



Revegetation Plan for
Temporary Impacts to
Coastal Sage Scrub on
the Castlerock Project
City of San Diego
Project No. 10046

Prepared for
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A handwritten signature in black ink, appearing to read "Gerry Scheid".

Gerry Scheid, Senior Biologist

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1.0 Introduction

This revegetation plan addresses mitigation for specific impacts to coastal sage scrub habitat that would result from water, sewer, and drainage infrastructure improvements located at the southwest corner of the Castlerock project site. These impacts would only occur if the “No Annexation” alternative is built. The impact area would be replanted with coastal sage scrub species as outlined in this revegetation plan.

The Castlerock project site is located in the eastern portion of the city of San Diego within the City of San Diego and the East Elliott Community Planning Area (Figures 1 and 2). Because the project site is located adjacent to the City of Santee’s western boundary and Santee could provide services to the proposed project, detachment from the City of San Diego and annexation to the City of Santee (“reorganization”) is being proposed as one of the project scenarios (the Annexation Scenario). The project could also be developed in the City of San Diego without annexation to the City of Santee, with either San Diego providing all municipal services or most municipal services with an out-of-service agreement for water and sewer service from the Padre Dam Municipal Water District (No Annexation Scenario).

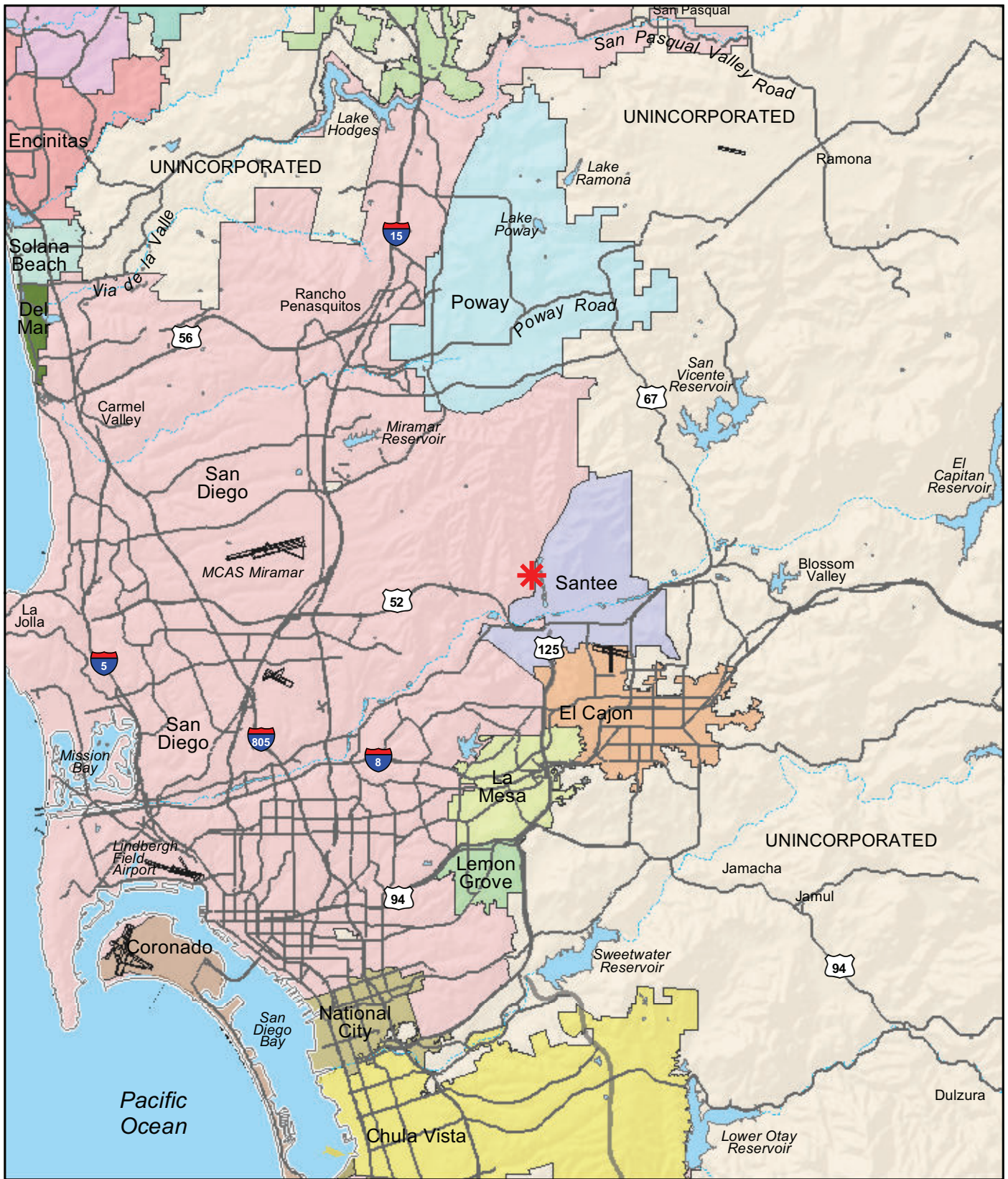
Proposed infrastructure improvement impacts to be built under the “No Annexation” alternative would impact a total of approximately 1.25 acres of coastal sage scrub habitat. This plan provides a description of the responsibilities of project participants, existing conditions, site preparation methods, planting, a maintenance and monitoring schedule, and performance standards.

