San Diego Ambrosia Translocation and Management Plan

Oakdale Avenue Residential Development, El Cajon, CA

Submitted to:
New Vision Building & Design
1109 East Washington Ave.
El Cajon, CA 92019

May 2021

schaefer ecological solutions
regenerating nature

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DRAFT

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schaefer ecological solutions

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1.0 Introduction

This Conceptual Translocation and Monitoring Plan (Plan) for the federally endangered San Diego ambrosia (ambrosia, *Ambrosia pumila*) describes the translocation of a 2000+-stem population of ambrosia covering about 0.03 acre within the Oakdale Avenue Townhomes Project site (Project). Translocation would be performed as mitigation for the project, as required by the under the California Environmental Quality Act (CEQA) and consistent with the CEQA-associated Biological Technical Report (Cadre 2020). The extant ambrosia population is expected to be permanently and directly impacted by the development of the Townhomes property. The Plan's purpose is to provide detail on the translocation for the impacted ambrosia as a guidance tool.

1.1 Project Location and Description

The 0.40-acre Project Site (APN 511-022-07) is located within the eastern region of the City of El Cajon (Figure 1). Specifically, the Project Site is located immediately south of Oakdale Avenue and west of Durham Street (Figure 2). The proposed action includes the Townhomes development of apartments and direct access off of Oakdale Avenue. The Project Site is currently heavily disturbed and possesses no suitable habitat for any state and/or federally listed threatened/endangered or regionally sensitive wildlife species.

1.2 Background

Although the species is federally listed as endangered, consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 or 10(a) of the Federal Endangered Species Act (FESA) is not required because of an exemption for federally listed plants in Section 9 of FESA. Section 9 (2)(B) clarifies that FESA only applies to areas under federal jurisdiction, and states that

> *with respect to any endangered species of plants listed pursuant to section 4 of this Act, it is unlawful for any person subject to the jurisdiction of the United States, to remove and reduce to possession any such species from areas under Federal jurisdiction; maliciously damage or destroy any such species on any such area; or remove cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation of any state or in the course of any violation of a state criminal trespass law.*

Although the species is listed as federally endangered, the USFWS does not have jurisdiction of this plant because the project is not subject to any federal action, and the California Department of Fish and Wildlife (CDFW) has not listed the plant as endangered or threatened. However, the species on the Townhomes Oakdale Avenue property is protected under the California Environmental Quality Act (CEQA) and the Multiple Species Conservation Program (MSCP). The Project Site is located within the Draft El Cajon MSCP Subarea Plan boundary; the El Cajon MSCP Subarea Plan has not been adopted and the property is not located with the Plan's preserve boundary. The San Diego ambrosia is a covered narrow endemic species under the MSCP.

A reconnaissance field survey was conducted by Ruben Ramirez of Cadre Environmental on October 9th, 2020 (Cadre 2020). The 2000+stem ambrosia population was reported from the central portion of the project site in a 0.03 acre area (Figure 3). This occurrence is located in close proximity to a 1997 record of the species west of the Project site on Caltrans property (California Natural Diversity Database (CNDDB) occurrence 29). The site is mainly disturbed with sparse cover of ornamental shrubs. Soils are characterized by Placentia sandy loam, 2 to 9 percent slope, which is highly suitable to the San Diego ambrosia species.

Aerial Photo: SANDAG & SanGIS 2017

Figure 1

Project Location Map and Aerial

OAKDALE TOWNHOMES

schaefer ecological solutions

N

0 200 Feet

SITE DATA:

PROJECT ADDRESS:	OAKDALE AVE. EL CAJON, CA 92019
PARCEL NUMBER:	511-022-07-00
LOT SIZE:	17,404 SQ. FT.
ZONING:	RM-2200
SETBACK:	FRONT... 10 FT TO PL SIDE ... 6 FT TO PL REAR ... 12 FT TO PL

BMPS LEGEND:

POST-CONSTRCUTION SITE DESIGN BMPS

- 4.3.3 MINIMIZE IMPERVIOUS AREA
- 4.3.4 MINIMIZE SOIL COMPACTION
- 4.3.5 IMPERVIOUS AREA DISPERSION
- 4.3.7 LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES

POST CONSTRUCTION SOURCE CONTROL BMPS

- 4.2.1 PREVENTION OF ILLICIT DISCHARGES INTO THE MS4
- 4.2.2 STORM DRAIN STENCILING AND POSTING OF SIGNAGE
- 4.2.3 PROTECTED OUTDOOR MATERIALS STORAGE AREAS
- 4.2.4 PROTECT MATERIALS STORED IN OUTDOOR WORK AREAS
- 4.2.5 PROTECT TRASH STORAGE AREAS
- 4.2.6 ADDNL BMPs BASED ON POTENTIAL RUNOFF POLLUTANTS:
- A ON-SITE STORM DRAIN INLETS
- C INTERIOR PARKING GARAGES
- D NEED FOR FUTURE INDOOR & STR. PEST CONTROL
- E LANDSCAPE/OUTDOOR PESTICIDE USE
- O FIRE SPRINKLER TEST WATER
- P MISCELLANEOUS DRAIN OR WASH WATER
- Q PLAZAS, SIDEWALKS, DRIVEWAYS, AND PARKING LOTS

LEGEND:

- PROPERTY LINE
- PROPOSED STRUCTURE
- CONCRETE
- PAVER
- LANDSCAPE
- GRAVEL
- DRAIN INLET
- DRAINAGE DIRECTION

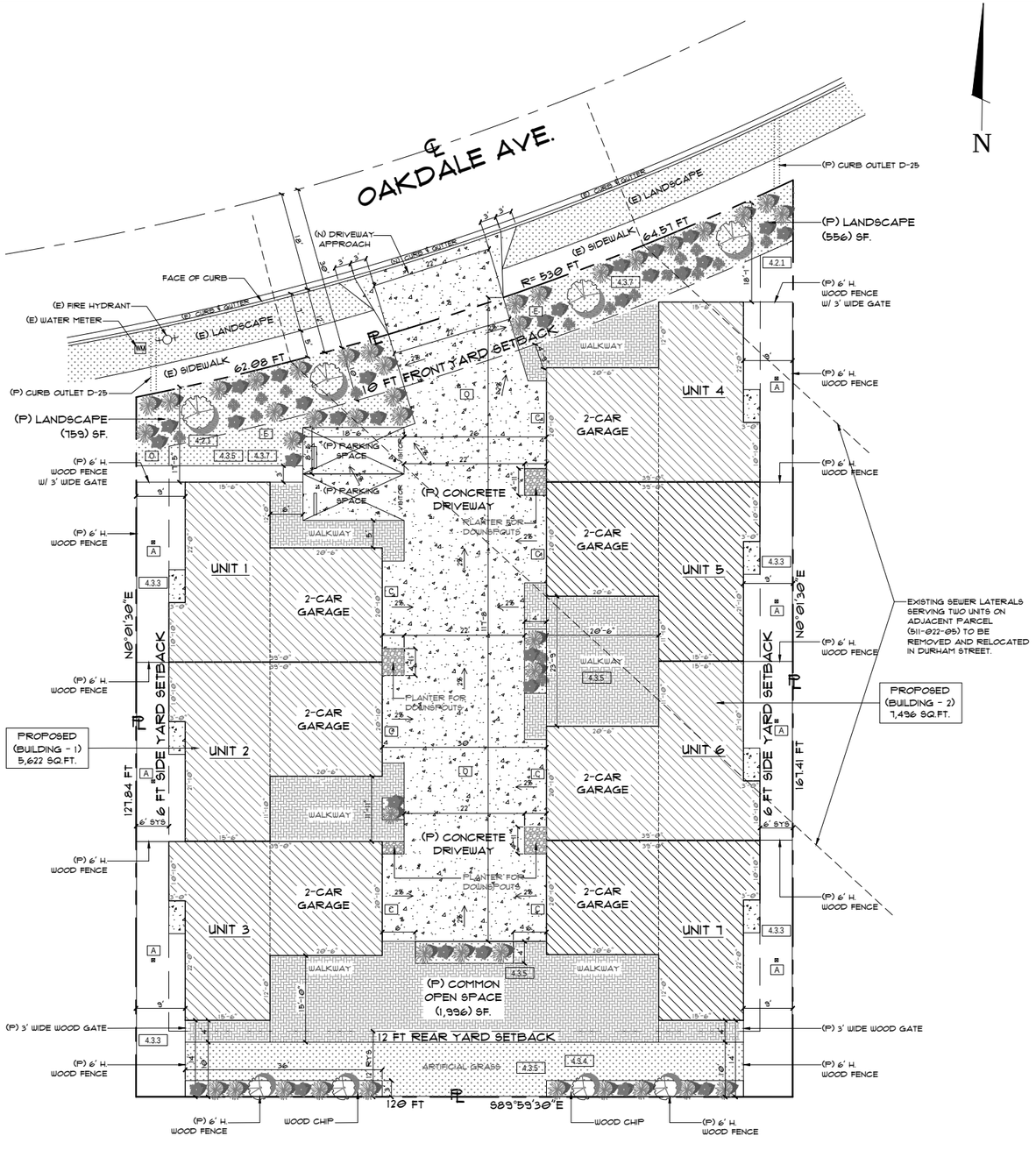
UNITS AREA BREAKDOWN:

