

La Jolla View Reservoir Project
Environmental Impact Report
SCH No. 2018041020 - Project No. 331101

Appendix D3

Off-site Tier I Maritime Succulent
Scrub Restoration Plan

February 2020

La Jolla View Reservoir Replacement Project

Off-site Tier I Maritime Succulent Scrub Restoration Plan

October 2019 | SDD-32.11

Prepared for:

City of San Diego
Public Works Department
525 B Street, Suite 750
San Diego, CA 92101

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

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ACRONYMS AND ABBREVIATIONS

AMSL	above mean sea level
BMP	Best Management Practice
CAGN	coastal California gnatcatcher
Cal-IPC	California Invasive Plant Council
City	City of San Diego
CRPR	California Rare Plant Rank
DCSS	Diegan coastal sage scrub
DSD	Development Services Department
HELIX	HELIX Environmental Planning, Inc.
lbs.	pounds
MHPA	Multi-Habitat Planning Area
MSCP	Multiple Species Conservation Program
MSS	Maritime Succulent Scrub
NNG	non-native grassland
P&R	Parks and Recreation
Park	La Jolla Natural Open Space Park
PEP	Plant Establishment Period
Plan	restoration plan
Preserve	Los Peñasquitos Canyon Preserve
Project	La Jolla View Reservoir Replacement Project
PUD	Public Utilities Department
SDG&E	San Diego Gas and Electric
SMS	southern maritime chaparral
USGS	U.S. Geological Survey

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1.0 INTRODUCTION

This report presents a restoration plan (plan) for Tier I impacts resulting from the City of San Diego (City) La Jolla View Reservoir Replacement Project (Project). Mitigation for impacts to other sensitive vegetation communities is not discussed in this report. This plan is anticipated to fulfill mitigation requirements of the City's Multiple Species Conservation Program (MSCP) Subarea Plan (City of San Diego [City] 1997) and the City's Land Development Code Biology Guidelines (City 2018a), and fulfill the Project's obligation under the California Environmental Quality Act.

The goal of the restoration proposed in this plan is the conversion of approximately 7.01 acres of disturbed non-native grassland (NNG) and disturbed Diegan coastal sage scrub (DCSS) to maritime succulent scrub (MSS) within the Los Peñasquitos Canyon Preserve (Preserve). Restoration will consist of initial removal of non-native vegetation from existing upland habitat; the installation of irrigation, container plantings, and seed; and maintenance for five years to control non-native vegetation and aid in the establishment of MSS vegetation. The restored habitat is expected to approach the function and value of early successional MSS habitat within five years.

This plan has been prepared according to Attachment B of the Land Development Code – Biology Guidelines, “General Outline for Conceptual Revegetation/Restoration Plans” (City 2018b). Nomenclature used in this report follows Holland (1986) Oberbauer (2008) for vegetation communities, The Jepson Flora Project (2018) for plants, American Ornithological Society (2018) for birds, and Society for the Study of Amphibians and Reptiles (2018). Habitat sensitivity is based on the City's Biology Guidelines (City 2018a).

2.0 PROJECT BACKGROUND

2.1 PROJECT LOCATION

The Project is generally located in the coastal zone, in central coastal San Diego County, within the La Jolla community of the City of San Diego, California (Figure 1, *Regional Location*). It is situated in unsectioned land within Township 15 South, Range 4 West on the U.S. Geological Survey (USGS) 7.5-minute La Jolla quadrangle (Figure 2, *USGS Topography - Project Site*). Specifically, most of the Project is located within the 42-acre La Jolla Natural Open Space Park (Park), which is a part of the City's Parks and Recreation Open Space, with surrounding land uses consisting of single-family residences to the north, south, and west; open space to the east; and a golf course to the southwest (Figure 3, *Aerial Vicinity - Project Site*).

The existing La Jolla View Reservoir (LJVR) is located in the Park, approximately 500 feet east of Country Club Drive; the La Jolla Exchange Place Reservoir and Pump Station is located outside of the Park in a residential area between Country Club Drive and Al Bahr Drive, south of Soledad Avenue. The Project site is located within the La Jolla Community Plan area, which designates the Project site for “Parks, Open Space” and within and adjacent to the Multi-Habitat Planning Area (MHPA) of the City's MSCP (Figure 3).

2.2 PROJECT DESCRIPTION

The Project would relocate the existing aboveground LJVR to a higher elevation to properly service current water system hydraulics, to increase the volume to provide storage commensurate with current water system needs, and to bury the reservoir to minimize visual impacts within the Park. Both the existing reservoir and pump station would be demolished. The Project would consist of the construction of a new 3.1-million gallon (MG) pre-stressed concrete reservoir, construction of approximately 2,700 linear feet of new pipelines, installation of hydraulic monitoring equipment, re-construction of a paved access road (Encelia Drive), and construction of a temporary access road. The City is the lead agency for the Project.

2.3 EXISTING CONDITIONS WITHIN THE PROJECT SITE

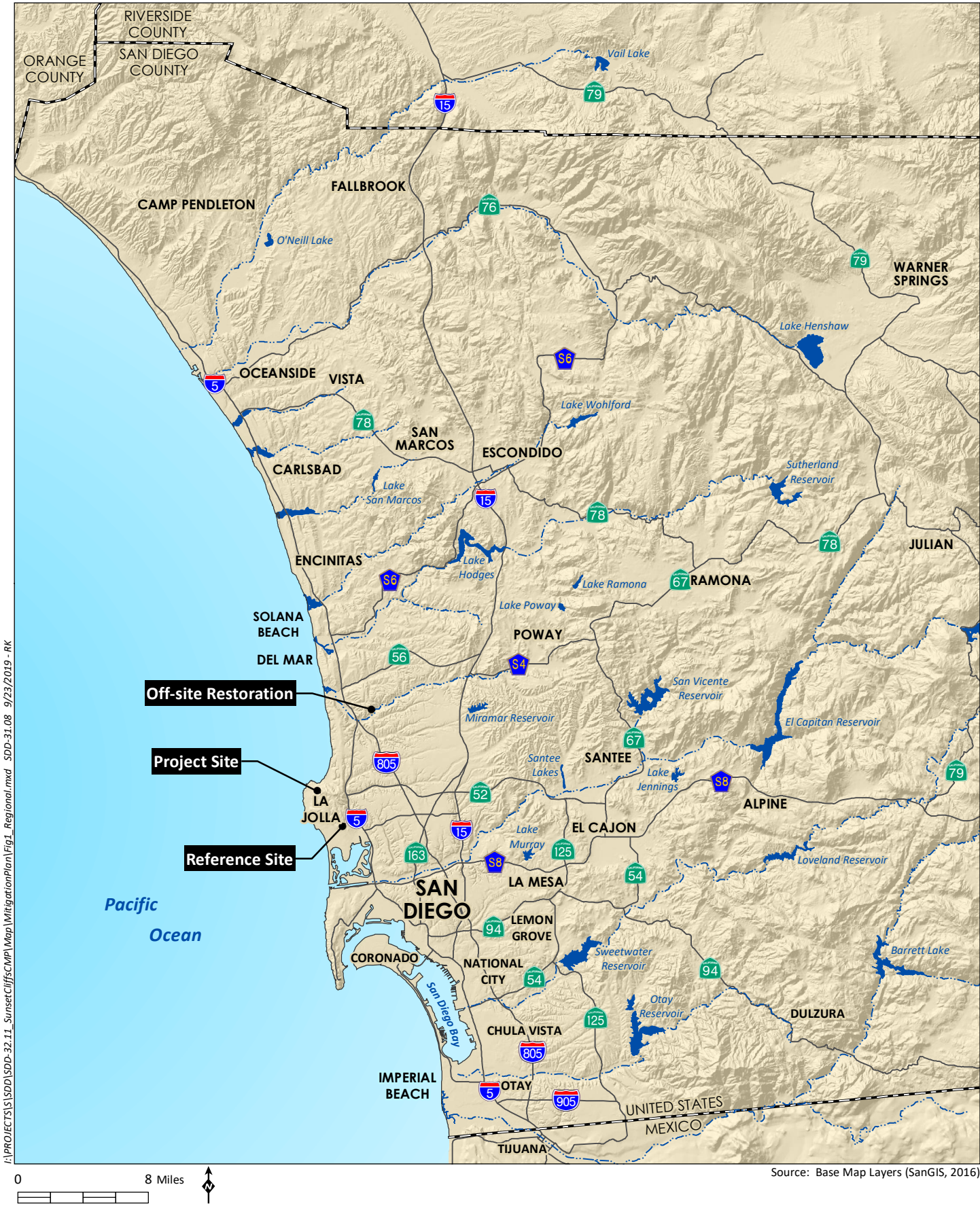
2.3.1 Vegetation Communities/Land Uses

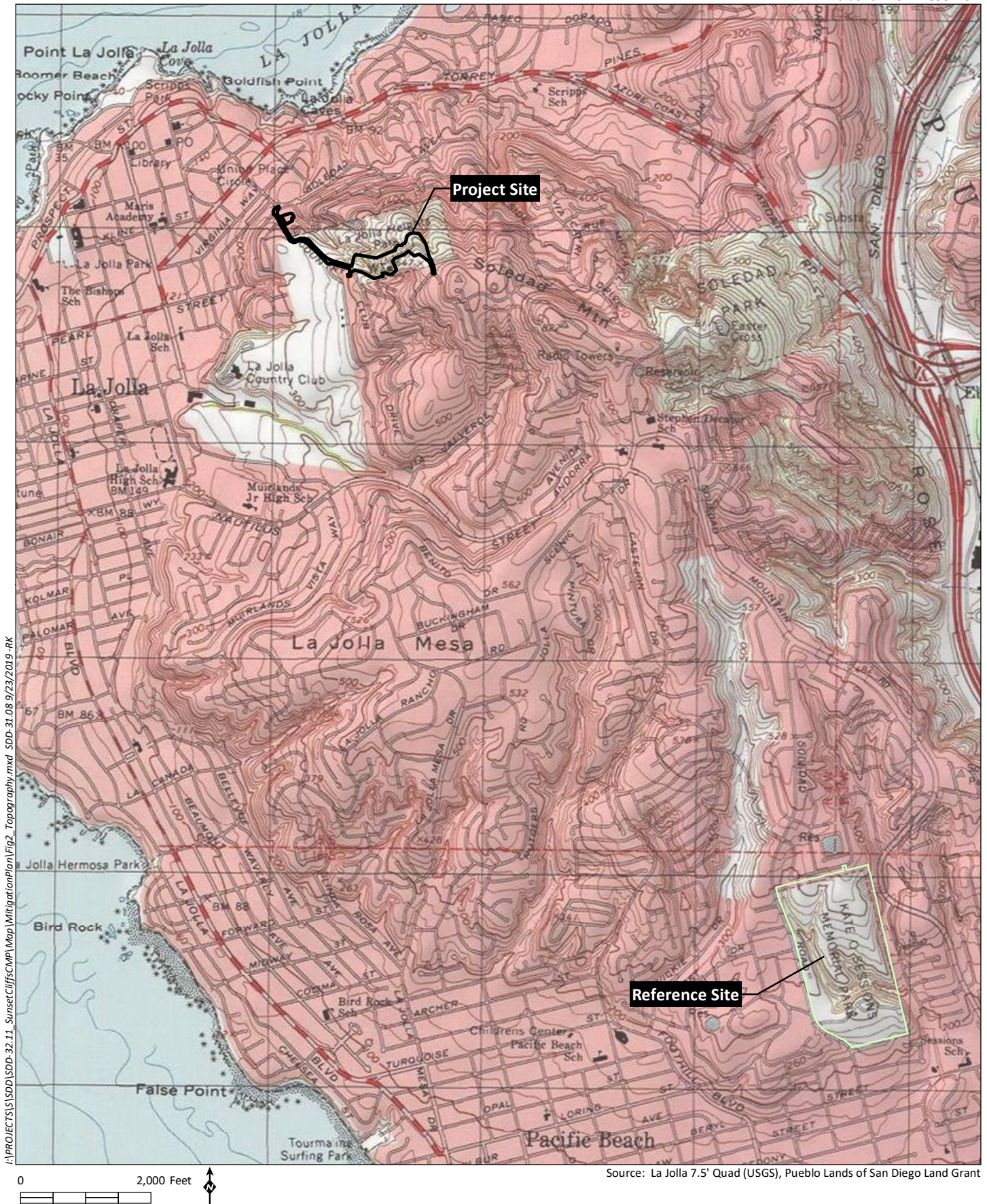
The Project site currently supports six vegetation communities including southern maritime chaparral (SMC), DCSS, DCSS/ornamental, eucalyptus woodland, ornamental vegetation, and disturbed land (Figure 4, *La Jolla View Reservoir Vegetation*; Rocks Biological Consulting 2019). The City defines Environmentally Sensitive Lands in their Land Development Code Biology Guidelines (City 2018a). All wetlands and associated plant communities are protected, and upland vegetation is grouped into tiers based upon the relative scarcity and sensitivity of each habitat (Tier I–Tier IIIB). The Project site supports two sensitive vegetation communities: SMC (Tier I) and DCSS (Tier II). Southern maritime chaparral (SMC) vegetation within the Project site is dominated by chamise (*Adenostoma fasciculatum*), Nuttall’s scrub oak (*Quercus dumosa*), black sage (*Salvia mellifera*), and toyon (*Heteromeles arbutifolia*). Diegan coastal sage scrub (DCSS) is composed of small patches of shrubs including broom baccharis (*Baccharis sarothroides*), coastal sagebrush (*Artemisia californica*), and California encelia (*Encelia californica*). On-site elevations range from approximately 650 feet above mean sea level (AMSL) in the southeastern portion of the site to approximately 220 feet AMSL in its northwestern portion (HELIX Environmental Planning, Inc. [HELIX] 2018). Four soil types are mapped within the Project site: Altamont clay (30 to 50 percent slopes), Huerhuero loam (15 to 30 percent slopes, eroded), Huerhuero loam (30 percent slopes, two to nine percent slopes), and Olivenhain cobbly loam (30 to 50 percent slopes).

