

**CONCEPTUAL HABITAT MITIGATION AND MONITORING PLAN
FOR IMPACTS TO AREAS WITHIN THE JURISDICTION**

OF

**THE UNITED STATES ARMY CORPS OF ENGINEERS
PURSUANT TO SECTION 404 OF THE CLEAN WATER ACT,**

**THE REGIONAL WATER QUALITY CONTROL BOARD
PURSUANT TO SECTION 401 OF THE CLEAN WATER ACT,**

**THE CALIFORNIA DEPARTMENT OF FISH AND GAME
PURSUANT TO SECTION 1600 OF THE FISH AND GAME CODE**

AND

**THE CALIFORNIA COASTAL COMMISSION
PURSUANT TO THE CALIFORNIA COASTAL ACT**

**SOUTH ORANGE COUNTY TRANSPORTATION INFRASTRUCTURE
IMPROVEMENT PROJECT (SOCTIIP)
ORANGE AND SAN DIEGO COUNTIES, CALIFORNIA**

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EXECUTIVE SUMMARY

Implementation of the South Orange County Transportation Infrastructure Improvement Project A7C-FEC-M Alternative (SOCTIIP – Proposed Project) will result in unavoidable permanent impacts to approximately 23.08 acres within the jurisdiction of the California Department of Fish and Game Code (CDFG), approximately 6.27 acres within the jurisdiction of the U.S. Army Corps of Engineers (Corps), approximately 7.95 acres within the jurisdiction of the Regional Water Quality Control Board (RWQCB) and 0.16 acre within the jurisdiction of California Coastal Commission (CCC).

To compensate for unavoidable permanent impacts to areas within the above-named regulatory jurisdictions, this comprehensive Habitat Mitigation and Monitoring Plan (HMMP) proposes to create and/or restore native grassland, wet meadow, mule fat scrub, southern willow woodland, and southern coast live oak/elderberry woodland habitats within approximately 216.4 acres in and adjacent to Chiquita Creek, located within the San Juan Creek watershed and 1.0 acre adjacent to San Mateo Creek in the San Mateo Creek watershed. The primary components of creation involve recontouring uplands that are adjacent to existing wetland/riparian areas in order to promote surface flow of water and restore the floodplain. The recontoured areas will be planted with a variety of wetland/riparian species. The primary components of restoration involve removing the non-native species and replanting the area with native plant species from perennial grassland and southern coast live oak/elderberry woodland communities.

The Proposed Project is an extension of the existing Foothill Transportation Corridor (FTC) State Route (SR) 241 from Oso Parkway to I-5 near the Orange County/San Diego County boundary. The Proposed Project is generally located in the coastal foothills of southern Orange and extreme northwestern San Diego counties and is approximately 16 miles long, with approximately 0.8 mile of improvements on the I-5. Topographically, this region exhibits low-lying ridgelines and mountains interspersed with relatively broad valleys and canyon bottoms. Elevations range from sea level at the coastline to approximately 900 feet above sea level in the interior hills. The region is entirely underlain with marine and non-marine sedimentary rocks with overlaying marine terrace, fan, alluvium, and landslide deposits. The Proposed Project occurs primarily within a largely undeveloped area with scattered areas of active agriculture, sand and gravel mining, a state park on leased land, and Marine Corps military operations. Much of the remaining undeveloped area has supported and/or is being used for livestock grazing. Considerable areas of natural open space also exist. These areas support several major vegetation types including grasslands, scrub, chaparral, oak and riparian woodlands, marshes, and other wetlands. These in turn provide habitat for a wide variety of animals, including many invertebrate, amphibian, reptile, bird, and mammal species.

There are two major drainage basins, the San Juan Creek Watershed and San Mateo Creek Watershed, within the vicinity of the Proposed Project. The San Juan Creek Watershed covers approximately 134 square miles and includes portions of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano. Its main tributary, San Juan Creek, originates in the Santa Ana Mountains district of the Cleveland National Forest in the easternmost part of Orange County. Other smaller, but still substantial, drainage courses include Bell Canyon, Cañada Gobernadora, and Cañada Chiquita, which are tributaries to

San Juan Creek. The San Mateo Creek Watershed covers approximately 139 square miles. Its drainage area lies within western Riverside and northwestern San Diego counties, with approximately 20 percent in the boundary of southeastern Orange County. Gabino Canyon, Blind Canyon, and Cristianitos Creek are tributaries to San Mateo Creek.

In summary, the goals of this HMMP are to:

- to the maximum extent practicable, establish a watershed-based mitigation approach whereby largely contiguous areas within the same watershed are created and restored in order to improve the quality and success of the mitigation program;
- ensure no-net-loss of wetland and/or riparian acreage;
- increase the functions provided by the existing drainages and associated riparian habitats, and limited areas of wetland;
- establish hydrologic, biogeochemical and wildlife functions currently not associated with drainages to be impacted; and
- increase the habitat values beyond those currently provided by the existing streambeds, wetlands and/or riparian habitats.

SOCTIIP CONCEPTUAL HABITAT MITIGATION AND MONITORING PLAN¹

I. DESCRIPTION OF THE PROPOSED PROJECT/IMPACT AREA

A. Responsible Parties

Applicant/Permittee: Transportation Corridor Agencies (TCA)
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B. Location and Brief Summary of Overall Proposed Project

The Proposed Project is generally located in the coastal foothills of southern Orange and northwestern San Diego counties. [Exhibits 1 and 2]. The site is depicted on U.S. Geological Survey (USGS) topographic maps El Toro, California [dated 1968 and photorevised 1982], Santiago Peak, California [dated 1954 and photorevised 1988], Canada Gobernadora, California [dated 1968 and photorevised 1988], and San Clemente, California [dated 1968 and photorevised in 1975].

The Proposed Project is the construction of a north-south toll road corridor with a cross section providing two general purpose lanes in each direction (with the option to add two high-occupancy vehicle lanes in the future) for the entire length of the corridor from the current terminus of the Foothill Transportation Corridor (FTC, SR-241) at Oso Parkway to Interstate 5 at Basilone Road. The proposed alignment is approximately 16 miles long. The northern boundary of the Proposed Project is located at approximately 33° 35' 13"N by 117° 36' 36"W, and the southern boundary is located at approximately 33° 23' 07"N by 117° 34' 59"W.

Topographically, this region exhibits low-lying ridgelines and mountains interspersed with relatively broad valleys and canyon bottoms. Elevations range from sea level at the coastline to approximately 900 feet above sea level in the interior hills. The region is entirely underlain with marine and non-marine sedimentary rocks with overlaying marine terrace, fan, alluvium, and

¹ This mitigation program was prepared in accordance with the following document: Army Corps of Engineers, Los Angeles District: *Special Public Notice: Final Mitigation Guidelines and Monitoring Requirements*. Public Notice 970031200-RRS, April 19, 2004.

landslide deposits. The Proposed Project occurs primarily within a largely undeveloped area with scattered areas of active agriculture, sand and gravel mining, a state park on leased land, and U.S. Marine Corps military operations. Much of the remaining undeveloped area has supported and/or is currently being used for livestock grazing. Considerable areas of natural open space also exist. These areas support several major vegetation types including grasslands, scrub, chaparral, oak and riparian woodlands, marshes, and other wetlands. These in turn provide habitat for a wide variety of animals, including many invertebrate, amphibian, reptile, bird, and mammal species.

There are two major drainage basins, namely the San Juan Creek Watershed and San Mateo Creek Watershed, within the vicinity of the Proposed Project. The San Juan Creek Watershed covers approximately 134 square miles and includes portions of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano. Its main tributary, San Juan Creek, originates in the Santa Ana Mountains district of the Cleveland National Forest in the easternmost part of Orange County. Other smaller, but still substantial, drainage courses including Bell Canyon, Canada Gobernadora, and Canada Chiquita, are tributary to San Juan Creek. The San Mateo Creek Watershed covers approximately 139 square miles. Its drainage area lies within western Riverside and northwestern San Diego counties, with approximately 20 percent in the boundary of southeastern Orange County. Gabino Canyon, Blind Canyon, and Christianitos Creek are tributaries to San Mateo Creek.

Throughout the San Juan and Mateo Creek watersheds, there are several locations where mitigation programs for other projects have been implemented for a variety of impacts to upland as well as wetland resources. Long term planning for conservation and development of these individual areas and the southern Orange County and northwestern San Diego County region are currently being addressed through the Orange County Southern Subregion Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) and resource management programs developed by Marine Corps Base Camp Pendleton (MCBCP).

C. Proposed Project Background

The proposed southern extension of existing SR 241, also referred to as the Foothill Transportation Corridor-South (FTC-S), has been subject to planning efforts for approximately 20 years. Final Environmental Impact Report (EIR) 123, which was certified by the County of Orange in 1981, resulted in a conceptual alignment for a transportation corridor facility being placed on the County's Master Plan of Arterial Highways (MPAH). The MPAH shows the alignment of the existing SR 241 and a conceptual alignment for the FTC-S. Between 1989 and 1991, the TCA prepared TCA EIR 3, pursuant to the California Environmental Quality Act (CEQA), for the selection of a locally preferred road alignment for the FTC-S. TCA EIR 3 addressed the C and BX road alignments, developed as part of the alternatives analysis phase of the project, as the primary build alternatives. On October 10, 1991, the Modified C Alignment was selected by the TCA as the locally preferred alternative. Subsequently, at the request of the United States Fish and Wildlife Service (USFWS), the Modified C Alignment was slightly altered to avoid high quality scrub communities, protect sensitive species and wildlife movement in the Sulfur Canyon area, and minimize impacts to the Pacific pocket mouse (*Perognathus*

longimembris pacificus). As a result of these changes, the Modified C alignment was then renamed the CP Alignment.

In 1996, as a result of the 1994 National Environmental Policy Act (NEPA)/Clean Water Act (CWA) Section 404 Integration Process for Surface Transportation Projects, the Federal Highway Administration (FHWA) initiated coordination to implement the policies of the Memorandum of Understanding for the NEPA and Section 404 Integration Process for Surface Transportation Projects in Arizona, California and Nevada (MOU). The MOU was related to development of the Environmental Impact Statement (EIS) and Section 404 permitting for the FTC-S. The NEPA/Section 404 MOU implements the FHWA, United States Army Corps of Engineers (ACOE), and United States Environmental Protection Agency (EPA) policies of improved interagency coordination and integration of the NEPA and Section 404 procedures. The NEPA/Section 404 MOU applies to all projects needing both FHWA action under NEPA and an ACOE individual permit under Section 404 of the CWA. The signatory agencies to the NEPA/Section 404 MOU include FHWA, EPA, ACOE, USFWS, National Marine Fisheries Service (NMFS), and Caltrans.

In March 1999, pursuant to the NEPA/Section 404 MOU and through collaboration with the NEPA/404 MOU agencies and the TCA, a purpose and need statement was approved for the SOCTIIP. Between August 1999 and November 2000, the NEPA/Section 404 MOU signatory agencies developed a list of project alternatives to be evaluated in the EIS/Supplemental Environmental Impact Report (SEIR). It was during this process that the signatory agencies referred to the project as the South Orange County Transportation Infrastructure Improvement Project or SOCTIIP. The NEPA/404 MOU agencies and the TCA are collectively referred to as the "SOCTIIP Collaborative." In November 2000, the SOCTIIP Collaborative concurred on the alternatives to be evaluated in the technical studies and in August 2003 concurred on the alternatives to be carried forward and evaluated in the EIS/SEIR. These alternatives are described in Section ES.3 of the Executive Summary in the EIS/SEIR and are described in detail in Section 2.0 (Alternatives) of the EIS/SEIR.

Between preparation of the draft and final EIS/SEIR, the SOCTIIP Collaborative identified the Preferred Alternative, which is described in this HMMP as the Proposed Project. The USFWS has preliminarily indicated that the Proposed Project will comply with applicable requirements of the Endangered Species Act. These determinations reflect the evaluations by these agencies in the Collaborative process conducted over the last six years.

The decision to select the A7C-FEC-M alignment represents the collaborative work of the above-named agencies to identify and select an alternative which minimizes environmental and community impacts and complies with the requirements of federal and state law and accomplishes the project's purpose and need. This decision is also based on the comments received from the public on the draft EIS/SEIR, federal and state resource/regulatory agencies, and elected officials.

D. Demonstration of Avoidance and Minimization

Minimization, avoidance and enhancement measures have been incorporated into the design of the Proposed Project to reduce impacts. During the Collaborative process, the alignment was adjusted to avoid much of the biologically sensitive resources within the south Orange County and northwestern San Diego County area. Specifically, direct impacts to both wetlands and non-wetland waters were avoided and/or minimized. Avoidance and minimization measures included refining the grading limits to reduce cut and fill by following natural contours, placement of bridge structures across major high order drainages, and shifting the alignment to avoid sensitive resources, including the Tesoro Wetlands area. Additionally, efforts were made to minimize impacts to jurisdictional waters by reducing the size and number of structural supports and by locating those required structural columns outside of high value jurisdictional resources. In order to reduce the number of structural columns, TCA maximized bridge span by increasing the structural strength of the bridge and increasing the bridge depth.

In addition, the Collaborative adjusted the alignment to avoid, to the greatest extent possible, the current natural open space areas in the eastern and/or central portion of the SOCTIIP action area. The Proposed Project, with its more western location, minimizes impacts on open space areas by being located in proximity to existing development and within the areas approved for development in the Ranch Plan. It allows for retention of large blocks of open space east of the alignment and retains major wildlife movement corridors and allows greater wildlife connectivity between the RMV property and the Cleveland National Forest.

Additional shifts of the alignment have been made to avoid geotechnical hazards, thus reducing remedial grading. Avoidance of existing utilities was also performed to limit relocation impacts. Bridges have been incorporated at the major stream crossings to minimize hydrologic impacts and impacts to wetland habitats. To minimize impacts during construction, features such as cofferdams can be utilized in wetland areas to limit the necessary construction area at the bridge supports. The addition of retaining walls was also incorporated to limit the grading footprint in sensitive areas.

The following description provides detailed information about the Proposed Project, refinements to the Proposed Project since circulation of the Draft EIS/SEIR, and the reasons for selection of the Proposed Project. The A7C-FECM-Initial Alternative is the Proposed Project but with the following primary modifications:

- *Reduction in Size of Project.* The Proposed Project is reduced in size from eight lanes to a maximum of six general purpose lanes. This modification to the Proposed Project reduces the typical cross-section of the project from 156 feet to 128 feet. Initially, the project will be constructed as a four-lane facility (two lanes in each direction).
- *Consistency with Anticipated NCCP Reserve Design.* The modifications conform to the anticipated reserve design for the Southern Orange County NCCP. In general, the Rancho Mission Viejo (RMV) Ranch Plan concentrates the development property in the western and northern portions of RMV property. The Proposed Project incorporates bridges and wildlife crossings into the design to minimize the effect of habitat

fragmentation. The NCCP/HCP identifies several important linkages connecting these open space habitat block areas. Out of the 20 habitat linkages and wildlife movement areas identified from field surveys in the NCCP/HCP planning area, 15 are applicable to the wildlife corridor existing conditions in the SOCTIIP biological study area. Bridge, arch culverts, and box culverts that provide for wildlife undercrossings of the Preferred Alternative have been incorporated into the project design at locations that are consistent with the linkages identified pursuant to the NCCP/HCP guidelines. It is anticipated that the reserve design for the Southern Orange County NCCP will be consistent with the Ranch Plan.

- *Modifications Regarding RMV Ranch Plan to Maximize Open Space.* The alignment of the Proposed Project is revised to conform as much as is feasible to the areas shown for development and potential development in the RMV Ranch Plan approved by the County of Orange as modified by the Settlement Agreement among RMV, the County and the environmental organizations (the Endangered Habitats League, Natural Resources Defense Council, Sea and Sage Audubon Society, Laguna Greenbelt, Inc., and Sierra Club). The RMV Ranch Plan (as reflected in the Settlement Agreement) contemplates the development of 14,000 units and 3,480,000 square feet of urban activity center uses, 500,000 square feet of neighborhood center uses and 1,220,000 square feet of business park uses in six development areas. By including as much of the Proposed Project within the development areas as is feasible, impacts on open space and habitat areas are minimized.
- *Minimization of Impacts on Wetlands and Other Natural Resources.* The Proposed Project includes a number of adjustments that avoid or minimize impacts to wetlands and other natural resources. For example, the Proposed Project impacts only 0.82 acre of wetlands within the entire 16-mile alignment.
- *Adjustments to Minimize Utility Relocation Impacts.* Disturbance limits associated with utility relocations were minimized based on coordination with utility service providers. These adjustments reduced impacts to the natural environment.
- *Inclusion of Additional Wildlife Crossings.* Fifteen wildlife crossings are included to further facilitate wildlife movement. Wildlife crossings are included within the four large habitat blocks identified in the approved RMV Ranch Plan open space reserves. These large open spaces areas are functionally interconnected through bridge and wildlife crossings incorporated into the design of the Proposed Project and through the project design features associated with the approved RMV Ranch Plan.
- *Minimization of Access Road Impacts.* The design of the connections between the Proposed Project and access roads is modified to further minimize grading and to insure continued access to existing utility and agricultural operations on RMV.

- *Minimization of Cultural Resources Impacts.* The location and design of several Extended Detention Basins have been modified to reduce impacts on cultural and biological resources.
- *Additional Avoidance within Disturbance Footprint:* Grading impacts within the disturbance limits are being further refined where possible. For example, direct impacts to VP3 and VM20 will be avoided and impacts to San Mateo Marsh – East of I-5 will be avoided to the maximum extent practicable.

E. Jurisdictional Areas to be Filled by Habitat Type and Location

The Proposed Project will permanently impact approximately 6.27 acres of Corps jurisdiction, of which 0.82 acres consist of jurisdictional wetland. Temporary impacts to Corps jurisdiction total 9.44 acres, of which 6.73 acres consist of jurisdictional wetland. Permanent impacts to CDFG jurisdiction total 23.08 acres, of which 20.37 acres consist of vegetated riparian habitat. Temporary impacts to CDFG jurisdiction total approximately 14.61 acres, of which 14.58 acres consist of vegetated riparian habitat. Permanent impacts to RWQCB jurisdiction (including isolated waters of the State) total 7.95 acres. Temporary impacts to RWQCB jurisdiction (including isolated waters of the State) total 9.49 acres. Permanent impacts to CCC jurisdiction total 0.16 acre, all of which consists of CCC wetland. Temporary impacts to CCC jurisdiction total 7.70 acres, all of which consists of CCC wetland. Tables 1 through 4 below provide a summary of jurisdictional impacts. Because impacts to Corps, CDFG, RWQCB and CCC listed above occur to the same set of drainage features, the impacts are not additive.

**TABLE 1
SUMMARY OF PERMANENT JURISDICTIONAL IMPACTS**

Drainage Feature	Resource Type	CORPS			CDFG			RWQCB	CCC
		Wetlands	Non-wetland Waters	Total	Vegetated	Unvegetated Streambed	Total	Total	Total
FE/C/7-Wetland 2	Slope Wetland	0	0	0	0	0	0	0.10	NA
FE/C/7-1	Ephemeral	0	0.02	0.02	0.41	0.01	0.42	0.02	NA
FE/7-1	Ephemeral	NA	NA	NA	0.5	0.01	0.51	0.02	NA
FE/7-2	Intermittent	NA	NA	NA	0.2	0.01	0.21	0.21	NA
FE-1	Ephemeral	NA	NA	NA	0.69	0	0.69	0.04	NA
FE-2A	Ephemeral	NA	NA	NA	0	0.01	0.01	0.01	NA
FE-2B	Ephemeral	0	0.06	0.06	0	0.06	0.06	0.06	NA
7-2	Ephemeral	0	0.02	0.02	0	0.03	0.03	0.03	NA
7-3	Ephemeral	0	0.51	0.51	3.91	0.08	3.99	0.52	NA
7-5	Ephemeral	0	0.01	0.01	0.09	0	0.09	0.01	NA
7-6	Ephemeral	0	0.01	0.01	0.13	0.01	0.14	0.01	NA

**TABLE 1
SUMMARY OF PERMANENT JURISDICTIONAL IMPACTS**

Drainage Feature	Resource Type	CORPS			CDFG			RWQCB	CCC
		Wetlands	Non-wetland Waters	Total	Vegetated	Unvegetated Streambed	Total	Total	Total
7-San Juan Creek	Intermittent	0	0.01	0.01	0.3	0	0.3	0.01	NA
7-10	Ephemeral	NA	NA	NA	0.09	0.08	0.17	0.08	NA
7-11	Ephemeral	NA	NA	NA	0	0	0.03	0.02	NA
7-12	Ephemeral	0	0.03	0.03	0.51	0	0.51	0.03	NA
7-13	Ephemeral	0	1.92	1.92	1.72	1.19	2.91	1.94	NA
FE/7-3	Ephemeral	0	0.2	0.2	1.94	0	1.94	0.61	NA
FE/7-4	Intermittent	NA	NA	NA	0.82	0	0.82	0.75	NA
FE/7-6	Ephemeral	0	0.1	0.1	0.79	0.05	0.84	0.1	NA
FE/7-7	Ephemeral	0	0.12	0.12	2.06	0	2.06	0.12	NA
FE/7-8	Ephemeral	0	0.19	0.19	2.34	0.08	2.42	0.19	NA
FE/7-9	Ephemeral	0	0.1	0.1	0	0.1	0.1	0.1	NA
Unnamed Tributary to Cristianitos	Ephemeral	0	0	0	0.08	0	0.08	0	NA
FE/7-10	Ephemeral	0	0.05	0.05	0.17	0.04	0.21	0.05	NA
FE/7-11	Perennial	0.12	0.39	0.51	0.77	0	0.77	0.51	NA
FE/7-12	Intermittent	0.35	0	0.35	0.35	0	0.35	0.35	NA
FE/7-12	Ephemeral	0	0.27	0.27	0.57	0.08	0.65	0.27	NA
FE/7-14	Ephemeral	0	0.19	0.19	0.15	0.05	0.2	0.19	NA
FE/7-VM18	Depressional Wetland	0.04	0	0.04	NA	NA	NA	0.04	NA
FE/7-VM19	Depressional Wetland	0.06	0	0.06	NA	NA	NA	0.06	NA
FE/7-15	Ephemeral	0	0.12	0.12	0	0.12	0.12	0.12	NA
FE/7-16	Ephemeral	0	0.09	0.09	0	0.09	0.09	0.09	NA
FE/7-17	Ephemeral	0	0.12	0.12	0	0.12	0.12	0.12	NA
FE/7-18	Ephemeral	0	0.55	0.55	0.89	0.25	1.14	0.55	NA
FE/7-19	Ephemeral	0	0.01	0.01	0	0.01	0.01	0.01	NA
FE/7-20	Ephemeral	0	0.01	0.01	0	0.01	0.01	0.01	NA
FE/7-21	Ephemeral	0	0.07	0.07	0.48	0	0.48	0.07	NA
FE/7-22	Ephemeral	0	0.22	0.22	0.18	0.15	0.33	0.22	NA
FE/7-24	Ephemeral	0	0.03	0.03	0	0.03	0.03	0.03	NA
FE/7-25	Ephemeral	0	0.03	0.03	0	0.03	0.03	0.03	NA

**TABLE 1
SUMMARY OF PERMANENT JURISDICTIONAL IMPACTS**

Drainage Feature	Resource Type	CORPS			CDFG			RWQCB	CCC
		Wetlands	Non-wetland Waters	Total	Vegetated	Unvegetated Streambed	Total	Total	Total
FE/7-San Mateo Creek	Perennial	0.01	0	0.01	0.01	0	0.01	0.01	0.006
FE/7-San Mateo Marsh- East of I5	Freshwater Forested Wetland	0	0	0	0.21	0	0.21	0	0.147
FE/7-VM203	Depressional Wetland	0.05	0	0.05	NA	NA	NA	0.05	0
FE/7-VP33	Depressional Wetland	0.18	0	0.18	NA	NA	NA	0.18	0
San Onofre Creek	Perennial	0.01	0	0.01	0.01	0	0.01	0.01	0.005
TOTAL	NA	0.82	5.45	6.27	20.37	2.71	23.08	7.95	0.158

**TABLE 2
Summary of Temporary Jurisdictional Impacts**

Drainage Feature	Resource Type	CORPS			CDFG			RWQCB	CCC
		Wetlands	Non-wetland Waters	Total	Vegetated	Unvegetated Streambed	Total	Total	
FE/7-1	Ephemeral	NA	NA	NA	1.28	0.03	1.31	0.05	NA
7-San Juan Creek	Intermittent	0.29	2.71	3.00	6.62	0	6.62	3.00	NA
San Mateo Creek	Perennial	5.30	0	5.30	5.69	0	5.69	5.30	5.75
San Mateo Marsh – East of I-5	Freshwater Forested Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89
San Onofre Creek	Perennial	1.14	0	1.14	0.99	0	0.99	1.14	1.06
TOTAL	NA	6.73	2.71	9.44	14.58	0.03	14.61	9.49	7.70

TABLE 3			
Impacts to CDFG Jurisdiction by Vegetation Type			
Riparian Vegetation Type	Permanent Impacts	Temporary Impacts	Total Impacts
Alkali Meadow	0.20	0.00	0.20
Coast Live Oak Riparian Woodland	11.88	0.00	11.88
Freshwater Marsh	0.00	0.42	0.42
Mule fat Scrub	3.96	0.00	3.96
Riparian Herb	1.05	0.00	1.05
Southern Willow Scrub	1.51	0.00	1.51
Southern Arroyo Willow Forest	0.41	6.69	7.10
Southern Sycamore Riparian Woodland	1.36	7.47	8.83
Unvegetated Streambed	2.71	0.03	2.74
Total	23.08	14.61	37.69

TABLE 4			
Summary Of Impacts To CCC Jurisdictional Wetland			
Vegetation Type	Temporary Impacts	Permanent Impacts	Total Impacts
Coastal Freshwater Marsh	0.42 ac	0.00 ac	0.42 ac
Southern Arroyo Willow Forest	7.28 ac	0.16 ac	7.44 ac
Total	7.70 ac	0.16 ac	7.86 ac

F. Type(s), Functions and Values of Jurisdictional Areas to be Directly and Indirectly Impacted

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of fill material into waters of the U.S. and evaluates the impacts of the placement of proposed fill into such waters. Where the discharge of fill material into jurisdictional waters is permitted by the Corps, mitigation to ensure no-net-loss of wetlands and aquatic functions is required. The Corps emphasizes the value of providing mitigation that maximizes the functions of the compensatory mitigation. The evaluation of functions associated with compensatory mitigation sites relies on a function-based assessment tool such as the Corps' HGM Methodology.² Such an approach is set

²Smith, R.D., Ammann, A., Bartoldus, C., and Brinson, M.M. 1995. "An approach for assessing wetland functions using hydrogeomorphic classification, reference wetlands, and functional indices," Technical Report WRP-DE-9, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

forth in a Regulatory Guidance Letter (RGL) published by the Corps on December 24, 2002³ and in a Special Public Notice published by the Los Angeles District on January 27, 2003.⁴ In both documents, the Corps encouraged the utilization of functional assessments for evaluating impacts to aquatic resources and determining appropriate mitigation ratios. On page 2 of the December 24, 2002 RGL, the Corps notes:

The Corps has traditionally used acres as a standard measure for determining impacts and required mitigation for wetlands and other aquatic resources, primarily because useful functional assessment methods were not available. However, Districts are encouraged to increase their reliance on functional assessment methods.