BUILDING 1	BUILDING 2
UNIT 1 1ST FLOOR LIVING AREA ... 521 SQ.FT. 2ND FLOOR LIVING AREA ... 906 SQ.FT. TOTAL LIVING AREA ... 1,427 SQ.FT. GARAGE AREA ... 441 SQ.FT.	UNIT 4 1ST FLOOR LIVING AREA ... 521 SQ.FT. 2ND FLOOR LIVING AREA ... 906 SQ.FT. TOTAL LIVING AREA ... 1,427 SQ.FT. GARAGE AREA ... 441 SQ.FT.
UNIT 2 1ST FLOOR LIVING AREA ... 521 SQ.FT. 2ND FLOOR LIVING AREA ... 906 SQ.FT. TOTAL LIVING AREA ... 1,427 SQ.FT. GARAGE AREA ... 441 SQ.FT.	UNIT 5 1ST FLOOR LIVING AREA ... 521 SQ.FT. 2ND FLOOR LIVING AREA ... 906 SQ.FT. TOTAL LIVING AREA ... 1,427 SQ.FT. GARAGE AREA ... 441 SQ.FT.
UNIT 3 1ST FLOOR LIVING AREA ... 521 SQ.FT. 2ND FLOOR LIVING AREA ... 906 SQ.FT. TOTAL LIVING AREA ... 1,427 SQ.FT. GARAGE AREA ... 441 SQ.FT.	UNIT 6 1ST FLOOR LIVING AREA ... 521 SQ.FT. 2ND FLOOR LIVING AREA ... 906 SQ.FT. TOTAL LIVING AREA ... 1,427 SQ.FT. GARAGE AREA ... 441 SQ.FT.
TOTAL 1ST FLOOR LIVING AREA ... 1,563 SQ.FT. TOTAL 2ND FLOOR LIVING AREA ...2,718 SQ.FT. TOTAL LIVING AREA ..4,281 SQ.FT. IN 3 UNITS TOTAL GARAGE AREA ... 1,341 SQ.FT. 5,622 SQ.FT. TOTAL AREA IN 3 UNITS	UNIT 7 1ST FLOOR LIVING AREA ... 521 SQ.FT. 2ND FLOOR LIVING AREA ... 906 SQ.FT. TOTAL LIVING AREA ... 1,427 SQ.FT. GARAGE AREA ... 441 SQ.FT.
	TOTAL 1ST FLOOR LIVING AREA ... 2,084 SQ.FT. TOTAL 2ND FLOOR LIVING AREA ... 3,624 SQ.FT. TOTAL LIVING AREA ... 5,708 SQ.FT.IN 4 UNITS TOTAL GARAGE AREA ... 1,788 SQ.FT. 7,496 SQ.FT. TOTAL AREA IN 4 UNITS

SITE NOTE:

1- PUBLIC IMPROVEMENTS ARE REQUIRED - ALL DETAILS ARE SHOWN ON A SEPARATE DETAIL PLAN.
2- WORK IN THE PUBLIC RIGHT OF WAY TO TAKE PLACE PER A SEPARATE PLAN AND REQUIRES AN ENCROACHMENT PERMIT.
3- THE EROSION CONTROL BMPS MUST BE INSTALLED PRIOR TO THE START OF ANY DEMOLITION OR CONSTRUCTION ACTIVITIES. PRIOR TO THE START OF ANY DEMOLITION OR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL NOTIFY THE CITY STORM WATER INSPECTOR AT 619-441-1653.
4- AN ENCROACHMENT PERMIT (EP) IS REQUIRED PRIOR TO ANY WORK IN THE PUBLIC RIGHT-OF-WAY). THE EP WILL BE ISSUED BY ENGINEERING DIVISION, 3RD FLOOR, CITY HALL (PERMIT ASSISTANCE CENTER). TO APPLY FOR AN EP YOU MUST PROVIDE THE FOLLOWING:
- AN ENGINEER SCALED DRAWING OF ALL WORK IN THE ROW.
- A TRAFFIC CONTROL PLAN ($300.00 REVIEW FEE)
- INSURANCE CERTIFICATE THAT COMPLIES WITH CITY COUNCIL POLICY D-3
- 2,000,000 GENERAL LIABILITY
- CITY LISTED AS 'ADDITIONAL INSURED' ON SEPARATE ENDORSEMENT WITH SPECIAL CITY REQUIRED LANGUAGE.
- 30 DAY NOTICE OF CANCELLATION ON SEPARATE ENDORSEMENT.
- WORKERS COMPENSATION WAIVER OF SUBROGATION ENDORSEMENT.

5- THE PROPERTY IS SERVED BY SDG&E FOR GAS AND ELECTRIC.
6- CONTRACTOR TO VERIFY ALL DIMENSIONS ON DRAWING AND JOB SITE PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES PRIOR TO START OF CONSTRUCTION.
7- CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS (EXISTING OR NEW) PRIOR TO START OF CONSTRUCTION.



SITE PLAN

SCALE: 1" = 10'

Source: New Vision Building & Design 2021

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Figure 2

Site Plan

OAKDALE TOWNHOMES

Figure 3 - Biological Resources

Biological Resources Assessment Report
City of El Cajon, APN 511-022-07

CADRE Environmental

N

1 inch = 50 ft.