2.3.2 Sensitive Species

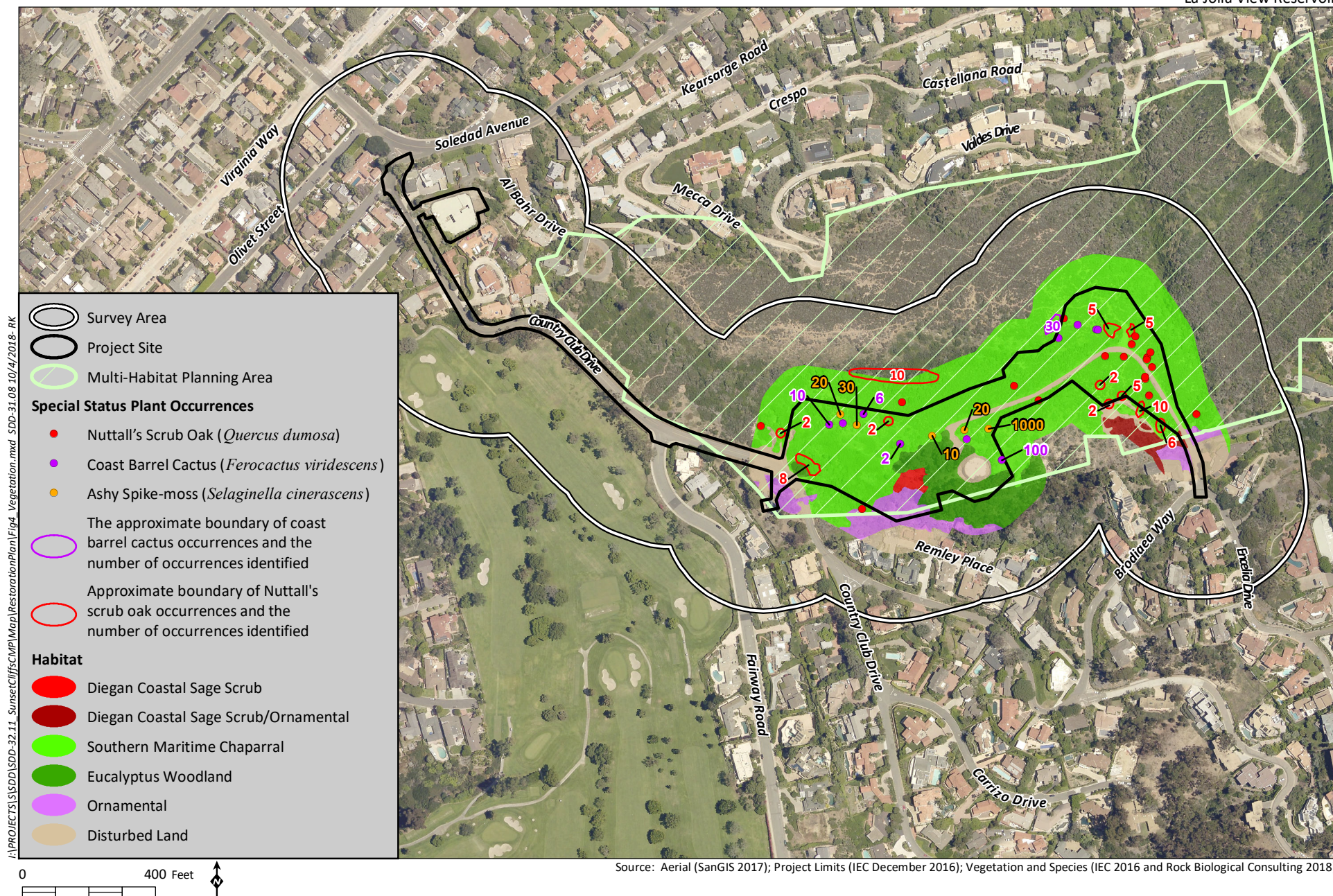
Three sensitive plants were observed within the Project site (Figure 4; Rocks 2019): Nuttall’s scrub oak, ashy spike moss (*Selaginella cinerascens*), and San Diego barrel cactus (*Ferocactus viridescens*). Nuttall’s scrub oak is a CRPR 1B.1 species, which indicates it is considered “seriously threatened in California and elsewhere.” Ashy spike moss is a California Rare Plant Rank (CRPR) 4.1 species, which indicates it is on a watch list and has a “limited distribution in California.” San Diego barrel cactus is a CRPR 2B.1 species, which indicates it is considered “seriously threatened in California but more common elsewhere” and is an MSCP covered species.

One sensitive animal, a single least Bell’s vireo (*Vireo belli pusillus*), was observed on the Project site in early spring 2014 in SMC habitat (Rocks 2019). This species typically inhabits riparian habitat and, given a lack of appropriate breeding habitat in the park and timing of the observation, it was considered an isolated sighting of a migratory individual. Given the presence of DCSS habitat, focused (protocol-level) surveys for the federally-listed threatened and MSCP-covered coastal California gnatcatcher (*Polioptila*









californica californica; CAGN) of the full Project area and a 300-foot buffer were performed in 2015 with negative results (Rocks 2019).

2.4 PROJECT IMPACTS

2.4.1 Vegetation Communities/Land Uses

LJVR replacement, including the construction of a temporary stockpile and construction access road, would result in direct impacts to approximately 5.67 acres of sensitive upland habitat, consisting of 5.53 acres of Tier I SMC and 0.13 acre of Tier II DCSS located within the MHPA, and 0.01 acre of DCSS located outside of the MHPA (Figure 4; Table 1, *Vegetation Impacts*). The associated Exchange Place reservoir demolition would result in additional impacts to 0.51 acre of disturbed land located outside of the MHPA. Impacts to Tier I and Tier II habitat are considered significant and require mitigation pursuant to the City's Biology Guidelines (City 2018a) and MSCP regulations (City 1997). Impacts to Tier IV habitats are not considered significant and do not require mitigation.

Table 1
VEGETATION IMPACTS

Habitat Type (Tier)	Tier ¹	Impacts (acres)				Total
		Reservoir and Pipeline Easement		Temporary Stockpile and Construction Access Road		
		Inside MHPA	Outside MHPA	Inside MHPA	Outside MHPA	
Southern Maritime Chaparral	I	2.13	-	3.40	-	5.53
Diegan coastal sage scrub	II	-	-	0.13	0.01	0.14
Eucalyptus Woodland	IV	0.01	-	0.73	0.05	0.79
Ornamental	IV	0.01	0.01	0.23	0.06	0.31
Disturbed Land	IV	0.10	0.01	0.80	1.50	-2.41
TOTAL		2.25	0.02	5.29	1.62	9.18

¹ Tiers refer to City of San Diego (City) Multiple Species Conservation Program (MSCP) Subarea Plan (City 1997) habitat classification system. Impacts within the Country Club Road portion of the impact area are included within the Reservoir and Pipeline Easement acreages.

2.4.2 Sensitive Species

The Project would impact sensitive plants including ashy spike moss, several San Diego barrel cactus, and approximately 45 Nuttall's scrub oak. The Project would also impact habitat for potentially occurring sensitive wildlife such as the CAGN, coast horned lizard, and orange-throated whiptail.

2.5 REQUIRED MITIGATION

2.5.1 Vegetation Communities/Land Uses

In accordance with City's Biology Guidelines (2018a), impacts to Tiers I and II habitats must be mitigated. Mitigation for impacts to Tier I habitat located inside the MHPA requires a 2:1 ratio for mitigation occurring within the MHPA, and 3:1 ratio outside of the MHPA (Table 2, *Mitigation Requirements for Project Impacts on Sensitive Upland Vegetation Communities*). Tier I mitigation must occur as Tier I habitat, though it may be out-of-kind. Mitigation for impacts to Tier II habitat inside the MHPA requires

a 1:1 ratio for mitigation occurring within the MHPA and 2:1 ratio outside of the MHPA; however, if Tier II impacts are located outside of the MHPA, then the ratio is reduced to 1.5:1 for mitigation occurring outside the MHPA. Impacts to Tier II habitat can be mitigated as Tier II or higher tier habitat.

If all mitigation were to occur wholly inside the MHPA a total of 11.20 acres of mitigation would be required for habitat impacts (including at least 11.06 acres of Tier I habitat and the remainder as Tier I, or II habitat) and if mitigation were wholly occurring outside of the MHPA a total of 16.87 acres of mitigation would be required for habitat impacts (including at least 16.59 acres of Tier I habitat and the remainder as Tier II habitat).

Table 2
MITIGATION REQUIREMENTS FOR PROJECT IMPACTS ON SENSITIVE UPLAND VEGETATION COMMUNITIES

Habitat Type	Tier	Project Impact (acres)		Mitigation Requirement			
		Inside MHPA	Outside MHPA	Inside MHPA		Outside MHPA	
				Ratio	Acres	Ratio	Acres
Southern Maritime Chaparral	I	5.53	-	2:1 ¹	11.06	3:1 ¹	16.59
Diegan coastal sage scrub	II	0.13	0.01	1:1/1:1 ^{2,3}	0.14	2:1/1.5:1 ^{2,3}	0.28
TOTALS		5.66	0.01		11.20		16.87

¹ Must occur as Tier I habitat, though this can be out-of-kind

² For impacts occurring inside/outside the MHPA

³ Can occur as Tier I or II habitat

2.5.2 Sensitive Species

Project impacts to ashy spike moss, which is relatively common in San Diego and is being conserved through the MSCP program, would not be significant and requires no mitigation.

Coast barrel cactus is an MSCP covered species; thus, take of the species is allowed for projects that comply with the City's MSCP implementing regulations. The Project complies with MSCP implementing regulations; therefore, impacts would be less than significant. Salvage and transplantation of this species is included in the on-site restoration plan to further protect this species.

The loss of approximately 45 Nuttall's scrub oak plants is considered adverse; however, securing comparable habitat and compliance with the MSCP offsets impacts to this species. Therefore, impacts are not considered significant and no species-specific mitigation is required.

Coast horned lizard is an MSCP covered species; thus, take of the species is allowed for projects that comply with the City's MSCP implementing regulations. To comply with the implementing regulations for this species, the Project is (1) not creating edge effects since it is replacing an existing reservoir with an underground reservoir and (2) removing all aboveground temporary irrigation (which encourages Argentine ant population increases).

Orange-throated whiptail is not an MSCP covered species. The potential loss of orange-throated whiptail individuals, if present, would be adverse; however, securing comparable habitat and compliance with the MSCP offsets impacts on most sensitive species, including orange-throated whiptails. Therefore, potential impacts on this species would not be considered significant and no species-specific mitigation is required.

3.0 RESTORATION OVERVIEW

3.1 RESTORATION GOALS

To meet the mitigation requirement for impacts to sensitive habitat, the City proposes to restore 4.57 acres of Tier I SMC habitat on site within the proposed Project limits of work, of which 4.53 acres would be located within the MHPA and 0.04 acre would be outside of the MHPA (Table 3, *Proposed Mitigation for Project Impacts to Sensitive Upland Vegetation Communities*). To further protect San Diego barrel cactus, all individuals identified within the impact area will be salvaged, stored temporarily, and transplanted back into the on-site restoration area. Although not required, the on-site restoration plant palette includes this species to further offset impacts. Like coast barrel cactus, Nuttall's scrub oak is included in the on-site restoration plant palette, substantially offsetting the Project-related loss of this species. On-site mitigation is discussed in detail in a separate report (HELIX 2019).

Table 3
PROPOSED MITIGATION FOR PROJECT IMPACTS TO SENSITIVE UPLAND VEGETATION COMMUNITIES

Impacts		Mitigation Requirements		Proposed Mitigation		
Vegetation Community	Tier	Ratio ¹	Acres ¹	On-Site		Off-Site ⁴
				Inside MHPA	Outside MHPA	
Southern Maritime Chaparral	I	2:1/3:1	11.06/16.59	4.53 ²	0.04 ³	6.50 ⁵
Diegan Coastal Sage Scrub	II	1:1/2:1	0.14/0.28	--	--	0.14
TOTAL		--	11.20/16.87	4.53	0.04	6.64

¹ For mitigation occurring inside/outside the MHPA.

² Based on a 2:1 mitigation ratio, 4.53 acres of on-site restoration provides mitigation for 2.27 acres of project impact.

³ Based on a 3:1 mitigation ratio, 0.04 acre of on-site restoration provides mitigation for 0.01 acre of project impact.

⁴ All off-site mitigation will occur within the MHPA.

⁵ Based on 2.28 acres of southern maritime chaparral mitigated on-site (see footnotes 2 and 3, above) and a 2:1 mitigation ratio for off-site mitigation within the MHPA [(5.53-2.28) x 2 = 6.50].

The remaining 6.50 acres of required Tier I and 0.14 acre of Tier II mitigation would occur off-site within the MHPA at Los Peñasquitos Canyon Preserve. The purpose of this restoration plan is to provide the framework for off-site compensatory mitigation for Tier I and Tier II vegetation impacts resulting from the Project. To this end, this plan proposes a total of 7.01 acres of off-site restoration consisting of the conversion of disturbed NNG and enhancement of disturbed DCSS to Tier I habitat. For contingency purposes, an excess of 0.37 acre of restoration will be provided. The final goal will be to establish habitat that meets the City's description of MSS (Oberbauer 2008) by the end of a five-year maintenance period. Per Appendix I of the City's Biology Guidelines (City 2018a), no additional mitigation is required for impacts to NNG resulting from conversion of this habitat type to Tier I habitat. Enhancement of disturbed DCSS (with sparse native vegetation and moderate to high cover by non-native grasses and forbs) to Tier I habitat likewise provides a benefit by restoring habitat that historically used to be more common in coastal areas and was more abundant within Los Peñasquitos canyon prior to recent fires that favored an expansion of non-native grasses.