To evaluate wetland functions of the Proposed Project a Hybrid Functional Assessment was prepared. This Hybrid Functional Assessment (HFA) method was developed by combining components of three established functional assessment methods adapted for use at the project site.⁵ A total of 21 different metrics were evaluated to determine riparian functions. These metrics are indicators of wetland or riparian function, and were evaluated quantitatively in this assessment. All metrics were scaled with values, or metric scores, between 0 (degraded condition) and 1 (optimal condition) and were used to calculate the HFA scores. This HFA first describes the individual metrics that were incorporated into this HFA. The HFA then, using these metrics, provides a quantitative assessment of the riparian resources within the subject study area in the existing condition or pre-project condition. For the purposes of this analysis, the study area was extended 300 feet beyond the impact limits in order to incorporate potential indirect impacts from project implementation. Functions for all reaches falling within the impact limits were considered to be lost in the post-project condition. Functions for reaches falling outside of the impact limits but within 300 feet were evaluated for potential reduction in function. The sum of this reduction of function is considered an indirect loss of function.

The metrics evaluated describe three categories of function based on the Corps' Hydrogeomorphic Approach (HGM): hydrologic functions, physical process functions (e.g., biogeochemical

Brinson, M.M., Hauer, F.R., Lee, L.C., Nutter, W.L., Rheinhardt, R.D., and Whigham, D. 1995. "A guidebook for application of hydrogeomorphic assessments to riverine wetlands," Technical Report WRP-DE-11, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

³ U.S. Army Corps of Engineers. 2002. *Regulatory Guidance Letter No. 02-2: Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899*. December 24, 2002, 16pp.

⁴ U.S. Army Corps of Engineers, Los Angeles District. 2003. *Special Public Notice: Mitigation and Monitoring Requirements*. January 27, 2003, 41pp.

⁵ The concept of combining different functional assessment methodologies has been previously approved by the Corps. Specifically, URS developed a draft *Hybrid Functional Assessment of Wetland and Riparian Habitats for the Newhall Ranch Habitat Management Plan* in June 2004. The URS HFA was subsequently used by Glenn Lukos Associates to evaluate impacts associated with the Newhall Ranch Riverpark project in Santa Clarita as well as to develop a mitigation program for the Newhall Ranch Santa Clarita Riverpark project. The Corps and CDFG issued authorizations for this project, in part based on the HFA and associated mitigation program developed using the HFA approach.

functions), and biological functions related to habitat. In addition to functions described under the Corps' HGM approach, functions from the California Rapid Assessment Method (CRAM) and Landscape Level Functional Assessment (LLFA) were incorporated, as categorized in each function heading. In summary, four metrics that describe buffer functions, seven metrics related to hydrological functions, three metrics that describe biogeochemical functions, and eight metrics associated with habitat functions were evaluated. These metrics were derived from the three accepted functional assessment methods that were used in developing the HFA and include the following:

Peer Review Draft Guidebook to Hydrogeomorphic Functional Assessment of Riverine Waters/Wetlands in the Santa Margarita Watershed. (Santa Margarita River HGM = SMR HGM) This HGM guidebook was developed for use in Southern California, and the reference domain is located in San Diego County.

Draft California Rapid Assessment Method for Wetlands. (CRAM) This method is currently being developed for use by California Department of Fish and Game (CDFG).

Assessment of Riparian Ecosystem Integrity: San Jacinto and Upper Santa Margarita River Watersheds, Riverside County, California. (Landscape Level Functional Assessment = LLFA) This method was developed for use in Special Area Management Plan (SAMP) projects that are ongoing in Orange and Riverside Counties.

Appendix D includes the detailed Hybrid Functional Assessment.

Metrics Evaluated

Riverine

The function of riverine systems were evaluated for hydrologic function, biogeochemical function and habitat function using 21 metrics including: percentage of assessment area with buffer, average width of buffer, buffer condition, land use/land cover, water source, hydroperiod, floodplain connection, altered hydraulic conveyance, surface water persistence, flood prone area, sediment regime, topographic complexity, substrate condition, vertical biotic structure, interspersed and zonation, ratio of native to non-native, canopy, age distribution, riparian vegetation condition, riparian corridor continuity and invasive plant species.

Depressional Wetlands

The function of depression wetland systems were evaluated for hydrologic function, biogeochemical function and habitat function using 9 metrics including: average width of buffer, buffer condition, water source, hydroperiod, surface water persistence, land use/land cover, substrate condition, ratio of native to non-native, and wetland vegetation condition.

Calculating Functional Capacity

Each metric was provided a score from 0.00 to 1.00 based on the condition of the reach. The Functional Capacity Score was then calculated by summing the scores of the individual metrics. Functional Capacity Units were then calculated by multiplying the Functional Capacity Score of an aquatic reach by the surface area in acres of that reach.

Calculating Loss of Functional Capacity

Quantifying the potential direct impact of the proposed project on aquatic resource function was accomplished by overlaying the Proposed Project grading footprint Geographic Information System (GIS) theme on the Aquatic resource theme. The function of aquatic resources falling within the grading limits was assumed to be entirely lost.

Quantifying the potential indirect impact of the Proposed Project on aquatic resource function was accomplished by simulating the changes that could be expected to occur in each aquatic reach as a result of the construction of the corridor. The sum of the differences between baseline assessment metric scores and metric scores resulting from the simulation represented the change (i.e., loss) in Functional Capacity Score for the aquatic reach being evaluated. The surface area of the reach expected to exhibit decreased function was multiplied by the change in Functional Capacity Score. As described above, indirect impacts were assumed to extend approximately 300 feet from the disturbance limits. This assumption was based upon the most extensive metric assessment area as defined by URS.

Results

Table 5 summarizes the loss of functional capacity expected to occur with implementation of the proposed SOCTIIP project.

TABLE 5			
Loss of Functional Capacity Resulting From Proposed Project			
Watershed	Direct Loss of Functional Units	Indirect Loss of Functional Units	Total Loss of Functional Units
San Juan	195.6	48.2	243.8
San Mateo	169.1	42.9	212.01
Sum	364.7	91.1	455.81

II. GOALS OF THE COMPENSATORY MITIGATION

This mitigation program is a collaboration of mitigation plans designed by EARTHWORKS Restoration, Inc., Glenn Lukos Associates, and Bonterra Consulting. The following mitigation goals take into account: 1) the obligation of the permittee to offset its impacts to jurisdictional resources pursuant to Sections 401 and 404 of the Clean Water Act, Section 1602 of the California Fish and Game Code, and the California Coastal Act, 2) the objectives of the Watershed Restoration Plan⁶ in identifying mitigation sites with sufficient restoration potential and practicable level of effort to offset impacts to the jurisdictional resources.

To that end, the goals of the proposed mitigation program are to: 1) establish (to the maximum extent practicable) a watershed-based mitigation approach whereby largely contiguous areas within the same watershed are created and restored in order to improve the functional quality and success of the mitigation program; 2) ensure no-net-loss of wetland and/or riparian acreage; 3) increase the functions provided by the existing drainages and associated riparian habitats, and limited areas of wetland; 4) establish hydrologic, biogeochemical and wildlife functions currently not associated with drainages to be impacted; and 5) increase the habitat values beyond those currently provided by the existing streambeds, wetlands and/or riparian habitats. In determining the best way to ensure no net-loss of wetland functions in the region, a number of factors were considered, including:

- the design of the mitigation wetlands/riparian areas
- the location of the mitigation wetlands/riparian areas
- the relative acreage for each habitat type within the mitigation wetlands/riparian areas; and
- the connectivity of the proposed mitigation wetland/riparian areas to other proposed or existing mitigation areas.

A. Types and Areas of Habitat to be Created and Restored

Four general areas have been identified as excellent candidate locations for the creation and restoration wetland, riparian and upland watershed habitats. Exhibit 3 depicts the Proposed Project footprint as well as the Mitigation Areas. Exhibits 4, 5, 6, 7 & 8 are more detailed depictions of the Mitigation Areas. Exhibit 9 includes photographs documenting the current conditions of the mitigation sites. These Areas include:

1. **Mitigation Area A:** a 20.80-acre area adjacent to Tesoro High School, located along Chiquita Creek and one of its tributaries; and
2. **Mitigation Area B:** a 195-acre area within several drainages and its watershed in the 1,158-acre Upper Chiquita Canyon Conservation Area.

⁶ Smith, R.D. and C.V. Klimas. October 2003 (Draft). Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watersheds: General Design Criteria and Site Selection. U.S. Army Engineer Research Development Center, Waterways Experiment Station, Vicksburg, MS. Draft Report to the U.S. Army Corps of Engineers, Los Angeles, Regulatory Branch.

3. **Mitigation Area C:** a 0.6-acre landslide remediation area extending Chiquita Woods to the southeast within the Chiquita watershed.
4. **Mitigation Area D:** a 1.0-acre area adjacent to San Mateo Creek and a proposed Extended Detention Basin within the project footprint.
5. **Temporary Impact Areas**

In addition, all areas of temporary impact, including the 0.14-acre mitigation site located within the re-aligned Talega Basin at the end of Avenida Pico will be revegetated.

Mitigation Area A

Mitigation Area A consists of 20.80 acres and is adjacent to the alignment of the Proposed Project, south of Oso Parkway. Two principal areas have been identified for habitat restoration and creation along Chiquita Creek, which is bisected by Tesoro High School. These mitigation areas are immediately downstream of the Upper Chiquita Canyon Conservation Area. The mitigation will include the following:

- Restoration and creation of 4.66 acres of southern willow woodland;
- Restoration and creation of 4.90 acres of coastal sage scrub/native perennial grassland ecotone;
- Creation of 3.06 acres of mule fat scrub;
- Creation 6.52 acres of wet meadow;
- Enhancement of 0.79 acre of degraded wet meadow; and
- Creation and restoration of 0.88 acres of oak/elderberry woodland.

Mitigation Area B

Mitigation Area B consists of 195 acres and is situated in the Upper Chiquita Canyon Conservation Area, which is currently managed by the TCA. This site is located south and east of the City of Rancho Santa Margarita and north and west of Oso Parkway. These 195 acres are proposed as part of the amendment to the existing Upper Chiquita Canyon Bank Agreement. The existing conservation bank was established with the TCA, USFWS and CDFG in 1996 when the TCA purchased the conservation easement for Upper Chiquita Canyon from RMV. Under the initial bank agreement, 327 conservation credits were established for the preservation of existing coastal sage scrub habitat within the Conservation Area. These 327 conservation credits were to be used as mitigation for impacts to coastal sage scrub associated with the future FTC-S, which is the Proposed Project. Each conservation credit represented one acre of occupied coastal sage scrub habitat value that could be used toward future TCA projects. The conservation bank agreement establishes the mechanism for additional credits for the restoration and enhancement of appropriate habitats within the Conservation Area.

For the Proposed Project, 13 acres of riparian oak woodland restoration, 3.0 acres of streambed enhancement and 179 acres of native grassland restoration are proposed, for a total of 195 acres

of mitigation in the Upper Chiquita Canyon Conservation Area. The mitigation will include the following:

- restoration of 179 acres of native perennial grassland;
- enhancement of 3.0 acres of existing streambed; and
- restoration of 13 acres of riparian oak woodland.

Mitigation Area C

Mitigation Area C consists of 0.6 acre and is west of the proposed alignment within a landslide remediation area. The area will be re-contoured and revegetated to extend the existing Chiquita Woods to the southwest. The mitigation will include the following:

- Restoration and creation 0.1 acre of native perennial grassland; and
- Creation and restoration of 0.5 acre of oak/elderberry woodland.

Mitigation Area D

Mitigation Area D consists of 1.0 acres and is located immediately east of Proposed Extended Detention Basin #2 within the Coastal Zone and adjacent to San Mateo Creek. The mitigation will include the following:

- Restoration and creation of 1.0 acres of southern willow woodland

Specifically, the mitigation approach will consist of a combination of 1) aquatic habitat restoration and creation within the Chiquita watershed and San Mateo watershed as set forth in this Plan, and 2) upland watershed buffer enhancement, via restoration of native grasslands within the Upper Chiquita Canyon Conservation Area.

This creation and restoration program would increase habitat function, hydrologic function and water quality function of the drainages contributing naturally to the San Juan Creek Watershed. The mitigation programs summarized below shall incorporate the methods and measures, and shall comply with all applicable performance standards and other criteria set forth in this HMMP. The total mitigation acreage, including Corps, CDFG, RWQCB, and CCC jurisdictional areas (33.40 acres) and upland watershed restoration (184 acres) comprises 217.4 acres.

Temporary Impact Areas

With respect to temporary impacts to 9.44 acres of Corps jurisdiction, 9.49 acres of RWQCB jurisdiction, 14.61 acres of CDFG jurisdiction, 7.70 acres of CCC jurisdiction and 0.14 acre of mitigation within the re-aligned Talega Basin, the applicant will re-contour and re-vegetate all temporarily impacted areas at a 1:1 ratio to replace pre-construction aquatic function.

TABLE 6 Proposed Mitigation Ratios For Permanent Impacts				
Proposed Impact		Proposed Mitigation		
Habitat Type	Acres	Habitat Type	Acres	Ratio
Alkali Meadow	0.20	Wet Meadow*	7.31 acres	5.8:1
Riparian Herb	1.05			
Mule Fat Scrub	3.96	Mule Fat Scrub* Southern Willow Woodland*	3.06	1.5:1
Southern Willow Scrub	1.51			
Arroyo Willow Forest	0.41	Oak Riparian Woodland	14.38	1.1
Sycamore Riparian Woodland	1.36			
Oak Riparian Woodland	11.88	Unvegetated Streambed Enhancement	3.0	1.1:1
Unvegetated Streambed	2.71			
Total	23.08		33.40	1.5:1

* Habitats expected to meet 1-parameter wetland criteria for CCC

TABLE 7 Proposed Mitigation Ratios For Temporary Impacts				
Proposed Impact		Proposed Mitigation		
Habitat Type	Acres	Habitat Type	Acres	Ratio
Freshwater Marsh	0.42	Freshwater Marsh*	0.42	1:1
Arroyo Willow Forest	7.28	Arroyo Willow Forest*	7.28	1:1
Sycamore Riparian Woodland	7.47	Sycamore Riparian Woodland	7.47	1:1
Unvegetated Streambed	0.03	Unvegetated Streambed	0.03	1:1
Total	15.20		15.20	1:1

* Habitats expected to meet 1-parameter wetland criteria for CCC

B. Specific Functions and Values of Habitat Types to be Created and Restored

This mitigation program compares the functional capacity of the jurisdictional areas to be impacted with the proposed mitigation areas to confirm that the functions of the replacement mitigation equal or exceed those of existing Corps, CDFG, RWQCB and CCC jurisdictional areas to be impacted. Table 8 summarizes the functional capacity expected to be gained through the proposed mitigation program.

TABLE 8 Gain of Functional Capacity Resulting From Proposed Mitigation			
Feature	Post-Mitigation Score (21 Possible)	Acres	Functional Units
MITIGATION AREA A			
TESORO (NORTH) – Creation	15.70	3.97	62.33
TESORO (SOUTH) – Enhancement	3.15	0.79	2.49
TESORO (SOUTH) - Creation	17.35	11.13	193.11
MITIGATION AREA B			
UPPER CHIQUITA CANYON - Enhancement	5.25	3.00	15.75
UPPER CHIQUITA CANYON Creation	19.75	13.00	256.75
MITIGATION AREA C			
CHIQUITA WOODS	20.50	0.5	10.25
MITIGATION AREA D			
EDB 2	15.55	1.0	15.55
GRAND TOTAL	97.25	33.40*	556.24
* Discrepancy between depicted grand total and actual total of individual acres is a result of rounding to the nearest hundredth.			

Functions Related to Hydrologic Processes

Riparian ecosystems with high hydrologic integrity exhibit the range of frequency, magnitude, and temporal distribution of stream discharge, and surface and subsurface interaction between the stream channel, floodplain, and terraces, that historically characterized riparian ecosystems in the region (Bedford 1996, Poff et al. 1997, Richter et al. 1997).

Functions related to hydrologic processes that are often associated with riverine wetlands include:

- short-term surface water storage;
- long-term surface water storage;

- energy dissipation;
- subsurface storage of water; and
- moderation of groundwater flow or discharge.

The Mitigation Sites will be created with areas that provide for limited short-term floodwater retention, energy dissipation, and subsurface water storage. The sites will be designed and contoured to provide long-term storage of storm flows, and moderation of groundwater flows, especially following winter and spring rains.

The restoration of a functioning floodplain, as well as low flow channel, will restore the hydrology of Upper Chiquita Canyon, which has been altered due to continuous ranching activities, including grazing, up until 1996. The restoration of the floodplain along Chiquita Creek south of Tesoro High School will allow greater flood flow attenuation, energy dissipation, and storage during storm events. By increasing the surface area by which waters can spread out, velocities are diminished which can reduce downstream flooding. The interception of storm runoff and the detention of storm waters would regulate the sharp runoff peaks and slow discharges over a longer period of time.

Functions Related to Water Quality

Also as described above, high water quality integrity is defined as exhibiting a range of loading in the pollutant categories of nutrients, pesticides, hydrocarbons, and sediments that are similar to those that historically characterized riparian ecosystems in the region.

Functions related to water quality including the biological processes that attenuate poor water quality include:

- nutrient cycling;
- removal of imported elements and compounds;
- retention of particulates; and
- organic carbon export.

The Mitigation Areas will support substantial amounts of vegetation and will provide for an increase in nutrient cycling, removal of imported elements and compounds or retention of particulates. The Mitigation Sites will be designed, contoured and planted to perform as a balanced system in which primary productivity and detrital turnover will be in equilibrium, exhibiting biogeochemical function at an overall higher level.

The creation and restoration of wetland riparian habitat will provide important biogeochemical and water quality functions. Contouring and restoring the floodplain and wet meadow areas will allow for an increase in short-term storage of water, which in turn allows for the capture and storage of sediment and other pollutants. The microbial action in the root zone removes toxic materials, nitrogen and other nutrients from the runoff, thereby improving water quality and helping to reduce the impacts of non-point source pollution.

Functions Related to Habitat Function

Functions related to plant or animal habitat that are often associated with wetlands include:

- habitat for invertebrates;
- habitat for vertebrates; and
- habitat for vascular plants.

The Mitigation Areas will have potential for supporting aquatic invertebrates because they will be influenced by groundwater flows and receive surface flows from very large watersheds during storm events. As noted under hydrogeologic processes, the sites will be contoured to include topographic complexity such that it is anticipated that local areas may pond for a number of weeks.⁷

The restoration and creation of riparian habitat and wetlands will result in the increase of the wildlife habitat functions. The Mitigation Areas are adjacent to existing wetland and riparian areas as well as open space. Thus, the program will maintain and restore the diverse and contiguous riparian corridor in Upper Chiquita Canyon. Wildlife has been observed in the area including mule deer (*Odocoileus hemionus*), raptors, coyote (*Canis latrans*), and a variety of wildlife species. Currently, wildlife use the box culvert under Oso Parkway connecting the Upper Chiquita Conservation Area with the downstream wetland habitat.

The Mitigation Areas will be designed to provide additional wildlife habitat functions. The wetland and riparian habitats are expected to attract a variety of bird species such as common yellowthroat (*Geothlypis trichas*), American goldfinch (*Carduelis tristis*), black phoebe (*Sayornis nigricans*), yellow breasted chat (*Icteria virens*), and song sparrow (*Melospiza melodia*), as well as creating potential habitat for the least Bell's vireo (*Vireo bellii pusillus*). The establishment of riparian vegetation will allow for foraging and nesting of animals as well as establishment of movement paths for wildlife through the site. The establishment of riparian habitat will also provide an expanded source for dispersal and establishment of vegetation in downstream areas.

It is expected that natural recruitment of wetland plant species will occur in the wetter portions of the site. The eradication of non-native plant species will allow native riparian vegetation to reestablish, providing valuable wildlife habitat and cover, as well as providing hydrological regimes within the site. These mitigation activities will result in significant gains in biological, biogeochemical, and hydrological functions. See Table 8 above for quantitative discussion of functional capacity.

⁷ Areas that pond more than 30 days provide important habitat for a variety of invertebrates including water fleas (*Cladocera*), copepods (*Copepoda*), leeches (*Hirudinea*), a variety of aquatic beetles (as both larvae and adults) including predaceous diving beetles (*Dytiscidae*), water scavenger beetles (*Hydrophilidae*), and whirligig beetles (*Gyrinidae*). Other aquatic insects include mayfly larvae (*Ephemeroptera*), dragonfly larvae (*Odonates*), mosquito larvae (*Culicidae*), midge larvae (*Chironomidae*), backswimmers (*Notonectidae*), waterboatmen (*Corixidae*), and toe-biters (*Belostomatidae*). Such invertebrates provide an important food source for waterfowl, passerines, as well as a variety of amphibians.

C. Time Lapse Between Jurisdictional Impacts and Expected Compensatory Mitigation Success

Proposed Project grading activities are expected to commence as early as Summer 2008. Mitigation site preparation shall begin in advance of, or concurrent with, initiation of impacts.

Within one year of the completion of mitigation installation it is expected that immature riparian vegetative structure will exist such that insects and birds will utilize the Mitigation Areas for foraging. With anticipated hydrology provided to the mitigation areas, the Mitigation Areas are expected to provide a greater degree of forage and shelter within two years, although woody trees and shrubs will take approximately three to five years to become fully established.

D. Estimated Total Cost

Table 9 below indicates the estimated cost for implementation, maintenance, and monitoring of the mitigation areas for five years.

