Alta La Jolla Drive Drainage Repair Project, Phase 2

Compensatory Mitigation and Monitoring Plan

June 2015

Prepared for:
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1 Description of the Project/Impact Site

1.1 Responsible Parties

The responsible party for the Alta La Jolla Drainage Repair Project Phase 2 (SCH No 2010081080) is the City of San Diego (City).

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Geosyntec Consultants is serving as the agent for the City of San Diego on the Section 404 Individual Permit application for the Project and Rocks Biological Consulting prepared this Compensatory Mitigation and Monitoring Plan.

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1.2 Location of Project

The Alta La Jolla Drive Drainage Repair Project Phase 2 Project (Project) and compensatory mitigation area are located at the terminus of Vickie Drive in the southern portion of the La Jolla community of San Diego, California, within the County of San Diego (approximately 32° 49′ 7″ 117° 14′ 38″) (Figure 1).

1.3 Summary of Overall Project

The Project, which is being constructed in two phases, is located within a privately-owned open space canyon that is surrounded by dense residential housing. Storm water and non-storm water flows from surrounding urbanized areas discharge into an ephemeral drainage in the Project via four storm drain outlets and overland flow. Over the past few decades, the drainage became severely incised due to storm water and non-storm water runoff; threatening the stability of the slopes and adjacent homes in the northwestern boundary of the Project area.

REGIONAL VICINITY MAP
ALTA LA JOLLA DRIVE DRAINAGE
REPAIR PROJECT, PHASE 2

San Diego, California.

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Figure **1**

* ESRI WORLD STREET MAP

Due to the slope stability concerns, emergency repairs (Phase 1) were initiated and carried out by La Jolla Alta Master Council, the local homeowner's association, in 2008 to stabilize the northern portion of the Project.

Phase 1 was conducted between October 2007 and March 2008 under a U.S. Army Corps of Engineer (Corps) Regional General Permit (RGP) 63 (issued October 8, 2007). Phase 1 construction stabilized the northwestern canyon slope and diverted runoff entering the Project from three of the storm drain outlets into three separate storm drain pipes. Phase 1 was completed by Land Design Consultants (LDC) under contract with La Jolla Alta Master Council. In 2008, the City and La Jolla Alta Master Council settled a lawsuit over repair and maintenance of the Alta La Jolla Drive drainage channel. A Settlement Agreement dated February 5, 2008 between La Jolla Alta Master Council and the City, requires that the City repair La Jolla Alta Canyon to prevent potential slope failures and to manage water flows in a non-erosive manner, limiting future erosion problems and decreasing maintenance requirements. The Settlement Agreement provided the City with an easement through the canyon to conduct the channel repairs and provide ongoing maintenance. The City's portion of the project is identified as Phase 2. Phase 2 includes finalizing the drainage repairs, obtaining the required environmental and development permits for the entire Project, and performing compensatory mitigation through restoration of the site. Geosyntec Consultants (Geosyntec) is completing the design and permitting portions of Phase 2 activities for the City.

Phase 2 is being carried out by the City in compliance with the Statement of Decision of the Superior Court of the State of California on case number GIC 822281. A full description of the project and biological impacts assessment can be found in the *Focused Survey Report La Jolla Alta Canyon Restoration, La Jolla, California* (LDC, 2007; Phase 1) and the *Alta La Jolla Drive Drainage Repair Project, Phase 2 Biological Resources Report* (Rocks Biological Consulting, 2009).

The Project area consists of approximately 7.9 acres of open space vegetated with native and non-native vegetation, including the sensitive upland habitats, Diegan Coastal Sage Scrub and Non-native Grassland; and one sensitive species, the federally-listed threatened Coastal California Gnatcatcher (*Polioptila californica californica*). The ephemeral drainage channel that flows from north to south within the canyon bottom receives water from two storm drain tributaries flowing west to east, and one storm drain tributary flowing from east to west. The three storm drain tributaries transmit storm water and non-storm water flows from urbanized areas surrounding the Project. The urbanized and natural areas north of the Project drain to the ephemeral channel via two storm drains under Alta La Jolla Drive. The ephemeral channel drains to a 48 inch culvert located at the southern site boundary of the Project at the northern terminus of Vickie Drive. All flows from the Project and this watershed continue in the City storm drain which discharges into the Pacific Ocean at Tourmaline Beach, approximately 1.5 miles southwest of the Project.

Corps Other Waters of the U.S. (OWUS) and California Department of Fish and Game (CDFG) jurisdictional areas are present along the drainage. Impacts on 0.20 acre (0.12 acres of temporary impacts; 0.08 acre of permanent impacts) of Corps OWUS and 0.59 acre of CDFG jurisdictional areas are expected with implementation of the proposed Project (Figure 2). A total of 0.35 acres (1,270 LF channel) of jurisdictional waters with improved function and value

will be created and/or restored as part of this Project and will serve as compensatory mitigation for impacts on Corps jurisdictional areas (Figures 3-4).

In addition to compensatory mitigation for impacts to Corps jurisdictional areas, Project impacts (Phase 1 and 2) on 1.82 acres of Diegan Coastal Sage Scrub and 1.25 acres of Non-Native Grassland will be mitigated in accordance with City of San Diego Biology Guidelines resulting in a net gain of native habitat within the Project site. Approximately 3.22 acres of the eastern portion of the site is located within the City's Multiple Habitat Planning Area (MHPA). Project boundaries, biological resources, and other features are shown on Figures 3 and 4. The Alta La Jolla Drive Drainage Repair Project (combined Phase 1 and Phase 2) has or will impact a total of 8.72 acres of land. In addition to impacts on sensitive Coastal Sage Scrub and Non-Native Grassland habitats, the Project will impact: 1) 4.55 acres Ruderal; 2) 1.01 acres Invasives; and 3) 0.19 acre of developed/disturbed lands. Within 90 days of project completion, the site will be re-vegetated with 6 acres of Diegan Coastal Sage Scrub, and the remainder of the lands will be planted with native riparian and transition species as outlined in section 4.6 of this document.

1.4 Jurisdictional Areas to be Filled

Temporary loss of approximately 0.20 acres (1,340 LF) of jurisdictional waters will occur during earthwork activities to restore the incised drainage and tributary channels (Figure 2). Approximately 0.06 acres (1,060 LF) and 0.02 acres (190 feet) of jurisdictional waters have been or will be permanently filled during Phase 1 and Phase 2, respectively, associated with diversion of flows into storm drain pipes to maintain slope and channel stability. No Corps jurisdictional wetlands will be impacted as a result of this Project.

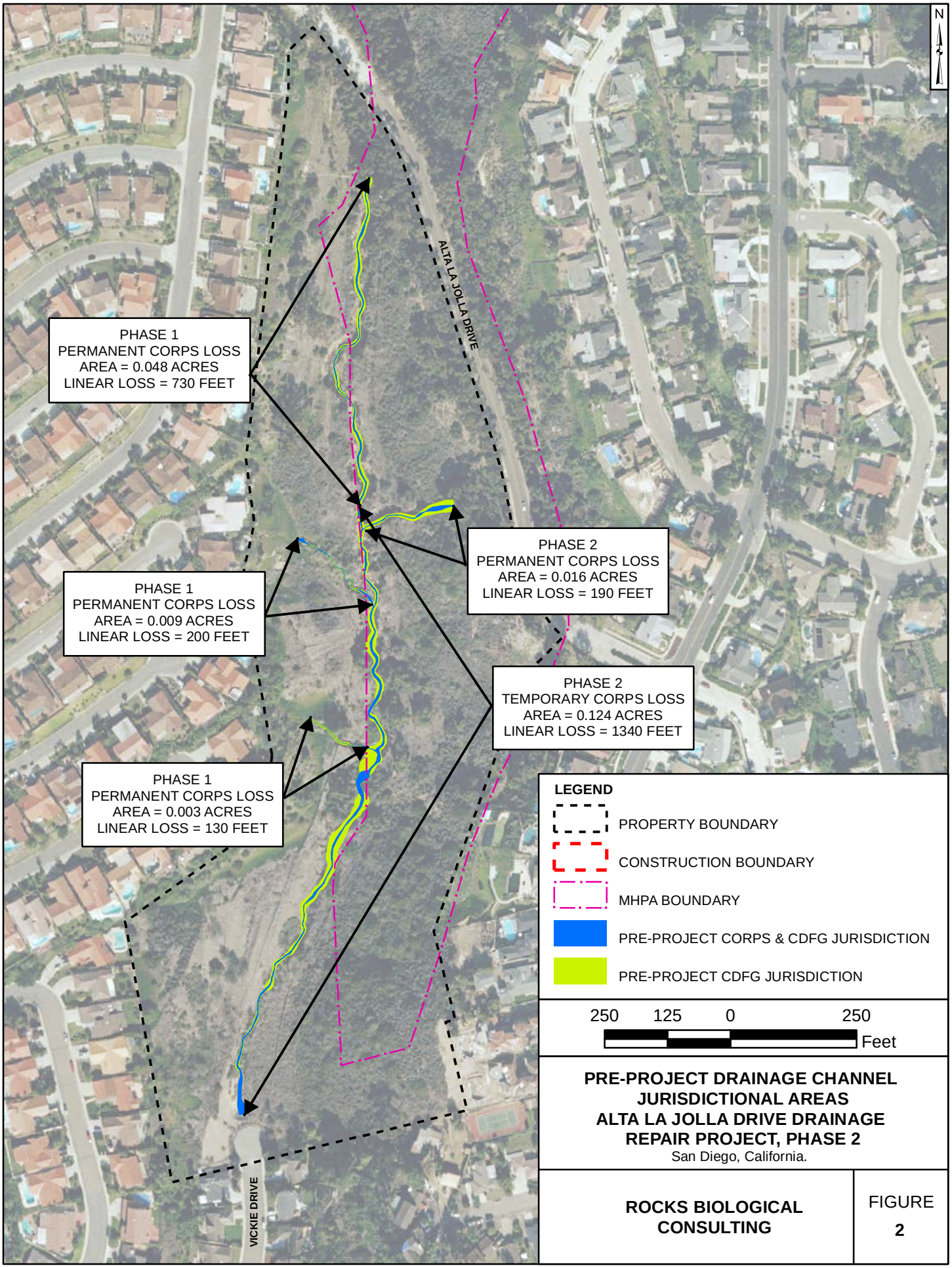
1.5 Types, Functions, and Values of Jurisdictional Areas to be Impacted

The importance of wetlands and OWUS is often described as 'functions and values.' Functions are properties that wetland and OWUS naturally provide and values are considered properties that are beneficial to humans. Some functions typically associated with wetlands include:

- Flood Control
- Waste Treatment/Pollution Interception
- Coastal Protection
- Ground Water Recharge
- Sediment Traps
- Habitat for Wildlife

Some values typically associated with wetlands include:

- Food
- Fuel
- Timber/Fiber Production
- Recreation, Aesthetics, Education



PRE-PROJECT DRAINAGE CHANNEL JURISDICTIONAL AREAS
ALTA LA JOLLA DRIVE DRAINAGE REPAIR PROJECT, PHASE 2
San Diego, California.