Direct impacts to San Diego ambrosia would be significant due to the rarity of the species (only 12 populations are known to remain within the species' range) and the federally endangered status of the species. Mitigation of these impacts would be conducted by translocating the impacted 2,000+-stem population within the property and conserving/managing the translocated population in perpetuity. The following mitigation requirements were described in the BTR for the project:

MM BIO 1: Prior to issuance of the Project grading permit, a San Diego ambrosia mitigation plan (Plan) shall be developed and approved by the City of El Cajon. The Plan shall be developed by a biologist or botanist with experience with the plant species. The Plan shall include a description of translocation of the species to a suitable receiver site and conservation in perpetuity. The Plan shall be implemented by a qualified biologist during Project construction.

1.3 San Diego Ambrosia Biology

USFWS Status: Endangered (July 2, 2002)
CDFW Status: None
MSCP Status: Covered
Other: County List A; CNPS CRPR 1B.1.

San Diego ambrosia is a clonal species that predominantly spreads through rhizomes. The genetics of two populations in San Diego, Mission Trails and the National Wildlife Refuge, have been studied (Friar 2007), but little is known about the remaining populations, including the genetic structure and relationships in translocated populations. The USFWS listed the San Diego ambrosia as endangered on July 2, 2002 (Federal Register Vol. 67, No. 127). The following species account for *Ambrosia pumila* gives a detailed description and the most current information about the species' habitat, natural history, and genetics, historical distribution, and current status.

1.3.1 Habitat

San Diego ambrosia occurs in the upper terraces of creek beds, seasonally dry drainages, open floodplains, and occasionally on the watershed margins of vernal pools. While these wetlands-associated habitats are usually associated with sandy alluvium or riverwash type soils, the species seems to favor uplands dominated by loamy or clay soils as long as it received occasional flooding. Elevations for this species include less than 600 feet in San Diego County. At Mission Trails Regional Park in San Diego, patches of San Diego ambrosia occur upon slope angles ranging from 0 to 18 percent with the vast majority of plants occurring at slope angles of less than 5 percent (Dudek 1997). Onsite, one patch occurs on flat terrain in a grassy area on a Townhomes property. San Diego ambrosia can be found in association with a number of plant species including saltgrass (*Distichlis spicata*), California buckwheat (*Eriogonum fasciculatum*), dove weed (*Eremocarpus setigerus*), and western ragweed (*Ambrosia psilostachya*).

1.3.2 Biology

The leaves of San Diego ambrosia, an herbaceous perennial, are finely divided with short, soft, gray-white hairs. Tiny flowers are present from June to September. Separate male and female flower clusters are found on the same plant. Male flowers are yellow to translucent and are borne in clusters on the end of the flower stalk. Female flowers lack petals, are yellowish-white, and are found in clusters below male flowers at the base of the leaves. Male flowers are downward-facing and located above female flowers.

San Diego ambrosia reproduces by vegetative reproduction through the spread of underground stems (rhizomes). Aerial stems sprout from underground rhizomes in early spring after winter rains. Aerial stems range from 5 to 30 centimeters in height, occasionally reaching 50 centimeters. The aerial stems persist until late summer when the dead stems persist or deteriorate. If the stems deteriorate, this species may be difficult to observe during some parts of the year. In addition, above ground plant matter is dependent on seasonal conditions, and may vary throughout the year.

In addition to self-pollination, wind is also considered to be a major method used for pollination (USFWS 2010), with other pollen carriers, such as crawling insects, less significant. However, because perennial species of ambrosia produce less seeds than annual species, most reproductive resources are allocated to the rhizomes. The major form of dispersal for this species is by means of rhizome extension. "There are no known examples of transplanted or reintroduced occurrences of this species in which sexual reproduction has occurred to sustain either a viable population or exhibit the genetic diversity found in a naturally occurring population" (USFWS 2002). It appears that the species favors vegetative reproduction through rhizomes over sexual reproduction, potentially as a response to the poor genetic variability of the species (McGlaughlin and Friar 2007). Sexual reproduction and seed set are not considered to be common in this taxon, and it is believed that tall, non-native vegetation surrounding ambrosia stands may preclude successful wind pollination (McGlaughlin and Friar 2007, Johnson el al. 2009). Flood disturbance may allow for long distance dispersal. Therefore, dispersal in this species is limited, and management of populations is crucial.

1.3.3 Genetics

Vegetative reproduction occurs by means of extension of rhizomes. The implication of this type of reproduction is that each population could be one genetically distinct individual restricted to the immediate appropriate habitat. Current genetic research conducted by Dr. E. Friar has determined that gene flow occurs at a very small scale, on the order of tens of meters (Friar, pers. comm. 2009, McGlaughlin and Friar 2007). It was found that genetic diversity across populations is limited, but there is a robust diverse genetic structure evident within populations among plots; this might be a result of breeding within populations and lack of sexual reproduction (McGlaughlin and Friar 2007). Genetic structure plays an important role in the sustainability of the species and also guides translocation methods. Therefore, the Plan includes a section on the biology of the species to inform translocation and long-term management. It was previously thought that transplantation and propagation may lead to further reduction of low genetic diversity and low rates of sexual reproduction. It was believed that if small samples of root material were collected from isolated populations and propagated and transplanted over larger areas, reproductive function problems may increase. However, based on the robust genetic structure within stands and populations, it is not likely that transplantation and propagation will affect a decline of genetic structure. Therefore, it should be possible to transplant a new population fairly close (e.g. 100 meters) to a previous one without the threat of genetic contamination but with the possibility of an increase in genetic diversity (Friar pers. comm. 2009).

1.3.4 Major Threats

Primary threats to this species include loss of habitat, habitat fragmentation, herbivory by gophers and snails (and possibly by rabbits and deer), isolation, low genetic variation, and competition with non-native species. Because so few populations remain, direct impacts to any existing population are significant because of the effect it might have on the survival of the species as a whole.

1.3.5 San Diego Ambrosia Distribution

San Diego ambrosia is endemic (occurs only within a very small geographic area) to southern California and northern Baja California, Mexico. This species is distributed from western Riverside County and western San Diego County, California, south in widely scattered populations along the west coast of Baja California, Mexico (Munz 1974; Reiser 1994). Additional populations occur in the central highlands of Baja California in the vicinity of Laguna Chapala near Catavina (Burrascano 1997). The complex of populations near Laguna Chapala reportedly contains the largest number of individuals. The status of populations between Cabo Colonet and the U.S. border are less certain and are rapidly disappearing due to recreational uses, development, and agricultural conversion.