TABLE 9	
Estimated Mitigation Cost for Jurisdictional Areas¹	
Task	Cost
Mobilization	\$33,250
Site Preparation	\$224,000
Irrigation Installation	\$330,000
Installation (includes plants and seeds)	\$890,000
Project Maintenance	\$332,500
Project Monitoring	\$199,500
Total	\$2,009,250.00

¹Please note that this estimate reflects the approximate cost to implementing the creation, restoration and enhancement of jurisdictional areas, including temporary impact areas, but does not include costs for upland restoration.

E. Special Aquatic Habitats, Other Waters of the U.S. and Non-Jurisdictional Areas Proposed as Compensatory Mitigation

Portions of Mitigation Areas A and B proposed for creation and restoration currently consist of non-jurisdictional upland areas. However, creation and restoration of jurisdictional habitat will occur within and adjacent to approximately 0.79 acre of existing jurisdictional wetland habitat at Mitigation Area A and within and immediately adjacent to approximately 3.0 acres of ephemeral

watercourses in Mitigation Area B. Mitigation Areas C and D currently consist entirely of non-jurisdictional upland areas.

Although the 184 acres of native grassland restoration will occur entirely on uplands, these areas will serve as a native buffer to the enhanced and restored riparian areas within the Upper Chiquita Conservation Area, Tesoro North and Chiquita Woods mitigation areas. This is consistent with the watershed mitigation approach as discussed above.

III. DESCRIPTION OF THE PROPOSED COMPENSATORY MITIGATION SITES

A. Location and Size of the Compensatory Mitigation Sites

During the process of locating mitigation sites for the Proposed Project, several criteria were evaluated, including: 1) the site(s) must occur within the two major watersheds being impacted, e.g., San Juan Creek and San Mateo Creek watersheds; 2) the site(s) should consist of largely contiguous areas rather than small pockets of habitat in order to maximize the quality and success of mitigation; 3) the site(s) must be available for mitigation, e.g., the site(s) either must be under management by the TCA currently or be eligible for use if not under ownership/management by the TCA; and 4) the site(s) must exhibit appropriate topography and hydrology to support the proposed habitat types. Mitigation Areas A, B, C and D meet all three screening criteria listed above and were selected for the proposed restoration program.⁸ Exhibit 10 depicts constraints that limited potential mitigation sites to those described herein.

Within the San Mateo Watershed, areas within Gabino and Cristianitos canyons were also evaluated for potential riparian and wetland habitat creation; however, the local area drainages exhibiting the high groundwater that would be necessary to successfully establish wetland and riparian habitat are characterized within these canyons by either 1) steep topography that would require extensive grading to expand existing wetland areas, 2) existing native vegetation that would require a habitat type conversion, in some cases impacting sensitive or listed species such as the coastal California gnatcatcher (*Polioptila californica californica*), 3) inappropriate soils, or 4) existing populations of listed species such as thread-leaved brodiaea (*Brodiaea filifolia*) or southwestern arroyo toad (*Bufo californicus*).

In evaluating the potential for mitigation opportunities within Gabino and Cristianitos canyons (San Mateo Watershed), these drainages would not meet all screening criteria. Specifically, mitigation within these drainages would be limited to multiple and relatively small patches that would be inconsistent with the watershed-based mitigation approach. Analysis of potential mitigation areas within the Cristianitos and Gabino watersheds shows the watershed as having already high scores for both habitat and water quality indexes. By comparison, creating new habitat and restoring degraded habitats within the Upper Chiquita and Tesoro watersheds would result in a much higher net increase to water quality, habitat, and hydrologic functions.

It is also important to note that all areas outside of development for RMV have already been designated as Open Space in RMV's HCP. RMV's Grazing Management Plan states that cattle grazing operations will continue on lands designated as Open Space. In addition to the mitigation search in Gabino and Cristianitos canyons, an existing cattle pond in Gabino was analyzed for potential mitigation opportunity due to the presence of wetland habitat within the pond. Changes in use of the pond from ranching to mitigation would conflict with RMV's Grazing Management Plan. In essence, any proposed mitigation in areas designated as Open Space by RMV would conflict with the Grazing Management Plan.

⁸ Mitigation Area A is currently owned by RMV; however, the TCA will enter into negotiation with RMV for the purchase of this land upon acceptance of this conceptual mitigation plan by the Corps, CDFG, and RWQCB. The TCA has condemnation authority.

1. Mitigation Area A

Approximately 20.80 acres have been identified immediately adjacent to Tesoro High School. This mitigation site receives flows from Chiquita Creek and one of its tributaries. These 20.80 acres occur on two distinct sites adjacent to the high school: the northern reach and the southern reach [Exhibit 5].

Northern Reach

The Northern Reach is directly south of Oso Parkway and east of Tesoro High School along an existing wetland. Water flow from the Upper Chiquita Conservation Area watershed is diverted under Oso Parkway via a large box culvert. The outlet allows for water flow across the flat expanse that currently is vegetated with a mixture of willow (*Salix sp.*), mule fat (*Baccharis salicifolia*), and wet meadow species. Chiquita Creek flows through this wetland to the south, into another concrete box culvert where it traverses below Tesoro High School.

The proposed mitigation areas in the Northern Reach are situated on both sides of the existing wetland habitat between the aforementioned box culverts. One creation area is situated on the western side of the existing habitat. Currently, this area is occupied by upland ruderal habitat and bare soil. An access road runs on the eastern side of the proposed area. The proposed actions are to contour this area and remove the road to promote surface flow of water as well as to allow plants access to the water table. Approximately 0.87 acre of wet meadow and 2.22 acres of southern willow woodland would be created in this area. An additional 0.88 acre of oak/elderberry woodland and 4.90 acres of coastal sage scrub/native perennial grassland ecotone will be restored in the Northern Reach in the two small drainages immediately south of the existing wetland where Chiquita Creek traverses below Tesoro High School.

Southern Reach

The Southern Reach is located directly south of Tesoro High School. A berm and stream crossing divide the Southern Reach into two distinct segments. The upstream portion of this reach, north of the berm and stream crossing, has a defined low flow channel and a wide floodplain that transitions to upland. The existing riparian habitat consists of mature willows, but lacks a well-developed shrub and herbaceous layer due to cattle grazing. The downstream portion of the Southern Reach, below the berm and stream crossing, loses its floodplain and becomes a narrow incised channel occupied by only emergent vegetation. This portion of the reach may have been cleared sometime in the past since historic photographs from 1938 show the area as already incised. Instability in the downstream portion of this reach has resulted in the undercutting of the creek. The Southern Reach will end at the point where downcutting exceeds 15 feet in depth and where the future proposed extension of Crown Valley Parkway crosses Upper Chiquita Canyon. Approximately 2.43 acres of southern willow woodland, 3.06 acres of mule fat scrub, and 6.44 acres of wet meadow habitat will be restored and created in this area. Additionally, there is a small population of Coulter's saltbush (*Atriplex coulteri*), a sensitive

plant species, adjacent to the existing riparian habitat. This population would be preserved and enhanced with the overall restoration.

The restoration actions for the upstream portion of the Southern Reach are to expand the existing floodplain through grading and to expand and restore the southern willow woodland habitat. This area will be restored through the prevention of grazing activities and by the planting of the understory with native riparian shrubs, herbs and grasses. On the eastern side of the existing habitat, just above the stream crossing, fill has been placed along the edge of the creek. Mitigation activities will also include the removal of the fill as well as the existing berm, and the restoration of wet meadow habitat.

Actions in the downstream portion of the Southern Reach will involve the restoration of the creek to mimic the channel morphology of the upstream portion. The existing stream crossing will be removed, and the channel and floodplain will be restored through recontouring activities. The existing channel will be enhanced through planting of willow trees and shrubs that allow the creek to be shaded. The floodplain will consist of several terraces that will capture different sized storm events. Southern willow woodland, mule fat scrub, and wet meadow habitat will be restored/created within this reach. A series of buried grade control structures will stabilize the transition into the severely undercut portion of the creek.

The soils in Mitigation Area A are suitable for the proposed wetland and riparian restoration, creation, and enhancement. Soils within Upper Chiquita Canyon along the creek have been mapped as Chino silty clay loam in the *Soil Survey of Orange and Western Part of Riverside Counties, California*. Clay soils have high water holding capacity, which allows for the slow release of moisture, increasing the duration in which water becomes available to plants. The presence of wet meadow habitat along this creek is driven by the soil characteristics and will allow for this type of habitat to be created as well under the restored hydrologic regime.

2. Mitigation Area B

Chiquita Canyon Conservation Area is a 1,158-acre site composed of north-south orientated, narrow to broad valleys between rolling hills. Elevations of the site range between 670 to 1,217 feet above sea level. The Conservation Area currently supports four broad plant communities: annual grasslands, coastal sage scrub, oak woodlands, and perennial grasslands. Additionally, some areas are ecotones that transition from annual grasslands to coastal sage scrub. Within this area, which has been disturbed by dry land farming and grazing practices, 179 acres of native grassland, 3.0 acres of streambed and 13 acres of riparian oak woodland will be restored for this Proposed Project [Exhibit 6].

The Conservation Area has experienced three fires in the last ten years. The site had not burned for at least 50 years prior to these recent fires. In August of 1996, a fire affected approximately 98 acres of annual grasslands, coastal sage scrub, and oak woodland communities. This burn area is located on north and south facing ridgelines in the northern most portion of the Conservation Area between Coto de Caza and upper Tijeras Creek. In May 1997, 114 acres burned and affected coastal sage scrub, annual grasslands, oak woodland communities, and perennial grasslands. This burn area is

located on the eastern side of the Chiquita Canyon Conservation Area, adjacent to Coto de Caza. In May 2002, the southern and central portions of Chiquita Canyon burned totaling 715 acres and affecting all of the plant community types. None of the burn areas overlap. The native habitats are well into recovery with little to no maintenance measures, especially for the 2002 burn area. The Conservation Area now supports vegetation communities of mixed age structure, including mature unburned communities, and communities in various stages of fire recovery.

The Conservation Area contains several soil types that support different vegetation communities. Two soil orders occur in the Conservation Area, Mollisols and Entisols. Mollisols typically support perennial grassland vegetation and the Entisols typically support trees and shrubs. To provide a better understanding of the potential restoration areas, the soils within the Conservation Area were analyzed to determine the correlation between soil type and plant communities. This analysis is necessary to determine appropriate restoration in the areas that had been historically disturbed by dry-land farming and cattle grazing. The results of the soil analysis are contained in the *Draft Upper Chiquita Canyon Conservation Area Comprehensive Habitat Restoration Plan* dated October 2006 and prepared by EARTHWORKS Restoration, Inc., which is attached as Appendix C.

In addition to the mitigation restoration discussed above for the jurisdictional impacts, the *Draft Upper Chiquita Canyon Conservation Area Comprehensive Habitat Restoration Plan* also defines the restoration of an additional 364 acres. These 364 acres consist of coastal sage scrub, CSS/grassland/ecotone and oak woodland habitats to complete a comprehensive restoration of the Chiquita Canyon Conservation Area easement. (See Appendix C.)

3. Mitigation Area C

Mitigation Area C falls entirely within the project disturbance limits. The area will be subject to grading for landslide remediation and will be recontoured to provide aquatic function. The site is immediately downstream of Chiquita Woods (Drainage FE/7-1). As indicated in the jurisdictional delineation, the streambed ends in a broad swale subject to dryland agriculture. The reach of the drainage above the mitigation site is vegetated with sycamore riparian woodland to be bridged and will be restored upon project completion.

4. Mitigation Area D

Mitigation Area D also falls entirely within the project limits. It will be located immediately adjacent to an extended detention basin east of the I-5 and south of San Mateo Creek. The proposed site is currently occupied by an irrigated agricultural field.

B. Ownership Status

The present owners of Mitigation Area A are as follows:

Owner: RMV Middle Chiquita, LLC, a California limited liability company
Authorized
Agent &
Manager: Rancho Mission Viejo, LLC, a Delaware limited liability company
28811 Ortega Highway
P.O. Box 9
San Juan Capistrano, CA 92693
Attn: Richard Broming
APN: 125-096-61 (16.4 acres)

and

Owner: RMV MC Investment, LLC, a California limited liability company
Authorized
Agent &
Manager: Rancho Mission Viejo, LLC, a Delaware limited liability company
28811 Ortega Highway
P.O. Box 9
San Juan Capistrano, CA 92693
Attn: Richard Broming
APN: 125-096-31 (16.9 acres)

The present owner of Mitigation Areas B, C, and D is Transportation Corridor Agencies.

Owner: Transportation Corridor Agencies
125 Pacifica
Irvine, CA 92618
Contact: Maria Levario
Telephone: (949) 754-3400

After completion of construction, access to the Mitigation Areas will be provided via private access roads. The Corps, CDFG, RWQCB and CCC may access the Mitigation Areas to ensure that the mitigation efforts have been implemented in a manner consistent with permit/agreement conditions, and are requested to notify the Applicant before entering.

C. **Existing Functions and Values of the Wetland/Riparian Creation/Restoration Mitigation Sites**

1. **Mitigation Area A**

Mitigation Area A is located along Chiquita Canyon Creek and will be contiguous with an existing mitigation wetland. This existing mitigation wetland was established as mitigation for construction of Tesoro High School. The mitigation site's proximity to an existing wetland and a major drainage system makes it suitable for substantially enhancing habitat values through habitat expansion plus enhancement of existing wildlife movement. On the western side of the northern reach, this area is bare ground that appears to consist of fill material placed some time in the past. On the eastern side of the northern reach, this area is occupied by upland ruderal habitat and bare soil. An access road runs on the eastern side of this area. Hydrology is to be provided by storm flows, shallow subsurface water during the rainy season and deep groundwater (i.e. 10-15 feet) during the summer and fall, and precipitation.

2. **Mitigation Area B**

As mentioned above, the Upper Chiquita Canyon Conservation Area was established with the approval of the USFWS and CDFG in 1996 when the TCA purchased the conservation easement for Upper Chiquita Canyon from the RMV. For the past approximately 10 years, the TCA has actively managed this site as a conservation area. Upon purchase of the conservation easement in 1996, the TCA removed all ranch activities, including grazing, from the site.

The Upper Chiquita Canyon Conservation Area currently supports vegetation communities of mixed age structure, including mature unburned communities, and communities in various stages of fire recovery. The site is highly disturbed as a result of historic dry land farming practices, which cleared existing vegetation and disked the soils for cattle grazing purposes. The farming and grazing allowed exotic grasses to invade and dominate the site even after the cessation of these practices.

The Conservation Area is the upper watershed of Chiquita Canyon. Small drainages start in the steeper hillsides containing coastal sage scrub and then merge into larger drainages within the broad valleys. Drainage patterns range from incised channels with depths of approximately 20 feet to flat impoundment areas. The annual runoff in these drainages is highly ephemeral and does not support any native obligate wetland vegetation. The soils are not classified as wetland soils, and, therefore, these drainages are classified as non-wetland watercourses. These drainages vary in the density of native species with sparse mule fat, as well as elderberry (*Sambucus mexicana*), toyon (*Heteromeles arbutifolia*) and coast live oak (*Quercus agrifolia*) interspersed with coastal sage scrub species and areas of dense annual grasses. Hydrology within the restoration site will be provided by storm flows, precipitation, and ground water.

3. Mitigation Area C

Mitigation Area C is an upland site that will be subject to grading for landslide remediation and will be recontoured to provide aquatic function. The site has been subject to dryland agriculture in the past and currently does not provide any habitat value.

4. Mitigation Area D

Mitigation Area D is an upland site currently occupied by an irrigated agricultural field and does not provide any habitat value.

D. Jurisdictional Delineation

1. Mitigation Area A

This area currently consists of 0.79 acre of degraded wet meadow and riparian habitats with surrounding upland areas vegetated with ruderal species. The proposed mitigation occurs within upland areas with the exception of 0.79 acres of substantial wet meadow restoration in the southern reach that currently falls within Corps and CDFG jurisdiction. These 0.79 acres of degraded wet meadow and riparian habitats would qualify as an existing one-parameter coastal wetland. Based on existing vegetation mapping, the surrounding upland areas are not expected to meet the criteria for coastal wetlands.

2. Mitigation Area B

The entire approximately 1,158-acre area consists mainly of upland areas vegetated with annual grasslands, coastal sage scrub, oak woodlands, and perennial grasslands. Thirty-eight drainage courses totaling approximately 13 acres of which 3.0 acres is proposed for enhancement, none of which consist of jurisdictional wetlands, traverse the Conservation Area. The proposed riparian creation will take place along existing drainages in areas presently dominated by annual grassland, and the 179-acre upland buffer restoration will occur entirely within upland areas, also dominated by annual grassland. Based on existing vegetation mapping, the surrounding upland areas are not expected to meet the criteria for coastal wetlands.

3. Mitigation Area C

Mitigation Area C consists entirely of uplands and does not contain any Corps or CDFG jurisdiction. The proposed riparian creation and native grassland buffer will take place immediately downstream of Chiquita Woods (Drainage FE/7-1), thereby extending the jurisdictional extent of Chiquita Woods by 0.6 acre. The reach of the drainage above the mitigation site is vegetated with sycamore riparian woodland to be bridged and will be restored upon project completion. Based on existing vegetation mapping, these upland areas are not expected to meet the criteria for coastal wetlands.

4. Mitigation Area D

Similar to Mitigation Area C, Mitigation Area D also consists entirely of uplands and does not contain any Corps or CDFG jurisdiction. The proposed riparian creation will take place adjacent to San Mateo Creek and a proposed Extended Detention Basin, and will increase the jurisdictional extent of San Mateo marsh by 1.0 acre. Based on existing vegetation mapping, these upland areas are not expected to meet the criteria for coastal wetlands.

E. Present and Proposed Uses of Mitigation Areas

Mitigation Area A is currently adjacent to open space, Tesoro High School, and Oso Parkway. The Proposed Project is located to the east of Mitigation Area A. No land use changes surrounding the mitigation areas are anticipated following the restoration.

Mitigation Area B is currently adjacent to open space within Upper Chiquita Canyon. While historically the area has been used for dry land farming by Rancho Mission Viejo, farming operations have been discontinued since TCA purchased the conservation easement over the property in 1996. Prior to TCA's conservation of Upper Chiquita Canyon area was proposed for development as a residential and golf-course community. Following the restoration, no land use changes will occur beyond those existing on the site.

Mitigation Area C is a remnant dryland agriculture site and currently lies within the development footprint of the Proposed Project. No land use changes surrounding the mitigation area are anticipated following the creation of habitat.

Mitigation Area D is an irrigated agricultural field that currently lies within the development footprint of the Proposed Project. The 1.0 acre of habitat proposed for creation will no longer be subject to agricultural uses following implementation of mitigation.

F. Reference Sites

The progress of this mitigation project will be monitored using the following existing habitats as a standard: wetlands and riparian vegetation within existing willow woodland, wet meadow, mule fat scrub and oak riparian habitats within the Upper Chiquita Conservation Area adjacent to Mitigation Area B, and the existing Tesoro mitigation wetland immediately adjacent to the proposed Mitigation Site A. The existing oak woodlands in Chiquita Woods and southern willow woodlands in San Mateo Marsh will be used as reference for progress of Mitigation Areas C & D, respectively.

IV. IMPLEMENTATION PLAN FOR THE COMPENSATORY MITIGATION SITES

A. Rationale for Expecting Implementation Success

Compensatory mitigation will be completed in advance of, or concurrently with, impacts to Corps, CDFG, RWQCB, and CCC jurisdiction. Specific rationale for expecting implementation success of the various components of the mitigation program is provided below.

The proposed Mitigation Areas are good candidates for habitat establishment for several reasons and will result in an increase in wetland functional capacity within the watershed to which the proposed impact site contributes. First, hydrology to support the expanded wetland/riparian areas within the sites is assured from existing sources based on soil boring observations. Second, the proposed plant palettes consist of species that occur on-site and are known to perform well in habitat restoration programs. The mitigation sites are adjacent to or near existing wet meadow, southern willow scrub, southern oak riparian woodland, and mule fat scrub. Each habitat type will be located at the optimal elevation and distance from the main channel with the driest areas supporting oak woodland and the wettest areas supporting willow woodland and wet meadow. Grading of the habitat creation areas will allow water to spread out during periods of high flow, as well as greater access to the water table for deep-rooted species. The tenacious quality of native plants, which allows their continued survival in areas of natural disturbance, also helps to ensure their establishment as part of the proposed mitigation. Natural recruitment and reproduction is expected within the site.

Additionally, the soils in the potential areas are suitable for the proposed wetland and riparian restoration, creation and enhancement. Soils within Upper Chiquita Canyon along the creek have been mapped as Chino silty clay loam (Aquic Haploxerolls). Clay soils have high water holding capacity, which allows for the slow release of moisture, increasing the duration in which water becomes available to plants. The presence of wet meadow habitat along this creek is driven by this soil characteristic and will allow for this type of habitat to be created as well under the restored hydrologic regime.

Finally, the individuals responsible for site selection, site evaluation and plan preparation have extensive experience designing and installing revegetation projects in southern California. This experience provides a strong basis for confidence in the success of the mitigation proposed herein, as well as a valuable resource in the field for ensuring that any necessary changes are implemented should unanticipated site conditions warrant in-field changes to the mitigation plan. A qualified habitat restoration specialist or other individual knowledgeable in native plant revegetation, hereinafter referred to as the Project Biologist, will supervise the implementation, maintenance, and five-year monitoring of the mitigation plan.

B. Responsible Parties

The Applicant will be responsible for the implementation of the HMMP.

Applicant: Transportation Corridor Agencies
Contact: Maria Levario
125 Pacifica
Irvine, CA 92618
Telephone: (949) 754-3400

Plan Prepared by:

EARTHWORKS Restoration, Inc.
2116 Arlington Ave., Suite 301
Los Angeles, CA 90018
Contact: Margot Griswold
Telephone: (323) 735-3225
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Glenn Lukos Associates
29 Orchard
Lake Forest, CA 92630-8300
Contact: Ingrid Chlup or Thienan Ly
Telephone: (949) 837-0404
Fax: (949) 837-5834

BonTerra Consulting
151 Kalmus Dr., Suite E-200
Costa Mesa, CA 92626
Contact: Ann Johnston
Telephone: (714) 444-9199
Fax: (714) 444-9599

C. Implementation Schedule

Site preparation, irrigation installation, and mitigation plantings shall begin during or after initiation of construction activities, which will commence after issuance of all required approvals for the Proposed Project. The timing is described in general terms by season. Exact dates for each phase of implementation and maintenance will depend on the onset and duration of seasonal rainfall as well as other factors such as the temperatures prior to, during and following rain events. Rainfall and temperature will define the type and the density of weed species as well as native species that will germinate in any given year and season. Table 10 below indicates anticipated timing of intended impacts to Corps, RWQCB, CDFG and CCC jurisdiction and mitigation implementation. Any changes to the initiation of impacts schedule will correspondingly modify the schedule for implementation of the mitigation areas.

TABLE 10
Conceptual Implementation Schedule

Initiation of Impacts to Corps, RWQCB, CDFG, and CCC Jurisdiction	Summer 2010
Initiation of Impacts to CCC Jurisdiction	Summer 2010
Implementation of Mitigation Area A	Spring 2010
Implementation of Mitigation Area B	Spring 2008
Implementation of Mitigation Area C	During Construction
Implementation of Mitigation Area D	During Construction
Restoration of Temporary Impacts to Pre-Existing Contours	Within 120 days following completion of impacts in each area.

D. Site Preparation

Restoration of each specified habitat shall require site preparation that will vary in time, intensity and method. This preparation will consist of weed control and removal as well as soil nutrient and microbial evaluations for potential amendments. Site preparation will require 1 – 2 years depending on particular areas, the type and density of exotic species, and the specific habitat to be restored. Additionally, some areas may need particular soil amendments such as native mulches, mycorrhizal fungi, and algae.

To the extent possible, as the phased restoration proceeds, initial site preparation and weed removal will begin outside of the breeding season of grassland birds to avoid disrupting nesting. Weed control would continue so that no suitable nesting habitat is available prior to seeding/planting.