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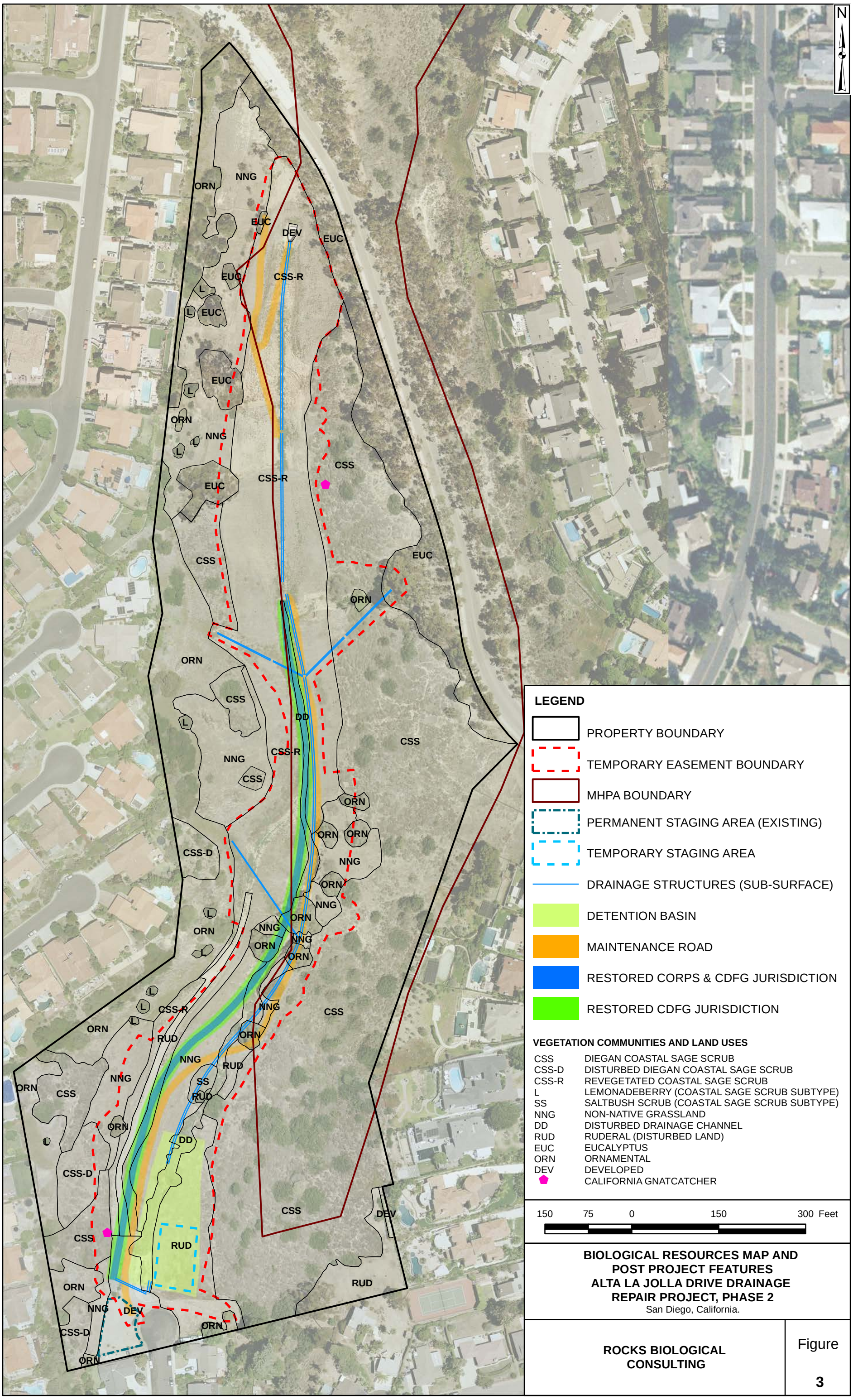
FIGURE **2**



BIOLOGICAL RESOURCES MAP AND POST PROJECT FEATURES
ALTA LA JOLLA DRIVE DRAINAGE REPAIR PROJECT, PHASE 2
San Diego, California.

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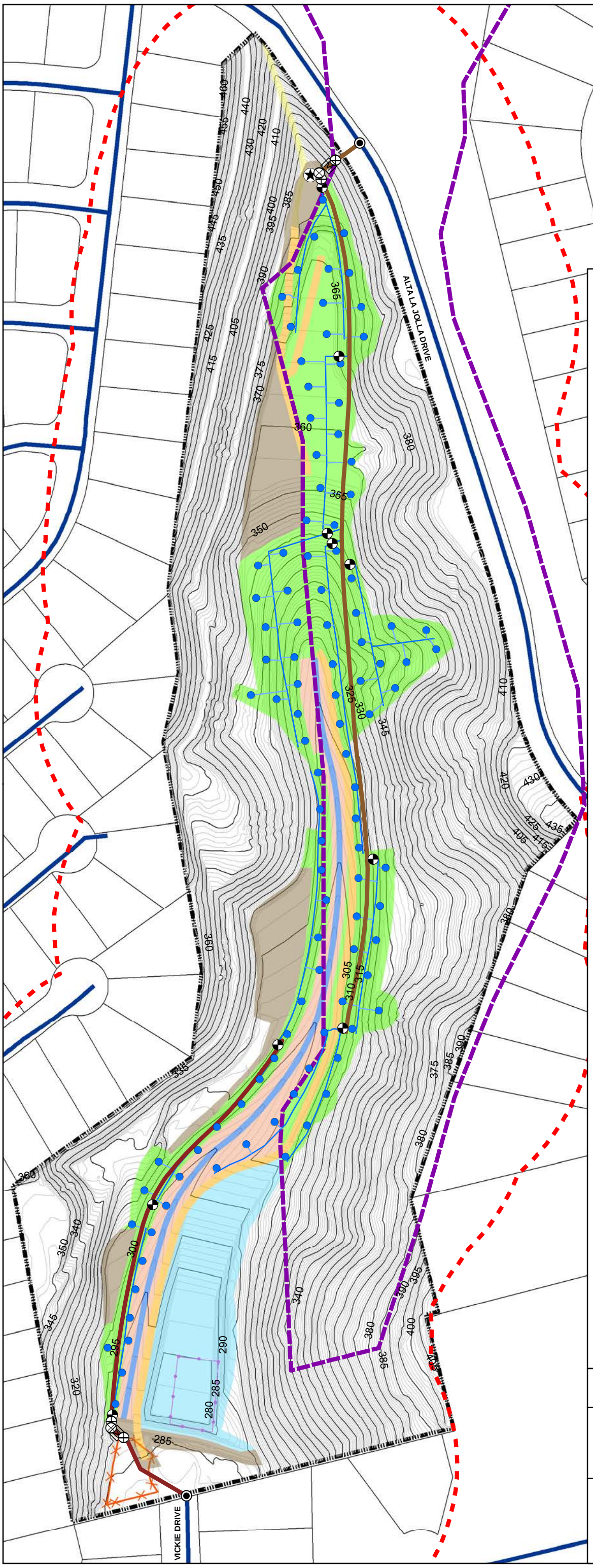
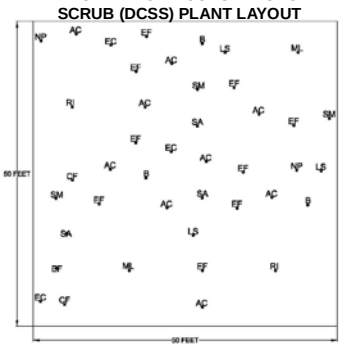
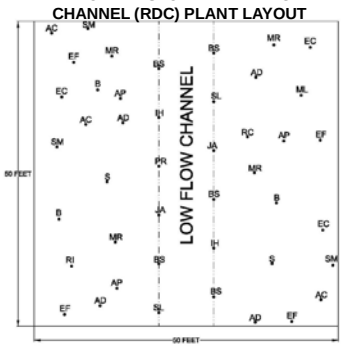
Figure **3**



TYPICAL DIEGAN COASTAL SAGE SCRUB (DCSS) PLANT LAYOUT



TYPICAL RESTORED DRAINAGE CHANNEL (RDC) PLANT LAYOUT



Symbol	Scientific Name	Common Name
AC	*Artemisia californica*	California Sagebrush
AD	*Artemisia douglasiana*	Douglas' Mugwort
AP	*Artemisia palmeri*	Palmer's Sagewort
BS	*Baccharis salicifolia*	Mulefat
BS	*Baccharis sarothroides*	Broom Baccharis
CF	*Corethrogyne filaginifolia*	Sand Aster
EC	*Encelia californica*	California Encelia
EF	*Eriogonum fasciculatum* var. *fasciculatum*	Coast California Buckwheat
IH	*Iva hayesiana*	San Diego Marsh Elder
JA	*Juncus acutus* ssp. *Leopoldii*	Spiny Rush
LS	*Lotus scoparius* var. *scoparius*	Deerweed
ML	*Malosma laurina*	Laurel Sumac
MR	*Muhlenbergia rigens*	Deergrass
NP	*Nassella pulchra*	Purple Needlegrass
PR	*Platanus racemosa*	Western Sycamore
RC	*Rosa californica*	California Rose
RI	*Rhus integrifolia*	Lemonadeberry
SA	*Salvia apiana*	White Sage
SL	*Salix lasiolepis*	Arroyo Willow
SL	*Sambucus mexicana*	Elderberry
SM	*Salvia mellifera*	Black Sage

LEGEND:

- PROPERTY BOUNDARY
- CONSTRUCTION BOUNDARY/ TEMPORARY EASEMENT BOUNDARY
- MHPA BOUNDARY
- UPLAND MITIGATION AREA [DCSS CONTAINER PLANTINGS AND DCSS HYDROSEED MIX]
- STEEP SLOPE REVEGETATION AREA [DCSS CONTAINER PLANTINGS AND DCSS HYDROSEED MIX]
- RESTORED DRAINAGE CHANNEL [RIPARIAN CONTAINER PLANTINGS AND HYDROSEED MIX; RIPARIAN UPLAND HYDROSEED MIX]
- EROSION CONTROL AREAS (<4:1 SLOPE; DCSS HYDROSEED MIX]
- LOW FLOW CHANNEL
- DETENTION BASIN [RIPARIAN UPLAND TRANSITIONAL HYDROSEED MIX]
- MAINTENANCE ROAD [WWD HYDROSEED MIX]
- PERMANENT STAGING AREA
- TEMPORARY STAGING AREA
- EXISTING EASEMENT ACCESS ROAD
- PROPOSED FINAL 1' CONTOURS
- PROPOSED FINAL 5' CONTOURS

* DATA SOURCES: SANGIS & SANDAG

150 75 0 150 300 Feet

REVEGETATION PLAN
ALTA LA JOLLA DRIVE DRAINAGE REPAIR PROJECT, PHASE 2
San Diego, California.

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Figure **4**

The functions and values of the existing Alta La Jolla drainage channel are low and have been greatly reduced because of severe scour and erosion and the dominance of non-native, invasive plant species. Current functions of the drainage channel are limited to conveyance of surface water, poorly functioning flood control, waste treatment/pollution interception, ground water recharge, and low quality habitat for wildlife and their local movement. The drainage channel is not functioning as a sediment trap, but is considered 'sediment starved' and deeply scoured banks are threatening the integrity of the adjacent slopes. The drainage channel and Alta La Jolla Canyon provide value in the form of aesthetics for adjacent homeowners, but do not provide food, fuel, timber/fiber production or recreation as the area is closed to the public.

2 Goals of the Compensatory Mitigation Project

2.1 Types and Areas of Habitat to be Restored, Enhanced, and/or Preserved

This compensatory mitigation and monitoring plan consists of mitigation for jurisdictional and non-jurisdictional areas.

Compensatory mitigation for impacts on jurisdictional areas:

Restored Drainage Channel

Restored drainage channel mitigation refers to the 0.68 acres of bed and banks that will be created on-site within the canyon both inside and outside the MHPA. Approximately 0.35 acres of the restored drainage channel will meet Corps OWUS criteria and serve as compensatory mitigation for total impacts on approximately 0.20 acres of OWUS (0.12 acres temporary impact; 0.08 acres permanent impact). A combination of container plantings and hydroseeding will be used to revegetate the drainage and adjacent banks with wetland species including Mulefat (*Baccharis salicifolia*) with transitional and upland species along the banks. The channel restoration shall fully mitigate project OWUS acreage impacts.

Detention Basin

The detention basin (0.67 acres) will be planted with a riparian-upland transitional hydroseed mix. Though this area will not formally serve as acreage mitigation for OWUS impacts, it is discussed here for informational purposes and for consideration of Project water quality benefits. It is anticipated that species will germinate and grow in the most suitable ecological areas within the habitat such that typical riparian species such as Mulefat and Willows will grow in the wetter areas with upland Coastal Sage Scrub species occupying the drier areas upslope. An unknown acreage of wetland vegetation is expected to develop within the basin and will provide compensatory mitigation in the form of wildlife habitat, improved water quality, flood control, coastal protection, and sediment trapping. Vegetation within the detention basin will be maintained through periodic thinning and/or removal as necessary.

Off-Site Invasives Removal

Phase 1 emergency work permanently filled 1,060 linear feet of the on-site jurisdictional areas and an additional 190 feet will be lost with Phase 2 implementation. The proposed restored on-site channel will mitigate for the loss of acreage from this work; however, the loss of linear feet of jurisdictional areas cannot be fully mitigated on-site. As such, mitigation in the form of Pampas Grass (*Cortaderia jubata*) removal will be performed along 1,250 feet of the natural channel occurring in nearby Kate O. Sessions Memorial Park (Figure 5). The natural area of the Park is primarily Coastal Sage Scrub and one large channel that runs north-south along the western boundary of the park, then west-east along the south end of the park. A small tributary to the main channel originates in the north-central portion of the park and joins the main channel in the central-western area of the park. The channel supports a mix of upland and wetland species, with native species predominating. However, there are also sizable areas of invasive Pampas Grass within the drainage. The Pampas Grass will be treated with herbicide, and/or manually removed.

