree that does not survive shall be replaced in-kind, at the ratios specified above. Any relocated trees that do not survive or appear unhealthy due to transplanting during the 10 year monitoring period shall be replaced. Replacement plantings shall be monitored with the same survival and growth requirements as initial plantings, for 10 years *after* re-planting.
- All replacement tree stock shall be obtained from a reputable and experienced native plant nursery, using locally adapted stock, and shall not be inoculated to prevent heart rot.

2.8 SOURCE MATERIALS

While source materials typically refer to materials used for restoration plantings, guidelines are also provided to ensure that plant materials used in areas adjacent to the restoration site(s) are compatible with the restoration program.

2.8.1 Restoration Plants

Appropriate selection of restoration plant materials (seed, cuttings, container stock) will have a direct bearing on the overall success of the restoration effort. Locally collected material will be better-adapted to site conditions and thus, have a greater potential for survival. Equally important is maximizing genetic diversity of restoration materials; genetically diverse populations are better able to adapt to changing conditions.

In many cases, procurement of source materials from the restoration site or general vicinity will provide adequate material if the source population(s) is large and collection methods include an adequate number of parental plants. In some cases (e.g., relatively common plants or plants with small, local populations), collection from a wider zone (e.g., South Coast ecoregion) may be appropriate. The Project Sponsor(s) shall include a list of all acceptable plant sources in the Restoration Plan; the Project Sponsor(s) shall confirm that all container stock, cuttings, and seed species are derived from specified sources prior to delivery to the restoration site during implementation. The plant source refers to the geographic area where the material was collected for container species propagation and development of seed mixes, which may be different from the nursery or facility where the restoration material is grown.

2.8.2 Invasive Plants

The use of invasive plants in or adjacent to restoration area(s) is prohibited. The Project Sponsor(s) shall not plant, seed, or otherwise introduce invasive plant species into the restoration area(s) *or* into adjacent landscaped areas. Invasive plant species include those on the California Native Plant Council's (Cal-IPC) California Invasive Plant Inventory (Cal-IPC 2006) and updates (e.g., Cal-IPC 2007). The Invasive Plant Inventory replaces the earlier Exotic Pest Plants of Greatest Ecological Concern in California (Cal-EPPC 1999).

2.8.3 Landscape Plants

The Project Sponsor(s) shall not use plants that require intensive irrigation, fertilizers, or pesticides in landscaped areas adjacent to restoration area(s). In addition, runoff from adjacent areas shall be routed away from restoration site(s) unless specifically intended to augment flows onsite. Any runoff allowed into the restoration area(s) shall be treated prior to entering the site to remove debris or pollutants. The Project Sponsor(s) shall submit a list of plants proposed for use in areas adjacent to the restoration site to OCTA for review and approval. This list shall be submitted with the Restoration Plan or at least 30 days prior to acquiring and/or use of any plant materials in adjacent areas.

2.9 SPECIES PROTECTION

A key objective of restoration projects is to improve habitat for the benefit of native species, including sensitive plants and animals. However, the process of restoration has the potential to directly or indirectly impact species during implementation. For this reason, the Restoration Plan shall incorporate sensitive species protection measures. Species protection measures include (1) focused surveys to identify sensitive species that may be impacted during project implementation, (2) permits and authorizations for take of listed species and Species Protection Plans for listed species, and (3) restoration activities restrictions to limit or minimize impacts to sensitive species.

2.9.1 Sensitive Species Surveys

Where the site assessment indicates the presence or potential for occurrence of sensitive species and these species may be directly or indirectly impacted by restoration activities, the Project Sponsor(s) or a qualified Biologist under direction of the Project Sponsor(s), shall conduct appropriately timed surveys prior to initiation of restoration activities. Where sensitive species are documented, the Project Sponsor(s) shall adhere to conditions in sections 2.9.2 and 2.9.3, as applicable.

Focused surveys may include (but are not limited to) surveys for threatened, rare, or endangered species, breeding/nesting birds, southwestern pond turtle, and bats. The Project Sponsor(s) shall use survey guidelines provided below or agency-approved survey protocols. Findings shall be included in the Restoration Plan (if timing allows) or documented in a letter report to OCTA prior to the onset of restoration activities.

Federally or state-listed species. The restoration site(s) (or suitable habitat within the restoration site[s]) shall be surveyed for listed species prior to the onset of restoration activities to ensure that no direct or indirect impacts will occur from project implementation. Surveys shall be conducted by a qualified biologist using agency-approved, species-specific survey protocols. If listed species are detected, the Project Sponsor(s) shall adhere to conditions in sections 2.9.2 and 2.9.3, as appropriate, including the preparation of a Species Protection Plan.

If restoration activities occur subsequent to site preparation (e.g., remedial grading in year 2 or 3), a qualified biologist shall re-survey for listed species using agency-approved, species-specific survey protocols. If listed species are detected, the Project Sponsor(s) shall adhere to conditions in sections 2.9.2 and 2.9.3, as appropriate, including the preparation of a Species Protection Plan.

Breeding/nesting birds. If vegetation removal or other activities that may result in the destruction of nests and death or injury of nestlings and fledglings will be conducted during the bird breeding season (January 15 to June 30 where nesting

raptors are an issue, March 15th to September 15th in riparian habitat, and February 15th through August 31st in upland habitat), breeding bird surveys will be conducted. These surveys will consist of at least three surveys conducted the week prior to conducting activities, with the last survey occurring within 2 days prior to commencement of work activities. If no breeding/nesting birds are observed and concurrence has been received from OCTA, work activities may begin. If breeding/nesting birds are observed, the measures described in 2.9.3 will be implemented.

Southwestern pond turtle. Suitable habitat within the restoration site(s) (i.e., drainages that contain standing water and adjacent uplands) shall be surveyed for southwestern pond turtle (*Actinemys marmorata)* prior to the onset of restoration activities to ensure that no direct or indirect impacts will occur from project implementation. Presence/absence surveys shall be conducted by a qualified turtle biologist. The biologist shall survey both aquatic habitat and potential breeding areas or existing nests in adjacent uplands.

Bats. If the restoration project includes any work at a bridge site, a qualified bat biologist shall survey the bridge structure for bats prior to the onset of restoration activities. The biologist shall conduct a minimum of 3 surveys, 7 days apart; unless a positive presence is determined, the surveys can be ended.

2.9.2 Permitting

If federally or state-listed species are documented on or adjacent to the restoration site(s) during the site assessment and/or focused surveys, the following conditions shall apply:

- The Project Sponsor(s) shall consult with the appropriate agencies, as prescribed in Federal and State Endangered Species Acts, and obtain any necessary federal and/or state permits/authorizations prior to the onset of any restoration activities. Any unauthorized take of listed species may result in prosecution.
- The Project Sponsor(s) shall be required to prepare a Species Protection Plan that contains specific measures to avoid, minimize, or mitigate impacts to listed species. The plan shall be submitted to OCTA with the Restoration Plan (if timing allows) or prior to initiation of any restoration activities, and will require OCTA review and approval prior to commencing work.

If federally and/or state-listed species are found on or near the restoration area *after* the project has been initiated, the following conditions shall apply:

- The Project Sponsor(s) shall cease work in the affected area and consult with the appropriate agencies, as prescribed in Federal or State Endangered Species Acts.

- If the work requires that the species be removed, disturbed, or otherwise impacted, the Project Sponsor(s) shall obtain the appropriate federal and/or state permits/authorizations prior to re-starting work in the affected area. In addition, the Project Sponsor(s) shall submit a Species Protection Plan to OCTA for review and approval.

The Project Sponsor(s) shall also be responsible for obtaining any other resource agency permits applicable to any work related to restoration activities. Such permits may include compliance with CDFG Section 1600, and/or ACOE and Regional Water Quality Control Board Sections 401 and 404.