Weed Removal

All areas to be restored are presently dominated by exotic species. Weed control will be required to thin or remove mainly the annual grasses, exotic mustards (*Brassica nigra*, *Hirschfeldia incana*), wild radish (*Raphanus sativa*), filaree (*Erodium brachycarpum*), and sow thistle (*Sonchus oleraceus*). During site preparation, weeds shall be removed before seed production to limit additional weed seed on the site. Weed removal may employ mechanical methods, such as mowing and weed whipping. Native grass straw mulch may be applied to areas after mowing to shade out weed seedlings. In combination with particular seeding methods, such as imprinting which requires ripping the soil, weed seed may be brought to the surface and controlled with a series of “grow and kill” treatments. Areas dominated mainly by annual grasses may be treated with an herbicide specific to control grasses such as flurazifop-p (Fusillade). Selected broadleaf species such as artichoke thistle (*Cynara cardunculus*), mustards and wild radish may require spot application with a glyphosate herbicide. Only herbicides registered for use in wildlands would be used judiciously in the Conservation Area.

The amount of site preparation weeding that is required for each area will vary depending on the soil and soil seed bank as well as the weeds present. The method of seeding for each area will also influence the timing of site preparation. Areas will be evaluated after each weeding event to assess the progress of site preparation and to plan the next step. Areas will be released for seeding/planting depending on seeding method and whether enough progress has been made in management of the weed species.

In summary, the following methods will be employed over the Conservation Area in various combinations based on adaptive management of the specific areas for seeding/planting.

- Mowing
- Specific hand weeding of target weeds
- Mulching with native grass straw
- Specific herbicide application for target weeds
- Ripping and tilling in combination with “grow and kill” herbicide application

Contractor Education

Prior to the commencement of work, the applicant will review all aspects of the Mitigation Plan that concern the contractors including permit requirements, site protection, maintenance inspections, landscape procedures, and monitoring.

The Applicant shall make all contractors, subcontractors, and the project supervisors aware of conditions required in the Corps permit, CDFG agreement, and 401 Certification. Copies of these documents shall be kept on-site at all times during periods of active work and must be presented to any agency personnel upon demand.

E. Planting Plan

Four wetland and/or riparian associations will be established within the proposed Mitigation Areas: wet meadow, mule fat scrub, southern willow woodland and southern oak riparian woodland. As indicated above, mitigation habitat labeled as southern willow woodland indicates that the habitat will be *dominated* by southern willow woodland species, but will also support an understory that includes other vegetation types, such as mule fat scrub and/or alkali marsh and riparian herb. The total mitigation acreage, including creation/restoration and enhancement categories, comprises 217.4 acres. These plant communities were selected based on surveys conducted both during various biological survey visits including vegetation mapping, jurisdictional delineation and functional assessment, and subsequent site visits to further evaluate the sites for suitability. With respect to the riparian woodland habitats, woody plant species were selected to create a mature tree canopy and provide wildlife forage, shelter, and nesting places. Planting shall consist of preparing planting holes, planting container stock, installing plant protection devices, applying mulch, and hydroseeding. No planting shall be done in any area until the area concerned has been prepared in accordance with the plans and presents an appearance satisfactory to the Project Biologist.

Plant Palettes

The Mitigation Areas will be vegetated with plant species native to the foothills of the Santa Ana Mountains. The proposed revegetation plant palettes for the revegetation habitat types are designated below in Tables 11 through 24. The plant palettes define species, spacing, and total quantity of plants required.

Mitigation Area A

Southern Willow Woodland (4.66 Acres)

This plan provides for the establishment of approximately 4.66 acres of southern willow woodland habitat within the northern and southern reach of Mitigation Area A. The planting palette for southern willow woodland is presented in Table 11.

TABLE 11 SOUTHERN WILLOW WOODLAND PLANT PALETTE 4.66 ACRES					
Botanic Name	Common Name	Stock Type	Plant Spacing*	No. per Acre	Total Plant Qty.
CONTAINER STOCK					
<i>Baccharis salicifolia</i>	Mule fat	Cutting	12' o.c.	349	1,626
<i>Salix goodingii</i>	Black willow	Cutting	20' o.c.	126	587
<i>Salix laevigata</i>	Red willow	Cutting	20' o.c.	126	587
<i>Salix lasiolepis</i>	Arroyo willow	Cutting	8' o.c.	401	1,869
<i>Juncus mexicanus</i>	Mexican rush	D-40	15' o.c.	400	1,864
<i>Juncus xiphioides</i>	Iris-leaved rush	D-40	15' o.c.	400	1,864
<i>Leymus triticoides</i>	Beardless wild rye	Liners	Clusters	503	2,344
<i>Sambucus mexicana</i>	Blue elderberry	1 gal	40' o.c.	63	294
Total Container Stock				2,368	11,035
SEED MIX					
		Stock Type	Minimum Purity/Germination	Lbs./Acre	Total Lbs.
<i>Ambrosia psilostachya</i>	Western ragweed	Seed	20/30	2.5	11.65
<i>Anemopsis californica</i>	Yerba mansa	Seed	45/60	1	4.66
<i>Artemisia douglasiana</i>	Mugwort	Seed	10/50	2.5	11.65
<i>Hordeum brachyantherum</i>	Meadow barley	Seed	90/80	6	27.96
<i>Juncus mexicanus</i>	Mexican rush	Seed	TBD	2	9.32
<i>Gnathaliium palustre</i>	Lowland cudweed	Seed	5/10	0.5	2.33
<i>Pluchea odorata</i>	Marsh fleabane	Seed	90/30	2	9.32
Total Seed Stock				16.5	76.89

* Plant spacing is approximate and refers to spacing within each vegetation level herbaceous, shrub and tree.

Mule fat Scrub (3.06 Acres)

This plan provides for the establishment of approximately 3.06 acres of mule fat scrub habitat within the southern reach of Mitigation Area A. The planting palette for mule fat scrub is presented in Table 12.

TABLE 12 MULE FAT SCRUB PLANT PALETTE (3.06 ACRES)					
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Total Plant Qty.
CONTAINER PLANTS					
<i>Baccharis salicifolia</i>	Mule fat	Live stake	10' o.c.	503	1539
<i>Salix lasiolepis</i>	Arroyo willow	Live stake	40' o.c.	63	193
<i>Juncus acutus</i>	Spiney rush	D-40	20' o.c.	126	386
<i>Urtica dioica</i> ssp. <i>Holosericera</i>	Hoary nettle	D-40	20' o.c.	126	386
<i>Leymus triticoides</i>	Beardless wild	Liners	Clusters	503	1539
Total Container Stock				1321	4042
SEED MIX					
			Minimum Purity/Germination	Lbs./ Acre	Total Lbs.
<i>Ambrosia psilostachya</i>	Western	Seed	20/30	2.5	7.65
<i>Artemisia douglasiana</i>	Mugwort	Seed	10/50	2.5	7.65
<i>Gnathaliun palustre</i>	Lowland	Seed	5/10	0.5	1.53
<i>Pluchea odorata</i>	Marsh	Seed	20/40	2	6.12
<i>Hordeum brachyantherum</i>	Meadow	Seed	90/80	6	18.36
Total Seed Stock				13.5	41.31

Wet Meadow (7.31 Acres)

This plan provides for the establishment of approximately 0.87 acres of wet meadow habitat within the northern reach and 6.44 acres of wet meadow habitat in the southern reach of Mitigation Area A. The planting palette for wet meadow is presented in Table 13.

TABLE 13 WET MEADOW PLANT PALETTE (7.31 ACRES)					
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Total Plant Qty.
CONTAINER STOCK					
<i>Anemopsis californica</i>	Yerba mansa	Liner	Clusters	503	3,677
<i>Carex praegracilis</i>	Clustered field	Liner	Clusters	126	921
<i>Distichlis spicata</i>	Salt grass	Rhizome plugs	10' o.c.	503	3,677
<i>Eleocharis macrostachya</i>	Spike rush	Liner	10' o.c.	503	3,677
<i>Juncus bufonius</i>	Common toad	Liner	Clusters	126	921
<i>Juncus mexicanus</i>	Mexican rush	Liner	20' o.c.	126	921
<i>Leymus triticoides</i>	Creeping wild rye	Liner	Clusters	503	3,677
Total Container Stock				2390	17,471
SEED MIX					
			Minimum Purity/Germination	Lbs./ Acre	Total Lbs.
<i>Ambrosia psilostachya</i>	Western ragweed	seed	20/30	0.5	3.66
<i>Anemopsis californica</i>	Yerba mansa	seed	45/60	1	7.31
<i>Artemisia douglasiana</i>	Mugwort	seed	10/50	1.5	10.97
<i>Hordeum brachyantherum</i>	Meadow barley	seed	90/80	6	43.86
<i>Sisyrinchium bellum</i>	Blue-eyed grass	seed	95/75	2	14.62
Total Seed Stock				11	80.41

Riparian Oak/Elderberry Woodland (0.88 Acres)

This plan provides for the establishment of approximately 0.88 acres of oak/elderberry woodland in the northern reach of Mitigation Area A. The planting palette for oak/elderberry woodland is provided in Table 14.

TABLE 14 RIPARIAN OAK/ELDERBERRY WOODLAND PLANT PALETTE (0.88 ACRES)					
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Total Plant
CONTAINER STOCK					
<i>Leymus condensatus</i>	Giant wild rye	D-40	Clusters	250	220
<i>Muldenburghia rigens</i>	Deergrass	D-40	Clusters	126	111
<i>Heteromeles arbutifolia</i>	Toyon	D-40	40' o.c.	63	55
<i>Lonicera subspicata</i>	Honeysuckle	D-40	10' o.c.	63	55
<i>Sambucus mexicanus</i>	Mexican elderberry	1 gal	20' o.c.	126	111
<i>Potentilla glandulosa</i>	Sticky cinquefoil	4-inch	20' o.c.	126	111
<i>Quercus agrifolia</i>	Coast live oak	Deep pot	20' o.c.	126	111
<i>Toxicodendron diversilobum</i>	Poison oak	D-40	20' o.c.	126	111
Total Container Stock				1006	885
SEED MIX					
			Minimum Purity/ Germination	Lbs./ Acre	Total Lbs.
<i>Bromus carinatus</i>	California brome	Seed	95/80	3	2.64
<i>Galium aparine</i>	Goose grass	Seed	TBD	0.5	0.44
<i>Mimulus aurantiacus</i>	Bush monkey flower	Seed	50/70	2.5	2.2
<i>Nassella lepida</i>	Foothill needlegrass	Seed	60/60	3.5	3.08
<i>Plantago ovata</i>	Wooly plantain	Seed	98/75	20	17.6
<i>Quercus agrifolia</i>	Coast live oak	acorns	n/a	200	176
<i>Sisyrinchium bellum</i>	Blue-eyed grass	Seed	95/75	2	1.76
<i>Vulpia microstachys</i>	Small fescue	Seed	70/70	6	5.28
Total Seed Stock				237.5	209

Coastal Sage Scrub/Native Perennial Grassland Ecotone (4.90 Acres)

This plan provides for the establishment of approximately 4.90 acres of coastal sage scrub/native perennial grassland ecotone in the northern reach of Mitigation Area A. The planting palette for coastal sage scrub/native perennial grassland ecotone is provided in Table 15.

TABLE 15 COASTAL SAGE SCRUB/NATIVE PERENNIAL GRASSLAND PLANT PALETTE (4.90 ACRES)					
Botanic Name	Common Name	Stock Type	Minimum Purity/ Germination	Lbs./ Acre	Total Lbs.
SEED MIX					
<i>Artemisia californica</i>	California sagebrush	seed	15/50	0.2	0.98
<i>Asclepias fascicularis</i>	narrow-leaf milkweed	seed	TBD	0.2	0.98
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	common fiddleneck	seed	30/70	0.5	2.45
<i>Baccharis pilularis</i>	coyote bush	seed	15/60	0.1	0.49
<i>Bromus carinatus</i>	California brome	seed	95/80	2.0	9.80
<i>Cryptantha intermedia</i>	popcorn flower	seed	TBD	0.5	2.45
<i>Datura wrightii</i>	tolugacha	seed	TBD	0.2	0.98
<i>Dichelostemma capitatum</i>	blue dicks	seed	95/50	1.0	4.90
<i>Hazardia squarosa</i>	goldenbush	seed	TBD	0.5	2.45
<i>Hemizonia fasciculata</i>	tarweed	seed	20/70	2.0	9.80
<i>Isocoma menziesii</i>	coast goldenbush	seed	TBD	0.5	2.45
<i>Lasthenia californica</i>	goldfields	seed	50/60	1.5	7.35
<i>Lessingia filaginifolia</i>	California aster	seed	TBD	0.5	2.45
<i>Lotus scoparius</i>	deerweed	seed	90/60	1.0	4.90
<i>Lotus strigosus</i>	strigose lotus	seed	98/70	1.5	7.35
<i>Lupinus bicolor</i>	miniature lupine	seed	98/85	3.0	14.70
<i>Lupinus truncatus</i>	collar lupine	seed	98/70	1.5	7.35
<i>Melica imperfecta</i>	melic grass	seed	90/60	1.5	7.35
<i>Nassella lepida</i>	foothill needlegrass	seed	60/60	3.0	14.70
<i>Nassella pulchra</i>	purple needlegrass	seed	60/60	8.0	39.20
<i>Plantago ovata</i>	wooly plantain	seed	98/75	20.0	98.00
<i>Sisyrinchium bellum</i>	blue-eyed grass	seed	95/75	1.5	7.35
<i>Vulpia microstachys</i>	small fescue	seed	70/70	4.0	19.60
Total Seed Stock				54.70	268.03

Mitigation Area B – Upper Chiquita Canyon Conservation Area

Native Perennial Grassland (179 Acres)

This plan provides for the establishment of approximately 179 acres of native perennial grassland habitat in Mitigation Area B. The planting palette for this habitat is provided below in Table 16.

TABLE 16 NATIVE PERENNIAL GRASSLAND PLANT PALETTE (179 ACRES)					
Botanic Name	Common Name	Stock Type	Minimum Purity/ Germination	Lbs./ Acre	Total Lbs.
SEED MIX					
<i>Asclepias fascicularis</i>	narrow-leaf milkweed	seed	TBD	0.25	46
<i>Ambrosia psilostachys</i>	western ragweed	seed	20/70	0.25	46
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	common fiddleneck	seed	30/70	1.00	182
<i>Bromus carinatus</i>	California brome	seed	95/80	2.00	364
<i>Castilleja exserta</i>	purple owl's clover	seed	50/60	0.50	91
<i>Dichelostemma capitatum</i>	blue dicks	seed	95/50	1.00	182
<i>Ericameria palmeri</i>	grassland goldenbush	seed	TBD	0.25	46
<i>Filago californica</i>	California filago	seed	TBD	0.50	91
<i>Gnaphalium palustre</i>	lowland everlasting	seed	25/10	0.50	91
<i>Hemizonia fasciculata</i>	tarweed	seed	20/70	2.00	364
<i>Lasthenia californica</i>	goldfields	seed	50/60	0.50	91
<i>Layia platyglossa</i>	tidy tips	seed	80/75	0.50	91
<i>Lotus purshianus</i>	Spanish clover	seed	98/70	1.50	273
<i>Lotus strigosus</i>	strigose lotus	seed	98/70	1.50	273
<i>Lupinus bicolor</i>	miniature lupine	seed	98/85	3.00	546
<i>Lupinus succulentus</i>	arroyo lupine	seed	98/85	1.50	273
<i>Lupinus truncatus</i>	collar lupine	seed	98/70	1.50	273
<i>Melica imperfecta</i>	melic grass	seed	90/60	1.50	273
<i>Nassella lepida</i>	foothill needlegrass	seed	60/60	2.00	364
<i>Nassella pulchra</i>	purple needlegrass	seed	60/60	10.00	1820
<i>Nemophila menziesii</i>	baby blue eyes	seed	98/85	0.50	91
<i>Plantago ovata</i>	wooly plantain	seed	98/75	20.00	3640
<i>Poa secunda</i>	bluegrass	seed	60/60	1.50	273
<i>Sisyrinchium bellum</i>	blue-eyed grass	seed	95/75	1.50	273
<i>Vulpia microstachys</i>	small fescue	seed	70/70	4.00	728
Total Seed Stock				59.25	10,785

Riparian Oak and Elderberry Woodland (13 Acres)

This plan provides for the establishment of approximately 13 acres of oak woodland habitat in Mitigation Area B. The planting palette for this habitat is provided below in Table 17.

TABLE 17 RIPARIAN OAK/ELDERBERRY WOODLAND PLANT PALETTE (13 ACRES)					
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Total Plant
CONTAINER STOCK					
<i>Baccharis salicifolia</i>	mule fat	Rooted Cuttings	5'	25	325
<i>Heteromeles arbutifolia</i>	toyon	D-40	20'	10	130
<i>Quercus agrifolia</i>	coast live oak	1 gal	25'	190	2470
<i>Rhamnus californica</i>	coffeeberry	D-40	20'	10	130
<i>Rhus integrifolia</i>	lemonadeberry	D-40	15'	20	260
<i>Sambucus mexicana</i>	Mexican elderberry	1 gal	15'	60	780
Total Container Stock				315	4095
SEED MIX					
			Minimum Purity/ Germination	Lbs./ Acre	Total Lbs.
<i>Bromus carinatus</i>	California brome	seed	95/80	3	39
<i>Galium aparine</i>	goose grass	seed	10/25	1	13
<i>Nassella lepida</i>	foothill needlegrass	seed	60/60	2	26
<i>Nassella pulchra</i>	purple needlegrass	seed	60/60	5	65
<i>Plantago ovata</i>	wooly plantain	seed	98/75	20	260
<i>Quercus agrifolia</i>	Coast live oak	Acorns	TBD	100	1300
<i>Sisyrinchium bellum</i>	blue-eyed grass	seed	95/75	0.5	15.5
<i>Vulpia microstachys</i>	fescue	seed	70/70	6	186
<i>Artemesia californica</i>	California sagebrush	seed	15/50	2	26
<i>Calystegia macrostegia</i>	morning glory	seed	TBD	0.5	6.5
<i>Eriogonum fasciculatum</i>	California buckwheat	seed	10/65	3	39
<i>Gnaphalium californicum</i>	California everlasting	seed	TBD	1	13
<i>Isocoma menziesii</i>	goldenbush	seed	TBD	0.5	6.5
<i>Lotus scoparius</i>	deerweed	seed	90/60	4	52
<i>Mimulus aurantiacus</i>	monkeybush	seed	5/70	2.5	32.5
<i>Salvia apiana</i>	white sage	seed	70/50	2	26
<i>Salvia mellifera</i>	black sage	seed	70/50	2	26
<i>Verbena lasiostachys</i>	common verbena	seed	70/50	1	13
Total Seed Stock				156	2145

Mitigation Site C: Chiquita Woods

Riparian Oak and Elderberry Woodland (0.5 Acre)

This plan provides for the establishment of approximately 0.5 acres of oak/elderberry woodland habitat in Mitigation Area C. The planting palette for this habitat is provided below in Table 18.

TABLE 18 RIPARIAN OAK/ELDERBERRY WOODLAND PLANT PALETTE (0.5 ACRES)					
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Total Plant
CONTAINER STOCK					
<i>Baccharis salicifolia</i>	mule fat	Rooted	5'	25	13
<i>Heteromeles arbutifolia</i>	toyon	D-40	20'	10	5
<i>Quercus agrifolia</i>	coast live oak	1 gal	25'	190	95
<i>Rhamnus californica</i>	coffeeberry	D-40	20'	10	5
<i>Rhus integrifolia</i>	lemonadeberry	D-40	15'	20	10
<i>Sambucus mexicana</i>	Mexican	1 gal	15'	60	30
Total Container Stock				315	158
SEED MIX					
			Minimum Purity/ Germination	Lbs./ Acre	Total Lbs.
<i>Bromus carinatus</i>	California brome	seed	95/80	3	1.5
<i>Galium aparine</i>	goose grass	seed	10/25	1	0.5
<i>Nassella lepida</i>	foothill	seed	60/60	2	1
<i>Nassella pulchra</i>	purple	seed	60/60	5	2.5
<i>Plantago ovata</i>	wooly plantain	seed	98/75	20	10
<i>Quercus agrifolia</i>	Coast live oak	Acorns	TBD	100	50
<i>Sisyrinchium bellum</i>	blue-eyed grass	seed	95/75	0.5	0.3
<i>Vulpia microstachys</i>	fescue	seed	70/70	6	3
<i>Artemesia californica</i>	California	seed	15/50	2	1
<i>Calystegia macrostegia</i>	morning glory	seed	TBD	0.5	0.3
<i>Eriogonum fasciculatum</i>	California	seed	10/65	3	1.5
<i>Gnaphalium californicum</i>	California	seed	TBD	1	0.5
<i>Isocoma menziesii</i>	goldenbush	seed	TBD	0.5	0.3
<i>Lotus scoparius</i>	deerweed	seed	90/60	4	2
<i>Mimulus aurantiacus</i>	monkeybush	seed	5/70	2.5	1.3
<i>Salvia apiana</i>	white sage	seed	70/50	2	1
<i>Salvia mellifera</i>	black sage	seed	70/50	2	1
<i>Verbena lasiostachys</i>	common verbena	seed	70/50	1	0.5
Total Seed Stock				156	78.2

Native Perennial Grassland (0.1 Acre)

This plan provides for the establishment of approximately 0.1 acre of native perennial grassland habitat in Mitigation Area C. The planting palette for this habitat is provided below in Table 19.

TABLE 19 NATIVE PERENNIAL GRASSLAND PLANT PALETTE (0.1 ACRE)					
Botanic Name	Common Name	Stock Type	Minimum Purity/ Germination	Lbs./ Acre	Total Lbs.
SEED MIX					
<i>Asclepias fascicularis</i>	narrow-leaf milkweed	seed	TBD	0.25	0.03
<i>Ambrosia psilostachys</i>	western ragweed	seed	20/70	0.25	0.03
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	common fiddleneck	seed	30/70	1.00	0.10
<i>Bromus carinatus</i>	California brome	seed	95/80	2.00	0.20
<i>Castilleja exserta</i>	purple owl's clover	seed	50/60	0.50	0.05
<i>Dichelostemma capitatum</i>	blue dicks	seed	95/50	1.00	0.10
<i>Ericameria palmeri</i>	grassland goldenbush	seed	TBD	0.25	0.03
<i>Filago californica</i>	California filago	seed	TBD	0.50	0.05
<i>Gnaphalium palustre</i>	lowland everlasting	seed	25/10	0.50	0.05
<i>Hemizonia fasciculata</i>	tarweed	seed	20/70	2.00	0.20
<i>Lasthenia californica</i>	goldfields	seed	50/60	0.50	0.05
<i>Layia platyglossa</i>	tidy tips	seed	80/75	0.50	0.05
<i>Lotus purshianus</i>	Spanish clover	seed	98/70	1.50	0.15
<i>Lotus strigosus</i>	strigose lotus	seed	98/70	1.50	0.15
<i>Lupinus bicolor</i>	miniature lupine	seed	98/85	3.00	0.30
<i>Lupinus succulentus</i>	arroyo lupine	seed	98/85	1.50	0.15
<i>Lupinus truncatus</i>	collar lupine	seed	98/70	1.50	0.15
<i>Melica imperfecta</i>	melic grass	seed	90/60	1.50	0.15
<i>Nassella lepida</i>	foothill needlegrass	seed	60/60	2.00	0.20
<i>Nassella pulchra</i>	purple needlegrass	seed	60/60	10.00	1.00
<i>Nemophila menziesii</i>	baby blue eyes	seed	98/85	0.50	0.05
<i>Plantago ovata</i>	wooly plantain	seed	98/75	20.00	2.00
<i>Poa secunda</i>	bluegrass	seed	60/60	1.50	0.15
<i>Sisyrinchium bellum</i>	blue-eyed grass	seed	95/75	1.50	0.15
<i>Vulpia microstachys</i>	small fescue	seed	70/70	4.00	0.40
Total Seed Stock				59.25	5.94

Mitigation Site D: Extended Detention Basin # 2

Southern Willow Woodland (1.0 Acre)

This plan provides for the establishment of approximately 1.0 acre of southern willow woodland habitat within the northern and southern reach of Mitigation Area D. The planting palette for southern willow woodland is presented in Table 20.