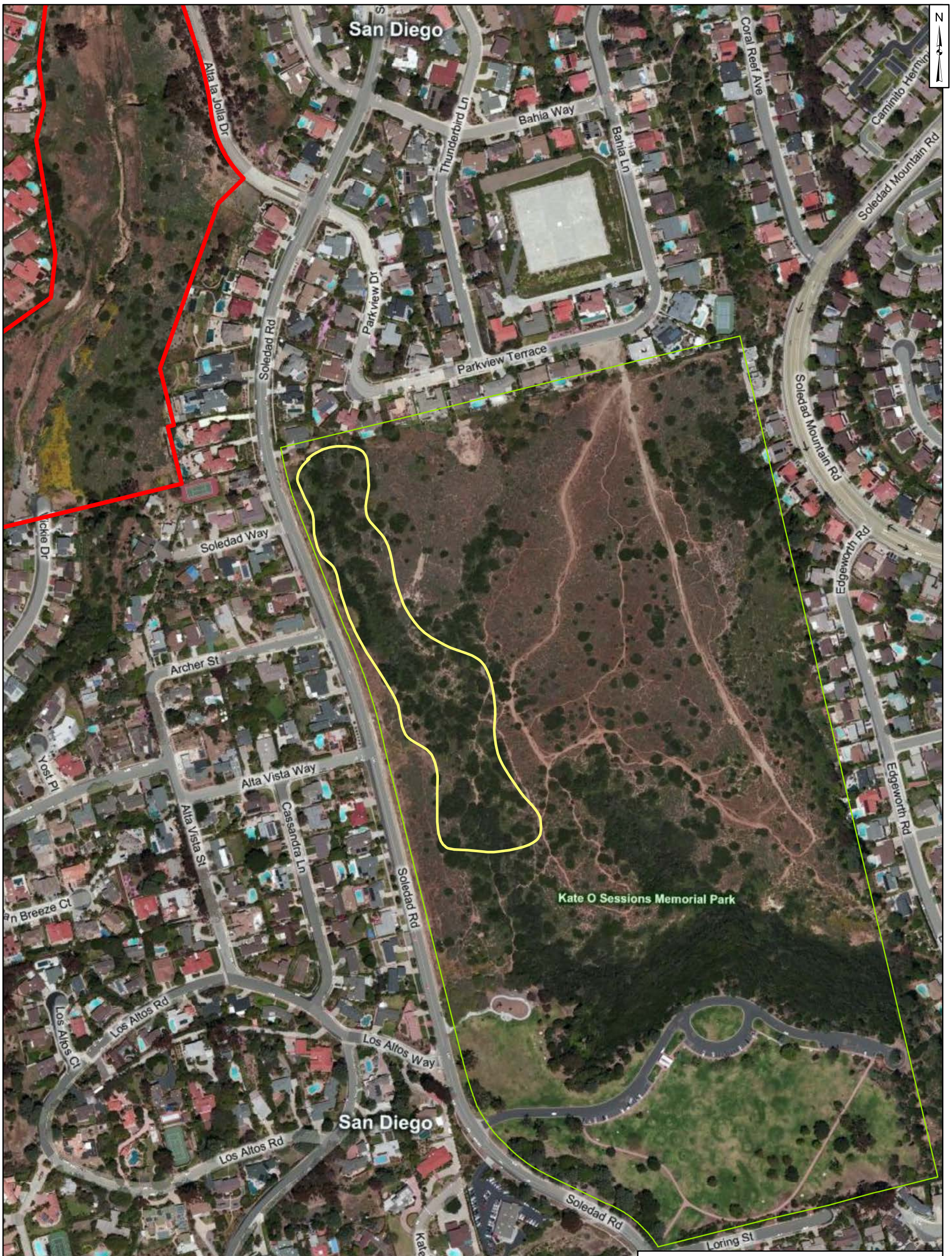
Compensatory mitigation for impacts on non-jurisdictional areas:

Diegan Coastal Sage Scrub - Upland

This mitigation refers to the mitigation of Diegan Coastal Sage Scrub within the MHPA. The purpose of the upland mitigation is to offset Project impacts on 1.82 acres of Diegan Coastal Sage Scrub and 1.25 acres of Non-Native Grassland, both considered sensitive habitats by the City. These areas will also serve as an improved channel buffer for the restored channel. Much of the current buffer area is Ruderal and Non-Native Grassland vegetation. All impacts on sensitive habitats impacted by the Project both inside and outside the MHPA will be fully mitigated within the MHPA. The total required mitigation is 2.57 acres consisting of 1.82 acres of Diegan Coastal Sage Scrub (1:1) and 0.75 acres of Non-native Grassland (0.5:1; see Table 2). Because the City's Biology Guidelines allow mitigation to occur at the same habitat tier or higher than that of impacts, all upland mitigation will be Diegan Coastal Sage Scrub container plantings and hydroseeding. The total upland mitigation acreage will be approximately 2.60 acres of Diegan Coastal Sage Scrub via replacement and creation within the MHPA. This exceeds the required 2.57 acres, but is necessary because City regulations require that all impacts within the MHPA be fully revegetated regardless of sensitivity.

Table 1. Summary of Impacts on Sensitive Upland Vegetation Communities for Phase 1 and Phase 2

Habitat Type (Tier)	Within MHPA (acres)	Outside MHPA (acres)	Total (acres)
Diegan Coastal Sage Scrub (TIER II; Phase 1)	0.88	0.06	0.94
Diegan Coastal Sage Scrub (TIER II; Phase 2)	0.58	0.25	0.83
Non-Native Grassland (TIER IIIB)	0.24	1.01	1.25
TOTALS	**1.70**	**1.32**	**3.02**



Legend

Notes

Path: author, dd-mmm-yyyy; ProjNum-Task-Phase; Document Number, etc.

OFF-SITE MITIGATION AREA FOR LINEAR FOOT IMPACTS

San Diego, California.

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Figure **5**

Table 2. Collective Mitigation Requirements for Sensitive Upland Vegetation Communities for Phase 1 and Phase 2 Project Impacts

Impact				**Mitigation Options**	
Habitat Type	**Within MHPA (acres)**	**Outside MHPA (acres)**	**Total (acres)**	**Mitigation Inside MHPA**	**Mitigation Outside MHPA**
Diegan Coastal Sage Scrub (Tier II; Phase 1 and 2)	0.88 + 0.58 = 1.46	0.06 + 0.30 = 0.36	1.82	**1.82 acres** (1:1)	3.46 acres (2:1 for impacts in MHPA; 1.5:1 for impacts outside MHPA; 2.92 + 0.54)
Non-Native Grassland (TIER IIIB)	0.24	1.01	1.25	**0.75 acres** (1:1 for impacts in MHPA; 0.5:1 for impacts outside MHPA; 0.24 + 0.51)	1.37 (1.5:1 for impacts in MHPA; 1:1 for impacts outside MHPA; 0.36 + 1.01)
Total	1.70	1.37	3.07	**2.57 acres**	4.83 acres

Erosion Control/Diegan Coastal Sage Scrub Revegetation

Erosion control/Diegan Coastal Sage Scrub revegetation refers to revegetation of areas that will be temporarily impacted during project construction activities, but that will not serve as mitigation for impacts on sensitive habitats (2.49 acres). All areas exclusive of the restored drainage channel, detention basin, and maintenance roads will be revegetated with Diegan Coastal Sage Scrub hydroseed mix. Areas that are steep slopes will also be planted with container plantings. The species composition will be the same as the Diegan Coastal Sage Scrub upland mitigation planting mix to ensure continuity within the canyon (please see Section 4.6 for full specifications). All erosion control planting areas are located outside the City's MHPA. These revegetation areas are expected to become native habitat; however, because they are not required for mitigation, will be subject to less stringent success criteria than those areas used for impact mitigation. Much of this area is currently Ruderal, Ornamental invasives, and Non-native Grassland so replacement with native Diegan Coastal Sage Scrub species will result in an overall improvement of the habitat.

Maintenance Road Revegetation

The maintenance roads (0.62 acres) that are necessary to allow for occasional vehicular use will be planted with low-growing native species appropriate to the area. This revegetation will not serve as mitigation for impacts on sensitive habitats. Based on discussions with the City's Metropolitan Wastewater Department (Balo, 2009), which has numerous maintenance roads throughout City open space areas, they use a master list of appropriate species then tailor the list to suit the particular area in which the planting will occur, e.g., use species from the master list that occur or would likely naturally occur in the immediate area, and add other low growing (< 3 feet) species native to the area as needed to create an appropriate palette. This strategy has been used to develop the Project maintenance road plant list. Please see Section 4.6 for full maintenance road revegetation specifications.

2.2 Specific Functions and Values of Habitats to be Restored

During implementation of the restoration plan, the functions and values of the restored areas on-site will continue to improve from existing conditions and upon meeting the final success criteria goals are anticipated to be vastly superior to current conditions. Specifically, the detention basin (approximately 0.67 acres) that will be constructed in the southern portion of the Project is designed to maximize treatment of storm water. The basin is designed to capture all non-storm water flows and will treat as much of the 85th percentile storm (0.5 inches) as possible. The 85th percentile storm event was selected as it is the numeric sizing treatment standard for volume-based BMPs that is recommended in the San Diego Municipal Code Land Development Manual Storm Water Standards. According to the Geosyntec study:

> *The detention basin is designed to treat as much of the volume of runoff from the 85th percentile event as possible. Because the design balances water quality treatment with the long-term channel stability design; treatment of the entire 85th design storm could not be achieved. Flows for the 85th percentile event that are not diverted to the detention basin are conveyed in the channel to support riparian vegetation similar to pre-development conditions. Analyses of the 85th percentile design storm with the CED diversion structure and detention basin stage-storage and stage-discharge relationships results in treatment of 3.06 acre-feet of runoff (58% of the total runoff volume 5.28 acre-ft) from the 85th percentile event. Diverting flows more than this amount to the detention basin would result in deviation of the channel design goals.*

Also, the detention basin will help attenuate the increase in the 100-year flood peak due to development. The basin will be planted with riparian-upland transitional hydroseed mix to provide quality native habitat. Currently, the channel has minimal habitat value due to the recent erosion impacts.

Habitat for wildlife will be lost temporarily, but will grow rapidly from seeds and container plantings. To be consistent with existing native habitats in the canyon and surrounding areas, the drainage channel and adjacent uplands will be revegetated with a structurally and species diverse plant palette. Upon meeting the success criteria, the restored habitat on-site and upstream will have higher function and value as these areas will not support perennial invasive species and will be of higher species diversity.

The value of the restored areas on-site will likely still be limited to recreation, aesthetics, and education, but each of these will be greatly enhanced as Alta La Jolla Canyon will support a properly functioning drainage with higher quality native habitat for wildlife following achievement of the success criteria.

Functions and values of the proposed off-site mitigation area, Kate O. Sessions Memorial Park, are relatively high. The channel captures stormwater from northern developed areas and appears to have minimal scour and erosion, so provides significant stormwater treatment for these areas. Wildlife habitat in the area is relatively high, as there is a high percentage of native cover, however with invasion of Pampas Grass, this function could be diminished if allowed to spread. This area also serves as an important recreational area for area residents and visitors, who are able to experience natural habitats at the park in an otherwise developed region.

2.3 Time Lapse Between Jurisdictional Impacts and Expected Compensatory Mitigation Success

The expected time lapse between jurisdictional impacts and compensatory mitigation success is approximately 5 years. However, benefits of the drainage repair project such as flood control, improved water quality, coastal protection, and sediment trapping will begin immediately whereas restored native wildlife habitat will develop over time.

2.4 Estimated Total Cost

Once all grading and channel re-contouring and engineering are complete, the estimated total cost of the biological restoration including site preparation, planting, maintenance, and monitoring, and contingency money breaks down as follows:

- Site preparation, planting, and maintenance = approximately $750,000
- Biological monitoring and reporting = approximately $100,000

Note that these costs include both upland and channel on-site mitigation and off-site linear foot mitigation.

2.5 Special Aquatic Habitat, Other Waters of the U.S., and Non-jurisdictional Areas Proposed as Compensatory Mitigation

OWUS and non-jurisdictional areas are proposed as compensatory mitigation for drainage repair project impacts. Though the area will require occasional maintenance so will not formally serve as compensatory mitigation, it should be noted that wetland habitat with proper hydrology, hydric soils, and hydrophytic vegetation is expected to colonize the detention basin and possibly small areas at the drainage outlet at the terminus of Phase 1. At this time it is not clear how much acreage of the 0.67 acres detention basin will meet Corps jurisdictional wetland standards, so we are not proposing a specific mitigation acreage, but rather want this area considered primarily for its water quality, flood control, coastal protection, sediment trapping benefits with wildlife wetland habitat as an additional consideration during Corps permitting review.

Restored OWUS is proposed as compensatory mitigation in the form of approximately 0.35 acres of OWUS within a larger 0.68 acre drainage restoration which includes adjacent banks that may not meet OWUS standards, but will support sensitive Diegan Coastal Sage Scrub which will serve as high quality buffer area to the restored channel.

Approximately 2.60 acres of Diegan Coastal Sage Scrub will be created or restored to fully mitigate project impacts on the non-jurisdictional habitats Diegan Coastal Sage Scrub and Non-native Grassland. Although not direct mitigation for impacts to Corps jurisdictional areas, restoration of the adjacent uplands within the watershed will provide a high quality local wildlife habitat corridor and buffer to jurisdictional areas and help improve water quality

through slowing runoff and allowing infiltration rather than the severe scour and erosion that currently exists.