2.9.3 Restoration Activities Restrictions

Where sensitive species may be directly or indirectly impacted by project implementation, the following species and general biological resource protection measures shall be implemented, as appropriate:

- If threatened or endangered bird species are present in or adjacent to the restoration area, no work shall occur during the breeding season (March 15th through September 15th in riparian habitat and February 15th to August 31st in upland habitat) to avoid direct or indirect (e.g., noise) impacts to listed species *except* as authorized by state and/or federal threatened/endangered species permits/authorizations which may be required prior to commencing restoration activities.
- If breeding activities and/or active bird nests of unlisted bird species are located and concurrence has been received from OCTA, the breeding habitat/nest site shall be fenced or otherwise marked a minimum of 50 feet (250 feet for raptors) in all directions, and this area shall not be disturbed until the nest becomes inactive, or the young have fledged, are no longer being fed by the parents, have left the area, or will no longer be impacted by the project.
- Where restoration activities may disturb nesting swallows on bridges, the Project Sponsor(s) shall avoid work March 15th through September 15th. If such a condition cannot be met, then prior to March 1st of each year, the Project Sponsor(s) shall remove all existing nests which would be impacted by the project. The Project Sponsor(s) shall continue to discourage new nest building in places where they would be disturbed using methods approved by OCTA. Nest removal and hazing must be repeated at least weekly until restoration activities begin or until a swallow exclusion device is installed. The exclusion device must provide a space of four to six inches for the passage of snakes at the bottom edge. Nests must be discouraged throughout the restoration implementation phase. At no time shall occupied nests be destroyed as a result of project implementation.
- If southwestern pond turtles are present in or adjacent to the restoration area, impacts to turtle habitat in wetlands or uplands from project

implementation shall take place outside the breeding period (April-August).

- If bats are present in or adjacent to the restoration area, OCTA shall be notified and provisions for their protection/conservation will be discussed. If loss of significant bat roosting habitat occurs due to the implementation of the project, the Project Sponsor(s) shall institute protection measures including the installation of roosting structures below the deck at OCTA approved locations.
- If work is performed within any stream channel during the winter storm period, the Project Sponsor(s) shall monitor the five day weather forecast. Where the forecast indicates precipitation, the Project Sponsor(s) shall secure the site to prevent materials from entering the stream or washing downstream. The site shall be completely secured one day prior to precipitation, unless prior written approval has been provided by OCTA. During precipitation events, restoration activities are prohibited *except* for those activities necessary to secure the site. No work shall occur in areas containing flowing water until the flows have receded and the soil moisture content has stabilized.
- Silt; foreign material; herbicides/pesticides; and/or liquids such as oil, gasoline, or other petroleum products will not be introduced to any soil on the restoration site, the drip line (the outside edge of foliage overhang) of any adjacent native plant species, or within existing stream channels.
- Construction equipment, vehicles, and materials will not be placed on planted/seeded restoration species, existing native vegetation, or within sensitive resource areas (stream or wash) and appropriate Best Management Practices (BMPs) should be implemented. All existing resources which are to be protected will be identified by the Project Sponsor(s) on an as-needed basis.
- Equipment should be stored outside of any stream or wash and appropriate BMPs should be implemented.
- If water diversion is needed, a water diversion plan should be prepared and submitted to the resource agencies for approval.

2.10 SITE PREPARATION AND INSTALLATION

The Project Sponsor will be responsible for the implementation of the restoration project. This will consist of site preparation and native plant materials installation performed under direction of the Project Sponsor(s) and the Biologist. The Biologist conducting maintenance inspections shall be knowledgeable of the physical requirements of native vegetation and experienced in the installation and maintenance of native habitats.

~~2.9.4~~2.10.1 Grading

Where grading is necessary to achieve an appropriate planting surface for restoration, the Project Sponsor(s) shall prepare a pre-grading plan which will

include final contours, hydrological testing and anticipated flow regime (as appropriate), and schedule for implementation. The pre-grading plan shall be included in the Restoration Plan.

Grading activities shall be subject to the following conditions:

- Grading of restoration sites(s) shall be completed no later than December 31st. If activities are within a stream or creek, grading activities should avoid the wet season (generally between October 1st and April 30th). To the extent feasible, grading should be conducted when soil moisture is relatively low.
- Heavy machinery used in grading may result in soil compaction. Therefore, grading activities shall avoid the dripline of oaks and other areas where compaction may damage existing native tree species and limit restoration success. If necessary, protective fencing shall be placed around the oak dripline to prevent compaction of the root zone from equipment.
- Following completion of heavy grading, discing (or similar) shall be performed to create loose, uncompacted soil surfaces that are suitable for plant establishment. Soil treatment activities shall avoid the dripline of oaks and other areas to avoid damaging the root systems of oak trees. If necessary, protective fencing shall be placed around the oak dripline to prevent damage of the root zone from equipment.
- For areas that are to be graded temporarily for construction access roads or equipment and are within jurisdictional waters, those areas will need to be restored to pre-construction elevations and revegetated with native non-invasive species. Any temporary fills shall be removed immediately upon completion of its use and relocated or disposed of outside of waters of the US. A grading plan is required showing the locations where grading is to occur and the amount of material to be dredged or filled.

~~2.9.5~~2.10.2 Soil Testing

For restoration strategies that focus on restoring or creating habitat, soil testing may be required prior to and during installation to determine soil suitability and prescribe appropriate soil amendments (if necessary) to ensure adequate growing conditions. Soil testing may occur during the site assessment, site preparation, or restoration monitoring phases, and shall include an assessment of soil texture, nutrients, pH, and compaction, among other factors.

~~2.9.6~~2.10.3 Pre-planting Weed Control

Weed control at restoration sites must be addressed at least 3 months before planting activities are initiated. Sites with a significant weed population may require one or more seasons of weed control before native plantings can be installed. While many methods of weed control are available, weed control

strategies shall be site-specific and consider target weed species (including extent and abundance of infestation), existing native vegetation, presence of sensitive species, proximity to water sources, and in some cases, importance of maintaining an intact soil profile.

Methods for controlling many perennial invasive weeds (e.g., Pampas grass, tamarisk, eucalyptus) are relatively standard and include removal and/or herbicide treatment. Refer to Cal-IPC (http://www.cal-ipc.org/ip/management/index.php) for sources on specific treatment methods. In all cases, treated plant material shall be removed from the site and disposed of at an appropriate offsite facility.

Effective herbaceous weed eradication requires initial stimulation of weed growth. This allows a larger crop of weeds to be eradicated and reduces the weed seed bank in the soil. This 'weed farming' method of removal is recommended for restoration sites where target herbaceous weeds are established *and* where irrigation is feasible. Weed farming includes a cycle of irrigation, weed germination, and weed removal that may be repeated up to 12 times or more as a means of reducing the weed seed bank. Mechanical clearing, mowing, and non-residual herbicides (e.g., Rodeo and/or Roundup) may be used to remove weed and exotic species, either in combination with weed farming or as an alternative where weed farming is not feasible. Only herbicide approved for use in aquatic areas by the U.S. Environmental Protection Agency (USEPA) shall be used in riparian areas adjacent to surface flows. Herbicides shall be judiciously and carefully applied in a manner that avoids spillage, and shall not be applied native plant species or spilled into any surface waters. The weed farming process is described below:

- The site will be cleared of weeds by mechanical mowing. Cut vegetation (including stems and flowering heads) will be removed from the site and disposed of at an appropriate offsite facility.
- In the absence of natural rainfall, the restoration area will be irrigated two times per week for a two week period using a temporary irrigation system. Soils shall be saturated to a depth of at least 3 inches during each irrigation cycle.
- Germinated weeds will be mowed and/or treated with an appropriate post-emergent herbicide at the end of the first two week irrigation cycle. Dead vegetation will be removed from the site and disposed of at an appropriate offsite location.
- The cycle of irrigation and weed removal, as described above, will be repeated at least 3 times, including the initial cycle. The cycle will be repeated during different seasons to ensure the removal of both annuals and perennials. The Project Sponsor(s) shall determine if further treatment is required to reduce the weed seed bank.