TABLE 20 SOUTHERN WILLOW WOODLAND PLANT PALETTE 1.0 ACRES					
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Total Plant Qty.
CONTAINER STOCK					
<i>Baccharis salicifolia</i>	Mule fat	Cutting	12' o.c.	349	349
<i>Salix goodingii</i>	Black willow	Cutting	20' o.c.	126	126
<i>Salix laevigata</i>	Red willow	Cutting	20' o.c.	126	126
<i>Salix lasiolepis</i>	Arroyo willow	Cutting	8' o.c.	401	401
<i>Juncus mexicanus</i>	Mexican rush	D-40	15' o.c.	400	400
<i>Juncus xiphioides</i>	Iris-leaved rush	D-40	15' o.c.	400	400
<i>Leymus triticoides</i>	Beardless wild rye	Liners	Clusters	503	503
<i>Sambucus mexicana</i>	Blue elderberry	1 gal	40' o.c.	63	63
Total Container Stock				2,368	2,368
SEED MIX					
	Common Name	Stock Type	Minimum Purity/Germination	Lbs./Acre	Total Lbs.
<i>Ambrosia psilostachya</i>	Western ragweed	Seed	20/30	2.5	2.5
<i>Anemopsis californica</i>	Yerba mansa	Seed	45/60	1	1
<i>Artemisia douglasiana</i>	Mugwort	Seed	10/50	2.5	2.5
<i>Hordeum brachyantherum</i>	Meadow barley	Seed	90/80	6	6
<i>Juncus mexicanus</i>	Mexican rush	Seed	TBD	2	2
<i>Gnathium palustre</i>	Lowland cudweed	Seed	5/10	0.5	0.5
<i>Pluchea odorata</i>	Marsh fleabane	Seed	90/30	2	2
Total Seed Stock				16.5	16.5

* Plant spacing is approximate and refers to spacing within each vegetation level herbaceous, shrub and tree.

Temporary Impact Areas

With respect to temporary impacts to 9.44 acres of Corps jurisdiction, 9.49 acres of RWQCB jurisdiction, 14.61 acres of CDFG jurisdiction and 7.70 acres of CCC jurisdiction within San Juan Creek, San Mateo Creek, San Onofre Creek, Drainage FE/7-1 and San Mateo Marsh-East of I-5, and 0.14 acre of mitigation within the re-aligned Talega Basin, the applicant will re-contour and re-vegetate all temporarily impacted areas as detailed below.

Re-aligned Talega Basin

This plan provides for the restoration of 0.136 acre of temporarily impacted southern willow scrub planted as mitigation within the re-aligned Talega Basin. The planting palette for southern willow scrub is presented in Table 21.

TABLE 21 SOUTHERN WILLOW SCRUB PLANT PALETTE 0.136 ACRES						
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Percent	Total Plant Qty.
Overstory						
<i>Salix exigua</i>	Sandbar willow	1 gal	10' o.c.	80	6	10
<i>Salix gooddingii</i>	Black willow	1 gal	10' o.c.	50	4	7
<i>Salix lasiolepis</i>	Arroyo willow	1 gal	10' o.c.	100	7	14
<i>Sambucus mexicana</i>	Blue elderberry	1 gal	15' o.c.	20	1	2
Subtotal				250		33
Understory						
<i>Artemisia californica</i>	Muawort	1 gal	4' o.c.	200	15	27
<i>Baccharis salicifolia</i>	Mule fat	1 gal	8' o.c.	200	15	27
<i>Juncus mexicanus</i>	Mexican rush	liner	4' o.c.	200	15	27
<i>Leymus triticoides</i>	Creeping wild rye	liner	4' o.c.	200	15	27
<i>Eleocharis macrostachya</i>	Creeping spikerush	1 gal	5' o.c.	200	15	27
<i>Rosa californica</i>	California wild rose	1 gal.	4' o.c.	100	7	14
Subtotal				1,100		149
Total Container Stock				1,350		182

Southern Arroyo Willow Forest (7.28 Acres)

This plan provides for the restoration of 7.28 acres of temporarily impacted southern arroyo willow forest habitat. The planting palette for southern willow woodland is presented in Table 22.

TABLE 22					
SOUTHERN ARROYO WILLOW FOREST PLANT PALETTE					
7.28 ACRES					
Botanic Name	Common Name	Stock Type	Plant Spacing*	No. per Acre	Total Plant Qty.
CONTAINER STOCK					
<i>Baccharis salicifolia</i>	Mule fat	Cutting	12' o.c.	349	2,541
<i>Salix goodingii</i>	Black willow	Cutting	20' o.c.	126	918
<i>Salix laevigata</i>	Red willow	Cutting	20' o.c.	126	918
<i>Salix lasiolepis</i>	Arroyo willow	Cutting	8' o.c.	401	2,920
<i>Juncus mexicanus</i>	Mexican rush	D-40	15' o.c.	400	2,912
<i>Juncus xiphioides</i>	Iris-leaved rush	D-40	15' o.c.	400	2,912
<i>Leymus triticoides</i>	Beardless wild rye	Liners	Clusters	503	3,662
<i>Sambucus mexicanus</i>	Mexican Elderberry	1 gal	40' o.c.	63	459
Total Container Stock				2,368	17,242
SEED MIX					
		Stock Type	Minimum Purity/Germination	Lbs./Acre	Total Lbs.
<i>Ambrosia psilostachya</i>	Western ragweed	Seed	20/30	2.5	18.5
<i>Anemopsis californica</i>	Yerba mansa	Seed	45/60	1	7.5
<i>Artemisia douglasiana</i>	Mugwort	Seed	10/50	2.5	18.5
<i>Hordeum brachyantherum</i>	Meadow barley	Seed	90/80	6	44
<i>Juncus mexicanus</i>	Mexican rush	Seed	TBD	2	14.5
<i>Gnathaliium palustre</i>	Lowland cudweed	Seed	5/10	0.5	4
<i>Pluchea odorata</i>	Marsh fleabane	Seed	90/30	2	14.5
Total Seed Stock				16.5	121.5

* Plant spacing is approximate and refers to spacing within each vegetation level herbaceous, shrub and tree.

Southern Sycamore Riparian Woodland (up to 7.47 Acres)

This plan provides for the restoration of 7.47 acres of temporarily impacted southern sycamore riparian woodland habitat. The planting palette for southern sycamore riparian woodland is presented in Table 23.

TABLE 23 SOUTHERN SYCAMORE RIPARIAN WOODLAND PLANT PALETTE 7.47 ACRES					
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Total Quantity
Canopy					
<i>Platanus racemosa</i>	Western sycamore	1 gal	20' o.c.	40	299
<i>Quercus agrifolia</i>	Coast live oak	1 gal	20' o.c.	20	150
<i>Sambucus mexicana</i>	Blue elderberry	1 gal	20' o.c.	30	224
Subtotal				90	673
Understory					
<i>Baccharis salicifolia</i>	Mule fat	1 gal	8' o.c.	100	747
<i>Leymus condensatus</i>	Giant wild rye	1 gal	5' o.c.	100	747
<i>Leymus triticoides</i>	Creeping wild rye	Liner	4' o.c.	100	747
<i>Rhus Integrifolia</i>	Lemonade berry	1 gal	15' o.c.	50	374
<i>Ribes speciosum</i>	Fushia-flowering gooseberry	Liner	5' o.c.	50	374
<i>Muhlenbergia rigens</i>	Deergrass	1 gal	5' o.c.	150	1,121
<i>Opuntia littoralis</i>	Coastal prickly pear	1 gal	5' o.c.	100	747
<i>Rosa californica</i>	California wild rose	1 gal.	5' o.c.	50	374
<i>Artemisia douglasiana</i>	Mugwort	Liner	4' o.c.	100	747
<i>Juncus textilis</i>	Basket rush	Liner	4' o.c.	200	1,494
<i>Rubus ursinus</i>	California blackberry	1 gal	5' o.c.	50	374
Subtotal				1050	7,846
Total Container Stock					8,519

Freshwater Marsh (0.42 Acre)

This plan provides for the restoration of 0.42 acre of temporarily freshwater marsh habitat. The planting palette for freshwater marsh is presented in Table 24.

TABLE 24 FRESHWATER MARSH PLANT PALETTE 0.42 ACRES					
Botanic Name	Common Name	Stock Type	Plant Spacing	No. per Acre	Total Quantity
EMERGENT MARSH					
<i>Eleocharis macrostachya</i>	Creeping spikerush	liner	2' o.c.	400	168
<i>Scirpus americanus</i>	Olney's spikerush	liner	4' o.c.	350	147
<i>Scirpus maritimus</i>	Alkali bulrush	liner	4' o.c.	350	147
<i>Typha domingensis</i>	Southern cattail	1 gal.	4' o.c.	300	126
Total				1400	588

Source of Plant Materials

It is preferred that the source of all propagules and seed used at the Mitigation Areas be from the site or adjacent riparian areas. If not available, the remainder of propagules and seed required will be from wild sources within Southern Orange County, and collected as close to the Mitigation Areas as possible to preserve regional genetic integrity.

Contract Growing

Contract growing of all container plants shall be by a local experienced native plant nursery. Substitution of plant material at the time of planting depends solely upon the discretion of the Project Biologist. Any substitutions that are approved will be documented in the As-Built Plans.

Container Plants

One-gallon container stock, rosepots, and liners shall be utilized for container stock production in order to develop vertical heterogeneity (strata). All plant materials will be inspected by the Project Biologist and approved as healthy, disease free, and of proper size prior to planting. Overgrown, root-bound container stock will be rejected.

Soil Amendments

Several soil amendments have been shown to be important tools in native habitat restoration while other amendments are still experimental. Most of these amendments are living components of the soil ecosystem. The following sections outline the potential use of soil amendments for restoration within the mitigation areas.

Arbuscular Mycorrhizal (AM) Fungi

Studies are currently underway in 2003/2004 to determine whether native AM fungi inoculum or commercial AM fungi inoculum has a positive effect on the establishment of native grasslands

compared to plots with no inoculum. Earlier studies within the Conservation Easement from 1999 - 2004 on establishment of coastal sage scrub showed no significant difference in establishment of native species between plots treated with and without commercial AM fungi (EARTHWORKS, unpublished data). However, plots treated with AM fungi seemed to have less mustard and wild radish. It is generally known that the Brassicaceae (Mustard) family is not mycorrhizal, and it is believed that AM fungi may have a detrimental effect on members of the family. Baseline tests of AM infectivity for the current 2003/2004 study indicate the soil in the restoration area has more AM potential than in the 1999 study baseline soil tests although data is not directly comparable because methods of infectivity differed. It is possible that when discing in the annual grassland areas was discontinued in 1999, AM fungi have increased because most annual grass species are mycorrhizal. Once the soil disturbance was stopped some species of AM fungi would have increased over the site.

Depending on the results of current studies, soil evaluations, site preparation and seeding method, soils will be amended with AM fungi through incorporation in the seed mix applied for each habitat. If native AM inoculum is used, the inoculum will be developed from sources within the mitigation area or close to the mitigation area, such as Bell Canyon. Native inoculum will be most likely used in restoration of the native grassland areas since there are few, if any, native grasses presently in the soil in these areas and, therefore, it is expected that few species of mycorrhizae associated with native grasses are present. Coastal sage scrub restoration areas are immediately down slope of existing scrub, and AM fungi native to this habitat likely will move into the restoration areas. If commercial AM is applied to coastal sage scrub, *Glomus intraradices* will be used. This species is native in most areas of the Western region and has been used on successful scrub restoration sites without inhibiting subsequent colonization by other native mycorrhizae (EARTHWORKS, unpublished data).

The AM fungi used in the Mitigation Areas will be provided by a person or company with experience in AM fungi development. The AM fungi will be applied at the rate of 3,600,000 live propagules per acre, based on the guarantee of the supplier. The AM fungi will be applied with the seed in any seed method that is specified for particular areas, including imprinting, range drill seeding, and hydroseeding.

Algae

Native algae may be applied to the sites to speed the development of soil crusts and diminish the opportunity for weed seed germination. This amendment is still experimental, but it is a potential tool to be used in combination with other microbial amendments and restoration activities.

Fertilizer

Fertilizer most likely will not be necessary since the generally luxuriant growth of the existing exotic species indicates sufficient nutrients for habitat restoration. Soil nutrient tests will include standard agricultural suitability as well as total organic content and organic nitrogen. The long-term success of the restoration will depend on adequate amounts of organic material in the soils (Claussen, 2000). If fertilization should be required, then a slow release, low phosphorous complete fertilizer coated with polyurethane will be used. If soil tests show an over abundance of available nitrogen in the soil, then additional mulch may be applied to the specific sites.

Plant Placement

Container stock will be laid out in such a manner that mimics natural plant distribution (i.e., in clusters and islands) to emulate regional reference sites. The Project Biologist will monitor and confirm that trees and shrubs have been placed at the designed elevation relative to the water source supporting them, such as ground water.

Planting Method for Rose Pot and/or Liner Plant Stock

Rose pot and/or liner plant stock will be placed in a hole measuring at least twice the diameter and depth of the container. The root structure will be examined and excess root material removed. The top of the rootball will be set slightly above finish grade. The planting hole will be backfilled with native soil. Fertilizer, watering basins, and mulch are not required for this planting method.

Planting Method for Container Stock

Container plants consist of either dominant tree species or large shrubs that are difficult to establish from seed, and they will be used in oak woodland areas and non-wetland drainage areas only. The layout for container plants will be determined for each area based on micro topographic features. Spacing of plants within the groups will follow the specifications presented in the tables for container plant palettes. Planting sites will be marked on the site using different colored pin flags under the supervision of the Project Biologist. Groups of container plants will be spaced in a natural looking mosaic in each area. As-built drawings of oak woodland and non-wetland drainage container planting will be prepared.

All container plants are to be planted to the following specifications:

- Planting holes shall be made with the minimum disturbance to accommodate the containers.
- Prior to planting, the planting hole shall be filled with water, and allowed to drain.
- Plants shall be set in the planting hole so that the crown of the root ball is approximately 0.5 inch above finish grade. Under no circumstance should the plant crown be buried.
- A watering basin shall be provided around each plant from 18 – 24 inches in diameter.
- Watering basins shall be filled with water after planting.
- Plant basins shall be mulched with approximately 4 – 6 inches of approved wood mulch after planting.

Planting Method for Seeding

Tests are currently underway to determine the optimum seeding method to use in various areas of the site based on weed densities; however, several physical factors will also determine what method of seeding is used. The following sections define several methods of seeding that will be used over the Conservation Area under particular circumstances. As-built plans will be prepared for each area to document the methods used.

Imprint Seeding

Most areas that have very dense weed species and few native species will be seeded by imprinting the seeds. Areas of shallow soil and the presence of rocks will limit the use of imprinting. Prior to imprinting an area, and as part of site preparation, soil will be ripped or tilled to prepare the seed bed.

Imprinting will apply the specific seed mix and specified AM fungi amendments at the same time through separate gandy boxes:

- 60 liters L/ac of AM fungi,
- specified seed mix for each area.

Range Drill Seeding

Range drill seeding will be implemented where the occurrence of native species is somewhat high, making ripping and tilling undesirable methods for site preparation. Range drill seeding can be accomplished over mowed stubble if the thatch is not too thick. In some case the thatch may be broken down by with a light disc prior to drill seeding. Drill seeding will be accomplished by dividing the seed mix in tow equal parts and applying each half of the seed mix in perpendicular passes with the range drill seeder.

Drill seeding will apply the specific seed mix and specified AM fungi amendments at the same time through separate gandy boxes, and with light seeds and heavy seeds separated into separate gandy boxes:

- 60 liters L/ac of AM fungi,
- specified seed mix for each area.

Hydroseeding

In areas that are not accessible by imprinter or drill seeder, a two-step hydroseeding technique shall be used to the apply seed. In the first step, a hydraulic application of a slurry mixture containing water, cellulose wood fiber, seed, and AM fungi will proceed as follows:

- 500 pounds lbs/ac of virgin cellulose wood fiber,
- 60 liters L/ac of AM fungi,
- specified seed mix for each area.

The second step will consist of the following slurry mixture:

- 1500 pounds/acre of virgin cellulose wood fiber, and
- 160 pounds lbs/ac M-binder.

Pruning and Staking

There will be no pruning or staking of any vegetation. Diseased or insect-damaged foliage, if sufficient to require pruning, will serve as a benchmark for rejection of plant material.

F. Irrigation Plan

Supplemental irrigation is to be used solely for the purpose of establishing the plants at the Mitigation Site and is of a temporary nature. The goal of the irrigation program is to obtain germination and growth with the least amount of irrigation. Frequent irrigation encourages weed invasion and leaches nutrients from the soil.

The Mitigation Areas will be initially supported by a short-term irrigation system as well as from existing water sources. Drip irrigation may be provided for trees and shrubs planted on the slopes. The container stock will be irrigated as long as necessary to establish the root systems in the native soils, probably two or three summers. The main line will be installed below-grade. All lateral lines will be installed above-grade for ease of removal and inspection.

The critical period for irrigation is during the first winter and early spring following planting. During this time, roots are not well established and an unseasonable drought can cause high mortality. During dry periods after plant installation, the Project Biologist and the maintenance contractor will regularly inspect soil moisture. Watering during the summer dry season will occur as frequently as required.

After the initial plant establishment period, water will be applied infrequently and only as required to prevent the mortality of plants and seedlings. The irrigation methods employed will attempt to mimic wet rainfall years by incorporating evenly spaced, infrequent, deep applications of water.

When the plantings are sufficiently established and no longer require supplemental irrigation, the Project Biologist shall notify the landscape contractor to remove all above-grade irrigation system components from the Mitigation Sites. Irrigation shall be stopped two years prior to achieving the success criteria.

No irrigation will be provided to the restored areas that were temporarily impacted as there was no vegetation in those areas to begin with. Areas undergoing enhancement will also not receive irrigation.

G. As-Built Conditions

Once the implementation of the Mitigation Sites has been completed, the Applicant will submit "As-Built" drawings to the Corps, CDFG and RWQCB within 45 days after completion of construction. The drawings will identify the date installation was completed and if there were any deviations from the approved mitigation plan.

V. MAINTENANCE ACTIVITIES DURING THE MONITORING PERIOD

A. Maintenance Activities

The purpose of this program is to ensure the success of the mitigation plantings. Maintenance will occur over the five-year life of the project. The Project Biologist will monitor all aspects of the revegetation in an effort to detect any problems at an early state. Potential problems could arise from irrigation failure, erosion, vandalism, competition from weeds and invasive species, and unacceptable levels of disease and predation.

These maintenance guidelines are specifically tailored for native plant establishment. The maintenance personnel will be fully informed regarding the habitat establishment program so they understand the goals of the effort and the maintenance requirements. A restoration contractor with experience and knowledge in native plant habitat restoration will supervise all maintenance personnel.

For a period of 120 days following completion of the planting installation, the restoration contractor will be responsible for the care of the plantings. The purpose of the 120-day establishment period is to ensure continuity between the installation of the plant material and its short-term maintenance. The contractor's presence during this period is proven to increase project success. The contractor will control the spread of weed species and identify any efforts necessary to ensure the health and survival of the plantings.

Following the 120-day establishment period the project will be evaluated for health of plant material, and if judged satisfactory by the Project Biologist, the establishment period will be considered concluded and the long-term habitat maintenance program will begin. A different restoration contractor may implement this period of maintenance; however, the Project Biologist will continue to review the project's success.

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired or replaced immediately.

General Maintenance

The Contractor will perform the following tasks as general maintenance duties:

- Plant Inspection
- Weed control
- Irrigation water volume and frequency
- General maintenance of irrigation system
- Trash and debris removal
- Pest control
- Plant replacement

Plant Inspection

After initial planting, the Project Biologist will check the Mitigation Areas on a monthly basis through the 18th month. The plants shall be inspected on a quarterly basis thereafter.

Weed Control

The Mitigation Areas shall be maintained free of weeds during the monitoring period. Weed eradication will minimize competition that could prevent the establishment of native species. All maintenance personnel will be trained to distinguish weed species from native vegetation to ensure only weedy species are removed or sprayed with herbicide.

As weeds become evident, they should be immediately removed by hand or controlled with an appropriate herbicide as determined by a licensed Pest Control Advisor (PCA). Weed debris shall be removed from the project area as accumulated and disposed of as permitted by law.

Weeds shall be manually removed before they can attain a height of 12-inches at intervals of not more than 30 days for the first two years of the project. All portions of the plant will be removed, including the roots. The Project Biologist shall direct the contractor regarding the selection of target weed species, their location, and the timing of weed control operations to ensure that native plants are avoided to the extent possible. Pulled weeds will be placed on a "mantilla" or other type of tarp to prevent the seeds from coming in contact with the ground.

Irrigation Water Volume and Frequency

The contractor shall be responsible for applying sufficient irrigation water to adequately establish new plant materials, and germinate and establish the applied seed. Irrigation water shall be applied in such a way as to encourage deep root growth (periodic deep irrigation versus frequent light irrigation). The contractor will allow soil to dry down to approximately 50- to 60-percent of field capacity (in the top six or 10 inches after germination and during seedling establishment) before the next irrigation cycle. Wetting of the full root zone and drying of the soil between irrigation events is essential to the maintenance of the plants and the promotion of a deep root zone that will support the vegetation in the years after establishment. Systems may need to be on for as long as six to eight hours at a time in order to get complete water penetration to the lower soil horizons to encourage deep root growth. A soil probe or shovel shall be used to examine soil moisture and rooting depth directly.

General Maintenance of Irrigation System

The contractor will be responsible for the regular maintenance and repair of all aspects of the irrigation system. Poorly functioning or non-functioning parts shall be replaced immediately so as to not endanger the plantings.

General system checks shall be conducted no less than weekly for the first month after installation to assure the system is functioning correctly, and monthly thereafter, except during periods when the irrigation system is not in operation as recommended by the Project Biologist.

Any erosion or slippage of soil caused by the contractor's inadequate maintenance or operation of irrigation facilities shall be repaired by the contractor at his/her expense.

Trash and Debris Removal

The Mitigation Areas shall be well maintained in order to deter vandalism and dumping of trash. The contractor is responsible for avoiding impacts to plantings during trash removal activities.

Contractor shall, during daily routine maintenance, manually remove weeds, litter, trash, and debris from the Mitigation Areas and dispose of off-site as permitted by law. Dead limbs and tree fall shall be left in place in the revegetation areas.

Pest Control

Young trees and shrubs will be monitored for signs of disease, insect and/or predator damage, and treated as necessary. Badly damaged plants will be pruned to prevent spreading of the pestilence or replaced in kind if removed. Excessive foraging by predators may necessitate protective screening around plants. The Project Biologist will be consulted on any pest control measures to be implemented.

Plant Replacement

The installation contractor will be responsible for replacing all container stock plants terminally diseased or dead for 120 days after plant installation. The long-term maintenance contractor will thereafter replace all dead and/or declining plants in the winter months as recommended by the Project Biologist. Replacement plants shall be furnished and planted by the contractor at his/her expense.

Replacement plants shall conform to the species, size requirements, and spacing as specified for the plants being replaced. The replacement plants shall be purchased from inventory at the same native plant nursery as were the contract-grown plant stock.

Fertilization

If nutrient deficiencies are observed during site monitoring, the Project Biologist may specify applications of slow-release pellet fertilizer or soil amendments to speed initial growth or as a remedial measure. These applications shall occur at the onset of the rainy season following the manufacturer's recommendations. Fertilizer will not be applied other than under the direction of the Project Biologist.

Pruning

No pruning is necessary unless otherwise specified by the Project Biologist. Dead wood shall be left on trees or where it has fallen as it plays an important role in habitat creation and soil formation.

B. Responsible Parties

The Applicant will be responsible for financing and carrying out maintenance activities.

Transportation Corridor Agencies
Contact: Maria Levario
125 Pacifica
Irvine, CA 92618
Telephone: (949) 754-3400

C. Maintenance Schedule

The restoration maintenance and monitoring program will begin with the construction process and continue for five years following the completion of plant installation or until performance criteria are met. Table 22 below indicates the schedule of maintenance inspections.

TABLE 25 Maintenance Schedule					
Maintenance Task	Year				
	1	2	3	4	5
Plant Inspection	Monthly first 12 months	Monthly through 18th month; quarterly thereafter	Quarterly	Quarterly	Quarterly
Irrigation System Inspection	Monthly, or more frequently if required	Monthly	As Required	N/A	N/A
Trash and Debris Removal	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Weed Control	Minimum of Monthly	Monthly	Quarterly	Quarterly	Quarterly
Pest Control	Monthly	Bi-monthly	Quarterly	Quarterly	Quarterly
Plant Replacement	Annually	Annually	Annually	Annually	Annually
Fertilization (if necessary)	Annually	Annually	N/A	N/A	N/A

VI. MONITORING PLAN FOR THE COMPENSATORY MITIGATION AREAS

A. Performance Standards for Target Dates and Success Criteria

In order to assure that the mitigation performance standards are met, the mitigation areas shall be qualitatively monitored annually after installation for four years. Photo-documentation at permanent points will be conducted for inclusion in the annual performance monitoring report. In the fifth year, the site shall be monitored quantitatively to determine if each restoration area achieves the performance standards. Monitoring will consist of random transects over each restoration area. The number of samples necessary will be evaluated to ensure statistical confidence based on variation over the site.