At Kate Sessions Park, 1,250 linear feet of Other Waters of the U.S., a portion of which may meet Corps wetland criteria, will be restored through removal of invasive Pampas Grass.

2.6 Overall Watershed Improvements to be Gained

The restored channel and detention basin [0.67 acres; 1,340 LF (1,270-foot channel plus 70-foot detention basin)] will provide water quality benefits, coastal protection, and sediment trapping for the developed watershed runoff and will attenuate 100-year peak flood events. The detention basin is designed to drain within 48 hours to avoid vector control issues (i.e. mosquito breeding). In addition, non-native, perennial, invasive species will be excluded from the compensatory mitigation area thereby improving native habitat within this portion of the watershed.

3 Description of the Proposed Compensatory Mitigation Site

3.1 Process of selecting proposed mitigation site

The majority of the compensatory mitigation site was chosen because it is onsite where the drainage repair project impacts occurred or will occur. Because the Project is a stream rehabilitation project, the mitigation of the on-site stream is, in effect, the Project. Onsite mitigation provides an opportunity to compensate for jurisdictional impacts through restoration of habitat and improved drainage function and value within the same watershed as the impact. The off-site area that will be used for linear feet mitigation, Kate Sessions Park, was chosen because it is very close to the Project area, the City owns the Park, the site is conserved and habitat is otherwise in good condition.

3.2 Location and Size of Compensatory Mitigation Site

The proposed channel restoration mitigation on-site (approximately 32° 49′ 7″ 117° 14′ 38″) is within the limits of the temporary impact areas. The on-site restoration area is 3.71 acres and can be broken down as follows:

- Drainage Channel Restoration (approximately 0.35 acres jurisdictional OWUS, with additional 0.33 acres transitional buffer area)
- Detention Basin (approximately 0.67 acres)
- Diegan Coastal Sage Scrub (approximately 2.60 acres; non-jurisdictional)

Implementation of the restoration plan will result in 0.35 acres of restored jurisdictional areas (OWUS) on-site, with additional compensation in the form of unspecified acreage of wetland

habitat within the detention basin, and approximately 2.60 acres of Diegan Coastal Sage Scrub to be created or restored in non-jurisdictional areas.

Additionally, Pampas Grass removal along 1,250 feet of the channel in nearby Kate O. Sessions Memorial Park will mitigate for permanent linear feet loss, which occurred primarily during Phase 1 emergency activities.

3.3 Ownership Status

The Project site is owned by La Jolla Alta Master Council, a local homeowner's association. An easement has been granted to the City to access the property for the restoration work and to maintain the drainage and infrastructure. Kate O. Sessions Memorial Park, which will be used for the off-site linear foot mitigation, is owned by the City of San Diego and overseen by the City's Park and Recreation Department Community Parks I Division. Community Parks I has given the applicant permission to perform the mitigation at the park (Bingham, 2011).

3.4 Existing Functions and Values of the Compensatory Mitigation Site

As described in Section 1.5, the existing functions and values of the compensatory mitigation site on-site are very low because of severe scour and erosion and the dominance of non-native, invasive plant species. Current functions of the drainage channel are limited to poorly functioning flood control, waste treatment/pollution interception, ground water recharge, and low quality habitat for wildlife and their local movement. The drainage channel is not functioning as a sediment trap, but is considered 'sediment starved' and deeply scoured banks are threatening the integrity of the adjacent slopes. The drainage channel and Alta La Jolla Canyon provide value in the form of aesthetics for adjacent homeowners, but do not provide food, fuel, timber/fiber production, or recreation as the area is fenced and not open to the public.

The existing functions of the off-site mitigation area, Kate O. Sessions Memorial Park, are relatively good. The on-site channel supports primarily native species, including a mix of Coastal Sage Scrub Species and Riparian species. With a high level of native cover, the drainage and the park as a whole provides moderate to high functioning habitat for wildlife, and the federally threatened California Gnatcatcher is known to occur in the area. The drainage exhibits low-levels of scour and little erosion. Because urban runoff enters the channel at its northern origin, the channel provides a flood control, waste treatment/pollution interception, and ground water recharge. The channel and Park provide excellent value in the form of aesthetics and recreation as this is a fairly large natural area in an otherwise highly developed region. The Park does not provide food, fuel, or timber/fiber production, as the area is a public park.

3.5 Jurisdictional Delineation

The jurisdictional delineation of Corps and CDFG jurisdictional waters on the Project site was performed by LDC in 2007 (see Figure 2) and the report was submitted to the Corps on September 12, 2007 for coverage under RGP 63. It has been agreed by the Corps and project applicant that compensatory mitigation be based on the habitat types and acreages delineated by LDC. The acreage calculations from the LDC report for the Corps and CDFG jurisdictional areas are used herein.

No Corps jurisdictional wetlands will be impacted as a result of this Project. Temporary loss of approximately 0.20 acres of jurisdictional waters will occur during Phase 2 earthwork activities to restore the severely incised drainage and tributary channels. Approximately 0.06 acres and 0.02 acres of jurisdictional waters will be permanently filled during Phase 1 and Phase 2, respectively, associated with diversion of flows into storm drain pipes to maintain slope and channel stability. A total of approximately 0.35 acres of jurisdictional waters (OWUS) will be restored as part of this Project with the reconstruction of the channel in Phase 2 (See Figure 3).

Table 3. Summary of Corps Jurisdictional OWUS, Project Impacts, and Compensatory Mitigation

Pre-construction OWUS	0.20 acres
Temporary Construction Loss of OWUS	0.20 acres
Permanent Construction Loss of OWUS	0.08 acres
Onsite OWUS Compensatory Mitigation	0.35 acres

3.6 Present and Proposed Uses of the Compensatory Mitigation Site and All Adjacent Areas

Present use of the compensatory mitigation area on-site is limited to access for maintenance and repair of sewer pipes and other infrastructure by City crews via a maintenance easement. The site is currently fenced and closed to any non-essential use. Proposed future use will likely be similarly limited.

Present use of the off-site compensatory mitigation area is exclusively passive recreation and habitat conservation. The site is owned by the City of San Diego Park and Recreation Department and is anticipated to be conserved in perpetuity.

3.7 Reference Sites

The drainage area immediately upstream of Alta La Jolla Drive will serve as a reference area to inform this compensatory mitigation and monitoring plan, but in fact, the mitigation area will be of higher quality after meeting the success criteria as it will be more diverse and provide greater function and value in the form of flood control, water quality benefits, coastal protection, sediment trapping, and wildlife habitat than adjacent upstream areas.

The undisturbed Diegan Coastal Sage Scrub that occurs on the slopes immediately to the east of the Project will be used as a reference site for the non-jurisdictional mitigation areas. The dominant species that occur in this habitat are included in the plant palette as well as several other species that commonly occur in Diegan Coastal Sage Scrub throughout coastal San Diego County. It is expected that following implementation of this mitigation plan, restored areas will be more species-rich and structurally diverse than the surrounding undisturbed habitats.

No reference site is proposed for the off-site linear foot mitigation at Kate O. Sessions Memorial Park, as the mitigation in this area is control of Pampas Grass rather than large-scale revegetation, planting, etc.

For areas that will serve as mitigation for project impacts, specific success criteria are outlined in Section 6.

4 Implementation Plan for the Compensatory Mitigation Site

4.1 Rationale for Expecting Implementation Success

The implementation of this compensatory mitigation and monitoring plan will be successful because critical factors such as site hydrology, soils, and plant species selection have been carefully designed, evaluated, and selected using the latest industry knowledge and is fully informed by current and historic conditions within Alta La Jolla canyon and other areas of the watershed. Success criteria have been selected that are robust, yet obtainable, and will result in a self-sustaining drainage supporting high quality native wildlife habitat.

Success of Pampas Grass control efforts is anticipated at Kate O. Sessions Memorial Park based on knowledge of the target species and based on the quality of adjacent habitat. Pampas Grass control has been performed throughout the region and success is well established. It is anticipated that at least two treatments (and in some cases three) will be necessary to eradicate the Pampas Grass.

4.2 Responsible Parties

The project team shall consist of a qualified restoration biologist, a revegetation contractor, a landscape architect or qualified engineer, a native plant nursery, and representatives of the City's Engineering & Capital Projects Department.

The restoration biologist shall have at least a bachelor's degree in botany, biology, ecology, or other related field and at least three years of successful mitigation/restoration project experience. The restoration biologist will work with the revegetation contractor to oversee, initial site preparation, hydroseeding and container plant installation, conduct qualitative and quantitative monitoring, provide professional expertise on maintenance and monitoring issues, help resolve problem areas, and submit required reports.

The revegetation contractor responsibilities include (but are not limited to) obtaining seed and container stock, installing temporary fencing around mitigation area, installation of the irrigation system, installing plantings and hydroseeding, routine and specific maintenance (e.g. irrigation system), trash removal, and coordinating with the restoration biologist to resolve problem areas.

The landscape architect or qualified engineer will be responsible for the preparation and further refinement of the irrigation plan based on the plans included here.

The project team should have mitigation/restoration experience in both wetland and upland habitats and have successfully completed restoration efforts for the Corps, City of San Diego, Caltrans, or other similar agency. All contractors shall use best professional practice to meet the goals of the compensatory mitigation plan.

4.3 Financial Assurances

The financial responsibility for implementation, maintenance, monitoring, and reporting requirements of this compensatory mitigation project rests solely with the project proponent of record, the City of San Diego Engineering & Capital Projects Department. Normally, pursuant to the City's Land Development Code 143.0152, a Covenant of Easement would be required to be placed on the mitigation area. However, because this is within an easement granted to the City per a settlement agreement, no such easement is needed. Also, performance bonds are typically required for mitigation projects, but because the applicant in this case is the City, no such bonds are required. However, the Engineering & Capital Projects Department may require performance bonds for contractors that are hired to execute this mitigation plan.

4.4 Schedule

Table 4. Compensatory Mitigation and Monitoring Schedule for On-Site Restoration

Milestone	Action
Within 90 Days of Grading Completion	--Install temporary, above-grade irrigation system --Install container plantings and hydroseed
30 Days after Plant Installation	--Biological monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed
Within 45 Days after Earthwork Completions and Plant Installation	Submit as-built drawings certified by professional engineer showing condition of compensatory mitigation to Corps.
60 Days after Plant Installation	--Biological monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed
90 Days after Plant Installation	--Biological monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed

Milestone	Action
120 days after Plant Installation	--Biological monitoring --Seed/re-plant as needed to achieve milestone --Submit biological monitoring report within 60 days of monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed
6 months after Plant Installation	--Biological monitoring --Submit biological monitoring report within 60 days of monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed
1 year after Plant Installation	--Biological Monitoring (incl. annual quantitative monitoring) --Seed/re-plant as needed to achieve milestone --Submit biological monitoring report within 60 days of monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed -- Submit annual monitoring report to Corps and City of San Diego
25 Months after Plant Installation	--Biological Monitoring (incl. annual quantitative monitoring) --Seed/re-plant as needed to achieve milestone --Submit biological monitoring report within 60 days of monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed
2 Years after Plant Installation	-- Submit annual monitoring report to Corps and City of San Diego
3 years after Plant Installation	--Biological Monitoring (incl. annual quantitative monitoring) --Re-plant as needed to achieve milestone --Submit biological monitoring report within 60 days of monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair

Milestone	Action
	as needed --Monitor site for trash and vandalism; remove/repair as needed --Cease irrigation if deemed appropriate by the restoration biologist -- Submit annual monitoring report to Corps and City of San Diego
4 years after Plant Installation	--Biological Monitoring (incl. annual quantitative monitoring) --Re-plant as needed to achieve milestone --Submit biological monitoring report within 60 days of monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed --Cease irrigation if deemed appropriate by the restoration biologist -- Submit annual monitoring report to Corps and City of San Diego
5 years after Plant Installation	--Biological Monitoring (incl. annual quantitative monitoring) --Re-plant as needed to achieve milestone --Submit biological monitoring report within 60 days of monitoring --Inspect plantings and adjust irrigation levels as needed based on weather conditions --Inspect area for invasives and control as necessary --Inspect plants for pests or disease; treat/replace as needed --Monitor irrigation system and erosion control measures; replace/repair as needed --Monitor site for trash and vandalism; remove/repair as needed -- Submit annual monitoring report to Corps and City of San Diego
Prior to Corps and City Approval of Mitigation Area	--Submit final report and notice of completion to Corps and City of San Diego --Remove temporary irrigation system

Table 5. Compensatory Mitigation and Monitoring Schedule for Off-Site Pampas Grass Treatment at Kate O. Sessions Memorial Park

Milestone	Action
Within 6 Months of Grading Completion	-Biological monitoring to quantify baseline Pampas Grass infestation prior to inital treatment -Treat Pampas Grass within mitigation area through application of appropriate herbicide, and/or manual removal
Within 1 Year of Initial Treatment	--Re-treat all Pampas Grass not completely killed from first treatment -Treat any new Pampas Grass Seedlings
Within 2 Years of Initial Treatment	--Re-treat all Pampas Grass not completely killed from first treatment -Treat any new Pampas Grass Seedlings _Biological monitoring to quantify treatment efficacy -Submit monitoring report to Corps

4.5 Site Preparation

Prior to installation of container plantings and hydroseeding on-site, a number of site preparations such as grading and recontouring must be performed to help ensure a properly functioning drainage and make the areas suitable for native plant revegetation.