At the time of planting, the Project Sponsor(s) shall assess whether any undesirable vegetation has become established in the restoration area(s) and whether additional eradication is necessary. Wherever feasible, pre-planting weed control will use mechanical methods such as removal by hand or string trimmers. If effective weed control cannot be attained through mechanical means, appropriate systemic non-residual herbicides may be applied by a licensed applicator under the supervision of the Project Sponsor(s). In some cases, herbicide application may be preferable to mechanical control, particularly where the latter results in excessive impacts to the soil profile. Weed species to be removed may include, but are not limited to the following species listed in Table 1:

Table 1
~~Invasive~~ Non-native Species

Common Name	Scientific Name
Tamarisk	*Tamarix ramosissima*
Eucalyptus	*Eucalyptus* spp.
Castor Bean	*Ricinus communis*
Pepper trees	*Schinus* spp.
Mustards	*Brassica* spp.
Tree tobacco	*Nicotiana glauca*
Fennel	*Foeniculum vulgare*
Arundo	*Arundo donax*
Ailanthus	*Ailanthus altissima*
Perennial pepper weed	*Lepidium latifolium*
Russian thistle	*Salsola tragus*
Mexican fan palm	*Washingtonia robusta*
Italian thistle	*Carduus pycnocephalus*
Milk thistle	*Silybum marianum*
Non-native weedy thistles	*Cirsium* spp.
Non-native annual grasses: Wild Oats Slender wild oats Foxtail chess Ripgut brome Soft chess Mediterranean barley Italian ryegrass Annual beard grass	 *Avena fatua* *Avena barbata* *Bromus madritensis* ssp. *rubens* *Bromus diandrus* *Bromus hordeaceus* *Hordeum murinum* *Lolium multiflorum* *Polypogon monspeliensis*
Non-native perennial grasses:	

Common Name	Scientific Name
Pampas grass	*Cortaderia selloana*
Bermuda grass	*Cynodon dactylon*
Fountain grass	*Pennisetum setaceum*
Smilo grass	*Piptatherum miliaceum*

It should be noted that some non-native species (e.g., annual grasses) are naturalized in southern California and reducing their levels to <5% cover may not be practicable in all situations.

Invasive species consisting of, but not limited to, Arundo (*Arundo donax*), tree tobacco (*Nicotiana glauca*), pepper tree (*Schinus* sp.), Ailanthus (*Ailanthus altissima*), tamarisk (*Tamarix* sp.), perennial pepperweed (*Lepidium latifolium*), Russian thistle (*Salsola tragus*), Mexican fan palm (*Washingtonia robusta*), and castor bean (*Ricinus communis*) shall comprise 0% of the cover at the end of the 5-year monitoring period.

~~2.9.7~~2.10.4 Irrigation

Many (but not all) restoration projects will require a supplemental source of irrigation for following plant installation. The irrigation system utilized will depend on site conditions (including access and sources of water) and target plant species. Potential irrigation systems include (but are not limited to) overhead, drip or bubbler systems, or water trucks. The Project Sponsor(s) shall include a detailed irrigation plan in the Restoration Plan. The irrigation plan shall identify the irrigation system and materials, water source, and irrigation schedule.

~~2.9.8~~2.10.5 Planting

All plantings (including seeding and hydroseeding) shall occur between October 1st and April 30th to take advantage of winter rains. If supplemental irrigation will be provided for container stock, planting (but not seeding) may occur into early spring. The Restoration Contractor shall install locally-specific plant materials as described in Section 2.8.1. C~~C~~ontainer stock ~~shall be installed~~ shall be installed no later than April 30th, cuttings shall be installed no later than February 1st, and seed shall be planted no later than December 31st. The plant palette, as well as planting density and methodology, shall follow specifications set forth in the detailed Planting Plan (Section 2.6).

3 RESTORATION MAINTENANCE PROGRAM

Maintenance of the restoration site(s) shall be performed by the Project Sponsor(s) or a qualified Restoration Contractor ('Maintenance Contractor') under direction of the Project Sponsor(s). The individual conducting maintenance inspections shall be a professional (e.g., biologist, landscape architect,

horticulturist) knowledgeable of the physical requirements of native vegetation and experienced in the installation and maintenance of native habitats.

3.1 SCHEDULE AND DURATION

Restoration site(s) shall be maintained on a regular basis throughout the maintenance period. The frequency of maintenance activities will depend on a variety of factors, including (but not limited to) restoration site size, type of plantings, use of irrigation, weed control requirements, and herbivore issues. Typically, maintenance will occur more frequently in the year following plant installation and will taper off as plantings become established and success criteria are met. The maintenance period shall begin upon completion of plant installation.

During the maintenance period, sufficient personnel and equipment shall be allocated to perform maintenance of all planted areas. Maintenance of the restoration site(s) shall occur for 5 years (10 years for oak and walnut restoration sites) following plant installation (sections 2.5.1 and 2.5.2). Maintenance visits shall be conducted a minimum of once monthly during the first year after installation and quarterly thereafter. The need for additional maintenance visits shall be determined by OCTA ~~and~~ the Wildlife Agencies, and the regulatory agencies depending on site conditions.

3.2 MAINTENANCE ACTIVITIES

The Project Sponsor(s) or Maintenance Contractor shall be responsible for implementing maintenance activities in Sections 3.2.1-3.2.9, as appropriate, according to the schedule and duration in Section 3.1.

3.2.1 Erosion Control

Drainage and sedimentation control devices shall be routinely cleaned, maintained, and repaired, as necessary. The Project Sponsor(s) or Maintenance Contractor shall install additional erosion control devices where necessary, as indicated by OCTA. Once sufficient vegetative cover has developed to prevent erosion, the erosion control devices shall be removed at the direction of OCTA.

3.2.2 Weed Control

Weeds shall be controlled in the restoration area(s) for a minimum of 5 years (10 years for oak and walnut restoration sites). Weeds shall be removed mechanically, to the degree feasible. Where mechanical removal is ineffective or detrimental to the soil profile, herbicides shall be applied utilizing appropriate methodologies and application rates, as determined by the Project Sponsor(s) and/or Maintenance Contractor, and as described in Section 2.10.3.

Follow-up foliar application of herbicide shall be applied to any resprouting stems of invasive species in the restoration area(s) approximately 5 to 7 weeks after the initial treatment. At a minimum, quarterly inspections and reapplication of herbicide, if necessary, shall be conducted for a period of 5 years (10 years for oak and walnut restoration sites) to ensure weed control.

Weed control activities shall occur prior to seed set to prevent weed seed from contributing to the soil seed back. Care should be taken to avoid native plantings during weed control activities. Spraying shall not be done under windy conditions to avoid herbicide drift.

3.2.3 Plant Protection

In restoration areas where plant loss or damage from herbivores (e.g., rabbits, gophers, ground squirrels, deer) is high, individual plants may need protective barriers. The need for plant protection shall be assessed on a site-specific basis. Plant protection may include (but is not limited to) wire cages lining planting holes for root protection (e.g., oaks, walnuts); shields or protective sleeves around trunks (trees) or entire plants (e.g., herbaceous perennials, shrubs) for sapling or shoot protection; or fencing of all or a portion of the restoration site(s) to exclude herbivores completely. Above-ground plant protectors shall be removed once plants are sufficiently large to withstand herbivore damage. After removal, plant protection devices shall be disposed of at an appropriate offsite facility.

Insects, plant disease, herbivores, and other pests will be closely monitored during the maintenance period. Diseased or infected plants will be immediately disposed of off site at an appropriate landfill to prevent infection of on-site resources. Where possible, biological controls will be used instead of pesticides or herbicides. Pesticide use will comply with local codes and regulations. The use of rodenticides that contain the active ingredients brodifacoum, bromadiolone, or difethialone is prohibited. If caging and fencing, as described above, is not sufficient to control rodent herbivory, live traps will be used as necessary to control problem rodent species.

3.2.4 Trash and Debris Removal

Although trash and debris will be removed from the restoration area during initial site preparation, it is anticipated that ongoing trash and debris removal will be required (e.g., following rain events or weed control activities). The Project Sponsor(s) or Maintenance Contractor shall be responsible for removing trash and debris during the maintenance period. Garbage, debris, and noxious weed biomass shall be removed from the restoration site(s) and disposed of at an appropriate offsite facility. Dead or downed wood of native species shall not be removed except as required for safety or flood control purposes.

3.2.5 Irrigation

The Project Sponsor(s) or Maintenance/Restoration Contractor shall be responsible for ensuring proper irrigation of plantings and maintaining all components of the temporary irrigation system at the restoration site(s). The irrigation system shall be maintained and repaired as necessary during the period of use. When irrigation is discontinued, all irrigation equipment shall be removed from the site and disposed of at an appropriate offsite facility.