3.2 RESTORATION LOCATION

The proposed off-site Tier I restoration site is located within the Los Peñasquitos Canyon Preserve in the north coastal portion of the City of San Diego, California (Figure 1). It is situated in an unsectioned portion of the Los Peñasquitos Land Grant in Township 14 South, Range 3 West on the USGS 7.5-minute Del Mar quadrangle (Figure 5, *USGS Topography – Off-site Restoration*). The site is wholly located on City-owned land (Accessor Parcel Number 310-050-14). It is situated within the western portion of Los Peñasquitos Canyon to the east of Interstate 805 and Vista Sorrento Parkway, to the south of East Ocean Aire Drive, and north of Sorrento Valley Boulevard and Peñasquitos Creek (Figure 6, *Aerial Vicinity – Off-site Restoration*). The proposed restoration site occurs within dedicated parkland in the MHPA (Figure 6). Existing dirt access roads occur nearby and will provide access for restoration activities.

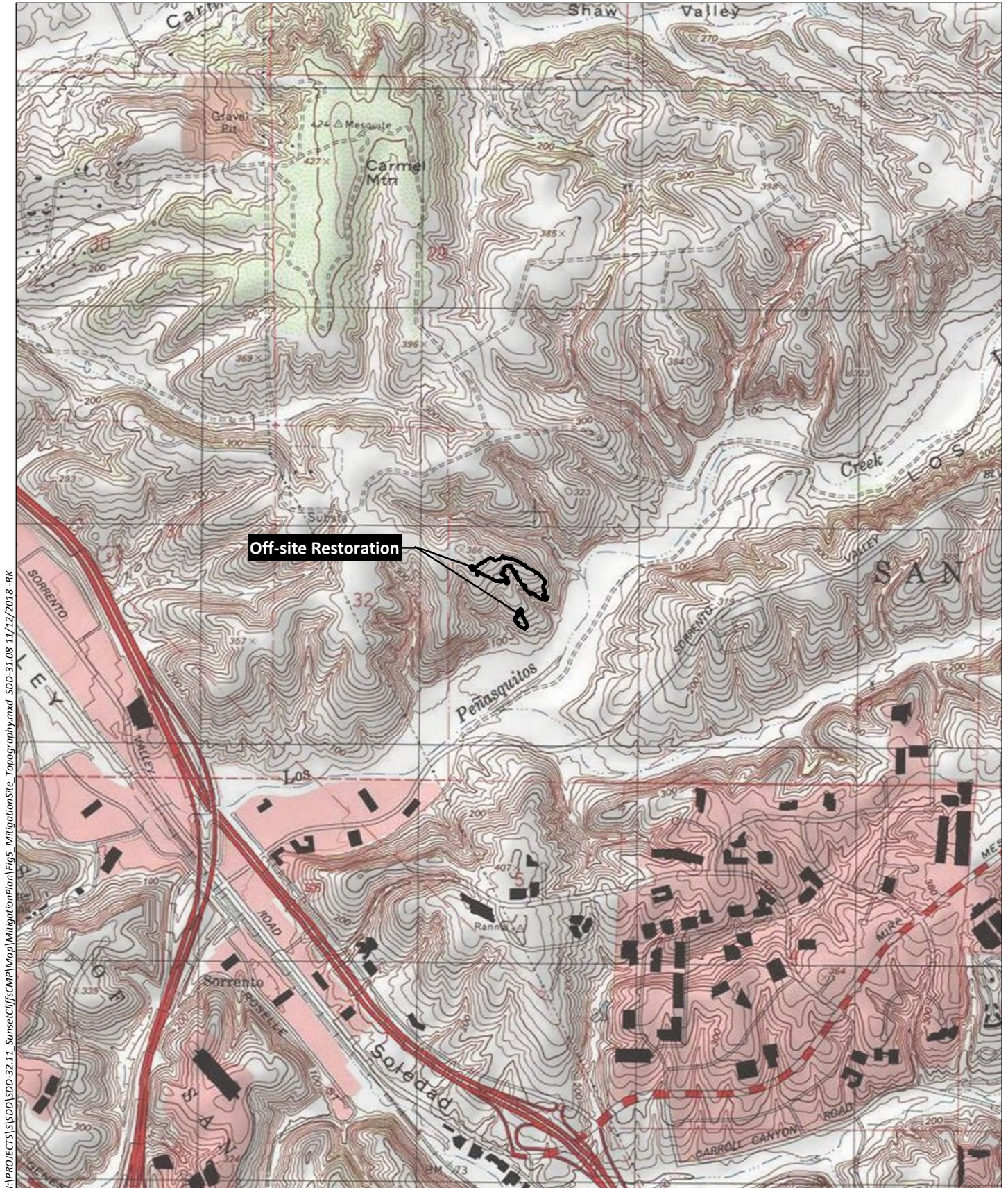
3.3 EXISTING CONDITIONS/FUNCTIONS AND SERVICES

The approximately 7.01-acre restoration site is situated on the north slope within an undeveloped canyon (Figure 7, *Off-site Restoration*). The topography slopes to the south and west with elevations on site ranging between 358 to 93 feet AMSL. The current SanGIS vegetation mapping dated 2012 shows DCSS and NNG within the restoration site (Figure 8, *SanGIS Vegetation Mapping*). A patch of MSS occurs to the east of the mitigation site on a similar southwestern facing slope.

Vegetation communities observed during the recent site visits conducted by HELIX biologists Sally Trnka and Erica Harris in September and October 2018 included a combination of disturbed DCSS and disturbed NNG. Disturbed DCSS within the restoration site is not very diverse. It is dominated by sparse to moderate cover of only two native shrubs - California sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*) – as well as scattered individuals of bladderpod (*Peritoma arborea*), coastal cholla (*Cylindropuntia prolifera*), and coastal prickly pear (*Opuntia littoralis*). The presence of the latter two cactus species suggests that this area may have previously been, and is suitable for, MSS habitat that typically supports a higher proportion of cacti and succulents than DCSS habitat. Non-native vegetation is common within the disturbed DCSS, particularly Russian thistle (*Salsola tragus*), tocalote (*Centaurea melitensis*), and annual non-native grasses (*Bromus* spp.). Dominant species within disturbed NNG include Russian thistle and black mustard (*Brassica nigra*) along with non-native grasses. Black mustard and tocalote are both ranked as “Moderate” for invasiveness by the California Invasive Plant Council (Cal-IPC; 2018). A patchwork of disturbed DCSS and NNG habitat occurs in the surrounding area. The MSS east of the restoration site is dominated by California sagebrush, California buckwheat, and jojoba (*Simmondsia chinensis*) with scattered individuals of coastal cholla, San Diego barrel cactus (*Ferocactus viridescens*), and dudleya (*Dudleya* sp.).

Soils mapped within the proposed restoration site consist of Altamont clay (30 to 50 percent slopes; Figure 9, *Soils*; U.S. Department of Agriculture 2018). The existing MSS to the east of the site (Figure 8) is located on the same mapped soil type. The proposed restoration site is located adjacent to existing dirt utility access roads. An existing San Diego Gas and Electric (SDG&E) easement is located to the west of the site (Figure 6).

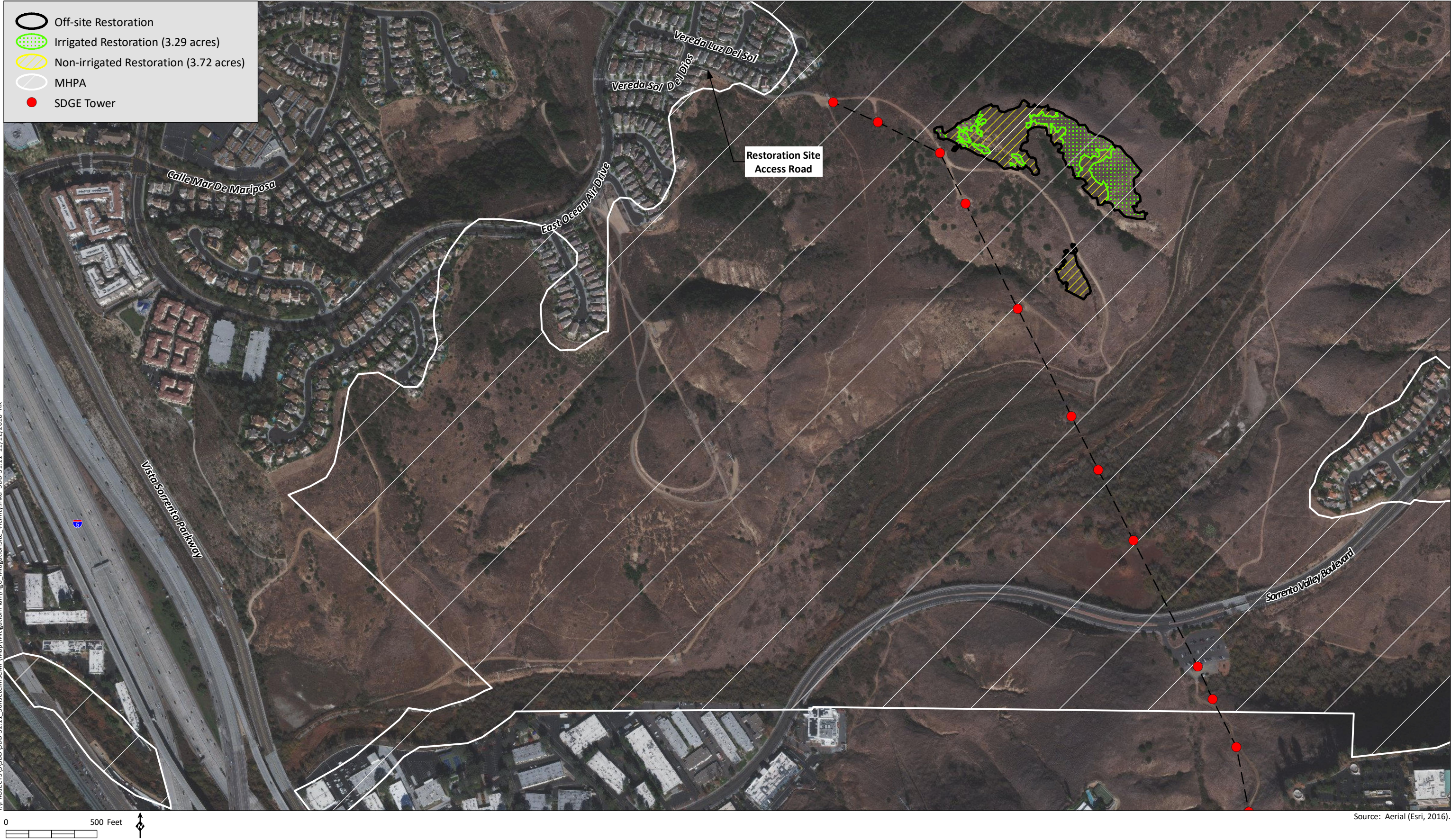
Existing wildlife functions and services are moderate within the proposed restoration site because, although disturbed, this area is connected to a large area of contiguous open space that includes less disturbed habitat to the east. Two sensitive wildlife species, CAGN and Belding’s orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), were observed in or adjacent to the proposed restoration



I:\PROJECTS\SD-32.11 SunsetCliffsCMP\Map\MitigationPlan\Figs MitigationSite Topography.mxd SDD-31.08 11/12/2018 -RK

0 2,000 Feet

Source: La Jolla 7.5' Quad (USGS), Pueblo Lands of San Diego Land Grant

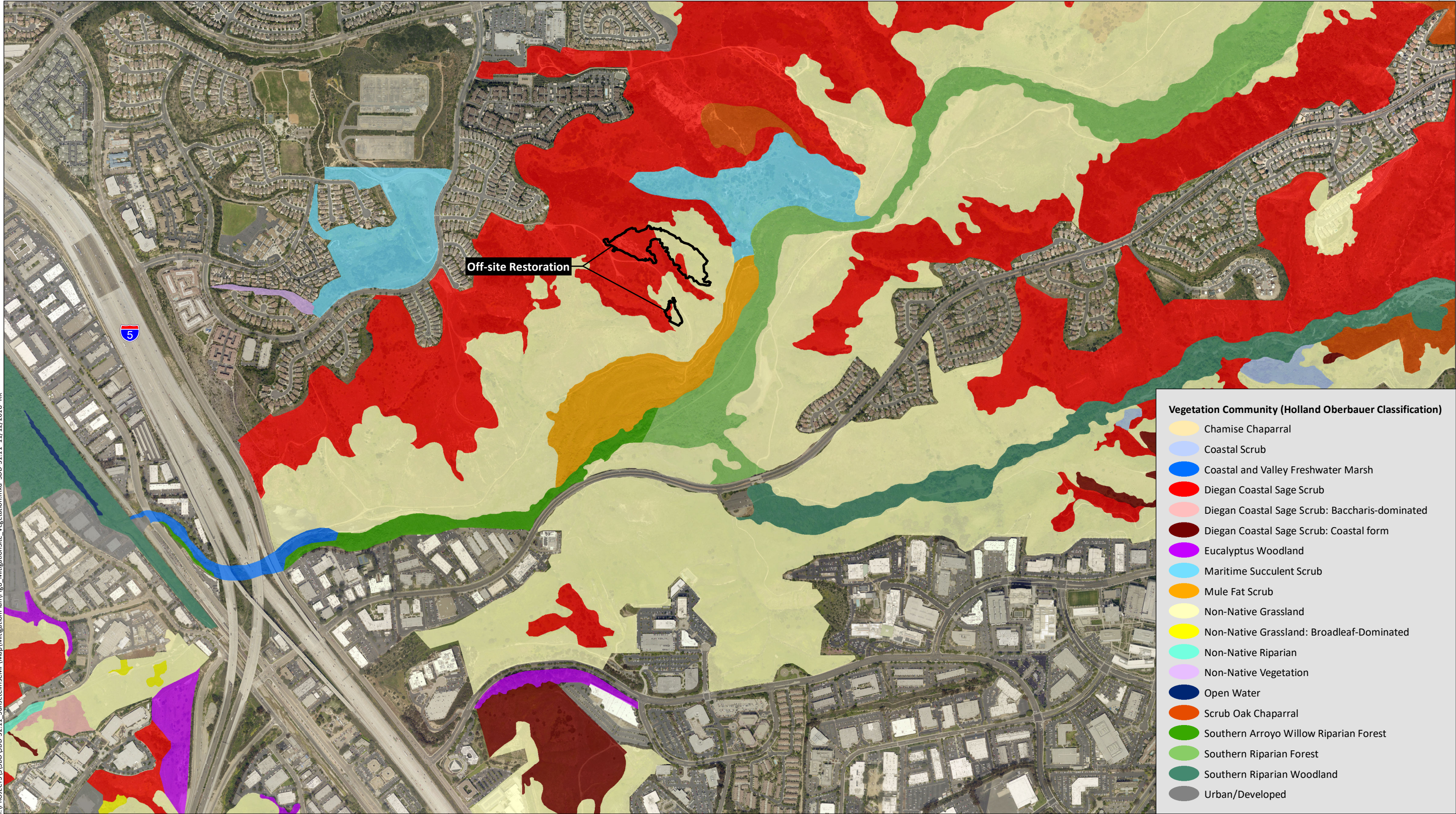




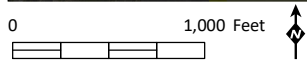
- Off-site Restoration
- Irrigated Restoration (3.29 acres)
- Non-irrigated Restoration (3.72 acres)
- SDGE Tower
- 20-ft Buffer