1.1 Responsible Party

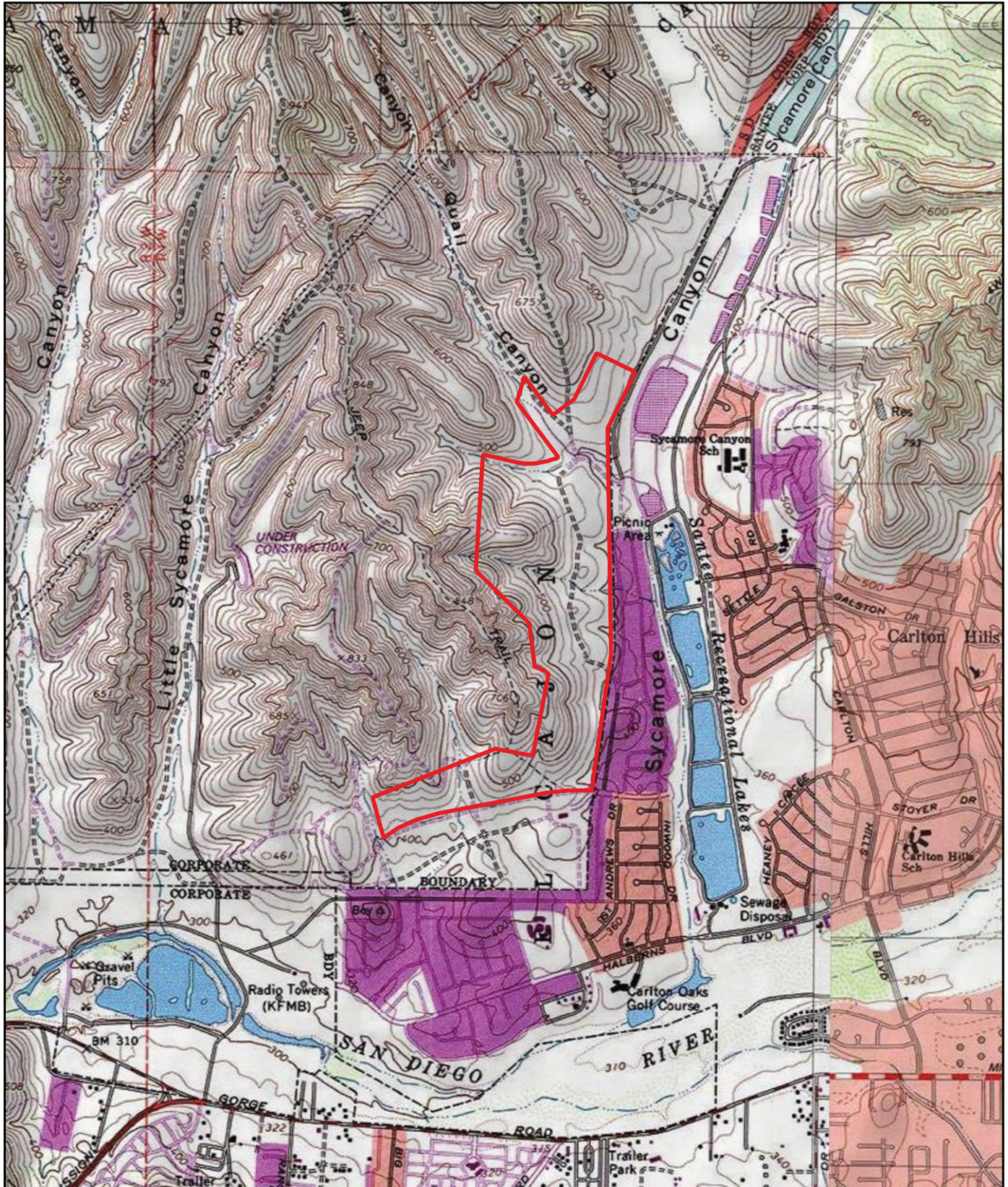
The party financially responsible for this revegetation project is:

Pardee Homes
6025 Edgewood Bend Court
San Diego, CA 92130

The project proponent will be responsible for contracting with personnel qualified in implementation, maintenance, and monitoring of the revegetation site and following the practices described in this plan. Upon contracting with a qualified person or organization to implement this plan, the project proponent will designate a person or group as the habitat revegetation specialist.



 Project Location



 Project Boundary

FIGURE 2

Project Location on USGS Map



1.2 Habitat Restoration/Revegetation Specialist

The habitat restoration/revegetation specialist should have a minimum of three years of experience in revegetation of Diegan coastal sage scrub habitat. The habitat restoration/revegetation specialist should understand upland plant communities and have expertise in plant and wildlife identification and ecology. The habitat restoration/revegetation specialist should be retained for habitat revegetation to perform the following tasks and be responsible for implementing the revegetation plan in accordance with its specifications:

- Coordinate and monitor revegetation site preparation.
- Be responsible for the installation and maintenance of the habitat revegetation areas as defined herein.

1.3 Seed Supplier

The seed supplier should have at least two years of experience collecting coastal sage scrub seeds for upland revegetation projects, and would:

- Collect only species specified or approved by the habitat restoration/revegetation specialist.
- Collect seeds on-site or within five miles of the Castlerock Project site, if approved by the habitat restoration/revegetation specialist.
- Seed should only be collected on legally accessible lands.

1.4 Plant Supplier

The plant supplier should have at least 2 years of experience in propagating native plants for upland revegetation projects. The plant supplier would:

- Produce only species specified or approved by the habitat restoration/revegetation specialist.
- Produce plants from seed collected on or adjacent to the site.
- Produce properly aged plants (roots filling pots, but not root-bound) in specified pot sizes ready for outplanting inoculated with mycorrhizae.
- Deliver healthy plants to the revegetation site.

1.5 Monitoring Biologist

The monitoring biologist may be the habitat restoration/revegetation specialist or a biologist with a minimum of two years of experience in upland habitat revegetation monitoring. The monitoring biologist should understand upland plant communities and have expertise in upland plant and wildlife identification and ecology. The monitoring biologist would:

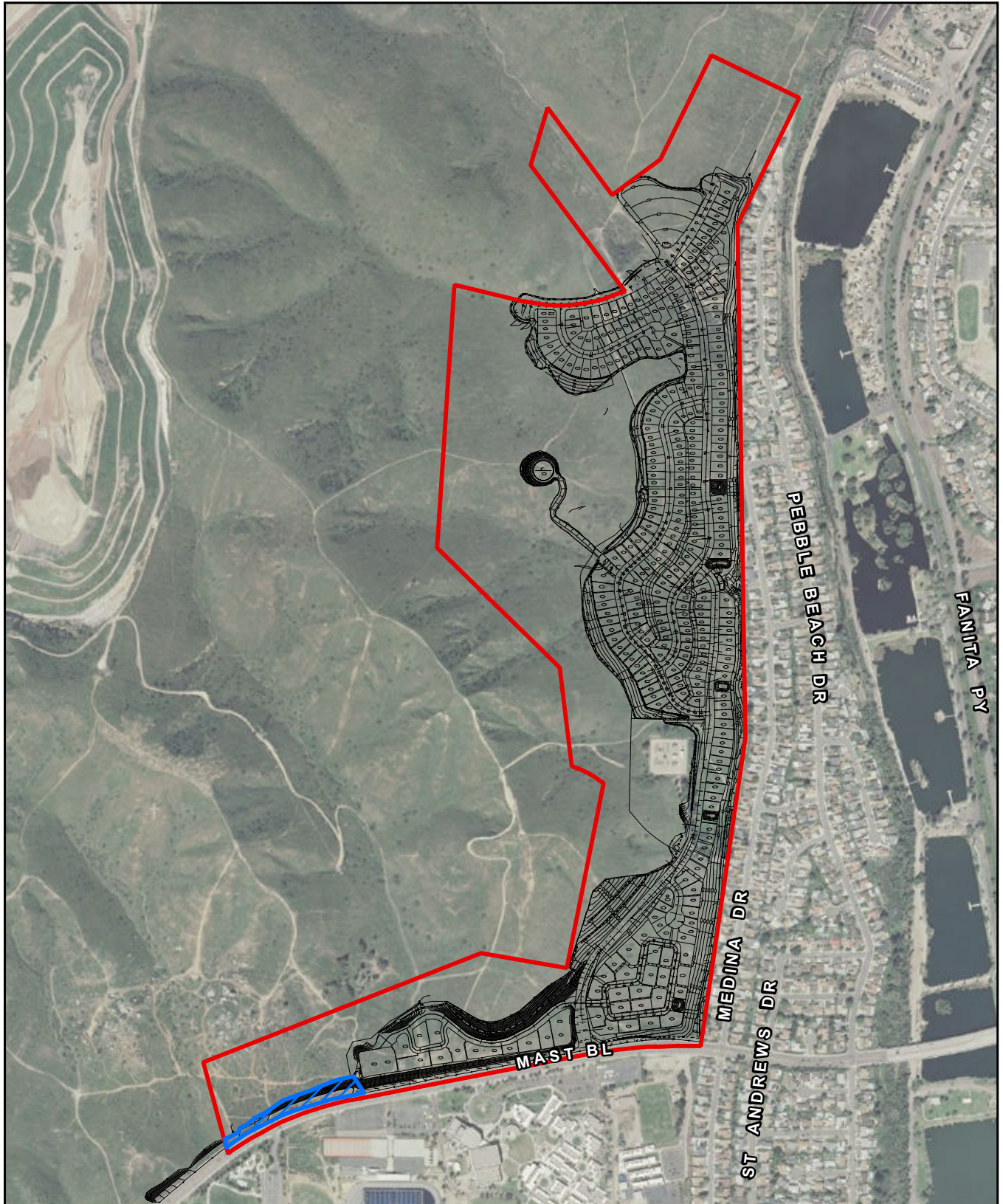
- Oversee and perform the required monitoring and reporting in accordance with the procedures established in this plan.




2.0 Site Conditions Prior to Construction

Temporary impacts to coastal sage scrub habitat will occur as a result of the construction of water, sewer, and drainage improvements as part of the “No Annexation” project alternative. The coastal sage scrub habitat in the impact area is dominated by shrubs of California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and laurel sumac (*Malosma laurina*). The impact/revegetation area is located on the southwestern portion of the Castlerock project site (Figure 3).

3.0 Revegetation Goals

The purpose of this revegetation project is to restore coastal sage scrub habitat within the area disturbed during the construction/installation of the water, sewer, and drainage improvements. This revegetation program is designed to create a native plant community that resembles the adjacent intact coastal sage scrub habitat. Details regarding site preparation, weed control, seed collection, plant production, irrigation, and implementation scheduling are described below. This plan also establishes performance standards for evaluating project success, and remedial and contingency measures, if needed.



-  Project Boundary
-  Coastal Sage Scrub Impact/Restoration Area
-  Plan Lines

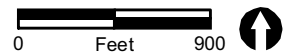


FIGURE 3
Location of Coastal Sage Scrub
Impact/Restoration Area
No Annexation Alternative

4.0 Implementation Plan

Native plant species will be used for this revegetation effort. These plant species include, but are not limited to, California sagebrush, black sage (*Salvia mellifera*), California buckwheat, purple needlegrass (*Nassella pulchra*), and golden tarplant (*Deinandra fasciculata*). Plants will be established through the use of container plants with supplemental hydroseed added. Coastal sage scrub species will be propagated in the nursery by growing plants from locally collected seed.