For restoration projects that use supplemental irrigation, irrigation shall be discontinued 2-5 years before the end of the maintenance period. Projects with a 5-year maintenance program may utilize irrigation for a maximum of 3 years after planting, while projects with a 10-year program may utilize irrigation for up to 5 years following planting. For 5-year projects, it is anticipated that in the first year following installation, plants will be irrigated at a frequency sufficient to keep soil within the root zone moist during the active growing season. In year 2, irrigation is anticipated to lessen, with frequency based on specific plant requirements. In year 3, it is anticipated that little to no irrigation shall be required. This schedule shall be tailored, as appropriate for 10-year projects. In all cases, the timing and frequency of irrigation shall be adjusted, as necessary, based on climatic conditions.

3.2.6 Vandalism

The Project Sponsor(s) or Maintenance/Restoration Contractor should note any instance of vandalism and report occurrences to OCTA within 24 hours. Recommendations for the replacement of damaged plants and their protection shall be developed by the Project Sponsor(s) and submitted to OCTA for review and approval. Remedial measures will be undertaken in a timely manner by the Project Sponsor. A description of all remedial actions will be included in the annual reports.

3.2.7 Replacement Plantings

Any portion of the restoration area that is bare or exhibits cover significantly below the success criteria due to low seed germination or establishment shall be reseeded. Prior to reseeding, soil compaction and soil chemical analyses may be required to identify site-specific characteristics that may inhibit plant establishment and thus, require specialized site preparation methods or seed mixes.

Dead container plants shall be recorded by the Maintenance /Restoration Contractor and replaced on an annual basis to ensure that project success criteria are met. Prior to replanting, the Project Sponsor(s) shall assess the cause of mortality to determine whether the same or alternative (native) species shall be re-installed. All reseeding and replanting shall be conducted from October through December of each year, unless irrigation is provided.

3.2.8 Fire Suppression

Wildfires are an integral component of the Mediterranean ecosystem of southern California and will likely affect some restoration sites. Although native vegetation is generally fire-dependent, recovery from fire depends on a variety of factors, including the age and health of pre-fire native vegetation, presence of an established native species soil seed bank, and fire intensity and frequency. Preventing overly frequent fires (particularly for young or establishing vegetation) will assist in achieving a diverse age structure of vegetation, while promoting natural fire cycles will prevent habitat from becoming too mature and dense. This, in turn, will reduce the fuel load and the chances of large, uncontrollable fire events.

Although prevention of fire is not possible, the damaging effects can be minimized by maintaining the overall health of the restoration plantings *and* reducing invasive species to the degree feasible. Many invasive species, such as grasses, are highly flammable and capable of spreading fire quickly across the landscape. Further, they often exhibit higher post-fire establishment rates than native species, thereby perpetuating the cycle of increased fire frequency and intensity at the expense of native plant establishment.

In addition to appropriate site maintenance, the Project Sponsor(s) shall develop a Fire Management Plan that addresses wildland fire suppression and pre-fire vegetation management for the restoration site(s). If the restoration site(s) is part of a larger property for which a Fire Management Plan already exists, it shall be subject to guidelines in the existing plan. The Fire Management Plan shall identify the following elements:

- Fire management objectives and general guidelines
- Fire management units (if appropriate, depending on size of site)
- Restricted uses onsite to help prevent catastrophic wildfires
- Prevention and suppression tactics, including fuelbreaks and targeted fuel management
- Sensitive resource areas to be avoided
- Staging areas for trucks and equipment
- Road repair and maintenance requirements for specified fire access roads

In developing the Fire Management Plan, the Project Sponsor(s) shall coordinate with the appropriate fire agencies (e.g., CalFire, Orange County Fire Authority).

3.2.9 Flood Control

Flooding is a natural occurrence along stream channels. However, severe flooding that uproots establishing vegetation within restoration site(s) and causes excessive erosion may hinder achievement of restoration-specific success criteria. The Project Sponsor(s) shall implement erosion control measures (Section 3.2.1) in advance of flooding events to minimize damage.

4 RESTORATION MONITORING PROGRAM

The purpose of restoration monitoring is to evaluate progress towards achieving success criteria and ultimately, project goals and objectives, through repeated observations or measurements. Where monitoring indicates that the project is under-performing, maintenance or management activities can be modified or adapted in a timely fashion to correct the deficiency (i.e., adaptive management).

4.1 FREQUENCY AND DURATION

Restoration monitoring shall begin prior to project implementation with the establishment of baseline conditions during the site assessment. Thereafter, monitoring to assess project success shall commence subsequent to installation of plant materials or initiation of specific maintenance activities (e.g., invasive weed control). At a minimum, restoration monitoring will be conducted yearly during the life of the restoration project (e.g., 5- or 10-year maintenance and monitoring period plus any extensions due to replacement plantings).

4.2 ADAPTIVE MANAGEMENT PLAN

Adaptive management is a structured approach to resource management that includes (1) establishing objectives, (2) monitoring to determine whether objectives have been met, and (3) using monitoring results to update and/or alter management activities to achieve objectives. The Project Sponsor(s) shall develop an Adaptive Management Plan for restoration monitoring which will:

- Document the ranges of natural variation within the targeted restoration habitats (i.e., baseline conditions)
- Collect and continuously update information that will inform adaptive management (e.g., qualitative and quantitative data collection)
- Measure the success of specific restoration activities (e.g., vegetative growth, non-native species removal)
- Measure species response to restoration activities (e.g., distribution and abundance of target species)

Sections 4.2.1 – 4.2.4 identify potential monitoring methods, with the understanding that these may be refined or altered based on expert input and monitoring results. In general, monitoring for restoration success should focus on assessing both habitat condition and species responses to restored habitat. The monitoring activities will be performed either annually or during each maintenance site visit, as noted in each sub-section. The adaptive management utilization will need prior approval from resource and regulatory agencies.

4.2.1 Photo-monitoring

The Project Sponsor(s) or designated biologist(s) under direction of the Project Sponsor(s) shall establish photo-monitoring stations (points, plots), as appropriate, within the restoration site(s). Photo stations allow a photographic record to be developed over time, and are a valuable tool for monitoring change, as well as re-locating transect or plot locations. For monitoring change, the ability to replicate conditions (e.g., location, direction, camera lens and angle) between years is particularly important; therefore, photo stations and photographs need to be well-marked and documented, as follows:

- Photo stations shall be marked in the field with metal stakes or posts, and triangulated or otherwise referenced to permanent landmarks (e.g., large boulders, roads, structures) so that the photo station can be reestablished if the marker is lost or destroyed.
- Photo station locations shall be recorded using a GPS device; in addition, the location shall be marked on a map and included with the annual and final reports.
- A photo log form shall be used for all photo documentation. The log shall include (but is not limited to) the following information:
  - Photographer name
  - Date of photo documentation
  - Photo station location (including GPS point)
  - Camera type and lens
  - Film type
  - Compass direction for each photograph
  - Height and angle or camera for each photograph
- Both the photo log for each photo station and all photographs taken at the station shall be included in the annual and final reports. Photographs shall be labeled and cross-referenced to the photo log.

As an option, video-monitoring to demonstrate the restoration progress and to make comparisons between before and after conditions is also recommended. Photographs of site progress (or video-monitoring) will be obtained at permanent photo stations at least once a year throughout the 5- or 10-year monitoring period. Photographs of maintenance activities and general site conditions will also be obtained as required throughout the 5- or 10-year period.

4.2.2 Habitat Monitoring

This section provides general guidelines on monitoring methodologies for those habitats expected to be the focus of most restoration efforts. Additional habitats not included here (e.g., coastal wetlands) may require alternative methodologies. In those cases, the Project Sponsor(s) shall develop habitat-specific monitoring methods for review and approval by OCTA.

Habitat monitoring methods outlined below are largely quantitative in nature, and shall be supplemented by plant survival data collected by the Maintenance/

Restoration Contractor (Section 3.2.7). When developing or refining methodologies for habitat monitoring, the Project Sponsor(s) shall:

- Define the type and number of sampling units (e.g., transects, plots, points)
- Describe the sampling unit size and shape
- Determine the placement of sampling units and whether they will be temporary or permanent
- Provide sample data collection forms

Oak, Walnut, and Sycamore Woodlands. The Project Sponsor(s) or designated biologist(s) shall establish permanent vegetation transects within the restoration site(s), and collect quantitative data on species composition and structure (e.g., cover, height, development of multiple vertical layers) along each transect. Monitoring should quantify recruitment of trees and shrub species within 2 x 2-m plots along each transect, and measure heights and girths for the dominant tree and shrub species along each transect. In addition, the biologist(s) should qualitatively assess trees for evidence of damage or disease.