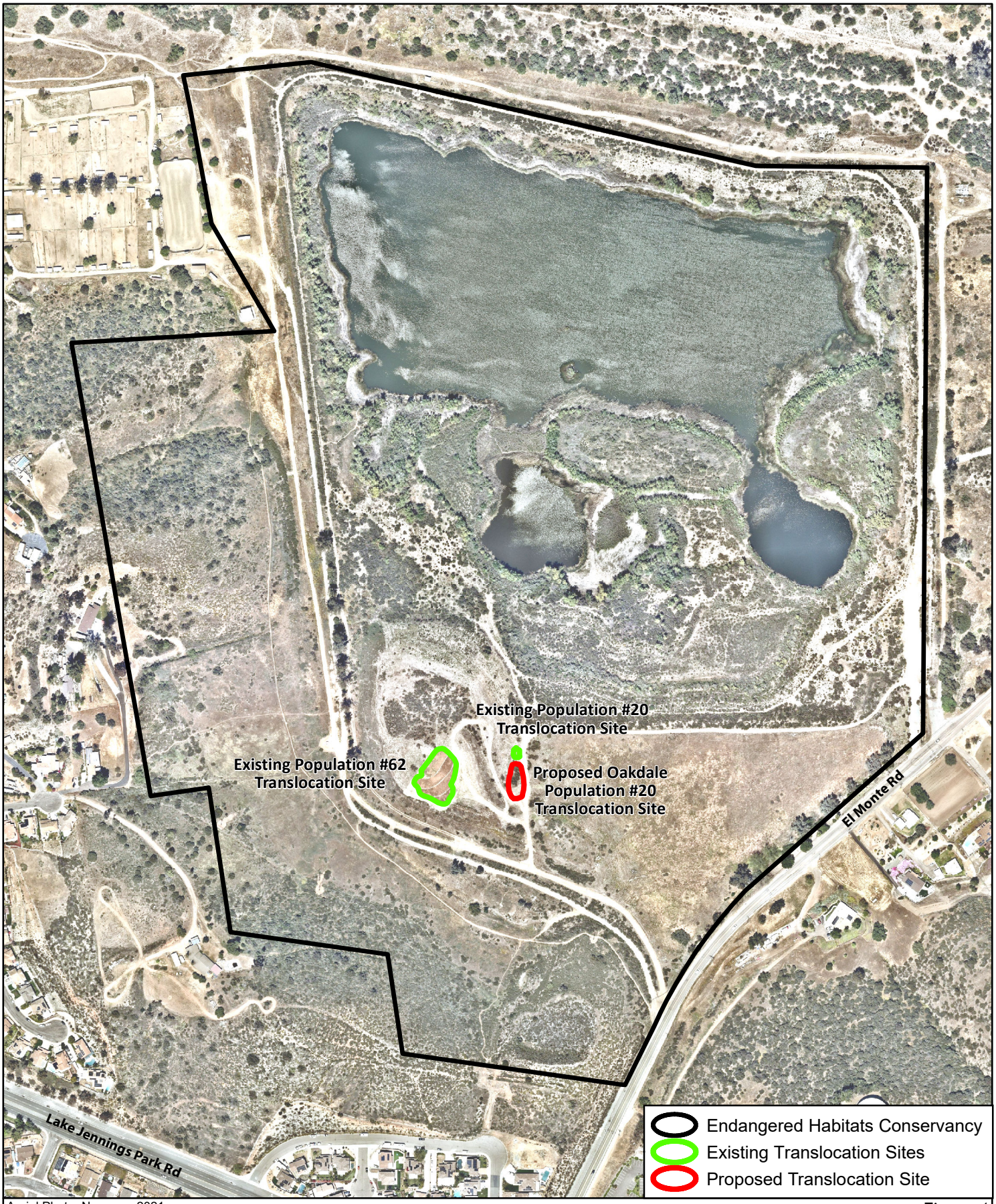
Sensitive species database searches conducted for this report indicate that this species has been documented historically from approximately 61 locations throughout western San Diego County. Of the 61 records, 18 are from SANDAG, and the rest are from CNDDB. However, ambrosia populations have experienced a rapid decline over the last half century. In 2002, it was believed that only 12 existing occurrences, approximately 24 percent, of this species remained in San Diego County (USFWS 2002). Three occurrences have been reported from Riverside County.

1.4 Translocation Receiver Site

Based on a GIS suitability model that was developed in 2020 to identify conserved or open space areas within the San Diego River watershed that contain suitable habitat for the species, the Endangered Habitat Conservancy (EHC) Hanson Pond Preserve was identified as potentially suitable. The Hanson Pond Preserve is located along El Monte Road in Lakeside, CA, and consists of an old gravel mining site conserved and managed by EHC (Figure 4). The site is located off El Monte Road in the San Diego River watershed, and consists of a pond (excavated pit) and undulated land surrounding the pond (spoils). Besides the riparian and lacustrine habitats surrounding Hanson Pond, the site is occupied by non-native grassland and coyote-bush (*Baccharis pilularis*)-dominated coastal sage scrub. Areas surrounding the pond include native freshwater marsh, willow riparian habitat, and mulefat scrub. Mapped soils on the site are Tujunga sand, five percent slope. However, the mine spoils are characterized by loamy soils containing a high percentage of silt, potentially from the Friant fine sandy loam and Huerhuero loam soil classifications, which also occur on the fringes of the site.

1.4.1 Caltrans Occurrence #20 Translocation

The Hanson Pond Preserve received two different translocated San Diego ambrosia population. In 2018, a volunteer effort led by Caltrans, USFWS, and CDFW translocated a population from Oakdale Avenue and Third Street (CNDDB occurrence #20) in El Cajon. The plants were salvaged from a Caltrans parcel located at Oakdale Avenue and Third Street in El Cajon, CA, by a volunteer group on March 27, 2018 (Sally Brown, pers. comm. 2020). In April 2018, 132 pots, all with multiple plant stems, were planted at two locations on the property by volunteers with Earth Discovery Institute and Endangered Habitats Conservancy. An additional nine pots were set aside for planting at a third experimental location. Two patches were planted out in the alluvial deposits at several different locations within mulefat scrub in the floodplain south of the pond. One experimental population was placed at a slightly higher elevation in more open habitat on the upper banks above the pond at the foot of one of the spoil mounds. The latter population is expanding, while the patches planted in the floodplain have not re-emerged except for one plant in the vicinity of the irrigation connector valve at the foot of the spoil mound.



Aerial Photo: Nearmap 2021

Figure 4

Hanson Pond Potential Receiver Site

OAKDALE TOWNHOMES

schaefer ecological solutions

N

0 400 Feet

1.4.2 Weld Boulevard Occurrence #62 Translocation

In February 2021, a 23,000+ stem population was transplanted from a property at the corner of Weld Boulevard and Cuyamaca Street in El Cajon (CNDDB occurrence #62) using a complete soil salvage method (Schaefer 2021). The entire population with its native soil was excavated, transported to the Hanson Pond site, and installed in four plots on one of the mining spoils that contains dense silty loams. In addition, a 500+ stem population from the same property was placed in nursery flats and planted out in the same receiver area (Schaefer 2021). Both translocated stands were installed at the top (plateau) of the spoil pile south of the pond after soil samples were taken and analyzed by EHC. The site is over 100 meters apart from the Occurrence #20 translocation sites, and therefore, no genetic conflict would exist between the different translocation projects.

1.4.3 Site Suitability

To confirm site suitability, the Hanson Pond Preserve was visited on May 5, 2021 to identify a suitable receiver area of a minimum of 1,000 square feet (sf) in size adjacent or close to the translocated Caltrans Occurrence #20 population (same sources population as the San Diego ambrosia population occurring on the project site; see Section 1.4.1). The identified area contains sparse vegetation and is surrounded by coyote bush, some of which will need to be removed prior to translocation to open the area up; photos of the recommended receiver site are included in Appendix A.

Soil samples (texture and grain size to determine amount of clay, silt, and water holding capacity) were also taken to verify soil suitability and compare with the native soil from the translocated occurrence #62; the soil sample results taken from the upper 12 inches of the Weld Blvd. translocation receiver site (#1) and the potential Oakdale Avenue translocation receiver site (#2) are identified in Table 1.