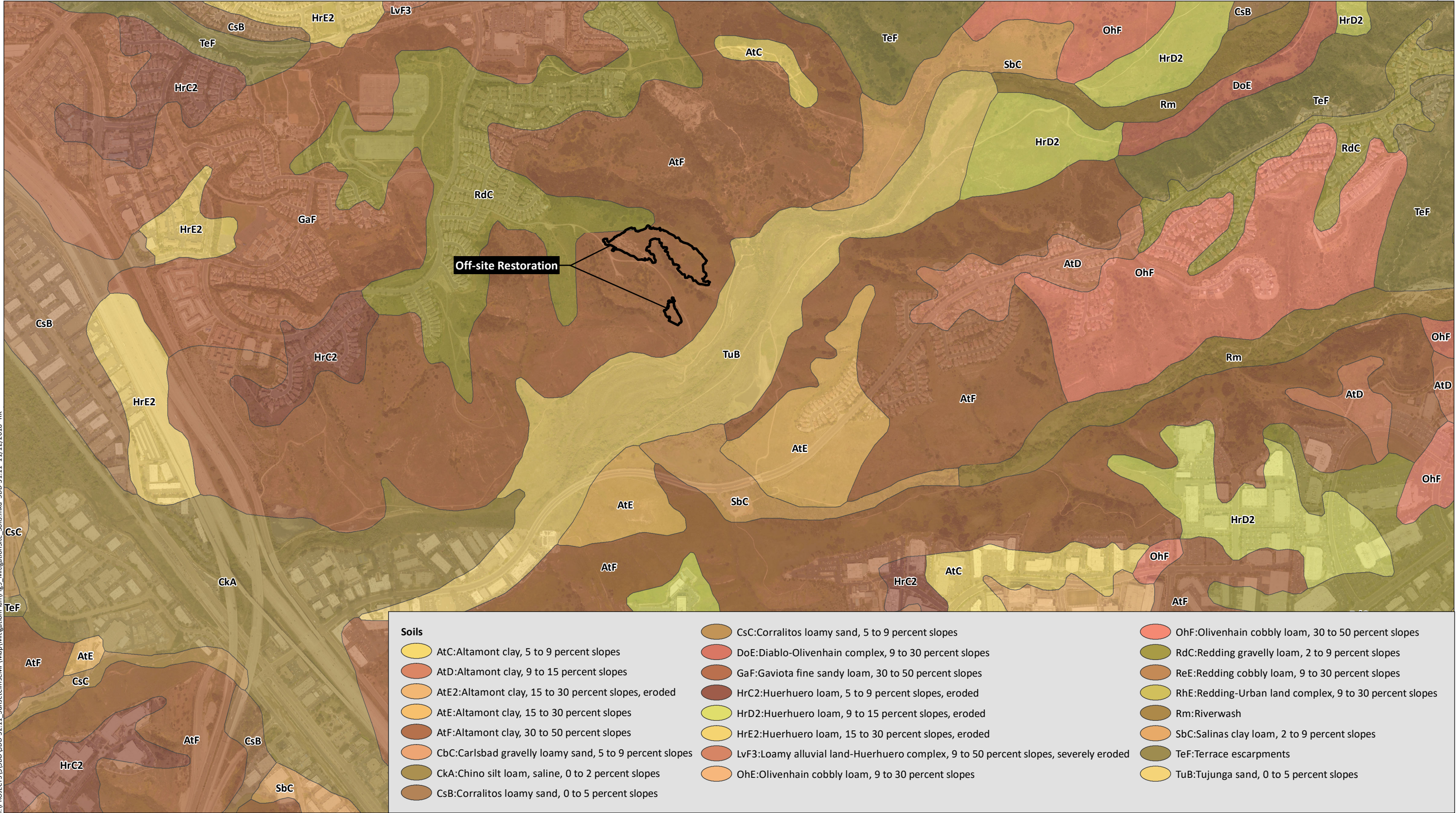
0 150 Feet

Source: Aerial (Esri, 2016).



Source: Aerial (SanGIS, 2017); Vegetation (SanGIS 2012).





0 1,000 Feet

Source: Aerial (SanGIS, 2017); Soils (NRCS 2005).

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site during recent site visits conducted by Ms. Trnka and Ms. Harris. In addition, the site provides foraging habitat for raptors and habitat for rodents and lizards.

3.4 RESTORATION SITE SUITABILITY

The proposed restoration site is considered suitable for maritime succulent habitat restoration; factors supportive of this assessment include:

- 1) located on City-owned land within the MHPA;
- 2) adequate site access;
- 3) proximity to irrigation hook-ups;
- 4) proximity to existing MSS east of the site on the same mapped soil type and slope aspect;
- 5) located on a southern exposure of slope;
- 6) presence of adjacent native scrub habitat;
- 7) avoidance of utility easements; and
- 8) outside of any brush management zone.

Based on the presence of appropriate soils and slope aspect within the proposed mitigation area, existing MSS located nearby on similar soils and slope aspect, and success criteria that require the establishment MSS species such as cacti and succulents, target MSS habitat is expected to be self-sustaining long-term at the selected site.

Existing utility access roads occur near the proposed restoration site (Figure 6); these roads will facilitate both short- and long-term maintenance access for restoration activities. Once restored, long-term maintenance and management of these areas will be executed by the City's Parks and Recreation (P&R) Department as part of their Open Space management program. An existing SDG&E utility easement located in this area was avoided for restoration activities (mitigation credit is not allowed within any easements). Future potential impacts to the proposed restoration site resulting from utility maintenance activities or future utility upgrades are not anticipated.

3.5 RESTORATION DESIGN

The design of the MSS restoration effort consists of weed-whipping and dethatching areas dominated by non-native grasses. These areas (mapped using a global positioning system [GPS] during recent site inspections) are proposed for irrigated MSS restoration, removing the biomass, installing irrigation, and conducting several grow/kill cycles by treating all germinating non-native vegetation (non-native grasses, mustard, tocalote, and similar forbs) with herbicide (Figure 10, *Planting Plan*). Subsequently, the areas designated for irrigated MSS restoration will be installed with shrub and cacti plantings, as well as a native seed mix that includes a variety of native shrubs and forbs characteristic of local MSS habitat. These areas will be temporarily irrigated to facilitate plant establishment. Initial vehicular access to the restoration site will occur along the adjacent, existing utility road. Maintenance and monitoring are proposed for five years or until success criteria have been met.

To avoid damaging existing shrubs within disturbed DCSS, these areas (mapped using a GPS during recent site inspections) were designed as non-irrigated MSS restoration. In these areas, larger non-native vegetation will be manually removed, dead non-native grasses will be manually thinned, and live non-native grasses will be treated with herbicide. These areas will then be seeded and groupings of plantings (mainly cacti) will be installed. These areas will also be maintained and monitored for five years.

3.6 TARGET FUNCTIONS AND SERVICES

The functions and services of the restored Tier I habitat are expected to increase as non-native vegetation is removed and native vegetation typical of MSS habitat is established. The conversion of disturbed DCSS to MSS will not result in a loss of functions of the existing habitat or impact/reduce habitat for MSCP Covered/sensitive species; rather, it will provide higher quality habitat that is more suitable for sensitive species such as San Diego barrel cactus, CAGN, and cacti and succulents that used to be more common in the area. The restoration site will also provide nesting and foraging habitat for invertebrates, mammals, reptiles, and birds.

3.7 MULTIPLE SPECIES CONSERVATION PROGRAM LAND USE CONSISTENCY ANALYSIS

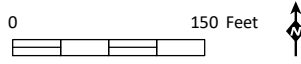
The MSCP General Planning Policies and Design Guidelines apply to lands in the MHPA to preserve its value as habitat for covered species. The City's MSCP includes Land Use Adjacency Guidelines designed to minimize indirect impacts to sensitive resources contained adjacent to the MHPA and thus maintain the value of the preserved open space. These adjacency guidelines govern impacts within and adjacent to the MHPA. The land use adjacency and compatible land use guidelines were implemented to minimize impacts and maintain the function of the MHPA. Land use adjacency guidelines pertain to drainage, toxins, lighting, noise, barriers to incursion, invasive species, brush management, and grading/land development. Compatible land use guidelines consist of roads and utilities, fencing and lighting, materials storage, mining, extraction, processing facilities, and flood control. Activities in this restoration plan that align with MSCP-compatible land use requirements include: storing materials within designated areas and using appropriate containment and using approved erosion and sediment controls during and after maintenance, and restoring unavoidable temporary impacts to native habitat.

The proposed restoration effort is consistent with the MSCP General Planning Policies and Design Guidelines, as discussed below. It is consistent with the roads and utilities guideline because temporary construction areas, roads, and staging areas will not disturb adjacent sensitive habitat unless it is unavoidable. All vehicular site access will occur along the existing dirt access road or other disturbed areas; foot trails will be designated by the Restoration Specialist and will occur through disturbed or NNG habitat wherever possible. If temporary habitat disturbance beyond minor trimming of aboveground vegetation is unavoidable, then restoration of, and/or other mitigation for, the disturbed area will occur. Only temporary staking will be used to demarcate the work area and only as needed. No lighting is included as part of the restoration effort. Long-term materials storage (e.g., hazardous or toxic, chemicals, equipment, etc.) will not occur within the MHPA. Storage may occur, if necessary, temporarily during construction, per applicable regulations and only within designated staging areas. Best Management Practices (BMPs) will be used, as needed, to protect habitat within the MHPA. Mining will not occur as part of the restoration effort. The need for flood control is not expected.



- Off-site Restoration
- Container Plantings and Hydroseed
- Cactus and Succulent Planting and Hand Seed
- SDGE Tower
- 20-ft Buffer

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Source: Aerial (Esri, 2016).

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Restoration consistency with the land use adjacency guidelines is detailed below. Proposed restoration will not affect current drainage patterns or create any new, impermeable surfaces within the restoration site. No toxins will be introduced as only appropriate herbicides will be used for weed control. No night lighting will be used as part of the restoration effort. Since the restoration site will not be graded and weed whipping would be completed within a few days, no noise impacts or constraints are expected. No permanent barriers will be constructed as part of the restoration effort; temporary signage will direct public access away from the restoration site. Temporary barriers may be installed if public access becomes detrimental to the restoration effort. Invasive plants will be removed from the restoration boundaries and will not be included in the installed plant palettes. Brush management does not apply as all proposed restoration is located outside of any Brush Management Zone and no new structures are being installed as part of the restoration effort. The proposed restoration is consistent with the land use adjacency guideline concerning grading/land development as no grading is proposed. There are existing utility access roads adjacent to the proposed restoration site.

The proposed restoration specifically conforms to the MSCP because the disturbed and low-quality habitat will be restored to Tier I native habitat, increasing and improving existing functions and services. Specifically, invasive species will be removed and replaced with native vegetation, creating habitat for native flora and fauna. All the proposed restoration and subsequent maintenance and monitoring will be consistent with the City's MSCP.

4.0 RESTORATION RESPONSIBILITY

4.1 FINANCIAL RESPONSIBILITY

The Project proponent (City Public Utilities Department [PUD]) will be responsible for financing the installation, five-year maintenance program, and biological monitoring of the restoration proposed in this plan. Damage to facilities occurring as a result of unusual weather or vandalism will be repaired, as directed by the Restoration Specialist. The cost of such repairs will be paid for as extra work. The contractor will be responsible for damage caused by any inadequate maintenance or operation of facilities, as determined by the Restoration Specialist.

4.2 RESTORATION TEAM

4.2.1 Project Proponent

The Project proponent (City PUD) will be responsible for retaining (1) a qualified Restoration Specialist with over five years of experience monitoring habitat restoration to oversee the entire installation and monitoring of the mitigation program in coordination with City DSD staff and (2) a qualified installation/maintenance contractor with documented success in restoration of native upland habitat. Contact information for the City's PUD Project Manager is:

Contact: Mr. Travis Whitney
City of San Diego
Public Utilities Department
9192 Topaz Way, MS 901A
San Diego, CA 92123
(858) 654-4237

4.2.2 Responsible Agencies

The City DSD will be responsible for issuing any necessary permits and reviewing and approving this plan.

Contact: Mr. Mark Brunette
City of San Diego
Development Services Department
1222 First Ave., MS 301
San Diego, CA 92101-4101
Office: 858-654-4237

Due to the location of the restoration site on City-owned preserve lands, the City's P&R Department will be responsible for overseeing the establishment and development of habitat during the five-year maintenance and monitoring period and beyond. The primary avenue for the City's participation is through the permitting process; reviewing and commenting on this plan, the construction documents, and subsequent annual reports; and inspecting and commenting on significant milestones involved in the implementation of this plan.