Native plants and seed listed in Tables 1 and 2 provide the target plant species to be included in the revegetation of the post-construction area. Native species will be planted in an arrangement that will approximate the natural distribution of plants that are present adjacent to the impact areas.

**TABLE 1
 COASTAL SAGE SCRUB SEED MIX
 FOR HYDROSEEDING AND POUNDS/ACRE APPLICATION RATE**

Species	Application Rate (lbs/ac)
California sagebrush <i>Artemisia californica</i>	2.0
Fasciated Golden tarplant <i>Deinandra fasciculata</i>	0.5
California encelia <i>Encelia californica</i>	1.0
California buckwheat <i>Eriogonum fasciculatum</i>	0.5
Golden yarrow <i>Eriophyllum confertiflorum</i>	0.5
California broom <i>Lotus scoparius</i>	1.0
Purple needlegrass <i>Nassella pulchra</i>	2.0
Black sage <i>Salvia mellifera</i>	2.0
TOTAL	16.5

**TABLE 2
CONTAINER PLANT DENSITIES FOR COASTAL SAGE SCRUB REVEGETATION**

Plant Species	Container Size	Density/Acre
California sagebrush <i>Artemisia californica</i>	One gallon	100
Common encelia <i>Encelia californica</i>	One gallon	80
California buckwheat <i>Eriogonum fasciculatum</i>	One gallon	80
Laurel sumac <i>Malosma laurina</i>	One gallon	5
Purple needlegrass <i>Nassella pulchra</i>	Rose-pots	25
Black sage <i>Salvia mellifera</i>	One gallon	75
TOTAL PLANTS/ACRE		435

4.1 Site Preparation

The revegetation site will be located in the area disturbed during the construction of the infrastructure improvements. Site preparation will be primarily focused on weed control prior to planting. Following completion of construction activities, herbicide will be used to spray newly germinated weeds prior to seed set. Herbicide applications will consist of spraying a glyphosate-based herbicide. The site will be monitored frequently, and herbicide applications will be scheduled as needed to control weeds. Newly germinated weed seedlings will require herbicide treatments before they reach six inches in height or before flowering, whichever occurs first.

4.2 Plant Propagation

4.2.1 Seed Collection

Native seed for the revegetation program will be collected in and around the Castlerock project property as directed by the project biologist. Seed collection will be limited to an approximately five-mile radius around the project site at a similar elevation and distance from the coast. Seeds will be used to propagate plants in containers and for hydroseeding. Seeds will be collected from the target species listed in Tables 1 and 2.

4.2.2 Container Stock Propagation

Container plants will be grown from locally collected seed, as described above. Container plants will be installed during the fall/winter season, after rains have begun. A minimum of nine months will be needed to grow the plants to an adequate size for installation.

Native soil will be used in the containers, as it provides arbuscular mycorrhizae (fungi) and other micro-organisms that enhance native plant growth. Commercial soil mixes with high nutrient levels tend to produce healthy looking plants, but may inhibit root growth, which can be detrimental to the plant once in the field. Species listed in Table 2 will be planted in arrangements that reflect their natural distribution adjacent to the impact areas.

4.2.3 Seed Application

The revegetation areas will be hydroseeded with the coastal sage scrub seed mix listed in Table 1. Seed will be applied through a hydroseed mixture containing seed, mulch, and M-binder. Other binders may be applied with the approval of the restoration/revegetation biologist. The M-binder, or equivalent, will be applied at a rate of 200 pounds per acre with 2,000 pounds per acre of wood fiber. The seed slurry will be mixed thoroughly before and continuously during application, and will be applied in an even manner. The seed mix will provide fast-growing native cover for erosion control and plant diversity within the project area.

4.2.4 Planting Schedule

Planting will be done in the fall or winter to take advantage of seasonal rains. Planting when soil moisture conditions are adequate ensures a higher survivorship of container stock. The plants will be watered thoroughly upon installation. Containers will be planted to mimic a natural distribution with variations in planting patterns. Final locations will be determined in the field by the monitoring biologist to account for microhabitats and other field conditions.