Table 1. Soil Sampling Results

		#1 Weld Blvd. Translocation		#2 Oakdale Receiver Site	
		Type	**Grain**	**Type**	**Grain**
Soil Texture		Sandy clay loam	Gravel>2mm	Loam	Gravel>2mm
Soil Components	Sand	59.2%	3.7%	42.0%	7.3%
	Silt	15.2%	Gravel>1/4”	42.4%	Gravel>1/4”
	Clay	25.6%	2.5%	15.6%	4.0%
	Free airspace	0.38%	Gravel>1/2”	2.29%	Gravel>1/2”
	Water space	51.77%	1.8%	51.58%	2.7%
	Porosity	52.15%		53.87%	
	Water holding	42.49%		43.15%	

The receiver site contains about 10 percent less clay, but 30 percent more silt than the Weld Blvd. translocation soil; when wet, silts become very dense and provide excellent water holding capacity as is documented by the excellent performance of the experimental translocated Occurrence #20 population. Based on the soil sampling results, the extant soils contain the desired threshold of water-holding capacity when wet in the form of clays, loams and silt. Given that the San Diego ambrosia translocation will occur using the soil salvage method, which will import the native soil (approximately 12-inch thickness) of the source population, the receiver site extant soil provides appropriate baseline conditions to achieve successful translocation with management, eventually leading to a naturally sustainable population.

2.0 Pre-Translocation Planning

2.1 Purpose and Goal

The proposed Project requires the translocation and monitoring of ambrosia to a suitable receiver site. The extant population will be moved to a different location within the Oakdale Avenue Property to an area where it can be conserved and managed in perpetuity (receiver area, Figure 4); the entire property is suitable habitat for San Diego ambrosia. The main goal of this translocation effort is to conserve the species in perpetuity. The objective of this effort is to successfully translocate the population of ambrosia from the development footprint so that it becomes established to the point that it can propagate and sustain itself in perpetuity without additional irrigation. The ambrosia population will be salvaged, transplanted, conserved, and managed. Achieving this goal will require the following actions:

- Improve receiver area conditions prior to translocation activities.
- Transplant ambrosia with the least amount of damage to roots and aerial shoots as possible.
- Minimize to the greatest extent possible the amount of nonnative seeds and number of plants that are transferred to the receiver site during ambrosia transplantation.
- Perform maintenance and monitoring during the 3-year post-translocation monitoring and maintenance period to achieve success according to success criteria.
- Manage the translocated population in perpetuity according to accepted standards and guidelines.

2.2 Responsible Parties

New Vision Building & Design (Owner) shall be responsible for the implementation, maintenance, monitoring, success, and long-term conservation and management of the translocated ambrosia population. Long-term conservation and management shall be funded and provided by the Owner as detailed herein. The Owner shall provide financial assurances for translocation implementation, post-translocation monitoring/management, and success of the habitat translocation area, as outlined in this plan.

As the CEQA lead agency, the City of El Cajon will require successful mitigation of impacts to the San Diego ambrosia. Due to the plant's listing status as federally endangered as consistent with the Biological Technical Report (Cadre 2020), the USFWS will have approval authority and be included in all correspondence. In addition, the CDFW will also be informed of the translocation and translocation success as a courtesy to assist with the assessment of the species' status for potential listing in the future. CDFW is currently tracking the status of the species.

2.3 Personnel Qualifications

2.3.1 Restoration Ecologist

Translocation shall be overseen by a qualified Restoration Ecologist. The Restoration Ecologist shall have documented experience in upland and coastal sage scrub transplantation, and an understanding of the San Diego ambrosia biology (including genetics), and document the following minimum qualifications:

- Bachelor degree in biology, ecology, botany, landscape ecology, or an acceptable related field;
- More than five years of documented experience implementing successful upland transplantation in San Diego County; prior involvement in San Diego ambrosia studies, ambrosia translocation planning, or implementation.

The Restoration Ecologist shall oversee the work of the Contractor and assist in developing the appropriate translocation techniques, receiver site identification and preparation, including plant salvage and transportation, planting installation, maintenance and monitoring, and City/agency consultation and reporting.

2.3.2 Translocation Installation and Management Personnel

The Contractor shall have a valid Restoration Contracting License, 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 would allow them to perform the required work for this Project. All licenses must be issued by the State of California, be registered in San Diego County, and be of current status. If a qualified applicator is not present during any non-toxic herbicide treatment, all applicators must have undergone documented herbicide application training. All work shall be performed by a trained crew in accordance with the standards and practices related to the trade. The translocation shall be conducted under the supervision of the Restoration Ecologist.

2.4 Implementation Schedule

The schedule of ambrosia translocation is crucial for success of the process; this includes the salvage timing, transportation and interim storage duration, and timing of out-planting at the receiver site. Aerial shoots of ambrosia typically become visible during the late winter/early spring and begin flowering in late spring to early summer. During late summer/early fall, aerial shoots typically die back, making it difficult to detect the presence of ambrosia. Soil moisture levels and air temperatures can have an effect on the amount of stress an ambrosia transplant experiences. Ideally, translocation should occur when soil is moist and ambient temperatures range from 65 to 75 degrees Fahrenheit (around February/March). Prior to receiver site preparation and translocation, the CEQA document must be certified and the City of El Cajon shall be notified, and courtesy notification shall also be provided to the USFWS and CDFW. Table 1 depicts an ideal ambrosia translocation schedule.

Table 2. Ambrosia Translocation Schedule

Description	Timing[1]	
	No Earlier Than	No Later Than
Notifications (City, USFWS, CDFW, Receiver Site Owner)	December 2021	January 2022
Donor and Receiver Site Preparation	January 2022	February 2022
Salvage and Translocation of San Diego Ambrosia	February 2022	March 2022
Outplanting at Receiver Site	February 2022	March 2022
Supplemental Watering	February 2022	June 2025
Five-Year Monitoring and Maintenance Period	March 2022	June 2027
Project Sign-Off	March 2027	June 2027

Preferably, site preparation (e.g., clearing/grubbing, weeding/non-toxic herbicide application, dethatching, watering), salvage, and outplanting should occur from January through February to take advantage of the rainy season. To the extent possible, preparation of the receiver site should occur outside the nesting bird season (typically February through mid-September) to avoid disturbing any active nests adjacent to the translocation area. If the receiver site is not ready at the time that salvage must occur, or if salvage requires that plants be acclimatized to avoid translocation shock, the salvaged plants may have to be temporarily

[1] Schedule may change based on permitting and construction schedules.

stored at the restoration yard. Translocation should occur during the cooler season of the year to provide time for plant establishment before the transplant area is exposed to drought and heat, and ideally, salvage of the donor population should occur when soils are moist and the plants have started emerging or expressing.

Supplemental watering shall be provided during the plant establishment and up to two years prior to the end of the five-year monitoring and maintenance period. The five-year post-translocation maintenance and biological monitoring period shall begin upon acceptance of installation by the City and USFWS, and end upon acceptance of the translocation project by the City and USFWS. Concurrence by CDFW is not mandatory as the agencies have no jurisdiction over the translocation effort; however, the agencies will be contacted and informed because of the sensitivity status of the species.

2.5 Pre-Translocation Tasks

2.5.1 Contractor Education

All entities participating in the ambrosia translocation shall meet for a pre-construction meeting with the Restoration Ecologist and Contractor to review plans, site information, and contractor responsibilities before beginning work in the area, including site protection, site preparation procedures (specifically weeding and dethatching), salvage techniques, transportation requirements, handling and outplanting specifications, and supplemental watering. Handling of a federally endangered plant species requires care, specifically as this type of work is not regularly conducted by the Contractor.