Performance Standards are based on the stated goals of the program, the design of the Mitigation Areas, and functional assessment criteria. This mitigation program considers the functions of both the jurisdiction to be impacted and proposed mitigation jurisdiction to confirm that the functions of the replacement mitigation equal or exceed those of existing Corps jurisdiction. These Performance Standards have been developed to assess an increase in functions and values of each habitat. Performance will be assessed as the mitigation areas develop trends in cover, species diversity, as well as soil development so that the habitat quality of the site is restored. Specifically, the restoration will be considered successful when the following criteria are met for each habitat type:

1. Performance Criteria for Wet Meadow, Southern Willow Woodland, Mule fat Scrub, Freshwater Marsh, Arroyo Willow Forest, ,

First-Year Monitoring

Success Standard: A minimum of 35-percent relative coverage by native species;
No greater than 20-percent coverage by non-native species.

Second-Year Monitoring

Success Standard: A minimum of 50-percent relative coverage by native species;
No greater than 20-percent coverage by non-native species.

Third-Year Monitoring

Success Standard: A minimum of 75-percent relative coverage by native species;
No greater than 15-percent coverage by non-native species;
Hybrid Functional Assessment Score for riparian habitats is 60-percent of expected (as referenced in Table 8);
A minimum of six species native to the target habitat types must represent 0.5-percent (each) of the total vegetational composition within the revegetation areas, with no single species representing over 75-percent composition;
Microtopographic complexity is at least 75-percent of reference site;
Habitat heterogeneity is at least 75-percent of reference site

Fourth-Year Monitoring

Success Standard: A minimum of 80-percent relative coverage by native species;
No greater than 15-percent coverage by non-native species.

Fifth-Year Monitoring

Success Standard: A minimum of 90-percent relative coverage by native species;
No greater than 10-percent coverage by non-native species.
Hybrid Functional Assessment Score for riparian habitats is 100-percent of expected (as referenced in Table 8)
At least 0.82 acres exhibit hydric soils, wetland hydrology, and hydrophytic plant community;
A minimum of six species native to the target habitat types must represent 0.5-percent (each) of the total vegetational composition within the revegetation areas, with no single species representing over 75-percent composition;.
Microtopographic complexity is at least 75-percent of reference site;
Habitat heterogeneity is at least 75-percent of reference site

2. Performance Criteria for Native Grassland Buffers

Perennial Grasslands and Grassland/Forbs

Success Standard:

- The site does not require significant maintenance measures during the last two years of the establishment period as documented by the restoration specialist's annual monitoring report;
- The native grasses set seed;
- AM fungi establishment on the site is demonstrated by root colonization of 90 percent of seedlings randomly sampled over the site;
- The habitat resists invasion by exotic plant species as demonstrated by less than 25 percent cover of annual grass species and less aggressive exotic forbs. There shall be no aggressive, invasive exotic species, such as *Cynara cardunculus*. The relative cover of native plant species is at least 60 percent; and
- The site demonstrates 80 percent of the native species richness found in the reference habitat in the Conservation Area;

3. Performance Criteria for Riparian Oak/Elderberry Woodland and Ephemeral Drainage Enhancement

Riparian Oak/Elderberry Woodland

Success Standard:

- The site does not require significant maintenance measures during the last two years of the establishment period as documented by the restoration specialist's annual monitoring report;
- At least 60 percent of container plants have survived in the site in the fifth year of monitoring based on information from quantitative monitoring;

- AM fungi establishment on the site is demonstrated by root colonization of 90 percent of understory seedlings randomly sampled over the site;
- The habitat resists invasion by exotic plant species as demonstrated by less than 25 percent cover of annual grass species and less aggressive exotic forbs. There shall be no aggressive, invasive exotic species, such as *Cynara cardunculus* and *Nicotiana glauca*; and
- The relative cover of native plant species is at least 75 percent with at least 5 percent cover from oak saplings and elderberry shrubs.

The Mitigation Areas will be monitored for five years following the completion of mitigation installation unless final success criteria are met prior to that point in time. The monitoring program will consist of the measurement of performance indicators and the assessment of these indicators relative to established performance criteria.

If the cover requirements have not been met, the Applicant is responsible for augmenting the mitigation areas with the appropriate seed and/or plants to achieve these requirements. Replacement plants and seeding shall be monitored with the same survival and growth requirements for five years after planting.

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

Survivorship of Container Stock

Many of the species proposed for the mitigation program exhibit vegetative reproduction, making identification of the original container stock problematic. Therefore, survivorship is not considered to be a useful indicator of success. Rather, total cover, habitat patchiness and diversity will be the criteria used to determine success for the vegetation.

Functionality as Wildlife Habitat

While conducting qualitative surveys, the Project Biologist will record wildlife observations within the revegetated habitat. The development of quantitative measures for wildlife use is not necessary for these Mitigation Areas, but general impressions of wildlife usage of any restoration area should be considered among the success criteria.

Native Plant Recruitment

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

Probability of Continued Habitat Progression

The qualitative monitoring will provide the Project Biologist with an opportunity to evaluate the progression of the revegetation sites towards maturity. This determination will be used to support a final decision as to whether the revegetation effort has been successful. If several of the above criteria have not been met, but the site is clearly nearing satisfaction of those criteria, the Project

Biologist may suggest that the Corps, CDFG, RWQCB and CCC accept the mitigation as completed based on professional experience and expectations of continuing habitat progression.

B. Target Functions and Values

The Applicant proposes to establish 33.40 acres of wetland/riparian habitat within Mitigation Areas A, B, C and D and restore 184.0 acres of upland buffer in Mitigation Areas A,B and C, for a total of 217.4 acres as compensation for permanent impacts to a total of 6.27 acres of Corps jurisdiction, of which 0.82 acres consist of jurisdictional wetlands, 23.08 acres of CDFG jurisdiction of which 20.37 consists of riparian habitat, 7.95 acres of isolated waters of the State and 0.46 acres of CCC wetlands.

Based on the HFA approach, the Proposed Project will cause the loss of 455.81 Functional Units. Following implementation of this HMMP, the mitigation areas will support 556.24 Functional Units, which results in a net increase of 100.43 Functional Units. Please see Appendix D for a complete description and explanation of the Hybrid Functional Assessment for both pre-project and post-project scores.

Temporary impact areas including 9.44 acres of Corps jurisdiction, 9.49 acres of RWQCB jurisdiction, 14.61 acres of CDFG jurisdiction, 7.70 acres of CCC jurisdiction and 0.14-acre of southern willow scrub mitigation within the re-aligned Talega Basin will be restored at a 1:1 ratio.

C. Target Hydrological Regime

Hydrological contribution to the Mitigation Areas will originate as direct precipitation that will drain directly to the site. Hydrological input is also expected to consist of runoff from bordering areas, groundwater supply, and artificial irrigation. The enhanced hydrology within the Mitigation Areas is expected to provide for dynamic storage of surface water, short-term storage of surface water, dissipation of energy, moderation of groundwater flow, nutrient cycling, removal of imported elements and compounds, retention of particulates, and export of organic carbon.

The mitigation plantings will initially be supported by a temporary irrigation system until gradually weaned. Irrigation water will be supplied via a potable water system piped into the Mitigation Areas.

D. Target Jurisdictional and Non-jurisdictional Acreages to be Established, Restored, Enhanced, and/or Preserved

Target jurisdiction to be established within the proposed Mitigation Areas consists of up to 33.40 acres of southern willow woodland, mule fat scrub, oak/elderberry riparian woodland and wet meadow supported by groundwater, overbank flows from the adjacent drainages portions, and artificial irrigation. Upon completion of this mitigation program, it is anticipated that 15.90 acres of habitat creation within Mitigation Area A will meet the definition of a waters of the U.S. and/or State, and that 17.5 acres of habitat creation/restoration within Mitigation Areas B, C and D will meet the definition of CDFG jurisdictional riparian habitat and streambed enhancement. A

minimum of 0.82 acre will meet wetland criteria (equaling a 1:1 replacement ratio for wetland impacts). Approximately 16.1 acres of the proposed mitigation is expected to meet the criteria for a 1-parameter CCC wetland.

All wet meadow, southern willow woodland, mule fat scrub, and Chiquita Creek enhancement areas are expected to meet the Corps requirement for 90-percent coverage of native species after five years with no single plant species composing more than 75-percent composition of each Mitigation Area, and no more than 10-percent non-native plant species within the Mitigation Areas.

Temporary impact areas including 9.44 acres of Corps jurisdiction, 9.49 acres of RWQCB jurisdiction, 14.61 acres of CDFG jurisdiction, 7.70 acres of CCC jurisdiction and 0.14-acre of southern willow scrub mitigation within the re-aligned Talega Basin will be restored at a 1:1 ratio.

E. Monitoring Methods

Monitoring will assess the attainment of annual and final success criteria and identify the need to implement contingency measures in the event of failure. Monitoring methods include an annual tally of dead and/or declining plant stock, and visual estimates of cover as well as field sampling techniques that are based in accordance with the methodology developed by the California Native Plant Society (CNPS).⁹ Please refer to *A Manual of California Vegetation* for further details on this sampling method.

1. Sampling Methods for Wet Meadow, Southern Willow Woodland, Mule Fat Scrub and Chiquita Creek Enhancement

Sampling Techniques For Vegetation Cover and Diversity

Percent canopy cover of the mitigation plantings will be measured by using the point-intercept sampling method centered in a 2-meter by 50-meter plot. At each 0.5-meter interval along each transect (beginning at the 50-cm mark and ending at 50-meter), a point is projected vertically into the vegetation. Each plant species intercepted by a point is recorded, providing a tally of hits for each species in the herbaceous, shrub, and tree canopies, making it possible to record more than 100 hits in any 50-meter transect. Percent cover for each species, according to vegetation layer (herb, shrub, and tree) can be calculated from these data. A list of all additional species within the 250 square-meter belt is subsequently made. Two 2-meter by 50-meter long transects per acre will be used to monitor the development of the revegetation. The various transects will be randomly located for the first sampling event and permanently marked to facilitate their use in subsequent years.

A sample of a proposed transect data sheet is provided in Appendix B.

Sampling Techniques For Microtopographic Complexity

Microtopographic Complexity will be evaluated by direct observation, comparing the reference sites with Mitigation Sites. Microtopographic complexity will be measured during performance of

⁹ Sawyer, John O. and Todd Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society.

vegetation transects, recording number of hummocks/mounds and depressions along with the change in topographic relief by class.

Sampling Techniques For Habitat Heterogeneity

Beginning with year three of the five-year monitoring program, vegetation patchiness will be evaluated by comparison with the reference site. Characterization of habitat heterogeneity or patchiness is greatly dependent upon scale and will be based upon direct visual observations made during performance of quantitative sampling.

Hybrid Functional Assessment

All mitigation sites will be evaluated for hydrologic function, biogeochemical function and habitat function using 21 metrics including: percentage of assessment area with buffer, average width of buffer, buffer condition, land use/land cover, water source, hydroperiod, floodplain connection, altered hydraulic conveyance, surface water persistence, flood prone area, sediment regime, topographic complexity, substrate condition, vertical biotic structure, interspersed and zonation, ratio of native to non-native, canopy, age distribution, riparian vegetation condition, riparian corridor continuity and invasive plant species. Appendix D includes the scoring methodology for each metric.

Photo-Documentation

Locations for photo-documentation will be established during the first annual monitoring event. Photos shall be taken each monitoring period from the same vantage point and in the same direction each year, and shall reflect material discussed in the annual monitoring report.

Jurisdictional Delineation

All mitigation sites will be evaluated for the presence of definable channels and/or wetland vegetation, soils and hydrology. Suspected wetland habitats will be evaluated using the methodology set forth in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual and Interim 2006 Arid Southwest Supplement¹⁰ (Wetland Manual).

Qualified habitat restoration specialists, biologists, or horticulturists with appropriate credentials and experience in native habitat restoration shall perform monitoring. Continuity within the personnel and methodology of monitoring shall be maintained insofar as possible to ensure comparable assessments.

2. Sampling Methods for Perennial Grassland

Vegetation Sampling

Vegetation sampling in perennial grassland habitats will utilize the point-intercept method to estimate vegetation cover and species diversity. This method is best suited to measure grassland habitats, and it will provide the most efficient and reliable method for estimating cover and species composition over the mitigation site.

¹⁰ Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Mississippi.

Locations of the transects will be randomly selected within each restoration area. At each randomly selected site, a 25-meter point intercept transect will be performed with points at every 5 meters. A 25-meter tape will be stretched taut, perpendicular to the main line at the randomly selected locations. At each 5 meter mark, a 1/2 meter quadrat will be placed. Native and non native plant cover will be estimated and entered into a hand-held computer. Data to be recorded will include the species present with quadrats, and native and non native vegetative cover in relative percent.

Additionally, the restoration area will be walked and a list prepared of all species observed. This species list will be reported in the annual report in addition to the transect data.

3. Sampling Methods for Riparian Oak/Elderberry Woodland

Vegetation Sampling

Vegetation sampling in oak woodlands will utilize belt transects to measure vegetation cover. This method is best suited to measure woodland vegetation, and it will provide the most efficient and reliable method for estimating cover and species composition over the sites.

Locations of the belt transects will be randomly selected within each restoration area. At each randomly selected site, a 25-meter x 2 meter belt transect will be performed. A 25-meter tape will be stretched taut, perpendicular to the main line at the randomly selected locations. Data to be recorded will include the species within the belt transect, and estimate of understory cover, and the height and cover of tree species will be recorded. Annual grasses will be grouped together in one measurement and species of annual grasses will be noted.

Cover data will be reported for understory species as an estimate of relative cover. Cover for tree species will be reported as absolute cover based on the volume of sampled trees. Each tree canopy within the belt will be measured from two perpendicular diameter measurements. Frequency data will be reported as the percent of transects a species is reported to occur in. Height data will be reported as the average height of the tree species.

Additionally, the restoration area will be walked and a list prepared of all species observed. This species list will be reported in the annual report in addition to the transect data. The percent survivorship of tree species will be determined from direct counts over the site.

4. Sampling Methods for Ephemeral Drainage Enhancement

Vegetation sampling for non-wetland drainages will utilize belt transects across the drainage to estimate vegetation cover. This method is best suited to measure the swale and bank vegetation, and it will provide the most efficient and reliable method for estimating cover and species composition over the drainages.

Locations of the belt transects will be randomly selected within each restored drainage. At each randomly selected site, a 2 meter belt transect will be performed. A meter tape will be stretched across drainages as a cross section. Data to be recorded will include the species within the belt

transect, and estimate of understory cover, and the height and cover of tree species will be recorded. Annual grasses will be grouped together in one measurement and species of annual grasses will be noted.

Cover data will be reported for understory species as an estimate of relative cover. Cover for tree species will be reported as absolute cover based on the volume of sampled trees. Each tree canopy within the belt will be measured from two perpendicular diameter measurements. Frequency data will be reported as the percent of transects a species is reported to occur in. Height data will be reported as the average height of the tree species.

Additionally, the restoration area will be walked and a list prepared of all species observed. This species list will be reported in the annual report in addition to the transect data.

F. Monitoring Schedule

Qualitative Monitoring

The Project Biologist will conduct qualitative monitoring surveys on a monthly basis for the first 6 months, quarterly for the next twelve months, and annually thereafter for the remainder of the monitoring period. Qualitative surveys, consisting of a general site walkover and habitat characterization, will be completed during each monitoring visit. General observations, such as fitness and health of the planted species, pest problems, weed establishment, mortality, and drought stress, will be noted in each site walkover. Permanent photo monitoring points will be selected to represent each area and habitat within the mitigation sites.

The Project Biologist will also note observations on wildlife use and native plant recruitment for the purpose of later discussion in the annual reports. Records will be kept of mortality and other problems such as insect damage, weed infestation, and soil loss. The Project Biologist will determine remedial measures necessary to facilitate compliance with performance standards. All remedial measures undertaken will be referenced in the annual monitoring report to the Corps, CDFG, RWQCB and CCC.

Quantitative Monitoring

The quantitative vegetation sampling will be conducted annually and will provide sufficient data to determine performance relative to the performance criteria described in Section VI.1 above.

G. Annual Monitoring Reports

At the end of each of the five monitoring period growing seasons, for the duration of the monitoring period, an annual report will be prepared for submittal to the Corps, CDFG, RWQCB and CCC. Since planting may not occur when planned, monitoring shall be tied to the actual implementation date (e.g., the first annual report shall be delivered on January 1st of the year following the first growing season after planting). These reports will assess both attainment of yearly target success criteria and progress toward final success criteria. These reports shall include the survival and/or replacement of tree and shrub container stock, percent cover of native vegetation, overall visual estimates of the heights of both tree and shrub species, and diversity data. These reports will also

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 copy of the Corps permit, CDFG agreement, RWQCB 401 Certification and waste discharge requirements (WDR), and any attachments including Special Conditions and subsequent Letters of Modification;
- a vicinity map indicating location of the Mitigation Areas;
- a Mitigation Site map identifying habitat types, transect locations, photo station locations, etc. as appropriate;
- copies of all monitoring photographs;
- copies of all completed field data sheets; and
- and an analysis of all qualitative and quantitative monitoring data

VII. COMPLETION OF COMPENSATORY MITIGATION

A. Notification of Completion

The Applicant should notify the Corps, CDFG, RWQCB and CCC in writing when the monitoring period is complete and the Corps and CDFG-approved success criteria have been met. A formal jurisdictional delineation of established wetlands should be submitted with the report (this delineation shall be accompanied by legible copies of all field data sheets), if applicable. If wetlands are not established, a delineation of non-wetland waters of the U.S. and other areas enhanced, restored, established, or preserved shall be submitted to the Corps, CDFG, and RWQCB.

B. Final Success Criteria Resolution

If the project meets all success criteria at the end of the five-year monitoring period, the revegetation will be considered a success. If not, the maintenance and monitoring program will be extended one full year at a time, and a specific set of remedial measures approved by the Corps will be implemented until the standards are met. Only those areas that fail to meet the success criteria will require additional monitoring. This process will continue until all year-five standards are met or until the Corps, CDFG, RWQCB and CCC determine that other revegetation measures are appropriate.

Final success criteria will not be considered to have been met until a minimum of two years after artificial irrigation has ceased. Should the revegetation effort meet all goals prior to the end of the five-year monitoring period, the Corps, CDFG, RWQCB, and CCC at their discretion, may terminate the monitoring effort. At that time the Applicant will be released from further maintenance and monitoring requirements of the mitigation area.

If, during the monitoring period, a destructive natural occurrence does occur which damages or destroys the mitigation planting, and if the mitigation planting was documented to have been proceeding well toward establishment, then reconstruction and replanting will not be required. However, if the Mitigation Areas fare significantly worse than the surrounding natural communities in this same natural disaster, then the Mitigation Areas would be considered to have not established itself, and reconstruction, replanting, and monitoring would continue.

C. Agency Confirmation

Following receipt of the final annual monitoring report, the Corps, CDFG, RWQCB, and CCC will contact the Applicant as soon as possible to schedule a site visit to confirm the completion of the mitigation effort and any jurisdictional delineation. The mitigation will not be considered complete without an on-site inspection by a Corps, CDFG, RWQCB and CCC project manager and written confirmation that approved success criteria have been achieved.

It is therefore critical that agency staff review annual reports on a timely basis and provide comments throughout the maintenance and monitoring program so that any project deficiencies they note can be addressed prior to the expected end of the program.

VIII. CONTINGENCY MEASURES

A. Initiating Procedures

If a performance standard is not met for all or any portion of the mitigation project in any year, or if the approved success criteria are not met, the Project Biologist will prepare an analysis of the cause(s) of failure and, if determined necessary by the Corps, RWQCB, CDFG and/or CCC, propose remedial actions for approval. If the compensatory mitigation site has not met one or more of the success criteria or performance standards, the responsible party's maintenance and monitoring obligations shall continue until the Corps, RWQCB, CDFG and CCC give final approval the mitigation obligations have been satisfied. It is therefore incumbent upon the Project Biologist to foresee project deficiencies as part of the monitoring program and take appropriate steps to address the situation.

B. Alternative Locations for Contingency Mitigation

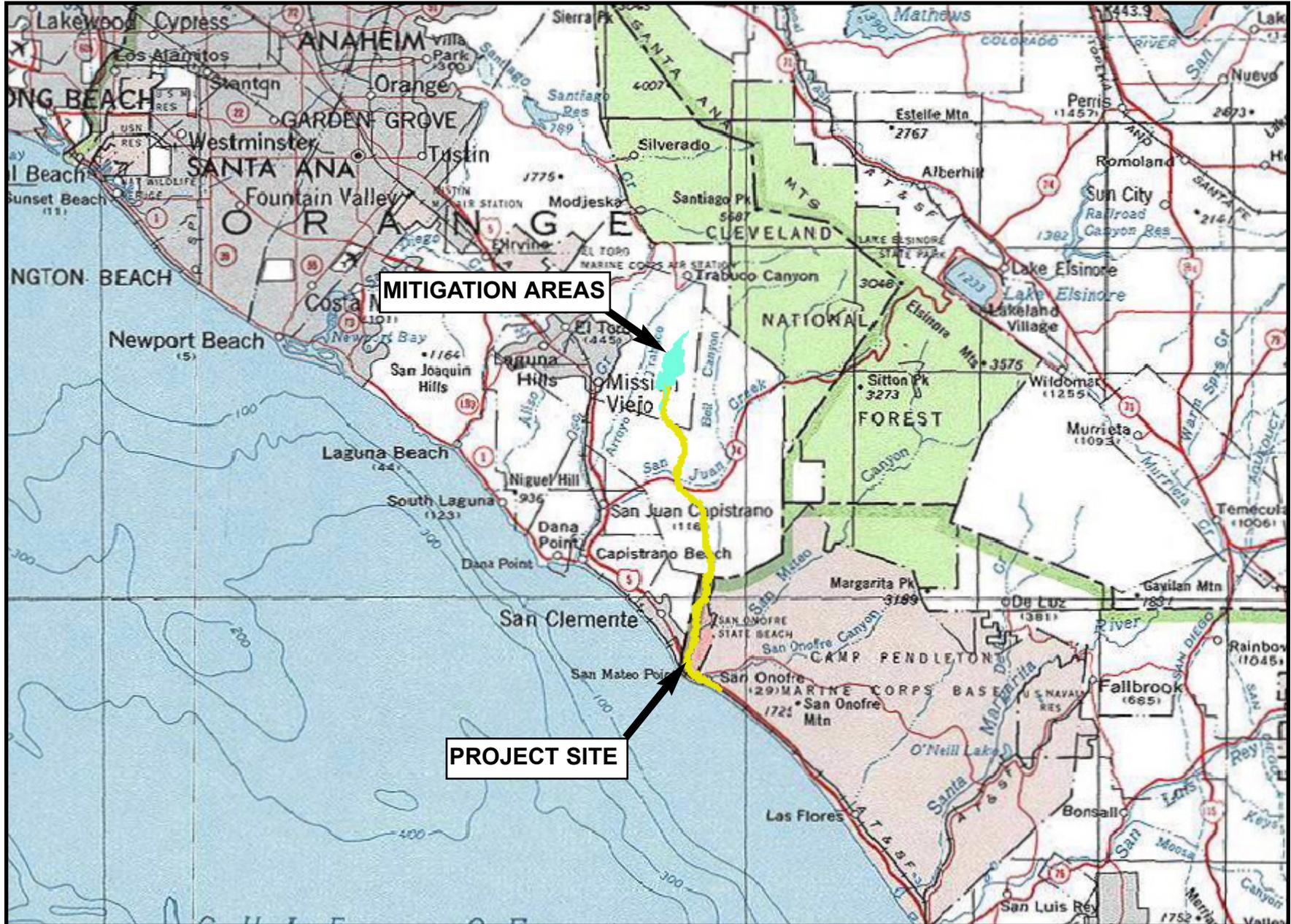
Sufficient acreage for creation of the Mitigation Areas is available so alternative locations would be unnecessary. Although this plan is expected to be successful, other alternative locations may be used in the event that revegetation cannot be achieved.

C. Funding Mechanism

The Applicant will fund planning, implementation, maintenance and monitoring of any contingency measures that may be required to achieve mitigation goals.