Riparian Habitat. The Project Sponsor(s) or designated biologist(s) shall establish permanent vegetation transects perpendicular to the riparian corridor, and collect quantitative data on species composition and structure (e.g., cover, height, development of multiple vertical layers) along each transect. Monitoring should measure foliage volume at 1-m height intervals within 2 x 2-m plots, identify species contributing to the foliage volume, quantify recruitment of woody riparian tree and shrub species within 2 x 2-m plots along each transect, and measure heights and girths for the dominant riparian tree and shrub species along each transect.

Depending on project-specific requirements, the Project Sponsor shall perform CRAM (or a similar method of evaluation) to assess the levels of habitat functions and services provided by the restoration site.

Coastal Sage Scrub. The Project Sponsor(s) or biologist(s) shall establish transects within scrub habitat, and collect quantitative data (e.g., species richness, cover) along each transect and in quadrats. Number and size of transects/plots may vary depending on the site; however, a relatively efficient and effective sampling design has been demonstrated using a combination of 10 50-m point-intercept transects with 1 m x 1-m quadrats placed on alternate sides of the transect at 5 m intervals. Cover data is collected at 1 m intervals along the transect line; species richness data is collected within the quadrats and should be correlated with climatic conditions, particularly for annual species (Deutschman and Strahm 2009).

Grasslands. The Project Sponsor(s) or biologist(s) shall collect quantitative data on vegetation species distribution, abundance, composition, and structure (e.g., cover, height, amount of thatch), using randomly allocated transects and/or randomly placed 1-m^2 quadrats. Monitoring shall record percent vegetative cover (categorized by native versus non-native species cover), species abundance, and amount of thatch for each quadrat. Quadrat size may need to be adjusted based on the size of the restoration area and/or results of initial monitoring studies.

4.2.3 Native Species Monitoring

While habitat monitoring provides an indication of the structure and composition of restored habitat, species monitoring can determine the functionality of the habitat for wildlife species. Species monitoring shall focus on sensitive and/or non-sensitive species, as appropriate. Although some sensitive species (e.g., California gnatcatcher, least Bell's vireo) can act as indicators of habitat condition, these species are not always present, even if suitable habitat is available. Therefore, monitoring increases or changes in species diversity (including common species), particularly where these changes can be correlated to habitat improvement or successional stages, may be a more useful measure of restoration success.

Based on restoration goals and objectives, the Project Sponsor(s), in coordination with OCTA and the wildlife agencies, shall identify suitable target species or species groups for monitoring (e.g., California gnatcatcher, arroyo toad, riparian birds, coastal sage scrub birds). The Project Sponsor(s) or designated biologist(s) shall monitor target species annually to assess their distribution, relative abundance, and/or breeding activity. Surveys shall be conducted according to standard survey protocols, where available.

Surveys for riparian birds shall be conducted along systematic survey routes, monitoring all portions of the riparian habitat. Monitoring shall identify species using the habitat and their relative abundance, and quantify the number of nesting pairs of any sensitive riparian bird species (e.g., least Bell's vireo, southwestern willow flycatcher, yellow-breasted chat, Cooper's hawk) using the habitat for nesting. Surveys shall be conducted at varying times of day between visits. The stream reach shall be monitored three times during January through mid-March, with at least a 7-day interval between site visits. Surveys shall begin within 1 hour after sunrise and end by noon, and should not be conducted under extreme conditions (i.e., during heavy rain or when the temperature is >95°F or <40°F or with winds >10 mph). Taped vocalizations shall be used, as needed. Territories (singing males) and nest locations shall be mapped, and the nest fate recorded (i.e., determine number of eggs laid, nest parasitism rates, eggs or nests lost to nest predators, and number of chicks fledged).

Surveys for upland birds (exclusive of those conducted using protocol surveys) shall be conducted by point counts 4 times per year (according to season), with

each site visited 2 times per season. Point count monitoring shall record species and relative abundance within a given area, and counts shall begin at dawn.

4.2.4 Invasive Species Monitoring

Invasive Plant Species. Invasive plant species shall be monitored by the Project Sponsor(s) or Maintenance Contractor as part of the Maintenance Program (Section 3.2.2) and by the Project Sponsor(s) or designated biologist during habitat monitoring (Section 4.2.2). Where invasive plant species are determined to pose a threat to restoration success, remedial actions will be implemented, as discussed in Sections 3.2.2, and documented in the appropriate reports.

Invasive Animal Species. The Project Sponsor(s) or biologist(s) shall survey annually for bullfrogs, cowbirds, and other invasive animal species that have the potential to significantly and negatively affect native wildlife. Surveys shall be conducted by walking through suitable habitat and mapping their distribution and relative abundance. Where invasive animals are determined to pose a threat to native species, recommendations for management will be included in the appropriate reports.

5 CONTINGENCY MEASURES

If at any time, the restoration project appears to be under-performing according to the established success criteria, the Project Sponsor(s) shall conduct remedial actions in a timely fashion to ensure that goals and objectives of the project are met. In addition, the Project Sponsor(s) may consult with the agencies regarding adaptive management that may result in alterations to the Restoration Plan. Potential remedial actions have been addressed throughout this document and include (but are not limited to):

- Replacement plantings
- Remedial reseeding
- Soil testing
- Invasive control
- Supplemental irrigation

In the event of a major fire or flood or other disturbance that substantially damages the restoration project, post-disturbance site conditions will be assessed as soon as the area is safe to access (e.g., the threat has passed). This site assessment shall be conducted by the Project Sponsor(s) and results shall be documented in a letter report to OCTA with accompanying photographs. At a minimum, invasive species abatement practices will likely be initiated or increased to encourage natural recovery processes. If evidence of natural recovery, as defined by native species regeneration (e.g., seedlings, stump sprouting), is not observed within three months or one growing season of the disturbance, or if the recovery is deemed inadequate to meet the stated goals and objectives of the project, the Project Sponsor(s) shall prepare an analysis

detailing the cause of the failure and shall enter into consultation with the agencies to determine an appropriate course of action, including (but not limited to) remedial actions, adaptive management, and/or modified project goals and objectives.

Where fire or flood damages the restoration site(s), the Project Sponsor(s) shall work with OCTA and the Wildlife Agencies to develop an adaptive management strategy that allows the restoration effort to move forward. This strategy may include (but is not limited to) post-disturbance monitoring, re-planting, and modified success criteria.

6 REPORTING AND DOCUMENTATION

Reporting is an important tool to assess project success and determine the need for remedial actions or adaptive management. Documentation provides a permanent record of the restoration project, and informs long-term site management and/or other restoration or research efforts.

6.1 REPORTS

The Project Sponsor(s) shall be responsible for submitting reports to OCTA for review and approval according to the schedules below. In addition, the Project Sponsor(s) shall be responsible for any other reporting requirements necessitated by federal or state permits or authorizations.

6.1.1 Maintenance Reports

The Project Sponsor(s), with input from appropriate contractors, shall be responsible for preparing maintenance reports during the entire maintenance period. Maintenance reports shall be prepared and submitted to OCTA and the Wildlife Agencies following each maintenance visit. As set forth in Section 3.1, maintenance visits shall be conducted a minimum of once monthly during the first year after installation and quarterly thereafter. Maintenance reports shall be letter reports (unless specific issues dictate a longer report) and shall include:

- Person or person(s) conducting the maintenance
- Date(s) of maintenance visits
- General site conditions
- Description of maintenance activities (e.g., irrigation maintenance, weed control, trash removal) and actions taken
- Issues or problems requiring follow-up attention
- Recommendations

Maintenance activities shall be summarized in the annual status report (Section 6.1.2) and final report (Section 6.1.3). In addition, those reports shall review the Maintenance Program budget, project schedule, and restoration site viability.

Any proposed changes and/or recommendations shall be subject to review and approval by OCTA.