2.5.2 Donor and Receiver Area Surveys

To verify that conditions at the donor and receiver areas are optimal for translocation of ambrosia, the areas shall be surveyed to assess native/nonnative vegetation cover and water availability. Ideally, the survey shall occur when the plant is observable (in the late winter/early spring), immediately upon the species being identifiable within the entirety of the patch configuration. The survey shall include mapping the perimeters of the patches using sub-meter accuracy GPS equipment and a full count (a stratified sampling technique may be used) of all visible aerial stems. The perimeter shall be staked and flagged to allow for the successful salvage of the entire patch. The exact area where translocation is to occur shall also be marked and mapped and the translocation area shall be fenced (this may occur after translocation). Irrigation hook-ups or water truck access, and access route to transport the plantings to the site shall also be identified.

2.5.3 Access

A haul route and staging area shall be identified by the Contractor in collaboration with the Restoration Ecologist and receiver site owner/manager; the access route shall be located within the future development footprint. The receiver site shall be separated from the existing access and staging area by a fence, and signage shall identify sensitive habitat and habitat restoration.

2.5.4 Pre-Translocation Watering

Moisture levels will be checked prior to the salvage event to verify that soil is adequately moist for removal of ambrosia blocks. Ideally, salvage should occur when soils are moist or wet. The ambrosia patches at the donor and receiver areas shall be watered using a mobile water source (e.g., water truck). Ideally, watering should be conducted for several weeks prior to salvage, as necessary specifically during dry conditions, and immediately prior to salvage using a mobile water source. Watering of the donor site will occur until soil is moist to a minimum depth of 1 foot. This will assist with excavating ambrosia blocks cohesively and salvaging additional soils that may contain rhizomes.

3.0 Translocation Implementation

The success of this plan hinges on its proper implementation, including but not limited to, Translocation Contractor responsibilities and education, site preparation/protection, timing of installation, supplemental watering, perpetual maintenance/weed-pest-herbivore control/repairs, and guarantees.

Translocation shall be achieved through a systematic process that includes: 1) pre-construction kick-off meeting; 2) at the receiver area, pre-construction removal of non-native and invasive weeds/pest species, non-toxic herbicide applications (if necessary), brushing/mowing, grubbing/tilling, and topsoil salvage as specified; 3) pre-construction soil de-compaction (tilling)/testing/amendment (if necessary) and seedbed preparation; 4) supplemental watering access/temporary irrigation installation; 5) salvage of extant population and transport to the receiver area; 6) installation of salvaged ambrosia population; 7) final installation inspection; and 8) five-year post-translocation installation monitoring and maintenance of the site until success criteria are achieved.

3.1 Receiver Area Preparation

3.1.1 Vegetation Management

Weed eradication/thatch removal shall be conducted at the receiver area to minimize invasive weed colonization. Control of non-native plant species that compete with native plants will be important for long-term sustainability of the translocation site. The receiver site shall be mowed and dethatched and non-native species controlled. Depending on the types of invasives, different control methods may need to be employed. Invasive species will require continuous, aggressive control and removal. After thatch removal at the receiver site, invasive species may be controlled by spot foliar non-toxic herbicide spray application on re-growth. This treatment shall be applied to the translocation area, and continued for at least two consecutive years following the methods detailed below. It is important that non-native forbs and grasses be controlled aggressively for the ambrosia to sustain itself.

Only EPA-approved, glyphosate-base, systemic herbicides (e.g., Rodeo/Aqua Master) shall be allowed. Glyphosate is a non-selective herbicide, and its mode of action works against both broadleaf weeds and grasses. The glyphosate-based herbicide shall be applied to non-native, broad-leaf plants (which are expected to emerge as a result of non-native grass species removal) twice during the growing season. Foliar spray application shall be at a minimum of two percent solution. Fusilade II may be used to control non-native grasses, including *Erodium* species, as needed.

If necessary, non-toxic herbicides shall be applied using either backpack sprayers (more cost effective) or equipment, such as a John Deere 6X4 gator or other all-terrain vehicle supporting an 80-gallon (g) "Stadium 80" by Brayton spray tank with a three-nozzled short boom that does not extend beyond the gator, or equivalent. A brightly colored dye shall be used in all herbicide applications to aid the applicator in achieving good coverage of the target species. The dye shall be a non-toxic material, such as Blazon, Turfmark, or equivalent, and shall be mixed with the herbicide at no more than half the rate specified on the label. Herbicide treatment shall be conducted only when weather conditions are conducive to effective uptake of the herbicide by the target species (e.g., sunny, dry with ambient temperatures 65 degrees Fahrenheit, and when plants are at the specified growing stage), and when wind conditions are such that herbicide drift is minimized (five mph or less). Treated areas shall not be disturbed until the applied non-toxic herbicide has had time to take effect per the manufacturer's instruction.

3.1.2 Planting Bed Preparation

The translocation receiver area will be identified and staked in the field. The receiver area will be excavated to a depth of 12 to 18 inches to create a depression; the area might be divided into two plots separate by an irrigation berm to contain the soils. A mini-excavator with rubber tracks will be used to decompact soil and carve out the ambrosia plot to form the slight depression to assure that sufficient water accumulates at the site during the rainy season to mimic conditions at the donor site. Following excavation of ambrosia plots, wire mesh will be used to line the plots for protection against subsurface herbivory by rodents (i.e., pocket gophers[2]). Irrigation of the soil prior to creation of ambrosia plots will provide adequate soil moisture conditions for transplanted ambrosia.

3.1.3 Irrigation and Watering

Ideally, a temporary irrigation system shall be installed at the receiver site to provide reliable irrigation to the transplanted population. Should irrigation line installation be infeasible, access to the site via dirt road is available so that a water truck or towable water tank can be staged at the site during irrigation events. Should the dirt road be too far to reach for a water truck, a temporary water tank will be installed at the site and filled as needed. Irrigation will consist of hauling a hose from the water tank parked on the access road to the ambrosia plots at which point a portable and adjustable impact sprinkler head will be attached to the water hose. Water will be sent through the irrigation hose to the sprinkler head via a gas-powered water pump connected to the water tank.

On the day of translocation, the Restoration Ecologist shall direct the Contractor on the proper amount of irrigation to promote adequate germination and establishment. The frequency of irrigation shall depend on the rate of evapotranspiration (ETo) and rate of infiltration of the soil, to be determined by the Restoration Ecologist. Adjustments to increase or decrease the amount of water applied will be performed in the field. The following guidelines shall be adhered to:

- Irrigate soil to full field capacity to the desired depth (approximately 18 to 24 inches) for several weeks prior to salvage.
- Irrigation may occur in pulses so that water could slowly percolate into the ambrosia plots.
- Initially keep the translocation areas moist, until ambrosia transplants have established.
- Allow soil to dry down to approximately 50 to 60 percent of field capacity (in the top 6 to 12 inches) before the next irrigation cycle.

Wetting of the full root zone and drying of the soil between irrigation events is essential to the maintenance of the plants and the promotion of a deep root zone that will support the vegetation. The irrigation schedule shall vary throughout the year based on weather conditions (i.e., precipitation and humidity) and plant needs. The irrigation schedule shall be determined by the Restoration Ecologist. Watering or irrigation shall be suspended in anticipation of forecasted rain events. Irrigation should be shut off or used sparingly, and for plant establishment only, during the summer months to adapt planting to summer dry conditions. Supplemental watering shall be tapered down during the first three years of the post-restoration maintenance period to acclimatize the planting to natural conditions.