Clearing/Grubbing and Grading/Recontouring

It is anticipated that most of the mitigation area will be cleared and graded as part of Phase 2 construction activities. The compensatory mitigation areas will be graded as shown on Figure 4, which, based on historic aerials, approximate pre-development conditions. In the base of the channel (approximately five-feet in width), approximately one-foot of locally-obtained cobble mixed with the sandy, coarse soil that occurs on-site shall be placed in the channel to prevent scour and to approximate natural conditions in nearby streams, including immediately upstream of the project (Photo 1). Further disturbance of the soil should be avoided unless deemed necessary by the restoration biologist. In areas where the soil may be severely compacted, the soil may be brushed or scratched with a hand rake to help prepare the soil for seeding.

Photograph 1. Photograph of channel located north of Alta La Jolla Drive and immediately upstream of Project site.

Site and Resource Protection

Prior to beginning the mitigation effort, the proposed planting areas should be clearly delineated and protected through installation of snow fencing or similar method and, if deemed necessary by the restoration biologist, posting of signage around the mitigation area.

The mitigation area should be thoroughly surveyed on foot to find and remove debris that may be present such as concrete pieces, pipe, barbed wire, and other large trash items. Removal of

these items will make the area safer to work in and contribute to the overall appearance and condition of the mitigation area.

Weed Control

The initial grading and recontouring activities will remove perennial, invasive weeds from the mitigation area, but if invasives remain adjacent to the on-site drainage, additional weed control will be necessary. The removal of exotic, invasive weeds within the mitigation area is an important component of this plan. Aggressive non-native, perennial species such as Pampas Grass (*Cortaderia* spp.), Tree Tobacco (*Nicotiana glauca*), Castor Bean (*Ricinus communis*), and Cyclops Acacia (*Acacia cyclops*) occur within or immediately adjacent to the drainage onsite. Annual, or biennial species such as Russian Thistle (*Salsola tragus*), Crown Daisy (*Chrysanthemum coronarium*), and others are present in disturbed upland areas onsite. These species should be eradicated and/or controlled within the mitigation areas. Competition from invasive, non-native plant species can be a serious problem in the establishment of native vegetation. Non-native species can out-compete native species, reduce diversity, and degrade habitat for wildlife. Controlling the spread and abundance of invasive species allows native species to become fully established in the mitigation areas and gain and maintain a competitive advantage over weeds. It is not anticipated, however, that all non-native species would be eradicated from the mitigation area as these species are ubiquitous within the canyon and in immediately surrounding areas, as well as throughout Southern California wild lands.

Weed control measures employed prior to the commencement of planting are the most effective method for control of invasive, non-native species. Following project completion and site preparation, if sufficient time for plant growth has occurred, the restoration biologist will identify invasive species that are in the mitigation area for removal. Then invasive species will be controlled as needed through the maintenance period, with a focus on invasive perennial species. Noxious weed species should be removed and/or treated, and disposed of according to the California Invasive Plant Council's (CalIPC) most recent guidelines.

Topsoil/Plant Salvage

Approximately 13,370 cubic yards of fill soil was imported during Phase 1 construction. Because of this, salvaging of topsoil is not recommended as it is not the native canyon soil and would not likely contribute to the success of the mitigation plan. Plant salvage is also not recommended as the construction footprint currently consists primarily of non-native species and young seedlings of Diegan Coastal Sage Scrub species resulting from the post-Phase 1 hydroseeding.

Fertilizer

The use of fertilizer is not recommended as part of this mitigation plan. Fertilization with nitrogen or phosphorous-based chemical fertilizers has been shown to favor exotic species over native plants in many sites throughout southern California (Grime and Hunt 1975; Grime 1978). The native species in our region have evolved under low nutrient conditions and fertilizer inputs may provide a competitive advantage to non-native species.

4.6 Planting Plan

The conceptual planting plan for the on-site mitigation areas includes container plants, hydroseeding, and "volunteer" native plant recolonization (Figure 4). The use of all of these methods is recommended and would likely achieve the goals of this mitigation plan expeditiously. Container plants and seeds should be procured from a native plant supplier, such as Tree of Life Nursery, Las Pilitas, or other local supplier. The plant materials should be ordered as soon as possible following approval of this mitigation plan to allow time to establish seeds and/or cuttings in one-gallon size containers.

Species Composition

Tables 5-10 provide a list of plants recommended for planting and seeding within discrete areas in the mitigation area. The planting palette and seed mixes are consistent with species that were observed in habitats within the canyon and are known to occur in coastal San Diego County. The tables list the dominant plant species to be used for container plantings and in the hydroseed mix. Plant species may be added or deleted from the list by the restoration biologist based on suitability to the mitigation areas or on a species commercial availability. For example, use of a plant species that consistently fails to germinate and/or grow within the mitigation areas may be discontinued and replaced with an appropriate species that is suitable to onsite conditions.

Please note, this plan has been written to be consistent with Section 142.0411 of the City's Land Development Code that states that disturbed areas with a slope greater than 4:1 with a slope height over 15 feet shall require container stock consistent with Table 142-04F. Areas that meet these criteria will be planted with container stock a minimum rate of one tree/shrub (minimum 1-gallon size) for every 100 ft^2 of disturbed area and will be temporarily irrigated.

Pursuant to the City's Landscape Standards (Section 4.2, Slope Revegetation Guidelines), "a minimum of 50% of total slope area shall be planted with deep rooting groundcovers, (i.e., those with a typical root depth of 5 feet or greater). For seeded plantings, at least 50 percent of the viable seed count shall be deep rooting species."

The use of the recommended shrubs such as Lemonadeberry, Laurel Sumac, California Buckwheat, California Sagebrush, and other species in the planting palette have been included in part to achieve this standard.

Restored Drainage Channel Mitigation Container Plantings and Hydroseeding

The Project consists of a fully restored drainage channel bed and banks and a detention basin. The restored drainage channel will consist of a flat one-foot deep and four-feet wide bed with banks approximately eight-feet wide for a length of approximately 1,270 feet for a total of 0.68 acres of which approximately 0.35 acres (8 foot wide channel/banks X 1,270 linear feet) will meet Corps jurisdictional OWUS following achievement of the success criteria. Mitigation for impacts on 0.20 acres of Corps OWUS and 0.59 acres of CDFG wetlands will occur as mitigation as shown on Figure 4. Following implementation and achievement of the success criteria (see Section 6.1); the restored drainage channel will mitigate impacts on Corps OWUS and CDFG wetlands resulting from the Project.

The restored drainage channel and adjacent banks will be planted with 1-gallon container plantings of the species recommended in Table 6 and then hydroseeded with the seed mix in Table 7. The seed mix consists of riparian species such as Mulefat (*Baccharis salicfiolia*), species that occur in transitional areas between riparian and upland areas such as Palmer's Sagewort (*Artemisia palmeri*), and drier, upland species such as Coast California Buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*). It is anticipated that species will germinate and grow in the most suitable ecological areas based on their habitat preferences. For example, riparian species such as Mulefat are likely to become established in the relatively wetter areas, whereas upland species like Coast California Buckwheat will dominate in drier areas along the restored banks.

Table 6. Restored Drainage Channel Mitigation Container Plant Palette

Scientific Name	Common Name	Approx. Total Quantity	Size	Approx. Spacing (on center)	Planting Notes
Riparian Species					
Overstory					
Baccharis salicifolia	Mulefat	160	1 gal	8′	Along channel edge
Platanus racemosa	Western Sycamore	10	5 gal	8′	Adjacent channel edge
Salix lasiolepis	Arroyo Willow	60	1 gal	8′	Along channel edge; near outfalls
Understory					
Iva hayesiana	San Diego Marsh Elder	50	1 gal	4-6′	Along channel edge
Juncus acutus ssp. *leopoldii*	Spiny Rush	50	1 gal	4-6′	Along channel edge
Transitional Species					
Artemisia douglasiana	Douglas' Mugwort	75	1 gal	4′	Along channel edge
Artemisia palmeri	Palmer's Sagewort	50	1 gal	4′	Along channel edge
Muhlenbergia rigens	Deergrass	50	1 gal	4′	Clustered along channel edge
Rosa californica	California Rose	20	1 gal	6′	Along channel edge
Sambucus mexicana	Elderberry	40	1 gal	10′	Along channel edge
Upland Species					
Artemisia californica	California Sagebrush	30	1 gal	4-6′	Cluster w/ *Eriogonum* and *Salvia*
Encelia californica	California Encelia	40	1 gal	4-6′	Scattered
Eriogonum fasciculatum var. *fasciculatum*	Coast California Buckwheat	50	1 gal	4-6′	Cluster w/ *Artemisia* and *Salvia*
Baccharis sarothroides	Broom Baccharis	30	1 gal	6′	Along channel edge
Malosma laurina	Laurel Sumac	20	1 gal	8′	Scattered
Rhus integrifolia	Lemonadeberry	20	1 gal	8′	Scattered
Salvia mellifera	Black Sage	30	1 gal	6′	w/ *Eriogonum* and *Artemisia*
Total		785			

Note: Species may be added or deleted from the palette or quantities adjusted by a qualified restoration biologist.

Table 7. Restored Drainage Channel Riparian-Upland Transitional Hydroseed Mix

Scientific Name	Common Name	Pounds Per Acre	Minimum Percent Purity/ Germination	Pounds Pure Live Seed (PLS) Per Acre
Riparian Species				
Baccharis salicifolia	Mulefat	2	30/40	0.24
Transitional Species				
Ambrosia psilostachya	Western Ragweed	2	2/30	0.01
Artemisia palmeri	Palmer's Sagewort	2	10/50	0.20
Artemisia douglasiana	Douglas Mugwort	2	10/50	0.10
Sambucus mexicana	Mexican Elderberry	1	90/30	0.27
Upland Species				
Artemisia californica	California sagebrush	2	15/50	0.15
Baccharis pilularis	Coyote Brush	2	15/50	0.15
Deinandra fasciculata	Fascicled Tarweed	3	10/25	0.08
Eriogonum fasciculatum var. *fasciculatum*	Coast California Buckwheat	5	10/65	0.33
Isocoma menziesii var. *menzesii*	Coastal Goldenbush	2	20/40	0.16
Lotus scoparius var. *scoparius*	Deerweed	3	90/60	1.62
Nassella pulchra	Purple Needlegrass	5	70/60	2.10
Eschscholzia californica	California Poppy	4	98/75	2.94
Lasthenia californica	California Goldfields	4	90/85	3.06
Lupinus succulentus	Arroyo Lupine	2	95/80	1.52
Nassella pulchra	Purple Needlegrass	6	70/60	2.52
Sisyrinchium bellum	Blue-eyed Grass	4	95/75	2.85
Vulpia microstachys	Fescue	6	90/80	4.32
Total		**App. 57**	**--**	**App. 22.61**

Note: Species may be added or deleted from the seed mix by a qualified restoration biologist.

Detention Basin Riparian-Upland Transitional Hydroseeding

Near the terminus of the restored drainage channel will be a detention basin (approximately 0.67 acres). The detention basin will be approximately 230 feet long and 95 feet wide with 2:1 slopes and a 2% internal slope. The detention basin will be hydroseeded with the seed mix in Table 8. The seed mix consists of riparian species such as Mulefat (*Baccharis salicfiolia*), species that occur in transitional areas between riparian and upland areas such as Palmer's Sagewort (*Artemisia palmeri*), and drier, upland species such as Coast California Buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*). It is anticipated that species will germinate and grow in the most suitable ecological areas based on their habitat preferences. For example, riparian species such as Mulefat are likely to become established in the relatively wetter areas, whereas upland species like Coast California Buckwheat will dominate in drier areas on the slopes of the basin. Please note that vegetation in the detention basin will be pruned or removed by City maintenance crews during periodic maintenance and dredging activities to allow for proper drainage and functioning of the basin.