6.1.2 Annual Status Reports

The Project Sponsor(s) shall provide OCTA and the Wildlife Agencies with an Annual Status Report (ASR) no later than January 31 of every year after project initiation and continuing until OCTA accepts the Final Report. The ASR shall present an overview of the restoration effort, focusing on year-to-date activities, and shall specifically address maintenance activities, monitoring methodologies and results, success criteria (as measured by plant survival, percent cover, or other parameters), remedial actions (including but not limited to replanting or reseeding), and recommendations for the following year. The ASR shall include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year
- a description of the existing conditions of the site
- the results of focused wildlife surveys
- an analysis of all qualitative and quantitative vegetation monitoring data
- the method used to assess these parameters
- the number by species of plants replaced
- copies of all photo documentation
- maps identifying monitoring areas, transects, and planting zones
- GPS points of all ~~transect~~ sampling locations and photo documentation points
- discussion and recommendations
- copies of all permits, and any special conditions or letters modifying the original permit conditions
- a description of the status of the restoration site and restoration activities, including actual or projected completion dates, if known
- a table showing the implementation status of each restoration task
- an assessment of the effectiveness (e.g., success criteria) of each completed or partially completed restoration task

6.1.3 Final Report

Upon completion of the maintenance and monitoring programs, the Project Sponsor(s) shall prepare a Final Report that summarizes methods, results, remedial actions, and adaptive management from all monitoring years (see elements in Section 4.2, above); appendices shall include all pertinent data and photo documentation. The Final Report shall serve as the complete record of the restoration project. The Final Report shall also include recommendations for long-term management of the restoration site(s).

The resource and regulatory agencies will determine if the mitigation site is successful. If the restoration project includes restoration with identified jurisdictional waters, the Project Sponsor (through coordination of OCTA) will need to obtain written concurrence from the ACOE District Engineer that the restoration project has met its objectives and no additional monitoring reports are required. A final site inspection may be necessary to determine mitigation success.

6.1.4 Data Documentation

The Project Sponsor(s) shall be responsible for maintaining and submitting project documentation to OCTA with all reports. Data to be submitted shall include maps (including GIS-generated maps where possible), quantitative monitoring data (including forms and field notes), photo documentation (photographs and accompanying photo logs) and video documentation (if applicable). This documentation should be completed to the standards required by the ACOE if the mitigation project includes restoration of aquatic habitat. Data shall be provided in an electronic format, to the degree feasible.

The Project Sponsor(s) shall maintain a record of maintenance and monitoring activities to assist in evaluating changes in resource status, and responses to remedial or adaptive management actions. Restoration status should be reviewed annually to inform the next year's restoration maintenance and management activities.

7 LONG-TERM RESTORATION SITE PROTECTION

While the restored habitat will be presumed to be self-sufficient once maintenance and monitoring obligations are met, some level of post-restoration site protection and monitoring may be required to ensure long-term habitat viability. In the Final Report, the Project Sponsor(s) shall document site-specific conservation mechanisms and long-term land management tasks and costs.

7.1 SITE CONSERVATION MECHANISMS/LONG-TERM PROTECTION INSTRUMENT

The Project Sponsor(s) shall provide information on site-specific strategies for long-term land protection of restoration site(s). Strategies should include conservation easements or Deed restrictions.

Prior to sign off, the Project Sponsor will place a conservation easement, or other Wildlife Agencies-approved conservation mechanism, in favor of the Wildlife Agencies (or an approved third party), over the project site specifying that the area will be retained in perpetuity as open space for the sole purpose of native habitat conservation. The conservation easement or mechanism language should be approved by the Wildlife Agencies and OCTA prior to its execution.

The conservation easement or mechanism shall disclose the obligations of future owners/tenants of the property.

For restoration projects within jurisdictional waters, long term protection of the aquatic habitat, riparian areas, buffers, and upland that comprise the overall compensatory restoration (mitigation) project is required. Long-term protection may be provided through real estate instruments such as a conservation easement. All real estate instruments shall be approved by the ACOE's Office of Counsel, through coordination with OCTA. The owner of the property must have the conservation easement/deed restriction placed prior to or concurrent to work within jurisdictional waters.

References

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California Invasive Plant Council (Cal-IPC). 2006. California Invasive Plant Inventory. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. Available: www.cal-ipc.org.

California Invasive Plant Council (Cal-IPC). 2007. New weeds added to Cal-IPC inventory. Cal-IPC News. Spring.

Deutschman, D. and S. Strahm. 2009. Improving statistical sampling and vegetation monitoring for the NROC reserves in central Orange County: Year 2. 2008 Final Report. Prepared for The Nature Reserve of Orange County (NROC). Addendum #1 to research agreement #07-03. January.

U.S. Army Corps of Engineers and Environmental Protection Agency. 2008. *40 CFR Part 230 Compensatory Mitigation for Loss of Aquatic Resources; Final Rule*. Available:<http://www.epa.gov/owow/wetlands/pdf/wetlands_mitigation_final_rule_4_10_08.pdf>

September 11, 2017

Measure M2 Freeway Environmental Mitigation Program
Restoration Projects Additional Funding Request
Staff Report

OCTA

COMMITTEE TRANSMITTAL

September 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Measure M2 Environmental Mitigation Program Restoration Projects Additional Funding Request

Regional Planning and Highways Committee Meeting of September 7, 2017

Present: Directors Delgleize, Do, Donchak, M. Murphy, Nelson, and Steel
Absent: Director Spitzer

Committee Vote

This item was passed by the Members present.

Committee Recommendations

A. Authorize the Chief Executive Officer to negotiate and execute an amount up to $805,000 to fund the expedited clean water permitting requirements.

B. Authorize staff to amend the fiscal year 2017-18 budget to include the recommended funding amount.

OCTA

September 7, 2017

To: Regional Planning and Highways Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Measure M2 Environmental Mitigation Program Restoration Projects Additional Funding Request

Overview

Measure M2 includes a program to deliver comprehensive mitigation for the environmental impacts of freeway projects in exchange for streamlined project approvals from the state and federal wildlife agencies. On a parallel path, the Orange County Transportation Authority has developed a similar approach to work with the State Water Resources Control Board and the United States Army Corps of Engineers regarding state and federal clean water permitting requirements to facilitate expedited implementation of the Measure M2 freeway projects. A request for funding authorization to advance the streamlined permitting process is submitted for Board of Directors consideration and approval.

Recommendations

A. Authorize the Chief Executive Officer to negotiate and execute an amount up to $805,000 to fund the expedited clean water permitting requirements.

B. Authorize staff to amend the fiscal year 2017-18 budget to include the recommended funding amount.

Background

Measure M2 (M2) includes an innovative comprehensive Environmental Mitigation Program (EMP) to address the biological impacts of M2 freeway projects. This is achieved through the development of a Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP), approved by the California Department of Fish and Wildlife and the United States Fish and Wildlife Service (Wildlife Agencies). These documents were finalized and approved by the Orange County Transportation Authority (OCTA) Board of Directors (Board) in November 2016. The final permits were issued to OCTA by the

Wildlife Agencies in June 2017. It should be noted that the Board previously approved $34.5 million in funding for the maintenance and operation of the seven Preserves, as committed to in the NCCP/HCP. Payments began in March 2017 to establish an account over a ten to 12 year time period.

On a parallel path, OCTA and the California Department of Transportation staff have been coordinating with the State Water Resources Control Board (State Board) and the Army Corps of Engineers (Corps), collectively referred to as Regulatory Agencies. This coordination has resulted in defining a process that would utilize some of the same mitigation within the NCCP/HCP to also obtain state and federal clean water permits to further streamline the M2 freeway projects. Separate funding is needed to meet the Regulatory Agencies' requirements. This request was presented to and endorsed by the Environmental Oversight Committee (EOC) on August 17, 2017. A summary of the additional funding needs is presented.

Discussion

The construction of the M2 freeway projects is anticipated to result in impacts to jurisdictional waters of the state and United States. These impacts will require that OCTA obtain Section 401 and 404 clean water permits from the Regulatory Agencies, which will require mitigation. On a parallel process to the NCCP/HCP, staff is finalizing program-level authorizations with the Regulatory Agencies, which is further described in Attachment A. This permit will enable OCTA to utilize mitigation included in the NCCP/HCP, as well as lay out an abbreviated process for project level 401 and 404 permit issuance.