Contact: Ms. Gina Washington
City of San Diego
Parks and Recreation Department
Office: 858-538-8066
gWASHINGTON@sandiego.gov

4.2.3 Restoration Specialist

Overall supervision of the installation and maintenance of this restoration effort will be the responsibility of a Restoration Specialist with at least five years of experience in upland habitat restoration. The Restoration Specialist will oversee the efforts of the installation/maintenance contractor for the life of the restoration. Specifically, the Restoration Specialist will educate all participants about restoration goals and requirements; inspect plant material; directly oversee planting, seeding, weeding, installation of erosion control materials, and other maintenance activities; and conduct regular monitoring as well as annual assessments of the restoration effort. The Restoration Specialist will help ensure that the contractor does not inadvertently impact adjacent sensitive habitat during installation or maintenance activities. When necessary, the Restoration Specialist will provide the PUD Project Manager and contractor with a written monitoring memo, including a list of items in need of attention. The Restoration Specialist will prepare and submit required reports annually.

4.2.4 Installation/Maintenance Contractor

The installation and maintenance contractor, hired by the PUD Project Manager, will have experience in native habitat restoration, be knowledgeable as to the maintenance of native upland habitat, and be familiar with native and non-native plants. The installation/maintenance contractor will be a firm holding a valid C-27 Landscape Contracting License from the State of California, a valid Maintenance Gardener Pest Control Business License or Pest Control Business License, and a Qualified Applicator Certificate or Qualified Applicator License, with Category B, that will allow them to perform the required work for this restoration effort. The PUD Project Manager may change contractors at their discretion.

During installation, the contractor will be responsible for initial weed control/dethatching, irrigation installation, implementation of several grow/kill cycles, and planting and seeding, as well as maintenance of the restoration site during the 120-day plant establishment period (PEP). Following installation, the contractor will submit marked up as-built irrigation plans to the PUD Project Manager and lists of all plant/seed material installed to the Restoration Specialist for inclusion in the as-built report. The contractor will be held responsible for meeting the success criteria specified for the PEP until formal sign off of the PEP has been obtained from the Restoration Specialist, PUD Project Manager, and City DSD staff.

Following formal sign off of the PEP, the contractor will maintain the restoration areas for five years. During this period, the contractor will service the entire restoration site according to the maintenance schedule (Section 6.1, below). Service will include, but not be limited to, weed control, irrigation maintenance, trash removal, watering, dead plant replacement, re-seeding, and pest and disease management. All activities conducted will be seasonally appropriate and approved by the Restoration Specialist and PUD Project Manager. The contractor will meet the Restoration Specialist and PUD Project Manager at the site when requested and will perform all checklist items in a timely manner as directed.

Following restoration sign off, the contractor will remove any erosion control, fencing/staking, and the aboveground portion of the irrigation system, as directed by the Restoration Specialist and PUD Project Manager.

4.2.5 Archeologist/Native American Monitor

A qualified archaeologist and a Native American (Kumeyaay) monitor are required on site full time during initial vegetation clearing. Ground disturbance is anticipated to be limited to digging the irrigation mainline, digging holes for the installation of plants, and installation of signs and stakes. These activities will not be monitored as they will result in minimal disturbance to surface and subsurface soils; however, monitors must be informed of any new developments, such as inadvertent discovery of cultural resources.

4.2.6 Nursery (Seed/Plant Procurement)

Plants and seed may be purchased from a nursery or supplier specializing in native plants or contract grown. Plant and seed material should be locally propagated and collected from coastal San Diego County, within 25 miles of the coast.

5.0 INSTALLATION PLAN

5.1 INSTALLATION SCHEDULE

Restoration activities will begin immediately after contracts are secured, as weather allows, and should be completed within 18 months or as quickly as practicable. Because it can take 12 months or more to collect seed of various species and grow seedlings into one-gallon sized container plantings, this process should be initiated as soon as possible following restoration authorization. In addition, although sensitive plants have not been previously documented within the proposed restoration site boundaries (California Natural Diversity Database, U.S. Fish and Wildlife Service, and SanBIOS), sensitive plant

species such as San Diego barrel cactus have been mapped in the immediate vicinity; therefore, a spring rare plant survey should be conducted prior to the initiation of restoration activities.

Restoration implementation is dependent on seasonal factors. Ideally, site preparation should begin before the rainy season, and should allow time for irrigation installation and weed eradication prior to planting and seeding.

The CAGN has been observed adjacent to the restoration site. For this reason, mechanical weed whipping or augering of NNG should be conducted outside of the CAGN breeding season (March 1 through August 15) or a biologist permitted to conduct surveys for the species will conduct a pre-construction survey within and adjacent to the restoration site and additional measures will be implemented if CAGN are found.

If vegetation removal needs to occur during the general avian and raptor breeding seasons (January 15 through August 31), a pre-impact survey for nesting birds and raptors will be required no more than 72 hours prior to the commencement of the activities. If the qualified biologist determines that an active migratory bird or raptor nest is present, appropriate setbacks shall be implemented as determined by the biologist. A 300-foot setback would be implemented for Cooper's hawk nests, and setbacks for other bird species would be determined by the qualified biologist. No impacts shall occur until the young have fledged the nest and the nest is confirmed to no longer be active, as determined by the qualified biologist. The results of the pre-construction nesting bird survey shall be reported to the PUD Project Manager in a brief memorandum, which will then be forwarded on to City DSD.

Monitoring of the restoration effort will begin during site preparation, continue throughout the installation and a 120-day PEP, and extend for a minimum of five years following completion of the PEP. Maintenance of the restoration site will begin following completion of installation and will continue during the 120-day PEP and for a minimum of five years thereafter. Manual non-native plant removal or control (including use of herbicides) may be conducted in the restoration areas at any time of year, provided it does not involve use of equipment which could result in noise-related direct or indirect impacts to sensitive bird species (i.e., greater than 60 decibels hourly average) within DCSS.

5.2 CONSTRUCTION ACCESS AND STAGING

A Right-of-Entry permit may be required for implementation of this plan; if necessary, it would be obtained from the City's P&R Department prior to any disturbance activities. Vehicle access to the restoration site will occur along from East Ocean Air Drive and proceed along the existing access road (Figure 6); City key access will be required. Some equipment (e.g., irrigation materials or container plantings) may be temporarily stored directly inside of the delineated restoration boundaries, as approved by the Restoration Specialist.

The type of equipment used for site preparation and installation will be at the discretion of the installation/maintenance contractor. Staging for restoration activities will be on site within disturbed land. All vehicles and construction equipment will be restricted to the staging area(s) when not required for restoration activities. No impacts to native habitat are proposed by construction staging or access. Materials cannot be stored along dirt roads or trails, where it could block access. The contractor will be responsible for determining the location of any buried utilities prior to any earth disturbance.

5.3 PRE-CONSTRUCTION ACTIVITIES

Prior to restoration installation, container plantings and seed will be ordered, a pre-construction meeting to identify the limits of work, access, and staging areas will be held, all restoration limits of work will be staked, and signs addressing the restoration effort will be installed. In addition, existing site conditions will be documented by the Restoration Specialist.

5.3.1 Plant/Seed Orders

The plant species selected for installation have been observed in existing MSS habitat located within Los Peñasquitos Canyon Preserve or are common to this habitat in other parts of San Diego County. A combination of container plants and seed will be used for the restoration effort. All plants and seed installed will be collected or derived from local plant populations occurring in San Diego County within 25 miles of the restoration area. Substitutions, other donor sites, or use of commercial material may be allowed if materials are unavailable, at the discretion of the Restoration Specialist, City P&R Department, and PUD Project Manager.

The PUD Project Manager must approve all seed and container stock orders, including specific species and source locations, prior to finalizing. The Restoration Specialist or PUD Project Manager must approve all container stock prior to installation. Extra container stock may be held in a nursery to be used to replace plants that die during the PEP, at the contractor's discretion. Because it can take 12 months or more to collect seed of various species and grow seedlings into one-gallon sized container plantings, this process should be initiated as soon as possible following restoration authorization. It is important to note that many of the species specified for planting will have mature seed from mid to late spring. Collected seed will be labeled and stored in a cool, dry location until it is used.

5.3.2 Pre-Construction Meeting

Prior to initiation of restoration activities, an on-site meeting will be held with the PUD Project Manager, installation/maintenance contractor, landscape architect, Restoration Specialist, Cultural/Native American monitor, City DSD, and City P&R staff. Topics that will be addressed at this meeting include but are not limited to: (1) timing constraints for clearing activities, (2) identification of sensitive areas and a strategy for avoidance, (3) defining site access routes and restrictions, (4) locating staging areas, and (5) the overall restoration goal.

5.3.3 Pre-Construction Site Documentation

Pre-installation photos will be taken by the Restoration Specialist from at least six designated photo stations. This information will be used later to track vegetation establishment within the restoration areas.

5.3.4 Delineating Limits of Work

Prior to any restoration activities, the limits of the irrigated and non-irrigated restoration areas will be surveyed and staked by the Restoration Specialist. To discourage work from occurring outside of authorized areas, the installation/maintenance contractor will delineate the outer limits of the restoration areas with staking or other markers; because the site will not be graded, fencing will not be used. Final staking will be inspected by a Restoration Specialist and PUD Project Manager prior to the

start of construction activities. All stakes or other markers will be removed when directed by the Restoration Specialist. The access route (the existing trails) will not be staked or fenced; however, it will be identified for the installation/maintenance contractor in advance of starting restoration activities.

5.3.5 Temporary Signage

Signs will be installed adjacent to the restoration area along the existing access road. Signs will indicate that vehicles and pedestrians shall keep out of the native habitat restoration areas.

5.4 SITE PREPARATION

5.4.1 Timing

Site preparation should start prior the rainy season, if possible, so that planting/seeding can occur at the start of the rain season to take advantage of the winter and spring natural growing period for upland vegetation.

5.4.2 Clearing/Weeding

Clearing of non-native plant material will occur after the limits of the irrigated and non-irrigated restoration areas have been delineated. No grubbing is proposed. Non-native vegetation within the areas designated for irrigated MSS restoration will be cut down using string trimmers. Plant biomass as well as debris will be raked up and removed and disposed of in a licensed landfill or green waste recycling center. To avoid damaging existing shrubs within disturbed DCSS in the non-irrigated MSS restoration areas, larger non-native vegetation will be manually removed, dead non-native grasses will be manually thinned, and live non-native grasses will be treated with herbicide.

As noted above, a qualified archaeologist and a Native American (Kumeyaay) monitor are required on site during initial vegetation clearing.

5.4.3 Erosion Control

Immediately following non-native plant removal, erosion control will be installed along the downslope perimeter of the irrigated MSS restoration areas to protect adjacent habitat from potential erosion impacts. Erosion control measures will be maintained by the installation/maintenance contractor, as needed. Modified or additional erosion control may be recommended by the Restoration Specialist. All erosion control measures will be removed, as directed by the Restoration Specialist, when enough plant cover has established. No erosion control will be installed in the non-irrigated restoration areas.

5.4.4 Irrigation Installation

Temporary, aboveground irrigation will be installed throughout the irrigated MSS restoration areas, in accordance with the Project's final landscape plans. Water will be supplied to this area via a temporary meter located at the top of the slope (within the brush management zone); a new meter will be installed at the top of slope, if necessary. The irrigation system will incorporate the use of moisture sensors connected to an irrigation controller; this will allow for the application of water on an as-needed basis. The landscape architect, Restoration Specialist, and PUD Project Manager, together with the

installation/maintenance contractor, will inspect the irrigation to ensure full coverage of target areas prior to the start of the grow/kill cycles.

5.4.5 Weed Eradication

Following dethatching, supplemental irrigation will be used in the irrigated MSS restoration areas to encourage the germination of the large non-native seed bank. All sprouting non-native vegetation will be sprayed with herbicide when it is one to two inches tall and allowed to die in place. These “grow/kill” cycles will be repeated until cover by non-native vegetation falls below 10 percent. Non-irrigated restoration areas will be weeded, as needed, during this period.

5.5 PLANT INSTALLATION SPECIFICATIONS

5.5.1 Plant/Seed Palettes

All restoration will be installed with an MSS plant palette that contains species observed in MSS habitat located in Los Peñasquitos Canyon (which is dominated by jojoba, coast cholla and prickly pear) and at the Kate Sessions reference site (which is dominated by California sagebrush, California buckwheat, black sage [*Salvia mellifera*], coast cholla, and coastal prickly pear). The 3.29 acres of irrigated MSS restoration areas will be installed with the plant palette provided in Table 4, *Irrigated Maritime Succulent Scrub Restoration Plant Palette* and the 3.72 acres of non-irrigated restoration areas will be installed with the plant palette provided in Table 5, *Non-Irrigated Maritime Succulent Scrub Restoration Plant Palette*.