Adapted from USGS Santa Ana quadrangle

NORTH
↑



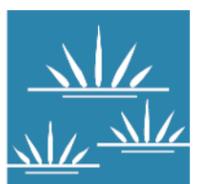
SOCTIIP

Regional Map

GLENN LUKOS ASSOCIATES

EXHIBIT 1

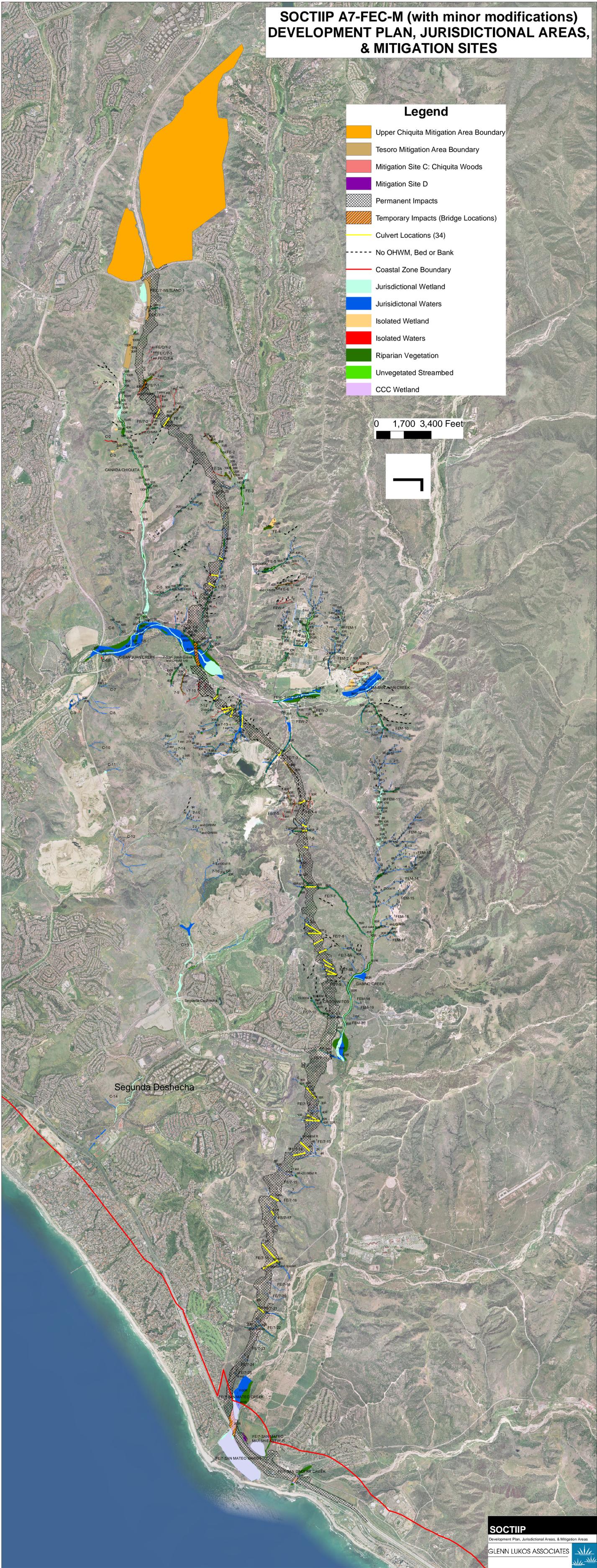


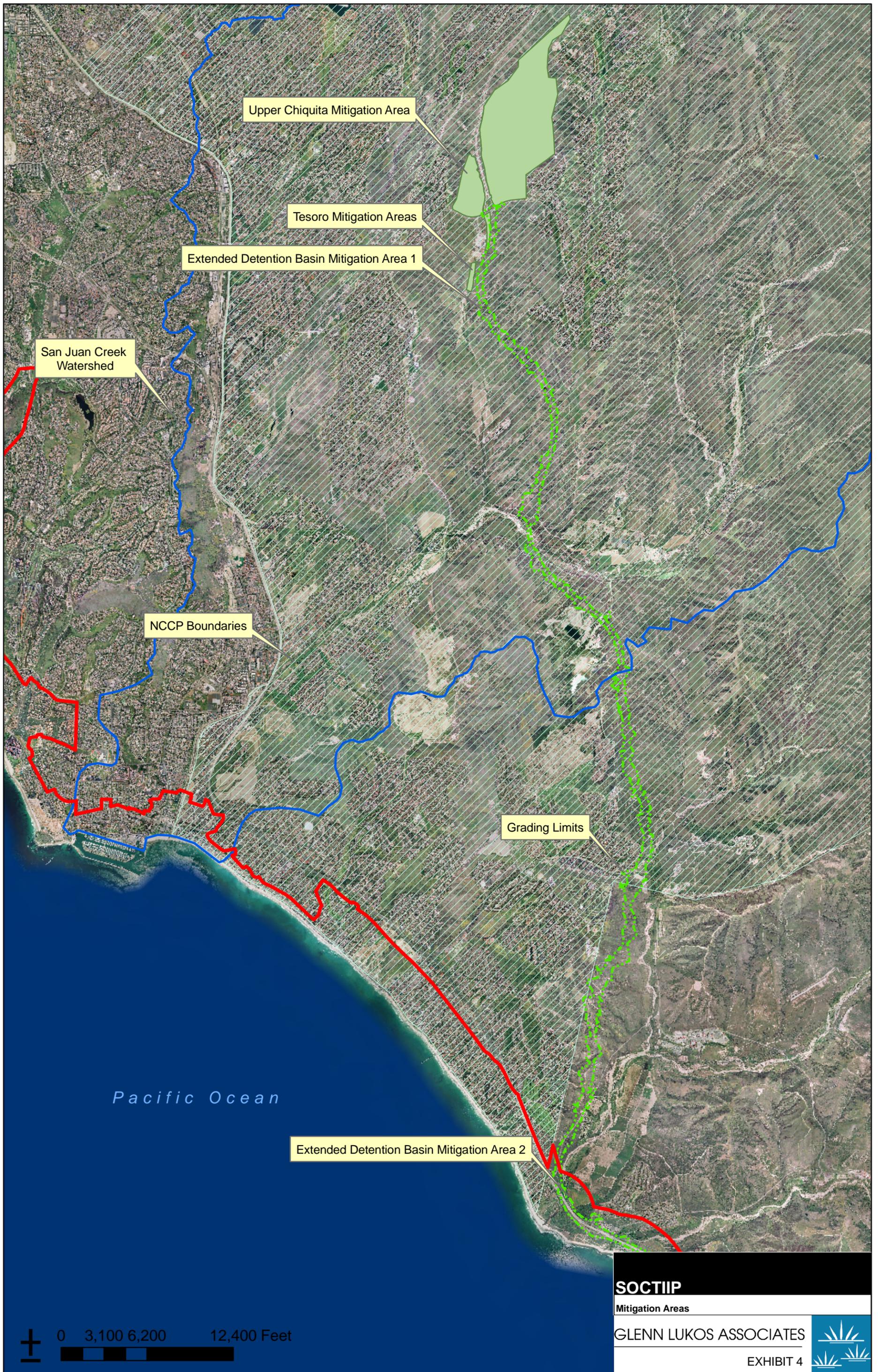


SOCTIP A7-FEC-M (with minor modifications) DEVELOPMENT PLAN, JURISDICTIONAL AREAS, & MITIGATION SITES

- ### Legend
- Upper Chiquita Mitigation Area Boundary
 - Tesoro Mitigation Area Boundary
 - Mitigation Site C: Chiquita Woods
 - Mitigation Site D
 - Permanent Impacts
 - Temporary Impacts (Bridge Locations)
 - Culvert Locations (34)
 - No OHWM, Bed or Bank
 - Coastal Zone Boundary
 - Jurisdictional Wetland
 - Jurisdictional Waters
 - Isolated Wetland
 - Isolated Waters
 - Riparian Vegetation
 - Unvegetated Streambed
 - CCC Wetland

0 1,700 3,400 Feet





Proposed Vegetation

- Riparian Oak Woodland (0.88 Acres)
- Existing Vegetation
- Mulefat Scrub (3.06 Acres)
- Southern Willow Woodland (4.66 Acres)
- Wet Meadow (7.31 Acres)
- CSS/Native Grassland Buffer (4.90 Acres)
- Tesoro Mitigation Area Boundary

Total Tesoro Mitigation - 20.80 Acres
(Previous Plan Totalled 14.40 Acres)

0 200 400 800 Feet



Existing Vegetation

- Annual grassland
- Cleared or graded
- Coast live oak woodland
- Wet meadow
- Dryland field crops
- Southern arroyo willow riparian forest
- Transportation

SOCTIIP

Tesoro Mitigation Plan

GLENN LUKOS ASSOCIATES

EXHIBIT 5





Proposed Vegetation

-  Candidate Riparian Oak Woodland Restoration Areas
-  Native Perennial Grassland Restoration Area



SOCTIIP

Upper Chiquita Restoration Areas

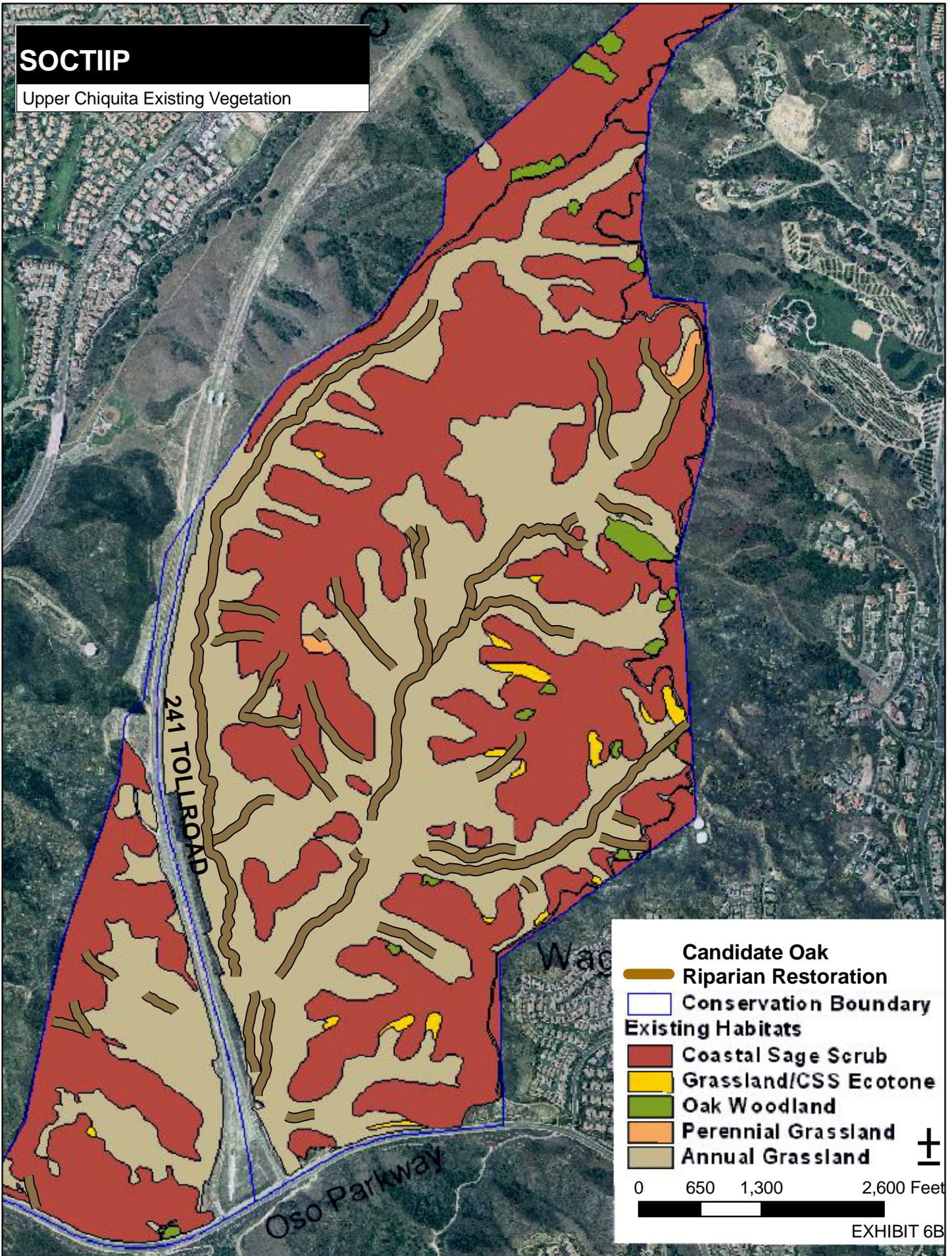
GLENN LUKOS ASSOCIATES

EXHIBIT 6A



SOCTIP

Upper Chiquita Existing Vegetation



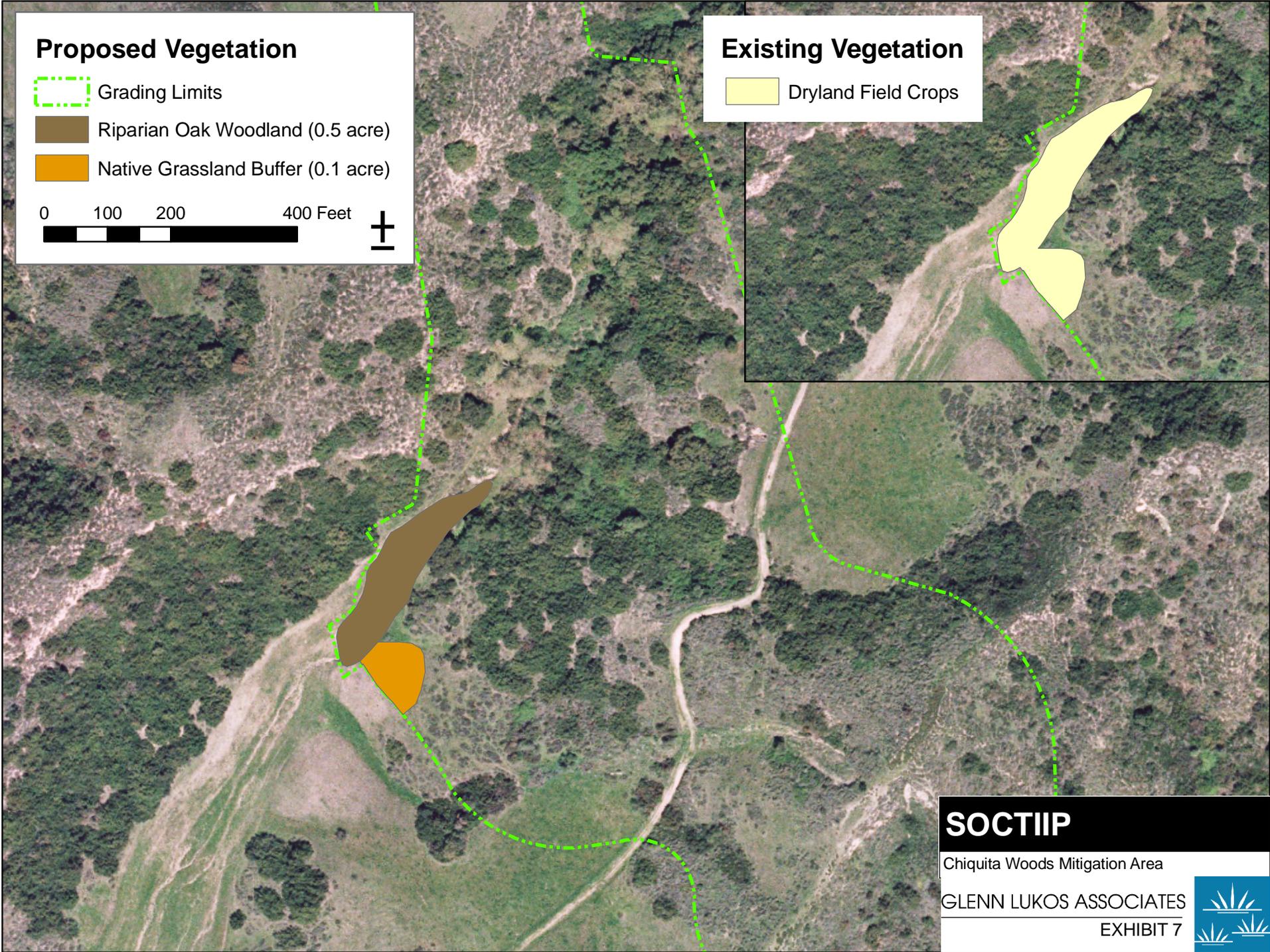
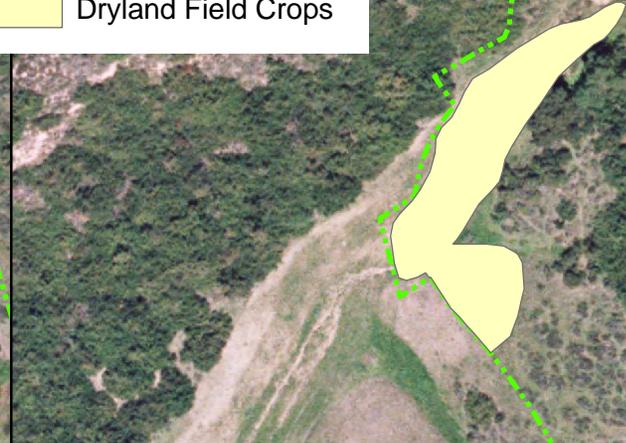
Proposed Vegetation

- Grading Limits
- Riparian Oak Woodland (0.5 acre)
- Native Grassland Buffer (0.1 acre)



Existing Vegetation

- Dryland Field Crops



SOCTIP

Chiquita Woods Mitigation Area

GLENN LUKOS ASSOCIATES

EXHIBIT 7



Proposed Vegetation



Disturbance Limits



Southern Willow Woodland (1.0 acre)

0 200 400 800 Feet



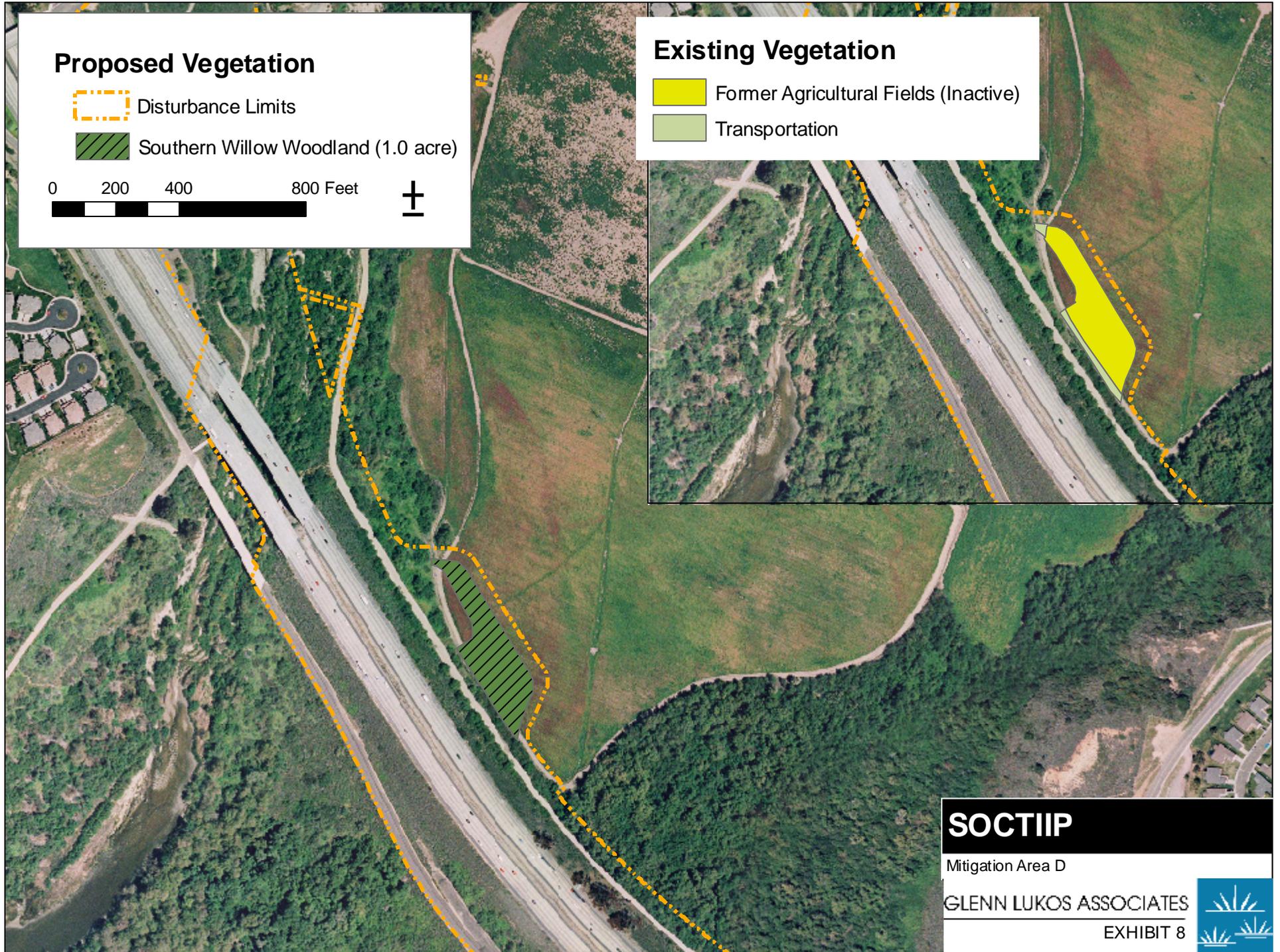
Existing Vegetation



Former Agricultural Fields (Inactive)



Transportation



SOCTIIP

Mitigation Area D

GLENN LUKOS ASSOCIATES

EXHIBIT 8

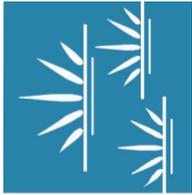




PHOTOGRAPH 1: Representative photo of the native perennial grassland restoration area within the Upper Chiquita Mitigation Area.



PHOTOGRAPH 2: Looking northeast at the drainages proposed for riparian oak woodland restoration in the distance.



GLENN LUKOS ASSOCIATES

EXHIBIT 9A



SOCTIIP

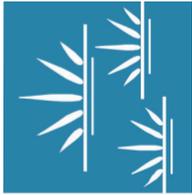
Mitigation Site Photographs



PHOTOGRAPH 3: Representative photo of one the photos proposed for riparian oak woodland restoration.



PHOTOGRAPH 4: Looking southwest at one of the drainages proposed for riparian oak woodland restoration.



GLENN LUKOS ASSOCIATES

EXHIBIT 9B

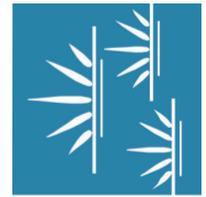




PHOTOGRAPH 5: Representative photo of the Tesoro South Mitigation Area illustrating the existing gap in the riparian canopy proposed for mitigation.



PHOTOGRAPH 6: Looking southwest at the existing riparian vegetation and adjacent non-native, ruderal vegetation proposed for removal within Tesoro South.



GLENN LUKOS ASSOCIATES

EXHIBIT 9C

SOCTIIP

Mitigation Site Photographs



PHOTOGRAPH 7: Representative photo of the Tesoro North Mitigation Area.

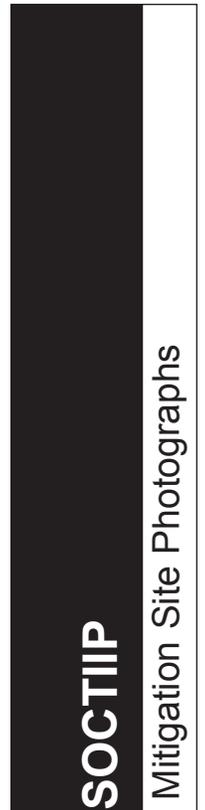


PHOTOGRAPH 8: Looking southeast at the area proposed for oak/elderberry woodland restoration within Tesoro North.