Once the translocation site has reached Year 3 success criteria, no further irrigation shall occur. All above-ground irrigation fittings will be removed at the terminus of the short-term monitoring period.

[2] It appears that pocket gophers do not harm the aerial stems or plant material; however, they may preclude plant establishment and distribution of rhizomes.

3.2 Transplantation and Translocation

3.2.1 Soil-Salvage Method at Donor Site

The soil-salvage translocation model tested for the Weld Boulevard San Diego Ambrosia Translocation Project (Schaefer 2021) has shown initially successful results. The advantages of this method are 1. Native soil is being salvaged with the plants, and because San Diego ambrosia is extremely soil specific, bringing the soil with the plant reduces the acclimatization time and risk of failure; 2. San Diego ambrosia aerial stems dry out quickly during transport, and it was shown that drying does not occur readily when the plants parts are intermixed with the soil; 3. Soil salvage is more efficient and less labor intensive, specifically for large area transplantations. In order for this method to work, soil shall be moist (through rainfall or watering). The ambrosia population shall be salvaged/excavated to a 12-inch depth (or deeper) using a mini-backhoe (301-series), skid loader, or a mini-tractor with a 33-inch-wide bucket. Rhizomes have shown to immediately regrow at the donor site if not excavated to a sufficient depth. The transplants shall be removed carefully from the bucket and loaded in intact sheets into a transporter. All excess soils shall also be salvaged as it is likely to contain additional rhizomes.

3.2.3 Planting at Receiver Site

Following salvage from the donor site, the soil salvage sheets will be immediately moved to the receiver site. Transport shall occur in moving truck or stake-bed truck. During transport of the ambrosia, some loss of turgor pressure (wilting) in the aerial shoots is expected. Frequent assessments to verifying adequate moisture levels will help to reduce the stress of aerial shoots. More aerial shoots will ultimately result in a greater rate of photosynthesis. Consequently, more energy will be made available for root production.

To facilitate a seamless translocation event, soils at the receiver site should be moist to a depth of 12-18 inches. In the event that soil is not moist and workable, additional watering should be applied. When soil conditions are acceptable, the salvaged soil will be distributed in the planting plots, initially using mechanized equipment (e.g., backhoe) to place the soil, and ultimately by spreading the soil using hand shovels and trowels. If the mechanized equipment option is used to initially place the sheets into the planting bed, any glazing on the underside of ambrosia blocks will be roughened by hand to facilitate better root growth; alternatively, the glazing can also be broken up through the hand distribution of the soil salvage in the planting bed. Care shall be taken not to break up aerial stems; some of aerial stems may be hand-planted into the soil salvage plot. Soil will be moderately tamped down by hand or foot to minimize the formation of voids in the soil. Ambrosia plots should be irrigated immediately after planting to reduce the level of transplant shock to ambrosia. Digital photos will be taken to photodocument the translocation event. Following translocation, the soil salvage plot shall be surrounded by temporary herbivory fencing (chicken wire with one access gate).

4.0 Post-Translocation Monitoring

The Five-Year Post-Translocation Maintenance and Monitoring section provides guidance for maintenance of the translocation site and reporting requirements to be executed throughout the post-translocation period which begins when the City of El Cajon confirms that the translocation installation has been completed in compliance with the mitigation intent as identified in the Biological Resources Technical Report for the Oakdale Avenue Project Site (Cadre 2020). The goal of post-translocation maintenance and monitoring is to verify success of the translocation. For success of ambrosia translocation, providing initial irrigation and maintaining a weed-free site in perpetuity is crucial. Specific focus should be placed on the survivability of the translocation and the overall reduction of invasive and exotic species.

4.1 Success Criteria

The following sections provide performance standards to determine the successful completion of the post-translocation mitigation and monitoring program. Attainment of these standards indicates the mitigation area is progressing toward the habitat functions and services specified for this plan. If the restored areas fail to meet the Year 5 standards after the full monitoring term, a specific set of remedial measures would be implemented, and the monitoring and maintenance period would be extended until all Year 5 standards are met or as otherwise provided in this document. Only areas failing to meet the success standards would require additional work (i.e., not all of the areas originally restored), and only when the entire mitigation site is meeting the Year 3 standards shall the entire site be signed off by the City.

It is understood that the rhizomal expansion of the translocated population may occur over many years, and that the original size of the population at the donor site may not be achieved within the 5-year post-translocation period. The Year 5 success standard should be to achieve 50 percent survival/re-establishment of transplanted ambrosia measured on the account of aerial stems (Table 3). If this success standard is not met after five years, additional monitoring may need to occur until the success standard has been met. If it is determined that the species is successfully expanding, but expansion to 50 percent is not feasible within five years, an alternate success criterion may be negotiated with the City of El Cajon.

Table 3. Five-Year Success Criteria

Year	Aerial Stems (%)	Cal-IPC Cover (%)	Non-native Cover (%)
1	10	0	50
2	20	0	35
3	30	0	20
4	40	0	10
5	50	0	5

4.2 Post-Translocation Monitoring

Qualitative surveys shall be conducted biweekly for the first year's growing season (approximately January through July), and four times for the remaining two years during the growing season (ideally at the beginning and mid-term). Site visits may be adjusted based on growing and climate conditions.

Qualitative surveys shall consist of a general site walk-through and a characterization of the translocation planting. General observations, such as new emergence, population spread, health of the species, invasive species issues, signs of over/under watering, and drought stress shall be noted. Translocation plantings shall be examined to visually estimate species mortality, recruitment/expansion, and erosion, weeds, trespassing,

and pest problems. The Restoration Ecologist shall determine if supplemental irrigation is necessary during the first monitoring year. Any sign of erosion, vandalism, trespassing and other anthropogenic disturbances should be identified and repaired immediately. The Restoration Ecologist shall communicate frequently and work closely with the maintenance provider at the receiver site.

One quantitative sampling event shall be conducted at the end of the five-year monitoring period to provide a metric for the success criteria and the baseline for long-term management. Sampling shall be conducted at the translocation site in the spring (at the peak of annual growth, around April/May) to determine transplant success. The actual timing may be adjusted by the Restoration Ecologist based on weather conditions.

Survivorship will be determined by performing direct counts of aerial stems in the soil salvage plot. This can be achieved through a direct count or stratified sample. The latter would include of a stratified sampling method, for example by placing 1-meter belt transects randomly across the site, and counting all aerial stems within the entire belt transect; to make counting more feasible, the count shall occur within a 1-meter quadrat placed throughout the entire belt transect to assist with the count. The counts for each belt transect will be averaged across the area of the entire plot to obtain an average cover per plot for the transplanted population.

4.3 Post-Translocation Maintenance

Post-translocation maintenance shall include frequent watering and invasive species removal, in addition to general management such as removal of trash, controlling trespass, and repair the herbivory fence. Watering shall occur three time per week initially, until the transplantation has been established. Watering shall be reduced incrementally until the population does not show desiccation stress. Watering frequency will be determined by the Restoration Ecologist and maintenance entity. If soil moisture is found to be high due to natural rainfall then irrigation will not occur until soil conditions require it.

Generally maintenance shall be conducted on a monthly basis throughout the first year, and every three months, or more frequently (as needed), for the remainder of the post-translocation period. Maintenance should include continued treatment of all CalIPC-identified highly invasive non-native grasses and invasive species, such as crown daisy (*Glebionis coronaria*). Maintenance methods shall include weeding, temporary watering, on-going trash removal, and fence and sign maintenance. Maintenance may also include replacement of dead plant material, if applicable performance standards are not met. Maintenance of the translocated population by EHC may occur concurrently with general maintenance of the Hanson Pond site and, eventually upon long-term management, with the Weld Blvd. translocation site.