Table 4
IRRIGATED MARITIME SUCCULENT SCRUB RESTORATION PLANT PALETTE
(3.29 acres)

Container Plantings*					
Scientific Name	Common Name	Spacing on Center (feet)	Grouping Size	Number Per Acre	Quantity Required
<i>Artemisia californica</i>	California sagebrush	6	10	200	658
<i>Cylindropuntia prolifera</i>	coast cholla	3	5	200	658
<i>Dudleya edulis</i>	fingertips	2	5	200	658
<i>Dudleya pulverulenta</i>	chalk lettuce	2	5	200	658
<i>Eriogonum fasciculatum</i>	California buckwheat	6	10	200	658
<i>Euphorbia misera</i>	cliff spurge	6	5	100	329
<i>Ferocactus viridescens</i>	San Diego barrel cactus	3	5	200	658
<i>Lycium californicum</i>	California box-thorn	6	5	200	658
<i>Mammillaria dioica</i>	fish-hook cactus	5	5	100	329
<i>Opuntia littoralis</i>	coastal prickly pear	5	5	200	658
<i>Peritoma arborea</i>	bladderpod	6	10	150	494
<i>Rhus integrifolia</i>	lemonadeberry	12	3	40	132
<i>Salvia mellifera</i>	black sage	6	10	200	658
<i>Simmondsia chinensis</i>	jojoba	5	10	400	1,316
TOTAL				2,590	8,522

Table 4 (cont.)
IRRIGATED MARITIME SUCCULENT SCRUB RESTORATION PLANT PALETTE
(3.29 acres)

Seed Mixture				
Scientific Name	Common Name	% Purity / Germination ¹	Application Rate (lbs./acre)	Amount to be Ordered (lbs.) ²
<i>Artemisia californica</i>	California sage brush	90/25	3	9.9
<i>Corethrogyne filaginifolia</i> var. <i>filaginifolia</i>	common sand aster	8/30	1	3.3
<i>Deinandra fasciculata</i>	fascicled tarplant	25/65	1	3.3
<i>Calochortus splendens</i>	Splendid mariposa lily	95/90	1	3.3
<i>Calystegia macrostegia</i>	morning-glory	95/90	1	3.3
<i>Dichelostemma capitatum</i>	blue dicks	95/80	1	3.3
<i>Encelia californica</i>	California encelia	30/45	2	6.6
<i>Eriogonum fasciculatum</i>	California buckwheat	55/20	2	6.6
<i>Eschscholzia californica</i>	California poppy	98/80	2	6.6
<i>Lasthenia gracilis</i>	common goldfields	70/50	2	6.6
<i>Lupinus succulentus</i>	succulent lupine	70/50	2	6.6
<i>Plantago erecta</i>	dwarf plantain	97/89	2	6.6
<i>Sisyrinchium bellum</i>	blue-eyed grass	98/80	2	6.6
<i>Stipa lepida</i>	foothill needlegrass	90/71	3	9.9
<i>Stipa pulchra</i>	purple needlegrass	90/75	7	23.0
TOTAL			32	105.5

* All container stock is one-gallon size; recommended 10 percent extra plantings be ordered and kept at a nursery facility for use as replacement plantings during the PEP

¹ Based on 2016 seed list from S&S Seeds

² Application rate * Size of project = Amount to be ordered (lbs.). Final order amount shall be adjusted based on seed availability, but shall be no less than 25 lbs./acre

Table 5
NON-IRRIGATED MARITIME SUCCULENT SCRUB RESTORATION PLANT PALETTE
(3.72 acres)

Container Plantings*					
Scientific Name	Common Name	Spacing on Center (feet)	Grouping Size	Number Per Acre	Quantity Required
<i>Cylindropuntia prolifera</i>	coast cholla	3	5	200	744
<i>Dudleya edulis</i>	finger tips	2	5	200	744
<i>Dudleya pulverulenta</i>	chalk lettuce	2	5	200	744
<i>Ferocactus viridescens</i>	San Diego barrel cactus	3	5	200	744
<i>Lycium californicum</i>	California box-thorn	6	5	100	744
<i>Mammillaria dioica</i>	fish-hook cactus	5	5	100	372
<i>Opuntia littoralis</i>	coastal prickly pear	5	5	300	1,116
TOTAL				1,500	5,208

Table 5 (cont.)
NON-IRRIGATED MARITIME SUCCULENT SCRUB RESTORATION PLANT PALETTE
(3.72 acres)

Seed Mixture				
Scientific Name	Common Name	% Purity / Germination ¹	Application Rate (lbs./acre)	Amount to be Ordered (lbs.) ²
<i>Artemisia californica</i>	California sage brush	90/25	3	11.2
<i>Corethrogyne filaginifolia</i> var. <i>filaginifolia</i>	common sand aster	8/30	1	3.7
<i>Deinandra fasciculata</i>	fascicled tarplant	25/65	1	3.7
<i>Calochortus splendens</i>	Splendid mariposa lily	95/90	1	3.7
<i>Calystegia macrostegia</i>	morning-glory	95/90	1	3.7
<i>Dichelostemma capitatum</i>	blue dicks	95/80	1	3.7
<i>Encelia californica</i>	California encelia	30/45	3	11.2
<i>Eschscholzia californica</i>	California poppy	98/80	2	7.4
<i>Lasthenia californica</i>	common goldfields	70/50	2	7.4
<i>Lupinus succulentus</i>	succulent lupine	70/50	2	7.4
<i>Peritoma arborea</i>	bladderpod	98/45	3	11.2
<i>Plantago erecta</i>	dwarf plantain	97/89	2	7.4
<i>Salvia mellifera</i>	black sage	85/50	3	11.2
<i>Simmondsia chinensis</i>	jojoba	95/51	1**	3.7
<i>Sisyrinchium bellum</i>	blue-eyed grass	98/80	2	7.4
<i>Stipa lepida</i>	foothill needlegrass	90/71	3	11.2
<i>Stipa pulchra</i>	purple needlegrass	90/75	7	26.0
TOTAL			37	141.2

* All container stock is one-gallon size; recommended 10 percent extra plantings be ordered and kept at a nursery facility for use as replacement plantings during the PEP

** Plant by hand under approximately ¼- ½ inch of soil

¹ Based on 2016 seed list from S&S Seeds

² Application rate * Size of project = Amount to be ordered (lbs.). Final order amount shall be adjusted based on seed availability, but shall be no less than 32 lbs./acre

5.5.2 Planting Method

Non-irrigated areas can be planted immediately after initial weeding is completed. Irrigated restoration areas will not be planted until the Restoration Specialist has authorized the completion of the grow/kill cycles. Planting may occur at any time of year, but ideally should be completed in the fall or early winter, which coincides with cooler temperatures and the rainy season. The Restoration Specialist must inspect all plant material prior to installation. Container plants that are dead, changing color, rootbound, stunted, diseased, pest-infested (e.g., Argentine ants [*Linepithema humile*]), or otherwise unacceptable may be rejected. The Restoration Specialist, City P&R Department, and PUD Project Manager must approve any seed or plant substitutions prior to installation.

The Restoration Specialist will direct the container plant layout. All plantings should be installed in a way that mimics natural plant distribution, not in rows. Container stock will be installed in holes that are the same width and depth as the container. Holes will be dug with mechanical augers where possible and by hand elsewhere. Holes must be filled with water and allowed to drain prior to installation; after installation, each container plant must be watered with at least one gallon of water. To aid plant establishment, plants should be inoculated with mycorrhizae by the nursery or at installation.

5.5.3 Seeding Method

After container plantings have been installed and the Restoration Specialist and PUD Project Manager have approved the seed order, the irrigated restoration areas will be hydroseeded and non-irrigated areas will be hand seeded and raked into the soil.

5.5.4 Irrigation Method

Assuming cool, dry weather conditions, it is anticipated that the irrigated restoration areas would initially be irrigated daily for approximately 15 minutes until seedlings are at least one inch in height, then irrigation could be decreased to five times a week, and further decreased as vegetation becomes established during the first three years of maintenance. There should be no irrigation during Years 4 and 5.

To the extent feasible, irrigation should attempt to mimic wet rainfall years by providing periodic, deep (e.g., to a depth of 12 inches or more) soil saturation to help promote root development and enhance plant growth and survivorship. To obtain deep soil saturation, the irrigation system may be activated several times in one 24-hour period. Supplemental watering should occur during early morning hours and/or evening hours to avoid excess moisture loss. The Restoration Specialist and PUD Project Manager should be notified of all irrigation schedule modifications.

6.0 MAINTENANCE PROGRAM

6.1 MAINTENANCE SCHEDULE

Maintenance will be performed as necessary to prevent re-seeding by non-native plants and will likely change with varying site conditions and seasons; the schedule outlined herein (Table 6, *Installation/Maintenance Schedule*) serves only as a guideline. At a minimum, the installation/maintenance contractor will conduct monthly maintenance during the 120-day PEP, continuing until the Restoration Specialist recommends and the City approves sign off of the PEP in writing. The contractor will be responsible for all maintenance activities during the minimum five-year maintenance and monitoring period. Maintenance of the entire restoration area will be conducted at least six times per year during Years 1 through 3 and four times per year, or as needed, in Years 4 and 5. Maintenance activities should focus on the winter and spring growing season for most upland vegetation, but also be conducted in early summer to catch late germinating weed species. The contractor will complete maintenance requests from the Restoration Specialist and PUD Project Manager within 14 days of any written request.

Table 6
INSTALLATION/MAINTENANCE SCHEDULE¹

Time Frame	Schedule
Site Preparation	As-needed
120-day Plant Establishment Period	Monthly
Year 1 through Year 3	Six times per year
Year 4 and Year 5	Four times per year

¹ This schedule is only a guideline; maintenance will be performed as necessary as directed by the Restoration Specialist

6.2 MAINTENANCE ACCESS

Maintenance access will occur along the existing, adjacent access road.

6.3 MAINTENANCE ACTIVITIES

A 120-day PEP and five-year maintenance program will focus on weed control, trash removal, irrigation system maintenance, irrigation application rates and schedules, and any remedial measures deemed necessary for the success of the restoration effort. During this period, the contractor will be responsible for performing remedial measures to fix any observed problems identified by the Restoration Specialist.

Maintenance personnel will be informed of the goals of the restoration effort and the maintenance requirements. A professional with experience and knowledge in native habitat restoration maintenance will supervise all maintenance. It is the contractor's responsibility to remove non-native vegetation, keep the site free of debris, maintain site staking, erosion control measures, and irrigation, adjust the irrigation schedule, monitor native plant condition and health, and implement any remedial measures deemed necessary for the success of the restoration effort (e.g., re-seeding and re-planting, soil amendment, and pest management). The contractor will also be responsible for replacing any dead or terminally diseased plants, at the direction of the Restoration Specialist and PUD Project Manager. Maintenance activities will be directed by the Restoration Specialist and PUD Project Manager.

6.3.1 Non-Native/Invasive Plant Control

Non-native plants should be removed by hand or controlled with the proper herbicides per the maintenance schedule, or as needed to prevent non-native plants from re-seeding the site. A licensed Pest Control Advisor will recommend which treatment method will be implemented and will supervise the use of herbicide. Any herbicide used to control non-native plants as part of the restoration effort must be on a City list of approved herbicides. Herbicides should be applied following manufacturer's guidelines and used only as necessary. In addition, herbicides must be applied by an individual with a valid applicator's license, as specified in Section 4.2.4.

All target invasive plant species other than annual non-native grasses considered to be Moderate or Highly invasive by the Cal-IPC (2018) will be removed or killed in place. These target invasive plant species shall be totally eradicated within the boundaries of the MSS restoration boundaries. Additional species may be added to this list if found to be a threat to the long-term success of the restoration effort.

6.3.2 Horticultural Treatments

No post-installation pruning is necessary unless otherwise directed by the Restoration Specialist and PUD Project Manager. If weed control continues to be an issue, mulch application around plants may be specified by the Restoration Specialist and PUD Project Manager. Fertilizer will not be applied except in extraordinary circumstances and only at the written direction of the Restoration Specialist and PUD Project Manager. Shrubs and trees will be monitored for signs of disease and pests; infected and infested plants will be treated as necessary and as directed by the Restoration Specialist and PUD Project Manager. Treatment measures may include pruning to prevent the spread of the disease or pestilence. Severely diseased or pest damaged plants will be removed and replaced if directed by the Restoration Specialist and PUD Project Manager. Plant substitutions may be recommended if the

disease is likely to affect its replacement (i.e., soil borne pathogens). Active pest control measures will be implemented if a pest species poses a competitive threat to native species establishment.

6.3.3 Erosion Control

Erosion control measures will be replaced, or additional BMPs will be installed as needed or as identified by the Restoration Specialist and PUD Project Manager. Any installed erosion control materials will be removed from the site by the installation/maintenance contractor once the Restoration Specialist and PUD Project Manager determine sufficient native plant cover has established.

6.3.4 Trash/Debris Removal

All trash and debris will be removed from the restoration site during each visit and disposed of at an off-site, licensed waste-disposal facility. Trash removal activities will minimize or avoid impacts to plants.

6.3.5 Replacement Planting and Seeding

If success criteria outlined in Section 8.0, are not being met, additional measures, such as installation of replacement plants or seeding, may be implemented as directed by the Restoration Specialist and PUD Project Manager.

6.3.6 Site Protection and Signage; Vandalism

Perimeter fencing as well as staking to differentiate the irrigated and non-irrigated restoration areas will be maintained, as needed, until removal is authorized by the Restoration Specialist.

Issues such as illegal access, off-road vehicle activity, or destruction of plant material or irrigation system, would be handled by the installation/maintenance contractor in coordination with the PUD Project Manager and the Restoration Specialist. Corrective and preventative actions could include irrigation repairs, additional fencing, placement of other barriers, and posting of signs that designate the site as a habitat restoration area. The cost of such repairs/work will be paid for as extra work. The contractor will be responsible for damage caused by inadequate maintenance or operation of facilities, as determined by the Restoration Specialist and PUD Project Manager.

6.3.7 Pest Management

Insects, vertebrate pests, and diseases will be monitored. If herbivores are found to be a significant problem for installed plant material, the Restoration Specialist may request that container plants in the affected area be caged or similarly protected. Generally, there will be a high threshold of tolerance before other control measures are considered. As required by law, specific recommendations (e.g., for pesticide use) will be made only by a licensed pest control adviser. All applicable federal and state laws and regulations will be closely followed. The Restoration Specialist and PUD Project Manager will be consulted on any pest control matters.

6.3.8 Irrigation Maintenance

The irrigation system should be inspected during each maintenance visit by the contractor. If issues are noted, the irrigation system should be turned off, and any necessary repairs should be made within a

few days to avoid stressing installed plantings and establishing seedlings and to avoid potential runoff and erosion issues.

7.0 BIOLOGICAL MONITORING PROGRAM

7.1 MONITORING SCHEDULE

Maintenance monitoring visits and annual assessments will be carried out under direction of the Restoration Specialist. Biological monitoring of the restoration effort is divided into four phases: (1) pre-installation; (2) installation and establishment; (3) maintenance monitoring; and (4) annual monitoring (Table 7, *Monitoring Schedule*). Details of each phase are provided in this section of the plan.

Table 7
MONITORING SCHEDULE ¹

Time Frame	Schedule
Pre-Installation/Site Preparation	
Pre-construction meeting	Once
Staking/Fencing/Sign Inspections	As needed
Pre-installation photos	Once
Installation and 120-Day Plant Establishment Period	
Site preparation and installation (including grow/kill cycles)	As needed
120-day Plant Establishment Period	Monthly
Maintenance Monitoring	
Year 1	Eight times per year
Years 2 and 3	Six times per year
Years 4 and 5	Four times per year
Annual Monitoring	
Years 1 through 5	April or May (1 visit per year)

¹ This schedule is only a guideline; monitoring will be performed as necessary.