4.2.5 Irrigation

As discussed above, planting shall be timed to coincide with the rainy season to take advantage of natural precipitation. A temporary irrigation system may be installed if water sources are available from the development area. If water is not available for an irrigation system, then a water truck will be used to irrigate plantings as needed.

4.2.6 Site Protection

Protection of the revegetation sites from disturbance is essential for project success. Of particular importance is protection of the revegetation site from pedestrian incursions, off-highway vehicles, and domestic pets. Signage will be installed listing the project contact and informing the public trespassers will be liable for any damage caused.

5.0 As-built Plan and 120-day Plant Establishment Period Letter

An as-built plan will be submitted to the City Mitigation Monitoring Coordinator (MMC) staff and the project proponent within 60 days following the completion of planting. The as-built plan will outline how the revegetation sites have been established in accordance with the approved design and construction methods. The as-built report will cover the time period from grading through the completion of plant installation. This report will document the start of the 120-day plant establishment period (PEP).

The PEP letter report will include information regarding the species and quantities of seeds applied, container plants installed, and photo documentation of site conditions 120 days after planting. The letter will also include a discussion of other aspects of site preparation, project implementation, plant establishment, and recommendations for remedial actions, if needed. After the PEP is complete, submittal of the PEP letter will coincide with the commencement of the five-year monitoring period.

6.0 Maintenance Activities

This section discusses the methods used to maintain the revegetation area following completion of implementation. Maintenance procedures are intended to be adaptive to ensure that the restored habitat meets the performance standards.

6.1 Maintenance Activities

6.1.1 Weed Control

Following the completion of revegetation planting, a non-native species weed management program will be implemented over a five-year period. The weeding program will focus on identification and eradication of non-native species prior to seed set. Maintenance workers will be trained to distinguish between native and non-native plants.

Regular visits to monitor the site for germinating weeds will be conducted followed by repeat spraying, as necessary, to control non-native plants. If non-native plants are controlled each season prior to flowering and seed setting, the level of effort required should decrease over the maintenance period. Exotic species will be removed by hand and herbicide (glyphosate) applications by maintenance workers familiar with and trained to distinguish weeds from native species. During the first year, weeding will be performed three times to keep weeds from producing seeds and to control weed competition during the establishment period of native plants. As the native plants grow and mature, a reduced level of effort for weed management is anticipated. A list of exotic species expected to grow on-site is presented in Table 3. In the event that additional invasive plant species are encountered, the habitat restoration/revegetation specialist will refine measures to control them.

**TABLE 3
ANTICIPATED EXOTIC SPECIES**

Scientific Name	Common Name
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Atriplex semibaccata</i>	Australian saltbush
<i>Avena</i> spp.	Wild oats
<i>Brassica</i> spp.	Mustard
<i>Bromus</i> spp.	Brome grass
<i>Centaurea melitensis</i>	Yellow star-thistle, Tocalote
<i>Dittrichia graveolens</i>	Stinkwort
<i>Erodium</i> spp.	Filaree, storksbill
<i>Foeniculum vulgare</i>	Fennel
<i>Hypochaeris glabra</i>	Smooth cat's-ear
<i>Lactuca serriola</i>	Prickly lettuce
<i>Mesembryanthemum crystallinum</i>	Crystalline iceplant
<i>Nicotiana glauca</i>	Tree tobacco
<i>Raphanus sativa</i>	Wild radish
<i>Ricinus communis</i>	Castor bean
<i>Salsola tragus</i>	Russian thistle
<i>Sonchus asper</i>	Prickly sow thistle

6.1.2 Reseeding and Replanting

Replanting and seeding of areas will occur as needed during the second year of the monitoring period to increase the cover in areas that are not meeting the performance standards.

6.1.3 Irrigation Maintenance

If a temporary irrigation system is installed at the site, it will be repaired as necessary to keep it functioning properly. At the direction of the habitat restoration/revegetation specialist, the irrigation system will be turned off when the plants have become established and irrigation is no longer necessary. If the irrigation system is removed, the habitat restoration/revegetation specialist will monitor the removal so that impacts to native plants are minimized.

6.2 Schedule

A five-year maintenance program will be implemented for the revegetation areas, and this schedule is presented in Table 4.