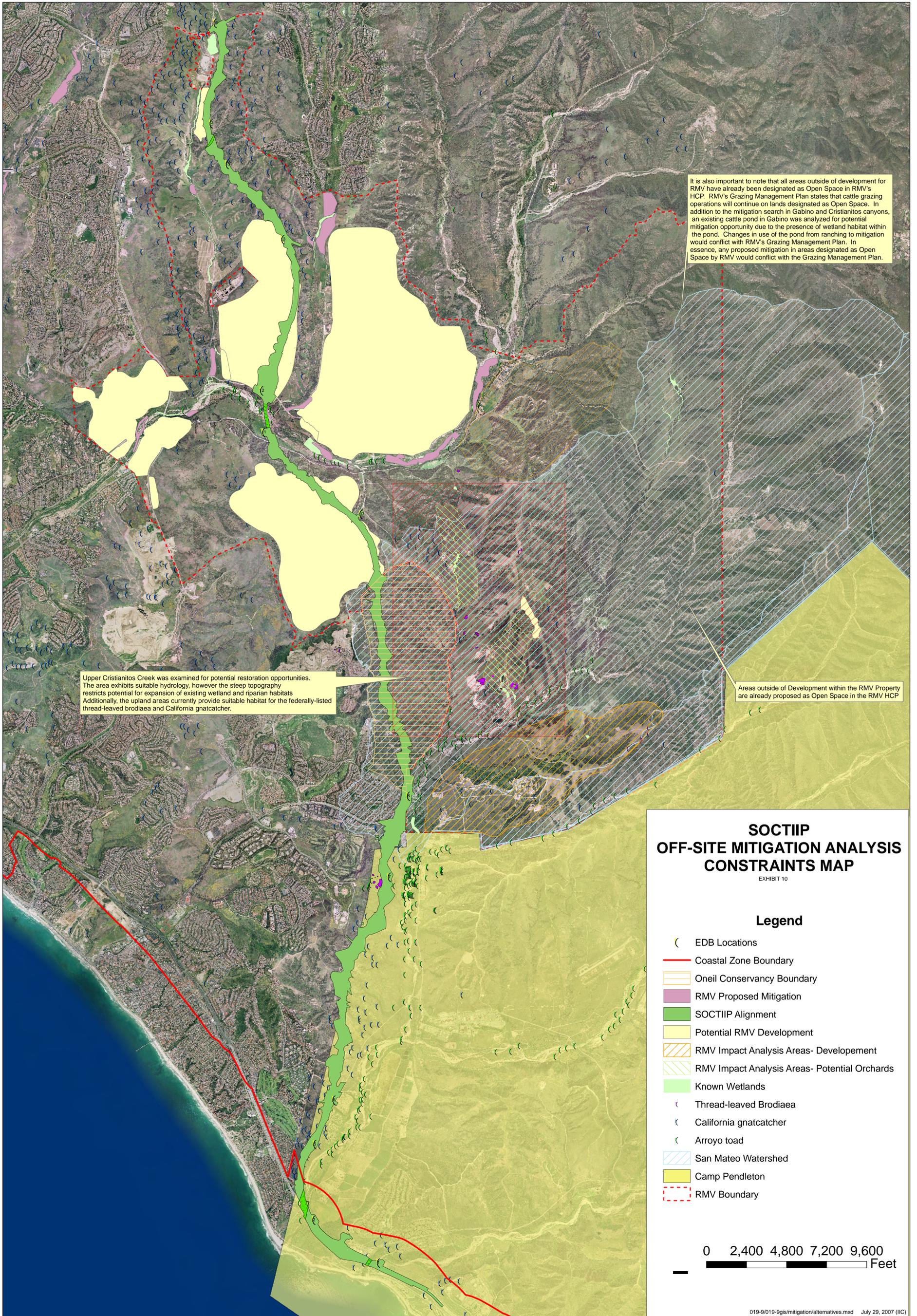
GLENN LUKOS ASSOCIATES

EXHIBIT 9D



SOCTIIP

Mitigation Site Photographs



It is also important to note that all areas outside of development for RMV have already been designated as Open Space in RMV's HCP. RMV's Grazing Management Plan states that cattle grazing operations will continue on lands designated as Open Space. In addition to the mitigation search in Gabino and Cristianitos canyons, an existing cattle pond in Gabino was analyzed for potential mitigation opportunity due to the presence of wetland habitat within the pond. Changes in use of the pond from ranching to mitigation would conflict with RMV's Grazing Management Plan. In essence, any proposed mitigation in areas designated as Open Space by RMV would conflict with the Grazing Management Plan.

Upper Cristianitos Creek was examined for potential restoration opportunities. The area exhibits suitable hydrology, however the steep topography restricts potential for expansion of existing wetland and riparian habitats. Additionally, the upland areas currently provide suitable habitat for the federally-listed thread-leaved brodiaea and California gnatcatcher.

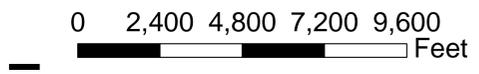
Areas outside of Development within the RMV Property are already proposed as Open Space in the RMV HCP

SOCTIIP OFF-SITE MITIGATION ANALYSIS CONSTRAINTS MAP

EXHIBIT 10

Legend

- (EDB Locations
- Coastal Zone Boundary
- Oneil Conservancy Boundary
- RMV Proposed Mitigation
- SOCTIIP Alignment
- Potential RMV Development
- RMV Impact Analysis Areas- Development
- RMV Impact Analysis Areas- Potential Orchards
- Known Wetlands
- (Thread-leaved Brodiaea
- (California gnatcatcher
- (Arroyo toad
- San Mateo Watershed
- Camp Pendleton
- RMV Boundary



Appendix A

Distribution Page of all Persons/Agencies Receiving a Copy of the Mitigation and Monitoring Plan, As-Built Reports, and Annual Reports

Susan Meyer
U.S. Army Corps Of Engineers
Regulatory Branch
P.O. Box 532711
Los Angeles, California 90053-2325

Jeremy Haas
San Diego Regional Water Quality Control Board
9174 Sky Park Court
Suite 100
San Diego, California 92123-4340

Naeem Siddiqui
California Department of Fish and Game
4665 Lampson Avenue
Suite J
Los Alamitos, California 90720

Mark Delaplaine,
Manager, Energy, Ocean Resources and Federal Consistency Division
State of California - California Coastal Commission
45 Fremont, Suites 1900 and 2000
San Francisco, CA 94105-2219

Appendix B

Samples of Monitoring Data Sheets

**MONITORING SHEET -
QUALITATIVE EVALUATION**

Project Name: _____

Date: _____

Recorders: _____

Plant Health - General

Are there visible signs of nutrient/water deficiencies? If yes, then describe:

Are there signs of regeneration/reseeding?

Is vandalism harming plant health or project success?

Are there any signs of herbivory?:

Other:

Container Stock

Provide visual estimation percent survival of container stock:

Are watering basins intact?:

Is mulch from original installation still present? Is there litter development?:

Seeded Species

Are all intended native species present? If not, then what is missing?:

Are there any occurrences of volunteer native species?:

Are there any unvegetated areas? Should these be remediated?:

Weeds

Is excessive competition from weeds affecting desired species?:

Is there adequate maintenance/weed clearing?:

Other:

Soils

Are there any signs of soil development?:

Other:

Irrigation System

Are irrigation heads functioning properly?:

Are there any signs of rodent damage to irrigation system?:

Are there any signs of vandalism to the irrigation system/controller box?:

Are there any signs of excessive runoff?:

Does irrigation frequency and volume require adjustment?

Other:

Is there any indication that wildlife is using the site?:

Recommendations for Remediation:

Draft
Upper Chiquita Canyon Conservation Area
Comprehensive Habitat Restoration Plan

Prepared for:

TRANSPORTATION CORRIDOR AGENCIES
125 Pacifica
Irvine, California, 92618
Contact: Maria Levario
(949) 754-3482

Prepared by:

EARTHWORKS Restoration, Inc.
2116 Arlington Avenue, Suite 301
Los Angeles, CA 90018
Contact: Margot Griswold
(323) 735-3225

October 2006

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SECTION 1 – OVERVIEW AND EXISTING CONDITIONS

1.1 OVERVIEW

This plan documents the rationale, methods and performance standards for the comprehensive restoration of the Upper Chiquita Canyon Conservation Area (Conservation Area). The restoration of the Conservation Area, located in southern Orange County, California, is proposed as part of the amendment to the existing Upper Chiquita Canyon Bank Agreement. The existing conservation bank was established when the Transportation Corridor Agencies (TCA) purchased the conservation easement for Upper Chiquita Canyon. The Conservation Area, located in southern Orange County, California is shown in Figure 1. Under the initial bank agreement, 327 conservation credits were established for existing coastal sage scrub habitat within the Conservation Area. Each conservation credit represents one acre of occupied coastal sage scrub habitat value and can be used toward future TCA projects. The amendment to the conservation bank Agreement establishes additional credits for the restoration and enhancement of appropriate habitats within the Conservation Area. These restored habitats include, coastal sage scrub, native grassland/coastal sage scrub ecotone, native perennial grassland, oak woodland/oak savannah, native forb and native forb/perennial grassland, riparian non-wetland watercourses, and rare plant transplantation.

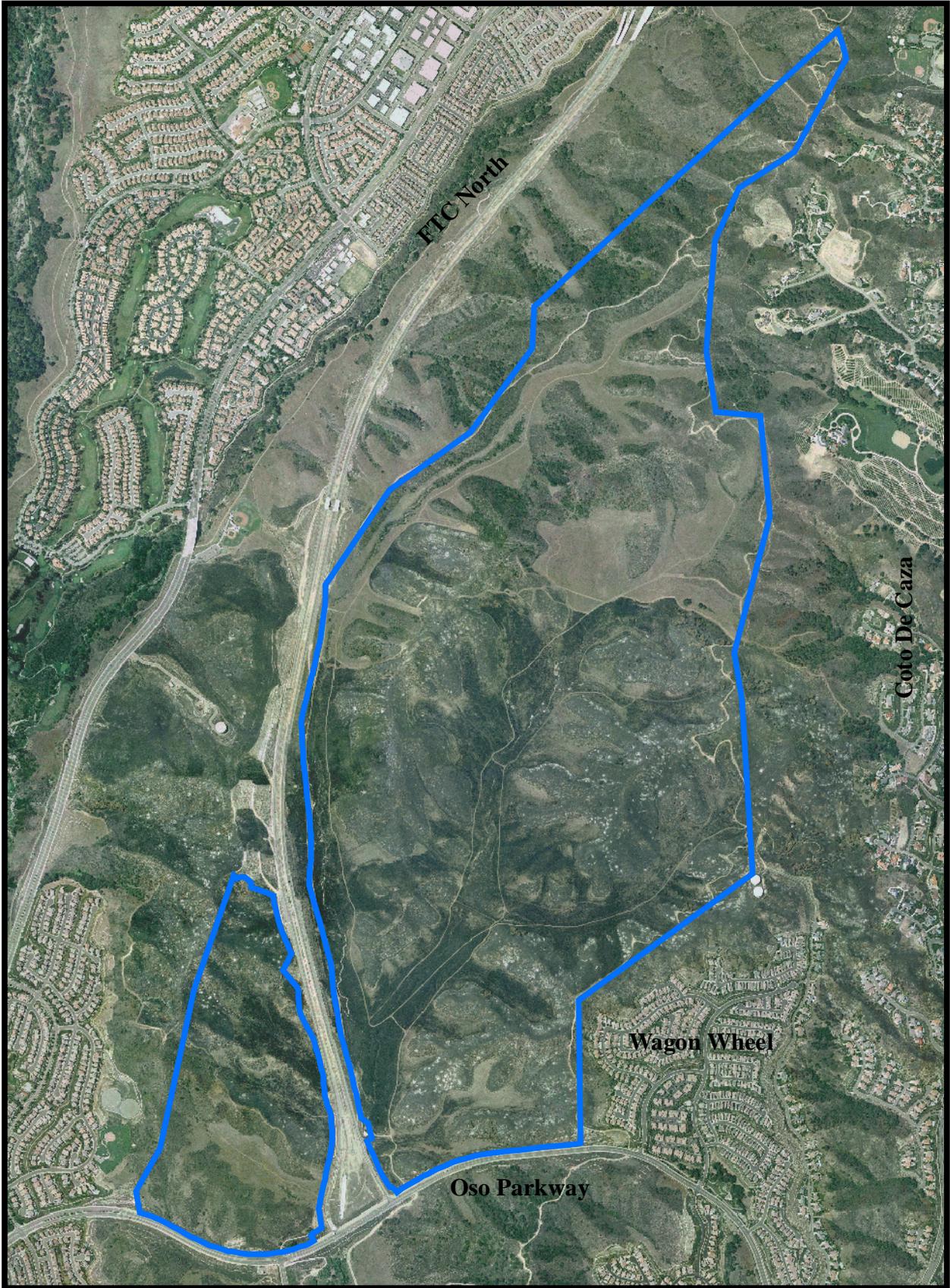
This section documents the existing vegetation within the Conservation Area. Sections 2 and 3 provide an analysis of soil conditions across the Conservation Area, define the specific locations of proposed habitat restoration, and outline the specifications for the habitat restoration. Performance standards are provided for each restored habitat. Conservation credits for each restored habitat will be certified once the habitats achieve the defined performance standards.

1.2 EXISTING VEGETATION

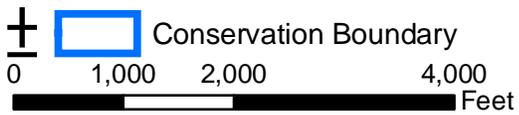
Chiquita Canyon Conservation Area is a 1,158 acre site made up of north-south orientated narrow to broad valleys between rolling hills. Elevations of the site range between 670 to 1,217 feet above sea level. The Conservation Area currently supports four different plant communities: annual grasslands, coastal sage scrub, oak woodlands, and perennial grasslands. Additionally, some areas are ecotones that transition from annual grasslands to coastal sage scrub. Figure 2 shows the existing vegetation.

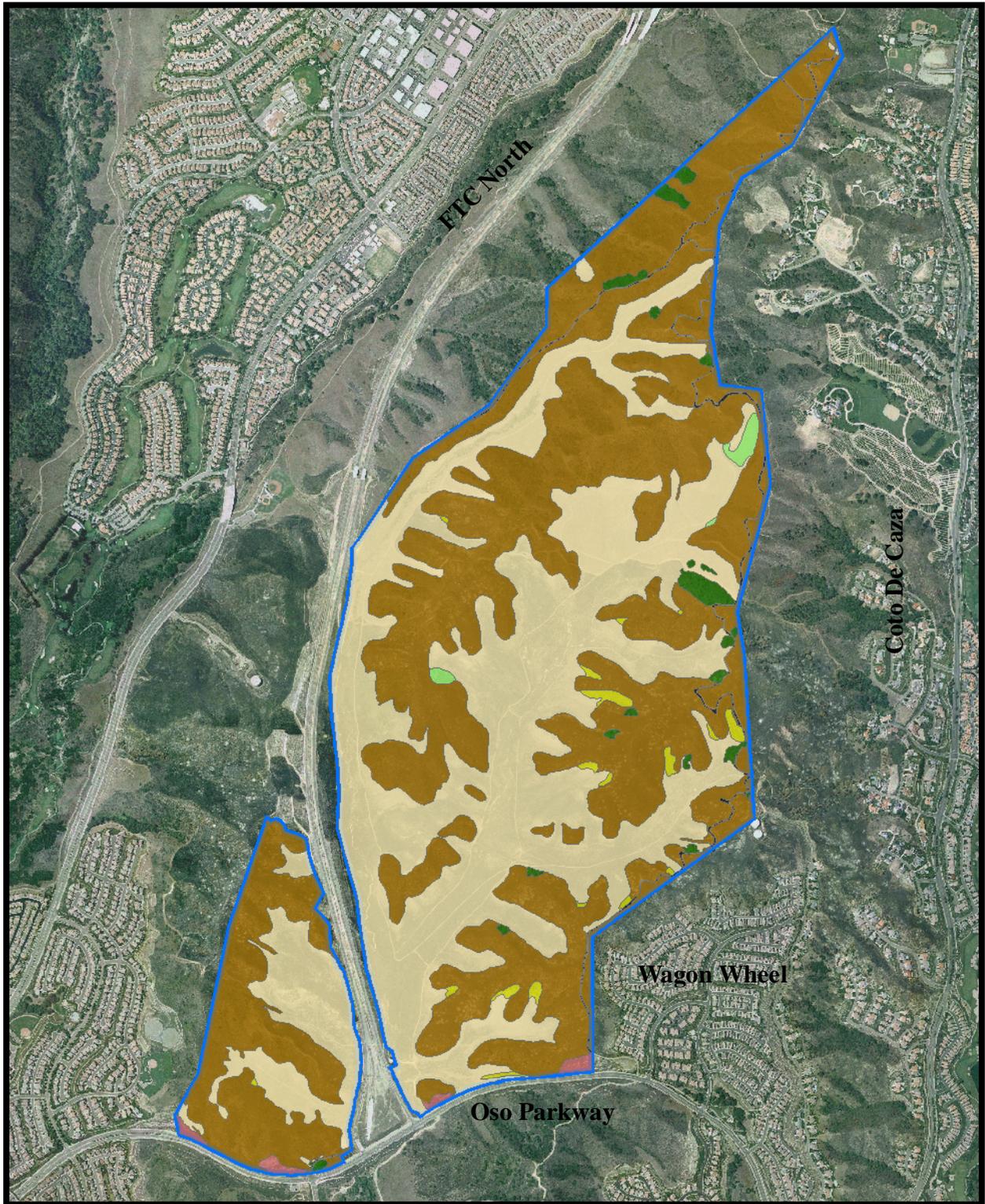
The Conservation Area has experienced three fires in the last ten years. The site had not burned for at least 50 years prior to these recent fires. In August of 1996, a fire affected approximately 98 acres of annual grasslands, coastal sage scrub, and oak woodland communities. This burn area is located on north and south facing ridgelines in the far northern part of the site between Coto de Caza and upper Tijeras Creek. In May 1997, 114 acres burned and affected coastal sage scrub, annual grasslands, oak woodland communities, and perennial grasslands. This burn area is located on the eastern side of the Chiquita Canyon Conservation Area, adjacent to Coto de Caza. In May 2002, the southern and central portions of Chiquita Canyon burned totaling 715 acres and affecting all of the plant community types. None of the burn areas overlap.

The native habitats are well into recovery with little to no maintenance measures, especially for the 2002 burn area. The Conservation Area now supports vegetation communities of mixed age structure, including mature unburned communities, and communities in various stages of fire recovery.



Chiquita Canyon Conservation Area
Figure 1

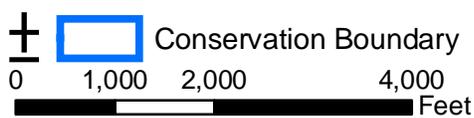




Chiquita Canyon Conservation Area
Existing Habitats

Figure 2

Existing Habitats



1.2.1 Annual Grasslands

Annual grasslands cover approximately 547 acres in the Conservation Area (See Figure 2). They occur because of historic disturbance from dry land farming, which cleared existing vegetation and disked the soils for cattle grazing purposes. The farming and grazing allowed the exotic grasses to invade and dominate the site even after the cessation of these practices. The annual grasslands are located in the valley and lower slopes of Chiquita Canyon on flat to gently sloping areas.

Annual grasslands are dominated by exotic annual grasses primarily from the Mediterranean region. This plant community is recognized as non-native grasslands (Holland 1986) or as California annual grassland series (Sawyer et al. 1995). Common grasses in this grassland include ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordaceus*), red brome (*Bromus madritensis* ssp. *rubens*), wild oats (*Avena barbata* and *A. fatua*), fescue (*Vulpia myuros*), and in heavier soils or moister areas, Italian ryegrass (*Lolium multiflorum*). Other exotic and annual forb species that occur in the annual grasslands within the Conservation Area include wild radish (*Raphanus sativus*), burclover (*Medicago polymorpha*), filaree (*Erodium cicutarium*), smooth cat's ear (*Hypochaeris glabra*), mustard (*Hirschfeldia incana*), and prickly lettuce (*Lactuca serriola*). Native forbs are also found in these annual grasslands and include dove weed (*Eremocarpus setigerus*), fiddleneck (*Amsinckia menziesii* var. *intermedia*), wire lettuce (*Stephanomeria virgata*), ragweed (*Ambrosia psilostachya*) and telegraph weed (*Heterotheca grandiflora*).

Because this plant community is mainly at the lowest elevations, it also supports drainage patterns that range from incised channels with depths of approximately 20 feet to flat impoundment areas. These drainages are described separately in the next section. The annual runoff in these drainages are highly ephemeral and do not support any native obligate wetland vegetation. The soils are not classified as wetland soils. Therefore, these drainages are classified as non-wetland watercourses. These drainages vary in the density of native species with sparse mulefat (*Baccharis salicifolia*), as well as elderberry (*Sambucus mexicana*), toyon (*Heteromeles arbutifolia*) and coast live oak (*Quercus agrifolia*) interspersed with coastal sage scrub species and areas of dense annual grasses.

Burned Annual Grasslands

In August of 1996, approximately 0.2 acre of annual grasslands was burned. On May 29, 1997, 34.4 acres of annual grasslands burned in Chiquita Canyon Conservation area. The May 2002 burn affected 382.8 acres of annual grasslands. Post 2002-fire assessments were conducted in June-July 2002. No live vegetation survived the fire (Harmsworth 2003). By mid-August 2002, exotic and native species reflective of pre-fire taxa colonized the site. In March of 2004, these areas had re-established as annual grasslands as described above.

1.2.2 Coastal Sage Scrub

Coastal sage scrub is a rare plant community in southern California (O'Leary 1989). In the Chiquita Canyon area, coastal sage scrub is identified as Diegan Coastal Sage Scrub (Westman 1983a) or Venturan Coastal Sage Scrub (Axelrod 1978). Holland (1986) classifies this community as Diegan Coastal Scrub. Sawyer et al (1995) classifies

different series of coastal scrub and series found on the Conservation Area, based on transect data (Harmsworth 2000; 2003), include California sagebrush – California buckwheat series, mixed sage series, and California buckwheat series. Common shrub species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), coast prickly-pear cactus (*Opuntia littoralis*), monkeyflower (*Mimulus aurantiacus*), lemonadeberry (*Rhus integrifolia*), poison oak (*Toxicodendron diversilobum*), and white and black sages (*Salvia apiana* and *S. mellifera*). Within the mature coastal sage scrub in the Conservation Area, the occurrence of herbaceous species (native or exotics) varies according to rainfall in given years. Exotic annual brome grasses, including soft chess and red brome, and mustard occur at higher cover levels in wetter years and low cover levels in dry years. Appendix I shows the results of transect data in relatively wet and dry years. Native needlegrass bunch grasses (*Nassella lepida* and *N. pulchra*) also occur between the shrubs at low cover levels.

The coastal sage scrub community is located on the ridgelines and steeper slopes of the Conservation Area. This community covers approximately 631 acres. Figure 2 shows the distribution of the coastal sage scrub community across the site.

Burned Coastal Sage Scrub

Because of the various burn in the Conservation Area, changes in the coastal sage scrub community have been documented. In August of 1996, approximately 16 of coastal sage scrub were burned. In May 1997, 75.3 acres of coastal sage scrub burned. The May 2002 burn affected 324.2 acres of coastal sage scrub.

The most recent data were collected in 2003 on species composition of coastal sage scrub in the 1996, 1997 and 2002 burn areas (Harmsworth 2004). In the 1996 burn areas, over half of the vegetative cover was exotic species including red brome (29.6%), mustard (14.6%), and soft chess (8.2%). California sagebrush was the most dominant cover of native shrub (17.1%), while laurel sumac (*Malosma laurina*) had 13.7% cover and black sage had 7.1% cover. Three native species are now present in this area that were not detected in the 1998 transects. These species include the perennial giant wild rye (*Leymus condensatus*), and two annual species, Artemisia-leaved pincushion (*Chaenactis artemisifolia*) and littleseed muhly (*Muhlenbergia microsperma*).

The 1997 burned area also has over half of the cover vegetated by exotics including red brome (34.8%) mustard (11.9%), and ripgut (8.5%). California sagebrush was the most dominant cover of native shrub (34.6%), while California buckwheat had 22.7% cover and black sage had 11.5% cover. Two native and one exotic species are now present in this area that were not detected in the 1998 transects. The native species include the one perennial species, rattlesnake weed (*Chamaesyce albomarginata*) and one annual species, wire lettuce (*Stephanomeria virgata*). The exotic species is Italian thistle (*Carduus pycnocephalus*).

The 2002 burn area is still in mid burn recovery, and is dominated by deerweed and wild morning-glory with typical sage scrub shrubs beginning to make up more of the cover, including California sagebrush, sticky monkeybush, black and white sage, and California buckwheat. Exotic species cover is lower in the 2002 burn area than in the 1996 and 1997 areas. Two native species are now present in the area, that were previously undetected. They are jimson weed (*Datura wrightii*) and California brickelbush (*Brickellia californica*).