7.2 MONITORING METHODS

7.2.1 Pre-Installation/Site Preparation Monitoring

The Restoration Specialist will attend one pre-construction meeting to review restoration goals, site access, and maintenance restrictions (e.g., timing for use of mechanized equipment for non-native plant control). In addition, the Restoration Specialist will inspect final staking and sign installation and take pre-installation photos from designated photo stations that will be marked in the field using a semi-permanent post (e.g. rebar or t-post) and mapped using a GPS device. This information will later be used to track the changes in vegetation during the restoration effort.

7.2.2 Installation Monitoring

The Restoration Specialist will monitor all phases of the installation process, including initial non-native plant removal/dethatching, installation of irrigation, implementation of grow/kill cycles, and installation of plant and seed materials. The Restoration Specialist and PUD Project Manager must inspect and

authorize each phase of work before the next phase may begin. Post-installation photos will be taken from the designated photo stations and will be used in each annual report for comparison with the respective year's annual assessment photos.

7.2.3 120-Day Plant Establishment Period Monitoring

Following installation, a Restoration Specialist will monitor maintenance activities monthly during the 120-day PEP. In particular, the Restoration Specialist will evaluate the establishment of container plantings and seed and note the presence of non-native and target invasive species that need to be removed. Sign off of the 120-day PEP by City DSD staff, the Restoration Specialist, and PUD Project Manager will be based on a final site inspection and whether the site meets the requirements outlined in Section 8.0.

7.2.4 Maintenance Monitoring

Immediately following the 120-day PEP, the Restoration Specialist will monitor maintenance activities during the minimum five-year restoration effort (Table 7). Maintenance monitoring will include making qualitative assessments of the vegetation and recording all wildlife incidentally observed or detected. Monitoring visits will be conducted eight times in Year 1, six times per year during Years 2 and 3, and four times per year in Years 4 and 5. This monitoring schedule is the minimum; more frequent inspections may be necessary if there are problems with contractor performance or habitat development.

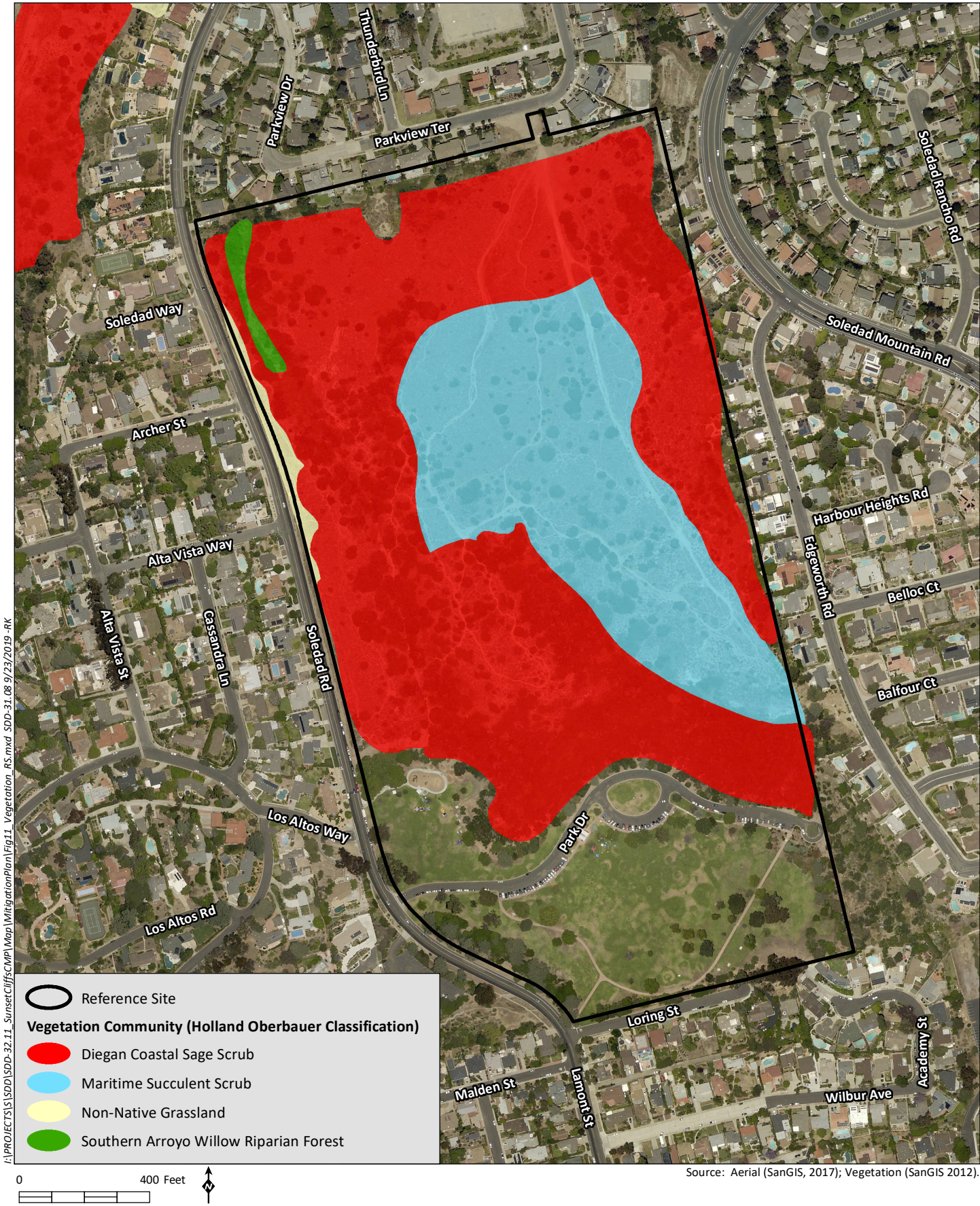
7.2.5 Annual Monitoring

In addition to maintenance monitoring visits, the Restoration Specialist will conduct annual technical monitoring of the restoration site, preferably in April or May of each year during the five-year maintenance and monitoring period. The timing of this assessment should coincide with the peak of the growing season for most native herbs and shrubs and should be conducted as close as possible to the same calendar week from year to year.

Annual monitoring will include both qualitative (visual) and quantitative (transect data collection) sampling. The qualitative assessment will consist of the following: (1) estimates of cover by native and non-native plant species, (2) a complete list of plant and animal species observed, (3) general observations of plant health and recruitment, and (4) photo documentation. The quantitative assessment will include measurements along line transects within the restoration area.

7.2.5.1 Vegetation Analysis

In Year 1, two 50-meter long line transects will be sampled at a maritime succulent scrub habitat reference site located at Kate Sessions Park open space in La Jolla, central coastal San Diego County (Figures 1 and 11, *Reference Site Vegetation*). Mean native cover and species richness measured along these transects will be used to calculate interim and final native cover and species richness targets at the restoration areas, as outlined in Section 8.3. Reference site data will only be collected in Year 1. In Years 1 and 2, native and non-native cover will be visually estimated separately for the irrigated and non-irrigated restoration areas. In Year 3, at least ten 50-meter long line transects will be randomly located and permanently marked with rebar to facilitate their use in subsequent years. In Years 3 through 5, vegetative data will be collected along each transect using the point intercept line transect



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sampling methods described in the California Native Plant Society's Field Sampling Protocol (Sawyer and Keeler-Wolf 1995). Species cover data will be collected by recording all of the species intercepted at each 0.5-meter interval along the length of each transect. Vegetation will be recorded separately for herb (0 to 0.6 meter), shrub (0.6 to two meters), and tree (greater than two meters) layers. Species richness is the number of native species present in a given area. Species richness data will be collected by noting all species occurring within a five-meter belt transect centered on each line transect. These data will be used to obtain native and non-native cover values, and target invasive species cover and species richness for each vegetation community. Transect data will be averaged separately for the irrigated and non-irrigated restoration areas.

7.2.5.2 Wildlife Observations

Wildlife use of the restoration site will be noted incidentally during regular monitoring visits and each annual assessment by hearing species-specific vocalizations, or by observing the species or their tracks, scat, or dens. No focused wildlife surveys will be conducted.

7.2.5.3 Photo Documentation

Photos will be taken at the previously established photo stations as part of all five annual monitoring events and will be included in the respective year's annual report.

8.0 SUCCESS CRITERIA

This section addresses performance standards that will be used to determine the successful completion of the restoration effort. Attainment of these standards indicates that the restoration effort is developing the habitat functions and services targeted by this plan.

8.1 INSTALLATION

For sign off of the installation effort, the following parameters must be met: (1) irrigated restoration areas must be delineated from non-irrigated restoration areas; (2) temporary irrigation must provide 100 percent coverage of the irrigated restoration areas without any overspray or runoff into adjacent habitat; and (3) the irrigation frequency must be enough to germinate the existing weed seed bank. The contractor must provide the Restoration Specialist and PUD Project Manager copies of the irrigation mark-ups for approval and submittal with the as-built report. The Restoration Specialist and PUD Project Manager must approve the irrigation system installation and oversee a coverage test for the restoration area for approval of installation.

The Restoration Specialist and PUD Project Manager will oversee the grow/kill cycles, which will be considered complete when weed seedlings cover no more than 10 percent of the restoration area. The Restoration Specialist will then oversee plant and seed installation, which must pass inspection by a Restoration Specialist prior to installation.

8.2 120-DAY PLANT ESTABLISHMENT PERIOD

Success at the end of the 120-day PEP will be met if: (1) irrigated restoration areas are clearly delineated from non-irrigated areas; (2) there is 90 percent survivorship of container stock; (3) there is some evidence of establishment from seed; (4) all target invasive plant species are present; (5) any installed

irrigation continues to provide adequate cover and appropriate application rates; and (6) there are no erosion-related issues or trash. Any replacement plantings added to attain the survivorship criterion must be installed for at least 30 days prior to sign off. The 120-day PEP will end when the Restoration Specialist recommends, and the PUD Project Manager approves sign off of the 120-day PEP in writing. The five-year maintenance and monitoring period will begin immediately following completion of the PEP.

8.3 MAINTENANCE AND MONITORING PERIOD

Standards to determine the successful completion of the restoration effort, as well as methods for determining success criteria, are specified below for the five-year maintenance and monitoring period. Attainment of specified success criteria will indicate whether the restoration area is progressing toward attaining the habitat functions and values specified by this plan.

8.3.1 Container Planting Survivorship

At the end of Year 1 of the restoration effort, container planting survivorship within irrigated and non-irrigated areas should be 85 percent of that originally installed (Tables 8, *Success Criteria For Irrigated Maritime Succulent Scrub Restoration* and 9, *Success Criteria For Non-Irrigated Maritime Succulent Scrub Restoration*). If planting mortality exceeds 15 percent, then additional measures, such as installing additional plantings, should be implemented. Starting in Year 2 it is anticipated that individual native plantings will be difficult to distinguish from some of the larger volunteer plants or existing vegetation within the non-irrigated restoration areas; therefore, survivorship will only be measured in Year 1.

Table 8
SUCCESS CRITERIA FOR IRRIGATED MARITIME SUCCULENT SCRUB RESTORATION

Criteria	Year 1	Year 2	Year 3	Year 4	Year 5
Minimum Container Planting Survivorship ¹	85				
Minimum Total Native Cover ^{1,2}	30	45	60	70	75
Minimum Native Shrub Cover ^{1,2}	30	40	50	60	70
Minimum Native Cacti and Succulent Cover ^{1,2}	30	40	50	60	70
Native Species Richness ^{1,2}	30	40	50	60	70
Maximum Non-Native Forb Cover ^{1,3}	5	5	5	5	5
Maximum Non-Native Grass Cover ^{1,3}	5	5	10	10	10
Maximum Target Invasive Plant Cover ¹	0	0	0	0	0
Irrigation	OK	OK	OK	None	None

¹ Percent

² Relative to a reference site

³ Excluding target invasive plants

Table 9
SUCCESS CRITERIA FOR NON-IRRIGATED MARITIME SUCCULENT SCRUB RESTORATION

Criteria	Year 1	Year 2	Year 3	Year 4	Year 5
Minimum Container Planting Survivorship ¹	85				
Minimum Total Native Cover ^{1, 2}	25	35	45	55	60
Minimum Native Shrub Cover ^{1, 2}	25	30	40	3550	55
Minimum Native Cacti and Succulent Cover ^{1, 2}	25	30	40	50	55
Minimum Native Species Richness ^{1, 2}	25	30	40	50	60
Maximum Non-Native Forb Cover ^{1, 3}	5	5	5	5	5
Maximum Non-Native Grass Cover ^{1, 3}	30	25	25	20	20
Maximum Target Invasive Plant Cover ¹	0	0	0	0	0

¹ Percent

² Relative to a reference site

³ Excluding target invasive plants

8.3.2 Native Vegetation Cover

Cover by native plants is a key component of determining successful native habitat restoration. Cover by native vegetation should increase over time and ultimately approach that of healthy native MSS in San Diego County. MSS located nearby within Los Peñasquitos Canyon is not being used as a reference site because only a portion of the SanGIS mapped MSS actually contains MSS vegetation while the rest appears to have converted to DCSS, likely following recent fires. Instead, native cover targets will be based on native cover observed at an MSS reference site located at Kate Sessions Park in La Jolla (Figures 1 and 11), which is the closest, naturally occurring, healthy MSS habitat. MSS habitat at Kate Sessions Park occurs at similar slope (30 to 50 percent slopes) and aspect (south facing) as the restoration site. It should also be noted that the MSS habitat at Kate Sessions Park is well established and mature, and the soils are mainly Olivenhain cobbly loam (per the Soil Survey Geographic database for San Diego County, California <https://databasin.org/datasets/028d6dc1c4084aeb96099355da5bc84a>) which is different from the Altamont Clay located within the proposed mitigation site as well as the existing MSS in Los Peñasquitos Canyon (Figures 8 and 9). While soils are different between the reference site and proposed mitigation site, Kate Sessions is still the preferred reference site due to it containing healthy MSS habitat, and its proximity to the mitigation site. Other reference sites were considered, but their soils types also differed, and they were located much further from the mitigation site. MSS is still considered appropriate for the mitigation site due to the presence of MSS and MSS associated species on Altamont clay soils within Los Peñasquitos Canyon. The difference in soil type could affect the percent native cover within the proposed mitigation site, which is reflected in the relative success criteria.