**TABLE 4
MAINTENANCE SCHEDULE**

Type/Task	Year 1	Year 2	Year 3	Year 4	Year 5
Site protection	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Weed control	As-needed	As-needed	Quarterly	Twice a year	Twice a year
Trash removal	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Replanting/seeding	Fall/winter	Fall/winter	Fall/winter	--	--
Irrigation	As-needed	As-needed	As-needed	--	--

7.0 Monitoring Methods

7.1 Performance Standards

The revegetation site shall be monitored qualitatively and quantitatively for five years following planting. The revegetation sites will be monitored for plant health, container survivorship, and weed cover for five years. Performance standards for the revegetation effort will be based on the development of native plant cover and species composition over the five year monitoring period (see Table 5).

**TABLE 5
ANNUAL PERFORMANCE STANDARDS**

Year	Cover by Native Species (in percent)	Species Composition (percent native)
1	--	--
2	20%	70%
3	30%	80%
4	50%	90%
5	75%	95%

7.2 Monitoring Methods

Specific monitoring activities will track changes over time and measure conditions against the performance standards. The monitoring program will include both qualitative and quantitative monitoring described below.

7.2.1 Qualitative Monitoring

Evaluation of plant health and identifying and correcting problem areas is necessary for ensuring successful vegetation establishment and is part of an adaptive management program to be implemented for this revegetation project. Qualitative monitoring will be conducted by the monitoring biologist on a monthly basis for the first growing season. In monitoring Years 2-5, qualitative monitoring will be conducted quarterly. The project biologist will review the revegetation areas to examine the irrigation systems, container plant survivorship and vigor, native plant germination, and exotic plant encroachment. The biologist will recommend remedial actions, as necessary.

Photographic monitoring locations will be established at the revegetation site. Representative photographs will be taken on an annual basis to photo-document the development of the native vegetation at the site.

7.2.2 Quantitative Monitoring

The following monitoring methods will be used to collect data that will determine whether the coastal sage scrub revegetation areas meet the performance standards presented in Table 5. Permanent transects will be established in the coastal sage scrub revegetation area and will be sampled on an annual basis starting in the spring of the second year of monitoring. Native canopy plant cover will be measured along these transects. The transect data will then be averaged over the entire 1.25 acres of revegetation to estimate the total native canopy cover. The estimated total native plant

canopy will be compared to the annual native cover goal listed in Table 5 to determine how well the vegetation is developing on the site. A list of all species will be noted each year of the monitoring period, and the percent of native plant species, especially those planted as part of this revegetation effort, will be calculated and compared to the annual performance standard listed in Table 5.

7.3 Monitoring Schedule

The monitoring period will begin with implementation of the revegetation work and will last for five years or until the restored vegetation has met the performance standards. A monitoring schedule is presented in Table 6. The monitoring program will be conducted by the monitoring biologist as outlined below.

**TABLE 6
MONITORING SCHEDULE (APPROXIMATE)**

Type/Task	Year 1	Year 2	Year 3	Year 4	Year 5
Qualitative					
Vegetation Monitoring	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Wildlife Monitoring	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Quantitative					
Spring vegetation sampling	--	Annually	Annually	Annually	Annually

7.4 Annual Monitoring Reports

Annual reports summarizing monitoring results of the habitat revegetation will be submitted to the project proponent and City MMC. The monitoring results section will include methods, discussions, remedial actions, recommendations, and photo documentation.

8.0 Completion of the Revegetation Program

8.1 Notification of Completion

At the end of the five-year maintenance and monitoring period, a final report will be submitted to the City of San Diego evaluating the success of the revegetation. The report will make a determination whether the requirements of this plan have been achieved.

Upon satisfactory achievement of the performance standards, the project biologist will inform the City of San Diego. A site review will be scheduled for all parties to review the restored areas within two months of the notification. Within one month following the site visit, the City of San Diego will provide written confirmation of acceptance that the site has met the performance standards.

8.2 Contingency Measures

If annual or final performance standards are not met, the project biologist will analyze the cause(s) and, if determined necessary, propose remedial action for approval to the client and the City of San Diego. The responsible party will be liable for reasonable funding of the contingency procedures necessary for completion of the revegetation success.