Agency coordination has resulted in the determination that the Agua Chinon and Aliso Creek restoration projects, as well as a small portion of the Ferber Ranch Preserve, should satisfy the Regulatory Agencies mitigation needs for the M2 freeway projects. These restoration projects and this Preserve are also included in the NCCP/HCP. Fact sheets for both of these restoration projects are included as Attachment B and Attachment C. As previously discussed, state and federal regulatory requirements include additional compliance that is above and beyond what is required within the NCCP/HCP. For example, these regulations require specific language within the long-term protection assurances, as well as funding to cover long-term management needs of the mitigation sites.

After collaboration with the Regulatory Agencies and the restoration project property owners (County of Orange and The Irvine Company), it has been determined that additional management tasks are necessary to satisfy compliance needs. Additional tasks include activities such as biological monitoring, weed removal, photo documentation, and annual reporting. The Corps requires that funding is provided to facilitate these tasks in perpetuity. This amount has been estimated at approximately $805,000. On August 17, 2017, the EOC endorsed the course of action and funding amount.

It is important to note that these additional funding needs are separate from the NCCP/HCP endowment. It is anticipated that a one-time payment will be made to a Corps-approved entity that will manage and disperse these funds to the land owners. For example, the National Fish and Wildlife Foundation has been approved to handle these types of services by the Corps.

The additional funding needs for Corps compliance was anticipated and included in the May 2015 Board-approved EMP Long-Term Funding Strategy and Guiding Principles. The EMP Guiding Principles contained the commitment to responsibly meet the M2 obligations, which include complying with regulatory requirements to ensure that freeway project mitigation obligations are met. In addition, the Long-Term Funding Strategy includes the commitment to complete the negotiations with the Corps and State Board, and allocate funding to meet regulatory permit requirements.

If OCTA does not provide this funding, additional mitigation opportunities would need to be explored. Specifically, mitigation would need to be identified within both the San Juan Creek and the San Diego Creek Special Area Management Plan areas to obtain clean water permits for the construction of the freeway projects. These watersheds are known to be challenging to locate mitigation opportunities and the same long term funding requirements would apply. This would take additional time and funding that is expected to exceed the amount presented herein.

Next Steps

Additional funding for the mitigation projects is required as a part of the regulatory permitting process related to clean water requirements. Upon Board approval, OCTA will issue a letter of commitment to the Corps for the restoration projects financial needs. In turn, the Corps and the State Board are anticipated to issue their programmatic authorizations which will help streamline the implementation of the M2 freeway projects. Additional steps are required, and OCTA will continue to work with the Corps and the State Board to complete the regulatory permitting process in order to obtain the applicable clean water authorizations, and are further described in Attachment A.

Summary

M2 includes an EMP that provides funding for programmatic mitigation to off-set impacts of the 13 freeway projects. To expedite the delivery of the freeway projects, this program was initiated in 2007 to implement early project mitigation through property acquisition and habitat restoration. This program is administered through a NCCP/HCCP, which was completed and approved by the Board in November 2016, and permits received in June 2017. State and federal programmatic clean water permits have also been developed and additional mitigation funding needs have been identified and presented for approval.

Attachments

A. Draft United States Army Corps of Engineers and State Water Resources Control Board Mitigation Funding Needs Summary
B. Aliso Creek Restoration Project
C. Agua Chinon and Bee Flat Canyons Restoration Project

Prepared by:

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Approved by:

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United States Army Corps of Engineers and State Water Resources Control Board Mitigation Funding Needs Summary

Overview: The Orange County Transportation Authority (OCTA) is coordinating with the United States Army Corps of Engineers (Corps) and the State Water Resources Control Board (State Board) to obtain programmatic Clean Water Act (CWA) Section 401 and 404 permits for the Measure M2 (M2) Environmental Mitigation Program (EMP). These permits will provide OCTA with assurances that the mitigation provided to date is acceptable to offset potential M2 freeway project impacts to state and federal jurisdictional waters. OCTA will utilize a subset of the conservation efforts (i.e. mitigation) included in the Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). These mitigation sites are illustrated in Figure 1. Separate funding is required by the State Board and the Corps to comply with this process.

Background: On April 6, 2015, the Corps released a Special Public Notice regarding the proposed Section 404 Letter of Permission (LOP) procedures (i.e. program level permit) for the OCTA M2 EMP. These LOPs will establish alternative permitting procedures to address anticipated discharges into Waters of the United States (WOTUS) associated with constructing the freeway projects over the next 15-20 years. LOP procedures are expected to be established via issuance of a CWA Section 404 Individual Permit. The State Board has also committed to issuing an authorization to approve the use of M2 mitigation once the Corps issues the 404 permit. This State Board authorization will provide the needed mitigation assurances and will further streamline the implementation of the M2 freeway projects.

Discussion: The Corps regulations require compliance with the April 10, 2008 mitigation rule. In addition, some M2 freeway projects may impact the San Diego and the San Juan Creek watersheds. These watersheds are subject to federal regulations that include specific Special Area Management Plan requirements. These mitigation requirements are in addition to what the Wildlife Agencies (United States Fish and Wildlife Service and California Department of Fish and Wildlife) require, and what OCTA has committed to in the NCCP/HCP. These regulations also require the development and funding of a long-term management plan for all mitigation sites before the Corps or State Board can issue their permits.

In order to satisfy the applicable CWA compensatory mitigation requirements, OCTA is proposing the following:

1. Freeway project avoidance and minimization measures: Avoidance and minimization measures are a required component of the freeway projects design and construction processes.

2. Two mitigation sites that provide enhancement and rehabilitation of the Waters of the United States: The two sites that provide the most appropriate enhancement and rehabilitation of WOTUS are the Aliso Creek and Agua Chinon restoration projects (also included in the M2 NCCP/HCP). Both restoration projects are within already managed lands. OCTA has been coordinating with the Corps and the property owners

United States Army Corps of Engineers and State Water Resources Control Board Mitigation Funding Needs Summary

of the Agua Chinon (The Irvine Company and the County of Orange) and Aliso Creek (the County of Orange) projects. Coordination included the review of the existing management plans and land protection documents (i.e. irrevocable offers of dedication). The Corps has determined that additional management tasks and long-term protection assurances are required. The additional management tasks require OCTA to provide a one-time payment to a Corps-approved finance manager to fund long-term maintenance costs.

3. One mitigation site that provides preservation of important physical, chemical, and biological aquatic functions: Ferber Ranch provides preservation of important physical, chemical, and biological aquatic functions. OCTA will record a conservation easement to assure that the Ferber Ranch Preserve is protected. This is also a commitment within the NCCP/HCP. The clean water requirements can be addressed through the management actions being performed as part of the existing NCCP/HCP commitments. However, the Corps has requested that supplemental funds be set aside in case future conservation easement violations occur at Ferber Ranch.

Overview of Additional Mitigation Requirements:

Mitigation Project Name	Property Owner	Location	Summary of Management Tasks	Estimated Amount Needed*
Ferber Ranch Preserve	OCTA	Trabuco Canyon	None	$10,000
Aliso Creek Restoration Project	County of Orange (OC Parks)	Aliso and Wood Canyons Wilderness Park	Biological surveys, spot treat weeds, photo documentation and reporting	$718,500
Agua Chinon Restoration Project	County of Orange (OC Parks) and the Irvine Company	Unincorporated Orange County	Same as above	$76,000
**Amount based on ~2.5% real interest earnings*			Total:	$804,500