Total native cover, shrub cover, and cover by cacti and succulents will all be assessed along two 50-m long transects sampled at the reference site, then final success criteria will be calculated by multiplying mean cover measured along these transects with the relative target percentages noted in Table 9 (e.g., a Year 1 target of 30 percent relative cover and mean native cover of 70 percent measured at the reference site would equate to a Year 1 native cover target of at least 21 percent).

For the irrigated MSS restoration areas, the final mean native cover at the end of the restoration effort should be at least 75 percent of that measured at the MSS reference site (Table 8), and should contain at least 70 percent relative cover by native shrub species (California sagebrush, California buckwheat, black sage, bladderpod, euphorbia, and/or jojoba), and at least 70 percent relative cover by native cacti

and succulent species (coast cholla, fingertips, chalk lettuce, cliff spurge, San Diego barrel cactus, California box-thorn, fish-hook cactus, and coastal prickly pear). These targets are considered appropriate given the different soil type and young age of MSS within the mitigation site relative to mature habitat.

Non-irrigated MSS restoration will be dependent upon rainfall for new plantings and seed to establish and grow. By the end of the restoration effort, mean native cover in these areas should be 60 percent of that measured at the reference MSS site, with at least 55 percent relative cover by native shrubs and 55 percent cover by native cacti and succulent species (Table 9). Interim performance goals have also been set to track the progress of the restoration effort. If annual goals are not met, remedial measures, including reseeding, planting, irrigation adjustments, and increased weeding, may be implemented to ensure final success.

8.3.3 Native Species Richness

Within irrigated restoration areas, the final target is for at least 70 percent of the number of native species observed in the reference site (e.g., if the reference site contains 10 native species, the restoration area will need to contain at least 7 native species). Within the reference site, species richness will be measured along a five-meter-wide belt centered along each of the sampled line transects. Existing disturbed DSS identified for enhancement to MSS is dominated by only two to three native shrub species, which is low species richness. In these areas, the final target is for a mean of at least 60 percent of the number of species observed in the reference site. If the restoration does not appear to be on track to meet the species richness goal, additional seed or plantings may be recommended.

8.3.4 Non-Native Vegetation Cover

Non-native plants are typically a problem in habitat restoration, particularly at the outset. The restoration site will be disturbed by dethatching, which favors the establishment of fast-germinating and fast-growing non-native annual species. These species are currently common in the proposed site (including as an abundant seed bank in the soils), as well as in the surrounding habitat. As the restoration effort takes hold, cover by non-native forbs such as black mustard and Italian thistle (*Carduus pycnocephalus*) should decrease because of diligent removal of these species and expanding cover by native vegetation.

Within the irrigated MSS restoration areas, cover by non-native forbs, exclusive of target invasive species, shall account for no more than five percent throughout the five-year maintenance period (Table 8), while cover by all annual non-native grasses shall not exceed five percent in Years 1 and 2 and 10 percent in Years 3 through 5.

Within the non-irrigated MSS restoration areas, tolerance for non-native forbs, exclusive of target invasive species, is five percent. However, cover by annual non-native grasses is well established and, while weeding should reduce cover by grasses, it will not be expected to eradicate it. Therefore, the cover limit for annual non-native grasses is higher, with a final limit of no more than 20 percent (Table 9).

8.3.5 Target Invasive Plant Cover

Target invasive plant species ranked as “Moderate” or “High” for invasiveness by the Cal-IPC will be eradicated from the site each year before re-seeding can occur. Seedlings of invasive species are expected to occur throughout the restoration effort; however, the acceptable cover value throughout the restoration areas and a five-foot buffer is set at zero percent to indicate that no re-seeding can occur (Tables 8 and 9). Certain non-native grasses are listed as invasive species by Cal-IPC. Some of these are naturalized in our region and are a common component of “undisturbed” scrub habitats. The tolerance for these species will be the same as other non-invasive, non-native species (i.e., will be included as part of the non-native cover criterion).

8.3.6 General Wildlife

No success criteria are specified for wildlife but increasing use of the site by native wildlife would be a positive indicator that target wildlife functions and services have been improved.

8.3.7 Irrigation

To demonstrate that established vegetation is self-sustaining, all artificial water supplies will be off for at least two years prior to restoration sign off.

9.0 REPORTING PROGRAM

This section provides a summary of all reporting required for this restoration effort.

9.1 INSTALLATION PERIOD

The results of cultural monitoring by the archeologist and Native American (Kumeyaay) monitor will be presented in a memo following completion of cultural monitoring. A brief memo documenting completed installation will be submitted to the PUD Project Manager by the Restoration Specialist.

9.2 120-DAY PLANT ESTABLISHMENT PERIOD

Monitoring memos noting any issues with plant establishment, irrigation, non-native species, sediment control, etc., will be provided as necessary to the installation/maintenance contractor and PUD Project Manager.

Following successful completion of the PEP, the Restoration Specialist shall submit a brief as-built letter report to the PUD Project Manager, MSCP, and City DSD-MMC within 60 days. The report will describe restoration site preparation, installation methods, activities conducted during the 120-day PEP, and the as-built status of the site, including plant material installed and deviations from this plan and construction documents. To document implementation of the plan and baseline site conditions, the letter will include an as-built graphic on an aerial photo base, as well as photos taken from the designated photo stations before and after restoration installation. All geographic information system (GIS) data and associated metadata shall be provided in a digital medium. The as-built letter will serve as the “time zero” report, noting when the five-year maintenance and monitoring period began.

9.3 MAINTENANCE AND MONITORING PERIOD

Monitoring memos noting any issues with plant establishment, irrigation, non-native species, sediment control, etc., and providing adaptive management strategies for keeping the restoration on track toward final success criteria, will be provided as necessary to the contractor and PUD Project Manager.

Annual reports will be prepared during the five-year monitoring period; these will report on the progress of the restoration effort toward final goals and present any remedial actions being recommended to help attain final success criteria. These reports will provide a summary of maintenance activities for the year, evaluate the success of the restoration effort to date relative to the success criteria, and include any recommendations for future work that may be deemed necessary to ensure ultimate success of the restoration effort. Baseline photos, as well as photos from recent site visits, will be included in the reports, which will be submitted within 60 days of the end of each year. Annual reports will be sent to the PUD Project Manager, who will then distribute the report to City DSD-MMC and MSCP.

10.0 SCHEDULE OF ACTIVITIES

This section provides a summary of the proposed schedule of activities for the irrigated and non-irrigated restoration areas (Table 10, *Restoration Schedule of Activities*).

Table 10
RESTORATION SCHEDULE OF ACTIVITIES

Milestone	Action
Site Preparation	<ul style="list-style-type: none"> -- Order container plantings and seed -- Pre-construction meeting -- Pre-construction site documentation -- Delineate limits of work -- Install temporary signage
Installation	<ul style="list-style-type: none"> -- Initial weed clearing -- Install temporary, above-grade irrigation system -- Install erosion control measures -- Conduct grow/kill cycles until weed cover falls below 10 percent -- Install container plantings -- Install hydroseed (irrigated restoration) and hand seed (non-irrigated restoration)
Monthly During 120-Day Plant Establishment Period	<ul style="list-style-type: none"> -- Biological monitoring -- Inspect plantings and adjust irrigation levels as needed based on weather conditions -- Inspect area for invasive plants 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 -- Re-seed/re-plant, as needed, to achieve milestones
120 Days after Plant Installation	<ul style="list-style-type: none"> -- Site inspection with DSD and PUD Project Manager -- Submit biological monitoring report within 60 days of authorized sign off

Table 10 (cont.)
RESTORATION SCHEDULE OF ACTIVITIES

Milestone	Action
Year 1	<ul style="list-style-type: none"> -- Biological monitoring eight times -- Inspect plantings and adjust irrigation levels as needed based on weather conditions -- Inspect area for invasive plants 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 -- Conduct qualitative annual assessment in April or May -- Seed/re-plant as needed to achieve 90 percent planting survivorship -- Submit biological monitoring report within 60 days of end of Year 1
Year 2	<ul style="list-style-type: none"> -- Biological monitoring six times -- Inspect plantings and adjust irrigation levels as needed based on weather conditions -- Inspect area for invasive plants 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 -- Conduct qualitative annual assessment in April or May -- Submit biological monitoring report within 60 days of end of Year 2
Year 3	<ul style="list-style-type: none"> -- Biological monitoring six times -- Inspect plantings and adjust irrigation levels as needed based on weather conditions -- Inspect area for invasive plants 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 Specialist -- Conduct quantitative annual assessment in April or May -- Submit biological monitoring report within 60 days of end of Year 3
Year 4 and Year 5	<ul style="list-style-type: none"> -- Biological monitoring four times per year, including quantitative annual monitoring -- Inspect plantings and adjust irrigation levels as needed based on weather conditions -- Inspect area for invasive plants 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 -- Conduct quantitative annual assessment in April or May -- Submit final biological monitoring report within 60 days of end of Years 4 and 5
Prior to City Approval of Restoration Area	<ul style="list-style-type: none"> -- Final site inspection of restoration areas with DSD and PUD Project Manager -- Remove temporary irrigation system and any remaining fencing/BMPs/signs

11.0 REMEDIATION MEASURES

11.1 INITIATING PROCEDURES

If the restoration effort is not meeting success standards, the PUD Project Manager will notify City DSD and propose corrective measures, as needed and as soon as possible once a problematic situation has been identified. The PUD Project Manager shall be responsible for all costs associated with the implementation of any required remedial measures and associated monitoring.

11.2 ALTERNATE LOCATIONS FOR CONTINGENCY MITIGATION

Tier I mitigation has previously been identified within Sunset Cliffs Natural Park. A revegetation plan has already been drafted (URS 2013) and Phase 1 of the plan is currently being implemented. HELIX has also identified additional Tier I MSS restoration potential within the Preserve (HELIX 2019). In the unlikely event that the proposed location was to fail, or be otherwise deemed unsuitable, the PUD Project Manager will work with City DSD to identify a mutually acceptable alternative location for Tier I mitigation.

11.3 NATURAL DISASTER

Should the restoration effort fail due to a natural disaster such as fire or flood, City PUD will not be held responsible for replanting.

12.0 COMPLETION OF RESTORATION

12.1 CONFIRMATION

If the restoration effort meets all success standards at the end of the five-year maintenance and monitoring period (or sooner) and all irrigation has been discontinued for at least two years, then the restoration effort will be considered a success. If not, the PUD Project Manager will submit a revised or supplemental restoration program to compensate for those portions of the restoration that were not successful. The maintenance and monitoring program will be extended one year at a time until the standards are met. Specific remedial measures (approved by City DSD-MMC) will be used during any such extension. Monitoring extensions will be done only for areas that fail to meet final success criteria. This process will continue until all Year 5 standards are attained or until City DSD-MMC determines that other mitigation measures are appropriate.

12.2 NOTIFICATION OF COMPLETION

The PUD Project Manager will notify and coordinate with City DSD-MMC to seek concurrence that the final performance criteria have been met through the submittal of the final monitoring report and a letter requesting a Notification of Completion. The final report will include analysis of quantitative sampling data that will illustrate the final success criteria have been met. All temporary structures, fences, stakes, irrigation, BMPs, and similar temporary items must be removed from the site prior to filing the notification of completion. The site may qualify for early approval if final success criteria have been met prior to Year 5 and the site is accepted as complete by City DSD-MMC; however, the site must be off supplemental irrigation for at least two growing seasons prior to final approval.

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14.0 REFERENCES

- American Ornithological Society. 2018. Checklist of North and Middle American Birds. Available at: <http://checklist.aou.org/taxa>. August.
- California Invasive Plant Council. 2018. California Invasive Plant Inventory Database. Available at: <http://www.cal-ipc.org/ip/inventory/index.php>
- HELIX Environmental Planning, Inc. 2018. Administrative Draft Environmental Impact Report. Biological Resources. SCH No. 2018041020; Project No. 331101. September, in process.
2019. Tier I Mitigation Site Evaluation within Los Peñasquitos Canyon Preserve for the La Jolla View Reservoir Project. June 11.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, 156 pp.
- Jepson Flora Project (eds.) 2018. Jepson eFlora. Available at: <http://ucjeps.berkeley.edu/eflora/>
- Oberbauer, T., M. Kelly, and J. Buegge. 2008. Draft Vegetation Communities of San Diego County. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California," R. F. Holland, Ph.D., October 1986. March. Revised from 1996 and 2005. July.
- Rocks Biological Consulting (Rocks). 2019. La Jolla View Reservoir Replacement Project Biological Technical Report. June.
- San Diego, City of. 2018a. San Diego Municipal Code Land Development Code: Biology Guidelines. February. Available at: https://www.sandiego.gov/sites/default/files/amendment_to_the_land_development_manual_biology_guidelines_february_2018_-_clean.pdf
- 2018b. San Diego Municipal Code Land Development Code: Biology Guidelines. Attachment B: General Outline for Revegetation/Restoration Plans. February. Available at: https://www.sandiego.gov/sites/default/files/amendment_to_the_land_development_manual_biology_guidelines_february_2018_-_clean.pdf
- 2018c. San Diego Municipal Code. Land Development Code: Landscape Standards. Available at: https://www.sandiego.gov/sites/default/files/dsdlc_landscapestandards_2016-04-05.pdf
1997. Multiple Species Conservation Program: City of San Diego MSCP Subarea Plan. March. Available at: <https://www.sandiego.gov/sites/default/files/legacy/planning/programs/mscp/pdf/subareafullversion.pdf>
- Sawyer, J.O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. CNPS. 472 pp.
- Society for the Study of Amphibians and Reptiles. 2018. North American Standard English and Scientific Names Database. Available at: <https://ssarherps.org/cndb/>

URS. 2013. Revegetation Plan for Sunset Cliffs Natural park Hillside Section Improvements Projects #236548, San Diego, Ca. April.

U.S. Department of Agriculture. 2018. Web Soil Survey. Natural Resources Conservation Service. Available at: <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. August 21.

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