Table 8. Detention Basin Riparian-Upland Transitional Hydroseed Mix

Scientific Name	Common Name	Pounds Per Acre	Minimum Percent Purity/ Germination	Pounds Pure Live Seed (PLS) Per Acre
Riparian Species				
Baccharis salicifolia	Mulefat	2	30/40	0.24
Transitional Species				
Artemisia palmeri	Palmer's Sagewort	2	10/50	0.20
Artemisia douglasiana	Douglas Mugwort	2	10/50	0.10
Sambucus mexicana	Mexican Elderberry	1	90/30	0.27
Upland Species				
Artemisia californica	California sagebrush	2	15/50	0.15
Baccharis pilularis	Coyote Brush	2	15/50	0.15
Deinandra fasciculata	Fascicled Tarweed	3	10/25	0.08
Eriogonum fasciculatum var. *fasciculatum*	Coast California Buckwheat	5	10/65	0.33
Isocoma menziesii var. *menzesii*	Coastal Goldenbush	2	20/40	0.16
Lotus scoparius var. *scoparius*	Deerweed	3	90/60	1.62
Nassella pulchra	Purple Needlegrass	5	70/60	2.10
Eschscholzia californica	California Poppy	4	98/75	2.94
Lasthenia californica	California Goldfields	4	90/85	3.06
Lupinus succulentus	Arroyo Lupine	2	95/80	1.52
Nassella pulchra	Purple Needlegrass	6	70/60	2.52
Sisyrinchium bellum	Blue-eyed Grass	4	95/75	2.85
Vulpia microstachys	Fescue	6	90/80	4.32
Total		**Approx. 55**	**--**	**Approx. 22.61**

Note: Species may be added or deleted from the seed mix by a qualified restoration biologist.

Upland Mitigation Container Plantings and Hydroseeding

Mitigation for impacts on 1.82 acres of Diegan Coastal Sage Scrub and 1.25 acres of Non-native Grassland will occur as mitigation inside the MHPA as shown on Figure 5. This area is approximately 2.60 acres and does not include areas that will be maintenance roads (0.32 acres within MHPA). The 2.60 acres of mitigation will fully offset project impacts on these sensitive habitats. The mitigation area will be planted with 1-gallon container plantings of the species recommended in Table 9 and then hydroseeded with the seed mix in Table 10.

Steep Slope Erosion Control Container Plantings and Hydroseeding

Non-jurisdictional areas that will be disturbed by Project activities that will not be used as mitigation must be revegetated for the purposes of erosion control and to prevent the creation of favorable conditions for invasive species colonization. Portions of these areas are steep slopes (greater than 4:1 slopes for more than 15 feet). As such, these areas will be planted with containter plants as outlined in Table 9 and hydroseeded with the Diegan Coastal Sage Scrub hydroseed mixture described in Table 10.

Table 9. Diegan Coastal Sage Scrub Container Plant Palette

Scientific Name	Common Name	Approx. Quantity /Acre	Size	Approx. Spacing (on center)	Notes
Artemisia californica	California Sagebrush	125	1 gal	4-6′	Cluster w/ *Eriogonum* and *Salvia*
Encelia californica	California Encelia	50	1 gal	4′	
Eriogonum fasciculatum var. *fasciculatum*	Coast California Buckwheat	150	1 gal	4-6′.	Cluster w/ *Artemisia* and *Salvia*
Baccharis sarothroides	Broom Baccharis	55	1 gal	4-6′	Cluster
Salvia mellifera	Black Sage	60	1 gal	4-6′	w/ *Eriogonum* and *Artemisia*
Salvia apiana	White Sage	50	1 gal	4-6′	
Malosma laurina	Laurel Sumac	20	1 gal	12′	Scattered
Rhus integrifolia	Lemonadeberry	20	1 gal	12′	Scattered
Lotus scoparius var. *scoparius*	Deerweed	40	1 gal	4′	
Corethrogyne filaginifolia	Sand Aster	40	1 gal	4′	Scattered
Nassella pulchra	Purple Needlegrass	40	2″ plug	2′	
Total		650			

Note: Species may be added or deleted from the palette and quantities adjusted by a qualified restoration biologist.

Table 10. Diegan Coastal Sage Scrub Hydroseed Mix

Scientific Name	Common Name	Pounds Per Acre	Minimum Percent Purity/ Germination	Pounds Pure Live Seed (PLS) Per Acre
Herbs				
Eschscholzia californica	California Poppy	6	98/75	4.41
Lasthenia californica	California Goldfields	4	90/85	3.06
Lupinus succulentus	Arroyo Lupine	2	95/80	1.52
Nassella pulchra	Purple Needlegrass	8	70/60	3.36
Sisyrinchium bellum	Blue-eyed Grass	6	95/75	4.28
Vulpia microstachys	Fescue	6	90/80	4.32
Shrubs				
Artemisia californica	California Sagebrush	2	15/50	0.15
Baccharis pilularis	Coyote Brush	2	15/50	0.15
Eriogonum fasciculatum var. *fasciculatum*	Coast California Buckwheat	5	10/65	0.33
Isocoma menziesii var. *menziesii*	Coastal Goldenbush	2	20/40	0.16
Lotus scoparius var. *scoparius*	Deerweed	3	90/60	1.62
Viguiera laciniata	San Diego sunflower	5	40/50	1.00
Total		**51**	--	**24.36**

Note: Species may be added or deleted from the seed mix by a qualified restoration biologist.

Maintenance Road Hydroseeding

The maintenance roads will be planted with a low-growing mix of native species that commonly occur in Diegan Coastal Sage Scrub as shown in Table 11. This table was developed based on discussions with the City's Metropolitan Wastewater Department (Balo, 2009), which has numerous maintenance roads throughout City open space areas. The City uses a master list of appropriate species then tailor the list to suit the particular area in which the planting will occur, i.e., use species from the master list that occur or would likely naturally occur in the immediate area, and add other low growing (< 3 feet) species native to the area as needed to create an appropriate palette.

Table 11. Erosion Control Hydroseed Mix for Maintenance Roads

Scientific Name	Common Name	Pounds Per Acre	Minimum Percent Purity/ Germination	Pounds Pure Live Seed (PLS) Per Acre
Herbs				
Ambrosia psilostachya	Western Ragweed	3	10/25	0.08
Deinandra fasciculate	Common Tarweed	3	10/25	0.08
Eriophyllum confertiflorum var. confertiflorum	Golden Yarrow	4	10/25	0.10
Eschscholzia californica	California Poppy	6	98/75	4.41
Lasthenia californica	California Goldfields	4	90/85	3.06
Lupinus succulentus	Arroyo Lupine	2	95/80	1.52
Nassella pulchra	Purple Needlegrass	6	70/60	2.52
Sisyrinchium bellum	Blue-eyed Grass	6	95/75	4.28
Vulpia microstachys	Fescue	6	90/80	4.32
Shubs (low-growing)				
Eriogonum fasciculatum var. *fasciculatum*	Coast California Buckwheat	5	10/65	0.33
Lotus scoparius var. *scoparius*	Deerweed	3	90/60	1.62
Total		**48**	**--**	**22.40**

Note: Species may be added or deleted from the seed mix by a qualified restoration biologist.

Erosion Control/Diegan Coastal Sage Scrub Hydroseeding

With the exception of the restored drainage channel, detention basin, upland mitigation area, steep slopes, and maintenance roads, all areas of the project that were impacted during Project construction will be hydroseeded with Diegan Coastal Sage Scrub hydroseed mix specified in Table 6. The seed mix consists of a combination of quick germinating herbaceous species to provide immediate erosion control and deeper rooted woody shrubs for restoring sensitive Diegan Coastal Sage Scrub habitat. Most areas (approximately 77%) within the Project footprint that will be hydroseeded with this seed mixture currently support non-native plant communities such as Ruderal and Ornamental vegetation and hydroseeding with native Diegan Coastal Sage Scrub species will contribute to a net increase in this habitat within the canyon.

Plant Arrangement/Design

In general, plant material should be clustered and distributed to emulate the natural structure and diversity of the habitat being restored and not planted in rows. Except as otherwise specified or directed by the restoration biologist, each species should be located where favorable

conditions are present and in a manner similar to natural plant distribution rather than attempting to achieve even cover across the site. As much as possible, plant species should be placed where they have the highest potential to thrive based on their known habitat preferences. The mature size of each species and their normal distribution and associations in nature should be considered.

Planting Procedure

Container plantings shall be installed first, followed by application of hydroseed. For container plantings, a hole as deep and twice as wide as each container should be dug then filled with water. Once drained, the container plant should be installed and then the hole should be back-filled. Immediately after installation, the plant should be thoroughly watered to settle the disturbed soil and eliminate air pockets. The entire planting operation should be completed quickly and without interruption. Staking of trees should not occur. On some small plants, stones may be used, if effective, to support the plant. Other standard planting practices and procedures should be used by the revegetation contractor to help ensure successful plant installation.

After container plantings are installed, hydroseed shall be applied pursuant to the following City Landscape Standards hydroseeding procedures:

- Seed mixes shall be specified by the pure live seed of each species.
- Fiber mulch shall be applied at a minimum rate of 2,000 pounds per acre except when used in conjunction with straw mulch, when it shall be applied at a minimum rate of 400 pounds per acre.
- A wetting agent consisting of 95% alkyl polyethylene glycol ether shall be applied as per manufacturer's recommendations.
- Equipment used for the application of hydroseed slurry shall have a built-in agitation system to suspend and homogeneously mix the slurry. The slurry mix shall be dyed green, and the equipment must have a pump capable of applying the slurry uniformly.
- Graded, disturbed, or eroded areas to be treated with non-irrigated hydroseed mix shall receive an interim binder/tackifier as needed between April 2nd and September 30th for dust-erosion control, with subsequent application of hydroseed mix during the rainy season between October 1st and April 1st.
- Graded, disturbed, or eroded areas that will not be permanently paved, covered, by structure, or planted for a period over 90 calendar days shall be temporarily revegetated with a non-irrigated hydroseed mix, ground cover, or equivalent material. Temporary irrigation systems may be used to establish the vegetation.

Timing of Plant Installation

All planting operations and hydroseeding applications shall be performed and completed within 90 days of Project completion, and if possible should be completed within the 30-day period following the onset of winter rains to take advantage of early season precipitation. Planting early in the wet season allows for sufficient root growth before the hotter, drier

conditions of summer. Avoid planting during extreme dry, hot weather unless sufficient irrigation is provided.

4.7 Irrigation Plan

The purpose of using irrigation water is to help ensure establishment of container plants and trigger germination of seeded species. Irrigation should be provided as required for proper germination, development, and maintenance of the vegetation during the initial stages of the mitigation process. A temporary overhead irrigation system (or other suitable irrigation method) will be installed in the City's MHPA upland mitigation area and restored drainage channel mitigation areas only prior to installing container plants and hydroseeding. A permit level temporary irrigation plan has been prepared by the project engineer in accordance with the City of San Diego's Landscape Standards Section II. This information is shown on Figure 4. The water source for the temporary irrigation system will be a fire hydrant along Alta La Jolla Drive immediately north of the project site. The irrigation system to be installed by the contractor must conform to City Landscape Standards specifications, as described in Sections 2.3 and 2.4 of that document, where applicable.

The hydroseed mix used for the project must include a wetting agent consisting of 95 percent alkyl polyethylene glycol ether and be applied per manufacturer's recommendations. This will provide initial irrigation of the seeded areas.

A temporary, overhead irrigation will be installed prior to planting of container plants and seeding. Irrigation should occur during early morning hours and/or evening hours to avoid excess moisture loss. During the first two weeks, watering should occur each day. Following that, irrigation should occur at least twice weekly for the next several months and adjusted based on local precipitation levels and site and soil conditions. There should be enough water present at all times to sustain healthy plant growth, but excessive irrigation should be avoided to prevent disease, discourage excessive weed growth, and minimize the loss of nutrients through leeching. Following initial plant establishment, watering should be less frequent and avoided, when possible. The irrigation schedule should attempt to mimic wet rainfall years through the use of periodic, deep applications of water. A deep soaking of the soil will help promote root development and will enhance survivorship and growth of container plantings and seedlings. The critical period for irrigation is during the first winter and spring following installation of container plants and seeding. The amount of water and length of irrigation should be determined by the restoration biologist based on local weather conditions, soil percolation, and other environmental variables. Typically, supplemental irrigation is significantly reduced or phased out after the third growing season.

Alternative methods of temporary irrigation may be used if necessary upon agreement of the City and the restoration biologist. Other methods may include use of a water truck and/or hand watering, use of a water tank(s) with a drip irrigation system, or other suitable method to provide sufficient irrigation for growth and development of container plantings and seeds.

4.8 As-Built Conditions

As-built drawing(s) showing the condition of the on-site compensatory mitigation site will be certified by a professional engineer and submitted to the Corps within 45 days of fully implementing the compensatory mitigation.

5 Maintenance Activities During the Monitoring Period

5.1 On-Site Maintenance Activities

Maintenance activities are proposed within the on-site restored drainage channel in order to ensure long-term success of the restoration plan. Because on-site mitigation consists of two distinct components; full mitigation for impacts on sensitive habitats and revegetation for erosion control per City standards, the Maintenance Program will consist of two different approaches as follows:

Mitigation Area Maintenance Program

Upland and Restored Drainage Channel Mitigation for Impacts on Sensitive Habitats

- Container Plantings and Hydroseeding
- Temporary Irrigation
- 120-Day Plant Establishment Period
- Five-Year Maintenance Period

During the first 120 days after container plant installation and hydrodseeding, the focus of the mitigation effort will be on establishing healthy plantings and replacing them if necessary, controlling erosion, weeding, and ensuring that the irrigation system in the mitigation areas is functioning properly and providing optimal moisture level for healthy plant growth. General maintenance activities should include, but not be limited to, inspection and replacement of dead or unhealthy plant materials, inspection and remediation of irrigation problems, pest management, prevention of vandalism, erosion control, and site protection.