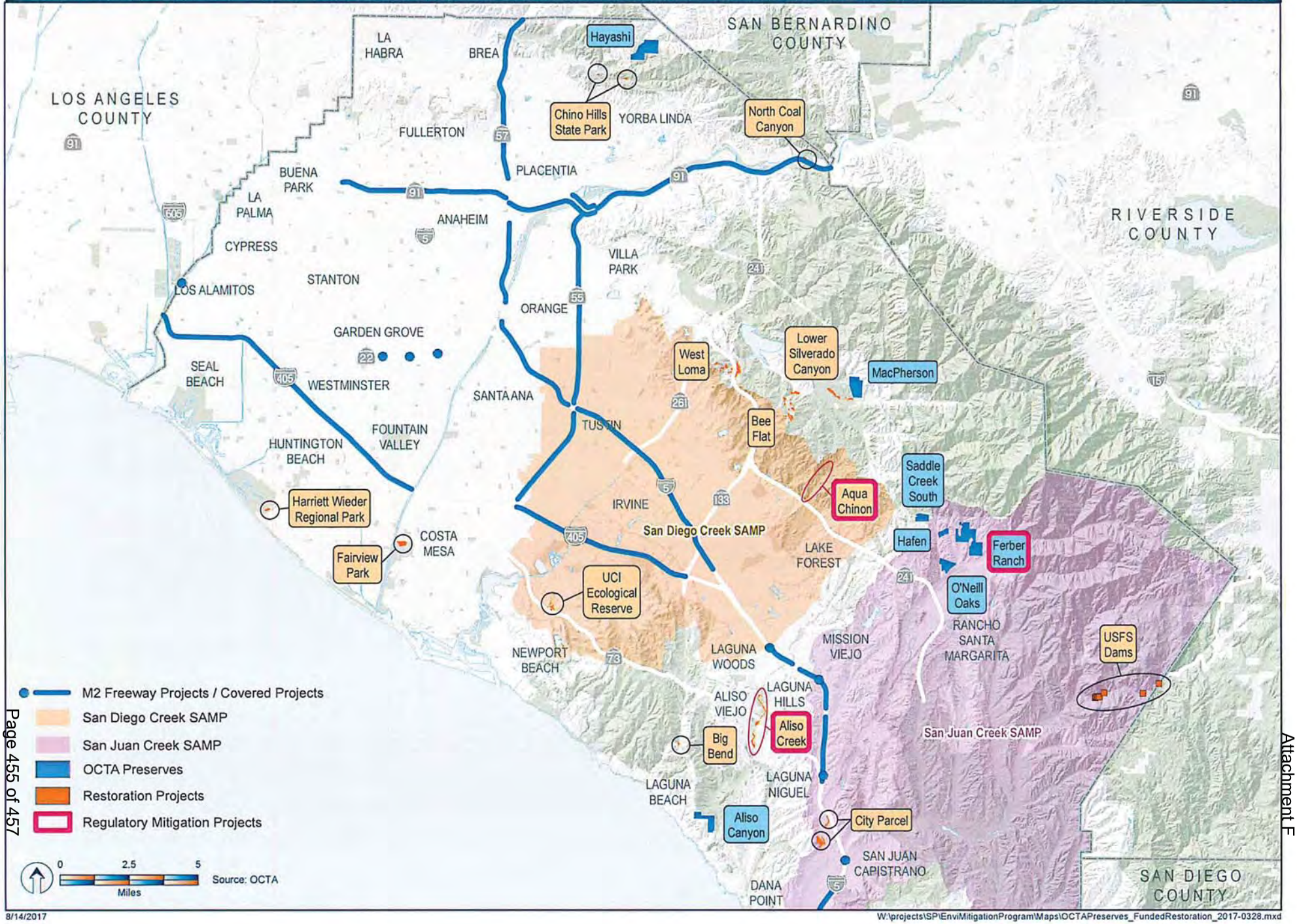
United States Army Corps of Engineers and State Water Resources Control Board Mitigation Funding Needs Summary

If the funding amounts are approved, OCTA must complete the following steps to meet the CWA permit requirements:

1. Issue a letter of commitment to the Corps for the restoration projects.
2. Continue coordination with the Corps and State Board to finalize the habitat and mitigation monitoring plans (i.e. restoration plans).
3. Obtain Section 401 and 404 authorizations from the State Board (general order/ letter of authorization) and the Corps (LOP procedures).
4. Obtain an agreement between the Corps and a fund manager (i.e. San Diego Community Foundation, California Community Foundation, etc.) and make a one-time payment to the mutually-agreed upon fund manager.
5. Execute an agreement between OCTA and a fund manager to manage and disperse funds on behalf of OCTA to the restoration site land managers.
6. Continue to coordinate with the land owners, Corps, State Board, and the Wildlife Agencies to finalize or amend the land protection documents for the restoration sites.
7. Record a conservation easement over the Ferber Ranch Preserve.
8. Ensure the restoration projects meet their NCCP/HCP set success criteria and performance standards.
9. Record the assignment of assumption document with the land manager of the mitigation sites. This will transfer mitigation responsibilities to the land manager.
10. Request a letter from the Corps documenting mitigation release once the land protection documents have been recorded and funding for the long-term management has been obtained.

OCTA NCCP/HCP Preserves and Funded Restoration Projects

FIGURE 1



8/14/2017

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ALISO CREEK RESTORATION PROJECT

M2: ENVIRONMENTAL MITIGATION PROGRAM

OCTA's M2 Freeway Environmental Mitigation Program (EMP) provides comprehensive mitigation to offset the environmental impacts of the 13 Measure M2-funded freeway projects.

The EMP presents a comprehensive mitigation approach that provides not only replacement habitat, but also the opportunity to improve the overall functions and value of sensitive biological resources throughout Orange County.

Based on the evaluation of mitigation opportunities in the County, priority conservation areas were identified, including candidate parcels and properties that could be considered for wilderness preservation purposes. Properties were then selected for acquisition and restoration. These properties are protected to enhance wildlife connectivity, safeguard sensitive species and preserve substantial parcels of valuable habitat.



Western pond turtle

ABOUT ALISO CREEK

The Aliso Creek restoration project is located in the City of Aliso Viejo within the 4,000-acre Aliso and Wood Canyons Wilderness Park, owned and operated by the County of Orange. The project, managed by the Laguna Canyon Foundation, takes place within and around Aliso Creek. The northernmost boundary of the project is Moulton Parkway and the project boundaries extend southward to approximately 500 feet south of the junction of Alicia Parkway and Avila Road.

The wilderness park is located near the Trabuco Creek Wildlife Linkage and is a part of the 19,000-acre Laguna Coast Greenbelt and the 38,000-acre Nature Preserve of Orange County. The restoration site contains the following general vegetation types:

- **Willow scrub**
- **Riparian woodland**
- **Coastal sage scrub**

The following listed and non-listed special status species have been reported from the wilderness park:

- **Least Bell's vireo**
- **Coastal California gnatcatcher**
- **Orange-throated whiptail**
- **Thread-leaved brodiaea**
- **Big-leaved crownbeard**
- **Catalina mariposa lily**
- **Western pond turtle**

The restoration goal is to improve habitat quality for riparian plants and wildlife species by increasing native habitat diversity, density, and structure within 55 acres of Aliso Creek and associated regions.



AGUA CHINON AND BEE FLAT CANYONS RESTORATION PROJECT

M2: ENVIRONMENTAL MITIGATION PROGRAM

OCTA's M2 Freeway Environmental Mitigation Program (EMP) provides comprehensive mitigation to offset the environmental impacts of the 13 Measure M2-funded freeway projects.

The EMP presents a comprehensive mitigation approach that provides not only replacement habitat, but also the opportunity to improve the overall functions and value of sensitive biological resources throughout Orange County.

Based on the evaluation of mitigation opportunities in the County, priority conservation areas were identified, including candidate parcels and properties that could be considered for wilderness preservation purposes. Properties were then selected for acquisition and restoration. These properties are protected to enhance wildlife connectivity, safeguard sensitive species and preserve substantial parcels of valuable habitat.



ABOUT AGUA CHINON AND BEE FLAT CANYONS

The Agua Chinon and Bee Flat Canyons restoration project is located east of the city of Irvine in unincorporated Orange County. Although this was funded as one project, it involves restoring lands within two distinct geographical areas, Agua Chinon and Bee Flat Canyons.

The Agua Chinon mitigation site includes acreage owned by the OC Parks and The Irvine Company. The Bee Flat canyon site is owned by the OC Parks. Both sites are being managed by the Irvine Ranch Conservancy.

These restoration sites are within the Central and Coastal Subregion Habitat Reserve System created under the Orange County Natural Communities Conservation Plan/Habitat Conservation Plan.

The restoration sites are located within large areas of open space. The Cleveland National Forest is located east of the area, while there is commercial and residential development across State Route 241 to the west of the site. The restoration site contains the following general vegetation types:

- **Grassland**
- **Coastal sage scrub**
- **Riparian**

The following listed and non-listed special status species have been reported from the sites:

- **Least Bell's vireo**
- **Coastal California gnatcatcher**
- **Orange-throated whiptail**
- **Coastal cactus wren**
- **Many-stemmed dudleya**
- **Intermediate mariposa lily**

The restoration goal is to enhance degraded biological habitat areas in order to help protect these lands from invasive plant species and fire within 90 acres of Agua Chinon and Bee Flat Canyons.