Following plant establishment, activities within the mitigation area will focus on basic maintenance, qualitative and quantitative monitoring, and reporting throughout the remainder of the five-year period. Further details are provided in Tables 12 and 13.

Erosion Control Areas Maintenance Program

Steep Slope Container Plantings and Hydroseeding;

- Container Plantings and Hydroseeding
- Temporary Irrigation
- 120-Day Plant Establishment Period
- 25 Month Maintenance Period

Erosion Control Hydroseeding of Detention Basin, Maintenance Roads, and Disturbed Areas

- Hydroseeding Only
- No Temporary Irrigation
- 120-Day Plant Establishment Period
- 25 Month Maintenance Period

During the first 120 days after plant installation and hydroseeding, the focus of the revegetation effort will be on assessing container plant survival, seed germination and growth, and controlling erosion. General maintenance activities should include, but not be limited to, removing perennial invasive weeds, pest management, prevention of vandalism, erosion control, and site protection.

Following plant establishment, activities within the revegetation area will focus on basic maintenance, qualitative monitoring, and reporting throughout the remainder of the two-year period. Further details are provided in Table 13.

Weed Control

As stated previously, weed removal and control is a critical factor in the success of the mitigation program. Weedy, non-native vegetation will be controlled as necessary to prevent adverse competition with the mitigation plantings and hydroseeding. Species that occur within the canyon that will be controlled include (but are not limited to), the perennial species Pampas Grass (*Cortaderia* spp.), Tree Tobacco (*Nicotiana glauca*), Castor Bean (*Ricinus communis*), Cyclops Acacia (*Acacia cyclops*), and Peruvian Pepper (*Schinus molle*) and annual/biennial species Russian Thistle (*Salsola tragus*), Crown Daisy (*Chrysanthemum coronarium*), and Black Mustard (*Brassica nigra*). Perennial invasive species will be excluded from the mitigation area and annual weeds should be controlled to allow native species to thrive and dominate, but are not expected to be extirpated from the mitigation area. In addition, all the species listed in Table 1 'Prohibited Species' of the City's Landscape Standards will also be eradicated from the mitigation site. Additional weedy species to be removed may also be identified by the restoration biologist.

Weeding shall be performed on-site by the revegetation contractor monthly during the 120-day plant establishment period following installation. For the remainder of year one, weeding should occur as needed based on the recommendation of the restoration biologist and data obtained during biological monitoring at six months and one year following installation. Weeding will then likely occur semi-annually for the duration of the maintenance and monitoring period. Weeding can be done by mechanical removal and/or the use of herbicide. Herbicides should be used at the discretion of the restoration biologist to control troublesome species. The use of herbicide should be conducted by a licensed revegetation contractor using herbicides that are safe and approved for general use.

Horticultural Treatments

No pruning will be required of the installed plants. If deemed necessary by the restoration biologist, mulch may be installed to increase moisture retention around plantings on an as-needed basis. Plants should be checked for disease during biological monitoring activities

(monthly during 120-day plant establishment period, then at six months, then annually), and diseased plants shall be treated or replaced by the revegetation contractor.

Erosion Control

Standard erosion control BMPs will be in place during construction activities per the Project's Stormwater Pollution Prevention Plan (SWPPP). Once the grading contractor has completed their site preparation and erosion control responsibilities, the revegetation, or other appropriate contractor, will be responsible for erosion control per the project's SWPPP and other requirements identified by the restoration biologist. Erosion control materials typically consist of, but are not limited to, silt fencing, straw wattles, sand bags, and use of a hydroseeding. Once site preparation is completed, the silt fence, straw wattles, etc. should be installed and then the appropriate areas hydroseeded. In areas receiving container plants, hydroseed should be applied following installation of all plants. All straw must be free of weed seeds to avoid further introduction of non-native species to the mitigation area. Erosion control measures will be checked monthly during the 120-day plant establishment period, then at six months, then at least annually for the duration of the monitoring period. Any vandalized or non-functioning erosion control features shall be immediately replaced or repaired as needed by the revegetation contractor.

Replacement Planting and Re-Seeding

As needed based on biological monitoring assessments, plantings will be replaced or re-seeded by the revegetation contractor in accordance with the procedures outlined in Section 6. Visual inspections conducted by the restoration biologist will be used to determine plant survivorship. Any losses of container stock within 120 days of installation will be replaced in-kind by the revegetation contractor. After 120 days, any losses in excess of 10 percent for the first year will be replaced in-kind by the revegetation contractor unless it has been determined by the restoration biologist that use of another species and/or stock size would better achieve the mitigation goals. Thereafter, plant materials will be checked as part of the monitoring program presented in Table 4.

Section 6 provides a detailed list of the mitigation success for revegetation in non-mitigation areas. In summary, Year 1 container stock survivorship shall be 90%. Replacement plantings and reseeding will be done by the revegetation contractor in years 2 and 3 as necessary to achieve an acceptable survival rate (see Section 6.1 for full success criteria). Remedial measures for plantings and hydroseeding within the mitigation area should be finalized by the end of Year 3 because problem issues and areas should be addressed and resolved through adaptive management in years 1-3. If a significant number of plants are still failing at the end of Year 3, remedial measures other than replacement planting and seeding should be considered and implemented to resolve the issue(s).

Site Protection & Signage; Trash & Debris Removal; and Vandalism

The revegetation contractor is responsible for maintaining site protection and signage, trash and debris removal, and prevention of vandalism. Issues such as off-road vehicle activity, destruction of plant material or irrigation system, or illegal trash dumping would be handled by the revegetation contractor in coordination with representatives of the City's Engineering &

Capital Projects Department and the restoration biologist. Corrective and preventative actions could include additional fencing, placement of other barriers, and posting of signs that designate the site as a habitat mitigation area. Site protection and trash removal should be performed more frequently immediately after plant installation (i.e., monthly during the 120-day plant establishment period following installation), then again at six months, then annually for the remainder of the five-year maintenance period. All required landscape areas shall be maintained free of debris and litter. No significant site protection issues are anticipated as the site is currently fenced and not easily accessible.

Pest Management

The revegetation contractor will be responsible for pest management under the direction of the restoration biologist. All plantings will be checked monthly during the 120-day plant establishment period, then at six months, then annually for the duration of the monitoring period. Any pest-infested plants shall be immediately treated or replaced as needed by the revegetation contractor.

Irrigation Maintenance

The revegetation contractor will be responsible for irrigation maintenance. The irrigation system will be checked monthly during the 120-day plant establishment period, then at six months, then annually for the duration of the monitoring period. Any vandalized or malfunctioning irrigation equipment shall be immediately replaced or repaired as needed by the revegetation contractor.

Additional Maintenance

The mitigation areas will be maintained during the monitoring period by the revegetation contractor under the guidance of the restoration biologist. The restoration biologist will be responsible for monitoring site conditions, identifying issues or problems, coordinating with the revegetation contractor for remediation, and verifying that remedial measures have been implemented. The revegetation contractor will maintain the irrigation system, mend fencing and perform general maintenance to the mitigation areas during the monitoring period.

The revegetation contractor will perform the maintenance activities and replacement planting procedures during the monitoring period as discussed above. In addition, maintenance of the mitigation area may be required after high channel flows. As with any newly graded and planted channel, full establishment of vegetation will occur over time. Any storm event that produces erosive velocities could have the potential to damage plantings that are not fully established, and therefore plant maintenance after these types of storm events may be required.

5.1.2 Off-Site Linear Feet Mitigation Area Maintenance Activities

Primary compensation for project impacts will occur on-site; however, to mitigate for permanent loss of 1,250 linear feet of channel, Pampas Grass control will be performed in nearby Kate O. Sessions Memorial Park. As discussed previously, there are considerable patches of Pampas Grass invasion in the park drainage. As part of this Project's mitigation, the Pampas Grass will sprayed with an appropriate herbicide, ideally between November and July.

Pampas grass is a tillering grass, which means it is a collection of blades attached to distinct root segments. As such, care will be taken to ensure that each leaf blade is sprayed. This is difficult since blades are often clustered tightly together. Thus, foliage will be sprayed and after initial treatment, the area will be re-visited within one year and any live leaf blades will be re-sprayed. At this time, the area will also be re-surveyed for new Pampas Grass seedlings, and any seedlings will be treated. If seedlings are very small, they may be hand-pulled; otherwise they will be treated with herbicide. Then, the area will be re-surveyed again within two years of initial treatment to ensure that all Pampas Grass is controlled in the area. The plants will be left in place post-treatment. This is the common practice on City of San Diego lands as the material tends to dry and decompose relatively quickly, and removal can be costly and can adversely impact adjacent native habitat areas. Pampas Grass seed is typically viable for approximately six months, so this treatment regimen is anticipated to extirpate the on-site population (Kelly, 2011).

5.2 Responsible Parties

As stated in the subsections of Section 5.0 above, the revegetation contractor will be the primary responsible party for maintaining the compensatory mitigation site with input from the restoration biologist and City's Engineering and Capital Projects Department.

5.3 Schedule

For the complete schedule of mitigation activities, please see Table 4 in Section 4.0.

6 Monitoring Plan for the Compensatory Mitigation Site

6.1 Performance Standards for Target Dates and Success Criteria

Mitigation success criteria are outlined in Tables 12 and 13 with additional criteria for non-mitigation (revegetation only) areas shown in Table 14. Success criteria have been established for each component of the mitigation effort. For areas that will serve as mitigation for project impacts, the final success criterion is at least 80% cover of native species at the end of the mitigation process. This success criteria applies to areas outside the main channel of water conveyance, which is not expected to support dense vegetative cover due to the cobbly nature of the channel bottom and stream meander, much like similar nearby streams. Upland success criteria are included herein for informational purposes only and are required pursuant to City of San Diego regulations. Please note that the City of San Diego regulatory requirements for the project are 100% coverage of erosion control areas within 25 months.

Table 12. Restored Drainage Channel Mitigation Success Criteria and Maintenance Actions

Milestone	Assessment Criteria	Maintenance Action
120 days	Planting and hydroseeding to achieve 50% overall cover and 90% survivorship of container plantings (excluding main channel area†). 0% cover of perennial invasive species; No more than 25% cover of annual invasive plants*	Replace unhealthy or dead container plants; Provide supplemental water if needed; Increase weed/exotics control; Repair /address erosion control as needed
1 year	90% survival of container plants; Native plant cover of at least 40% (excluding main channel area†); 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*	Replace unhealthy or dead container plants; Provide supplemental water if needed; Increase weed/exotics control; Repair /address erosion control as needed
2 years	Native plant cover of at least 50% (excluding main channel area†); 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*	Provide supplemental water if needed; Increase weed/exotics control; Repair /address erosion control as needed
3 years	Native plant cover of at least 60% (excluding main channel area†); 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*	Provide supplemental water if needed; Increase weed/exotics control; Repair /address erosion control as needed
4 years	Native plant cover of at least 70% (excluding main channel area†); 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*	Provide supplemental water if needed; Increase weed/exotics control; Repair /address erosion control as needed
5 years	Native plant cover of at least 80% (excluding natural openings within the main channel area†); 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*	Provide supplemental water if needed; Increase weed/exotics control; Repair /address erosion control as needed

*Invasive annual plants include any species listed in the City's Landscape Standards Table 1 'Prohibited Species' or listed as having a 'high negative ecological effect on California wildlands' by the California Invasive Plant Council (CalIPC 2009).
† Please note that the main stream channel area is expected to lack dense vegetative cover due to the cobbly substrate, stream meander, and erosive force of water that may preclude dense vegetation from establishing in this area (similar to nearby natural streams). As such, a quantitative assessment criterion is not appropriate for this area. A qualitative assessment should be used to assess the health of the main channel and perennial invasive plant species shall be excluded from this area throughout the restoration period.

Table 13. Upland Mitigation Success Criteria and Maintenance Actions

Milestone	Assessment Criteria	Maintenance Action
120 days	Planting and hydroseeding to achieve 50% overall cover and 90% survivorship of container plantings. 0% cover of perennial invasive plants, no more than 25% cover of invasive annual plants*	Replace unhealthy or dead container plants; Provide supplemental water if needed; Repair /address erosion control as needed Weeding and maintenance as necessary.
1 year	70% survival of container plants; Native cover of 30%; 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*; Minimize erosion	Replace unhealthy or dead container plants; Provide supplemental water if needed; Increase weed/exotics control; Repair /address erosion control as needed Weeding and maintenance as necessary.
2 years	Native cover of 40% 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*; Minimize erosion	Provide supplemental water if needed; Repair /address erosion control as needed Weeding and maintenance as necessary.
3 years	Native cover of 60% 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*; All planting should be completed; irrigation terminated at end of year 3, if practicable; Minimize erosion	Provide supplemental water if needed; Repair /address erosion control as needed Weeding and maintenance as necessary.
4 years	Native cover of at least 70%; 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*; Minimize erosion	Provide supplemental water if needed; Repair /address erosion control as needed Weeding and maintenance as necessary..
5 years	Native plant cover of at least 80%; 0% cover of perennial invasive plants; No more than 20% cover of annual invasive plants*	Provide supplemental water if needed; Repair /address erosion control as needed Weeding and maintenance as necessary.

*Invasive annual plants include any species listed in the City's Landscape Standards Table 1 'Prohibited Species' or listed as having a 'high negative ecological effect on California wildlands' by the California Invasive Plant Council (CalIPC 2009).

Table 14. Success Criteria and Maintenance Actions for Steep Slope Erosion Control Areas and Areas Receiving Erosion Control Hydroseed (Detention Basin, Maintenance Roads, Disturbed Areas) Only

Milestone	Assessment Criteria	Maintenance Action
120 days	Plant cover of approximately 50% (visual estimate by restoration biologist); 0% cover of perennial invasive plants.	Reseed if necessary based on poor germination or development of seeded species; Provide supplemental water if deemed necessary by restoration biologist; Increase weed/exotics control; Repair /address erosion control as needed
1 year	Plant cover of approximately 80% (visual estimate by restoration biologist); 0% cover of perennial invasive plants.	Provide supplemental water if deemed necessary by restoration biologist; Increase weed/exotics control; Repair /address erosion control as needed
25 Months	Plant cover of approximately 100% (visual estimate by restoration biologist); 0% cover of perennial invasive plants.	Provide supplemental water if deemed necessary by restoration biologist; Increase weed/exotics control; Repair/address erosion control as needed

6.2 Target Functions and Values

The target functions and values for the on-site mitigation areas are as follows:

- Greatly Improved **Flood Control** Over Current Conditions
- Vastly Improved **Waste Treatment/Pollution Interception** Through Restored Drainage Channel and Detention Basin
- Improved **Coastal Protection** Through Water Quality Benefit of the Restored Drainage Channel and Detention Basin
- Greater **Ground Water Recharge** Through Improved Infiltration
- Improved **Sediment Traps** Through Reduced Scour and Erosion
- Higher Quality **Habitat for Wildlife** Through Created and Restored Native Habitat
- Improved **Aesthetics** Through Creation and Restoration of Native Habitat

The target functions and values for the off-site linear foot mitigation area is as follows:

- Higher Quality **Habitat for Wildlife** Through Created and Restored Native Habitat
- Improved **Recreation, Aesthetics, Education** Through Restoration of Native Habitat

As stated earlier, the basin is designed to capture all non-storm water flows and will treat as much of the 85th percentile storm (0.5 inches) as possible. Also, the detention basin will improve flood control by attenuating the increase in the 100-year flood peak due to development. Both of these factors will provide downstream benefits to the Pacific Ocean by improved water quality and reduction of excess sedimentation. In addition, the basin will be planted with riparian-upland transitional hydroseed mix to provide quality native habitat.

Habitat for wildlife on-site will lost temporarily, but will grow rapidly from seeds and container plantings. To be consistent with existing native habitats in the canyon and surrounding areas, the drainage channel and adjacent uplands will be revegetated with a structurally and species

diverse plant palette. Upon meeting the success criteria, this restored habitat will have higher function and value because these areas will not support perennial invasive species and will be of higher species diversity.

The value of the on-site restored areas will likely still be limited to aesthetics, but will be greatly enhanced as Alta La Jolla Canyon will support a properly functioning drainage with higher quality native habitat following achievement of the success criteria.

6.3 Target Hydrological Regime

Prior to creation of this plan, a hydrologic study of the Project area was conducted by Geosyntec (2010). This study was used in the design of the weir structure that will divert unnaturally high stormwater flows in the Project area. With this diversion, the hydrology of the restored channel will be returned to approximate pre-development flow volume, duration, and rates . The long-term stability of the restored channel will thus be improved because low or non-storm water flows (flows up to approximately 0.30 cubic feet per second [cfs]) and high erosive flows (runoff rates between 20 percent of the 5-year pre-development event and the 10-year pre-development event) will be diverted to the 36-inch/42-inch RCP and detention basin. This innovative design will balance water quality and channel stability methodologies to maximize treatment and long-term channel stability.

The restored natural channel will be designed to match its pre-developed slope and geometry, as determined by historic topographic maps, and will create channel conditions (velocities, shear stresses, etc.) that mimic pre-development hydraulics to the extent possible. The restored drainage channel will consist of a flat one-foot deep and four-foot wide natural (soil) bed, with natural banks approximately eight-feet wide, for a length of approximately 1,270 feet for a total of 0.68 acres. Within this restored channel, flows will meander naturally within the channel banks free of berms, channelization and man-made constraints. The new channel will restore 0.35 acres (1,270 LF) of Corps jurisdictional OWUS. (Figure 3). The jurisdictional area is calculated based on an approximately 1/2-foot deep, four-foot wide channel, with approximately 4-foot banks on each side (approximately 1-year frequency storm event). The restored channel will be designed to receive flows to support vegetation similar to pre-development conditions (i.e., drought tolerant vegetation or vegetation that does not establish as a result of non-storm water flows).

An approximately 0.67 acre detention basin will be constructed in the southern portion of the site (Figure 3). The detention basin will be designed to capture all non-storm water flows and treat as much of the 85th percentile storm (0.5"), as possible and will help attenuate the increase in the 100-year flood peak due to development. The detention basin is designed to drain within 48 hours to avoid vector control issues (i.e. mosquito breeding).

Based on this hydrologic regime, riparian plant species were selected for planting within and immediately adjacent to the channel, with transitional species along the channel and higher up on the banks. Although historically a ephemeral drainage with little or no riparian vegetation, this plan proposes some riparian plantings because improved channel stability should allow for water to move through the drainage, infiltrate, and be used by riparian plant species rather than

produce severe scour and erosion as is currently the case. Riparian plantings will be placed in areas most likely to support them such as near the end of drainage outfalls and meanders in the drainage where water velocity typically slows. Transitional and upland plantings along the drainage buffer are expected to thrive as they are consistent with the flora currently present in the canyon or known to inhabit stream banks and adjacent areas in coastal San Diego.

Please see the *Alta La Jolla Drive Drainage Repair Project, Phase 2, Hydrology and Hydraulic Study* (Geosyntec, 2010) that was submitted as part of the Section 404 application package for additional information and supporting models.

6.4 Target Jurisdictional and Non-Jurisdictional Acreages to be Restored

Table 15 summarizes the target jurisdictional and non-jurisdictional acreages to be restored as part of the compensatory mitigation.

Table 15. Summary of Target Jurisdictional and Non-Jurisdictional Acreages to be Restored

Jurisdictional Acreage	0.35 acres of OWUS (plus 0.33 acres of transitional buffer)
Jurisdictional Linear Feet	On-site restoration of Phase 2 linear feet; 1,250 of off-site invasives removal for mitigation of linear feet loss
Non-jurisdictional Acreage	2.60 acres of Diegan Coastal Sage Scrub

6.5 Monitoring Methods

A monitoring program spanning five years (or until all success criteria have been met) will be conducted by the restoration biologist. The monitoring program is intended to document the progress of the mitigation effort as well as to fulfill Project mitigation requirements. The primary goals of the monitoring program have been designed to gather information on the success of plant establishment and to recommend any remedial actions. The performance standards outlined herein have been developed based on the Corps' *Final Mitigation Guidelines and Monitoring Requirements* (2004) and the City of San Diego's Biology Guidelines and Landscape Standard regulations.

If a performance criterion is not met for all or a portion of the mitigation areas in any year, or if the final success criteria are not met, the permittee shall prepare an analysis of the cause(s) of failure and, if determined necessary by the City, propose remedial action for approval. If the mitigation site has not met the performance standards, the responsible party's maintenance and monitoring obligations shall continue until the Corps and the City's Development Services Department and MSCP Section give final project confirmation.

Qualitative Monitoring Procedures

Qualitative monitoring of the mitigation areas will be conducted by the restoration biologist. Qualitative monitoring will consist of establishing photo documentation points throughout the

mitigation area to document site conditions through time and a visual estimation of plant cover within the hydroseed areas.

Fixed photo points (number of points to be determined by the restoration biologist) should be marked within the mitigation area using metal stakes or similar. Photos should be taken annually at each photo documentation point and the direction of the photo recorded. Photo documentation is an important tool in assessing overall development of the mitigation areas and photos should be included in the annual reports to provide visual documentation of site conditions.

Quantitative Monitoring Procedures

Quantitative analysis shall consist of estimates of overall and relative percent plant cover using transects within areas receiving container plantings. Visual estimates of plant cover in the areas that are only receiving hydroseed will be recorded, but transects will not be used.

Transects should be established across the mitigation area to provide a thorough assessment of the developing vegetation. The number, length, and orientation of the transects should be determined by the restoration biologist based the configuration of the mitigation area and placed to collect data across all representative areas. The point-intercept method, or similar, should be used to count and identify plant species at intervals along the transects. For example, if a 25 meter transect is used, plant species could be recorded at each 1 meter interval for a total of 25 data points per transect. The results of these measurements will be evaluated against the performance/success criteria outlined in Section 6.1.

For the off-site linear foot mitigation area at Kate O. Sessions Memorial Park, a baseline survey of Pampas Grass infestation will be peformed. Photographs will be taken at fixed photo points. At the completion of treatment, a final survey will be conducted to confirm control of all Pampas Grass in the mitigation area. Photographs will be taken at the fixed photo points established during the baseline survey.

6.6 Monitoring Schedule

Monitoring shall commence with site preparation, continuing through the five-year post-installation period or until success criteria are met. Biological monitoring shall be performed on-site monthly during the 120-day plant establishment period, at six months, then semi-annually. The monitoring program will emphasize qualitative and quantitative assessments of the status of the mitigation program. Biological monitoring at the off-site linear foot mitigation site will occur prior to Pampas Grass treatment, then at the conclusion of treatments. Please see Table 4 in Section 4.0 for a detailed schedule of monitoring activities throughout the mitigation effort.

6.7 Annual Monitoring Reports

A detailed monitoring report will be submitted to the Corps annually. Monitoring reports must follow the Corps' outline for monitoring reports provided in their *Final Mitigation Guidelines and Monitoring Requirements* (2004) and must include the information requested therein.

Additional reporting as required under the City's revegetation guidelines will be provided to the City. Progress reports detailing the results of the qualitative assessments and annual quantitative assessments of the condition of the mitigation plantings and hydroseed shall be submitted to the client within 60 days of the field surveys. These reports will include information on problems with irrigation, pests, vandalism, mortality, and weeds that have been identified during the monitoring. Proposed remedial actions will also be discussed as a part of these reports. Details of any necessary replacement plantings will be included. Once the site meets regulatory success requirements, a final report will be prepared and submitted to the Corps and to the City's Development Services Department and MSCP Section.

Progress and technical reports shall also be submitted to the City's Engineering & Capital Projects Department for review. The client shall make these reports available to the Corps and the City's Development Services Department or City Planning & Community Investment Department's MSCP Section as needed. Any comments on the monitoring program or site conditions should be forwarded to the project restoration biologist.

7 Completion of Compensatory Mitigation

7.1 Notification of Completion

When all of the final success criteria have been met, notification of these events shall be provided with the final report. All revegetated areas shall be maintained by the permittee until final written approval by the Corps. The temporary irrigation system shall be removed prior to final agency approval of the mitigation area. The compensatory mitigation effort is not complete until a Corps Los Angeles District project manager confirms completion during a site inspection.

7.2 Agency Confirmation

The compensatory mitigation effort is not complete until a Corps Los Angeles District Project Manager confirms it is complete during a site inspection.

8 Contingency Measures

8.1 Initiating Procedures

Contingency measures to the onsite compensatory mitigation proposed herein may be necessary if the mitigation area does not meet or exceed the success criteria after seven years from the start of the mitigation effort. This would provide the responsible parties two additional years beyond the expected five year process to remediate problems and achieve the success criteria that have been proposed. Contingency measures would be initiated through written request by the Corps to begin pursuing offsite mitigation at a Corps approved mitigation bank.

8.2 Alternative Locations for Contingency Compensatory Mitigation

If success criteria cannot be met at the onsite compensatory mitigation site, subject to Corps approval, land can be purchased at an offsite 'mitigation bank' to mitigate impacts on Corps jurisdictional areas.

8.3 Funding Mechanism

The funding mechanism for contingency measures would be allocated through the City of San Diego's funding procedures to purchase necessary mitigation lands.

8.4 Responsible Parties

The financial responsibility for contingency measures such as offsite acquisition of land in a mitigation bank rests solely with the project proponent of record, the City of San Diego.

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