4.3.1 Weed Control

Weed abatement shall be executed as described in Section 3.1.1. Workers shall be closely supervised by the Restoration Ecologist or knowledgeable professional if they are not familiar with native plant species. All personnel involved with weed abatement must be trained and familiar with identifying native and non-native plant species. The Restoration Ecologist shall approve weed control methods (e.g. hand pulling, treatment with herbicide, mechanical methods); the ambrosia plots shall be weeded using manual techniques (no herbicide application).

All pesticides and herbicides shall only be applied by licensed pest-control personnel, and used in their appropriate applications Weed abatement activities shall be consistent with the following guidelines:

- Weeds shall not be allowed to set seed at any time during the monitoring period.
- Weeds shall be removed before reaching six inches in height or prior to seed set, whichever comes first.
- Once treated, weed biomass shall be collected and removed from the site and disposed of in a legal manner.
- If used, herbicides shall not be applied within the ambrosia plots and used in a manner that does not result in overspray into ambrosia plots and adjacent native habitat areas.

4.3.2 Vandalism Control and Trash Removal

The receiver site is located within a fenced and controlled conservation property, and while trespassing is low it does occur. Fences and other disturbances shall be repaired within three working days of discovery. Trash removal and repair of fences and signs shall be conducted as needed. All trash and debris shall be disposed off-site and in a legal manner.

4.3.3 Erosion Control

The crew shall install erosion control measures as directed by the Restoration Ecologist. Erosion control may include the installation of Best Management Practices (BMP), such as: fiber coirs, silt fencing, bio-fiber matrix (BFM), and silt traps. All erosion control materials must be inspected and free of invasive species seeds (e.g. compostable coils, fill dirt).

4.3.4 Herbivory Control

The Restoration Ecologist or maintenance personnel shall look for signs of herbivory (plant predation, native and non-native, including pocket gophers and rough harvester ants) during monitoring evaluations. If signs of herbivory are noted, the problem shall be immediately remedied as directed by the Restoration Ecologist.

4.4 Annual Reporting

Annual reports shall be prepared by the Restoration Ecologist and submitted to the City of El Cajon, the USFWS, and a courtesy copy to CDFW. The annual reports should summarize and discuss the results of the monitoring visits and compare successes for each monitoring year. Successes and failures as well as representative photographs should also be included. Trespass, erosion, seed germination and container plant mortality as well as other relevant site conditions shall be discussed. Any recommendations to further site success should also be included. A total of three annual reports shall be submitted. The report must show that the goals and success criteria of the mitigation program have been met and the type of remediation recommended, if necessary. The translocation project shall be accepted by the City and USFWS following a field review of the site and written confirmation.

5.0 Long-Term Habitat Management Plan

Once the mitigation project has been successfully completed, the Owner shall accept responsibility for long-term management upon receipt of a letter from the City of El Cajon stating that they accept the translocation efforts as complete. The main purpose of long-term management in perpetuity is to preserve the translocated San Diego ambrosia population pursuant to City of El Cajon approvals. Conservation of the translocated ambrosia population will require monitoring and maintenance, specifically regular and reliant removal of invasive species and non-native species thatch.

5.1 Responsibilities

5.1.1 Project Owner

The Project Owner shall be responsible for funding the long term management and monitoring of the translocated ambrosia population in perpetuity. At or before the onset of the translocation effort, the Owner shall invest an endowment with the San Diego Foundation.

5.1.2 Habitat Manager

The EHC, who manages the translocation receiver site, shall be responsible to provide management of the translocated ambrosia population in perpetuity, following the tasks identified herein. Any disturbance or impact to the translocation receiver site shall be immediately repaired as detailed below. Long-term management shall commence upon the availability of the invested endowments funds from the San Diego Foundation.

5.1.3 Site Protection and Financial Assurances

The entire Hanson Pond Property, of which the Mitigation Site is a part, is covered by unrecorded grant agreements from the California Resources Agency that prohibit future development or any land use activities that would be deleterious to wildlife habitat. A portion of the property is also covered by a conservation easement of those held by the County of San Diego. No further site protection mechanism will be required.

As part of the compensatory mitigation requirement, the Project Owner shall invest an endowment fund with the San Diego Foundation. The endowment shall be calculated to generate sufficient annual interest to fund the required long-term management of the translocated population. The Property Analysis Record (PAR)-equivalent documentation of the long-term management costs are included in Appendix B.

5.2 Management Tasks

The receiver area and translocated ambrosia population shall be maintained and managed in perpetuity. This shall be accomplished through regular monitoring and aggressive vegetation management. The management goals for the translocation ambrosia population are as follows:

1) Maintain the ecological functions and values of the ambrosia population.
2) Maintain existing habitat conditions and functions and values of the receiver area.
3) Protect and enhance the long-term viability of the ambrosia population.
4) Prevent impacts from invasive species and anthropogenic threats and stressors.

5.2.1 Prohibited Uses and Access Control

The mitigation areas shall not be open to the public. However, research and educational programs may be allowed on the mitigation areas as deemed appropriate, but are not specifically funded or a part of this Project. Educational use and use for scientific study shall be limited to passive activities. The receiver area is intended to serve as a long-term preservation for the San Diego ambrosia population, and as such, is not compatible with the following activities:

- Trespass or unauthorized access
- Dumping or trashing
- Construction activities and staging
- Unauthorized recreational use
- Unauthorized vegetation clearing or mowing
- Removal of natural resources.

The land manager shall control access to the receiver area. Vehicular access shall be limited to uses for the purposes of law enforcement, management, or emergencies. Exceptions to these prohibitions include specific activities related to habitat restoration and biological resources monitoring and management. Signage and fencing shall be installed and maintained. Signs shall identify that there is no public access to the site and the site contains a federally endangered species. Emergency access (e.g., for the purpose of accident recovery or fire suppression) shall be granted, and shall be coordinated with the land manager as feasible. The receiver site shall be restored to pre-existing conditions should emergency access cause disturbance to the mitigation areas.

5.2.2 Trash and Trespass

The land manager shall record occurrences of trash and/or trespass, including the type and location. The land manager shall plan and implement future remediation and coordinate with the community to reduce these threats and stressors. The land manager shall collect and remove waste, trash, or other debris encountered within the receiver area. All materials shall be disposed of in a legal manner.

5.2.3 Vegetation Management

San Diego ambrosia is sensitive to the impact of encroaching species, specifically tall species that may inhibit wind pollination. Specifically tall grasses and shrubs inhibit the growth and expansion of this clonal rhizomal plant. Vegetation management and invasive removal shall occur at least twice per year in the early spring (February/March) and early summer (May/June). All workers conducting invasive plant removal activities shall be able to distinguish between native and non-native species and identify San Diego ambrosia. All vegetation management within five feet around the ambrosia population(s) shall be performed manually using hand tools. The ambrosia population shall not be impacted through spraying of herbicides; therefore, invasives shall be either removed manually or by mowing (San Diego ambrosia responds well to early season mowing when the plants are small). Invasive species and thatch removal shall occur by removing all clippings and thatch from the site.

To keep encroaching invasive species at bay (native or non-native), and as necessary, spot-spraying with herbicides approved for use in California shall be conducted around the ambrosia populations by a licensed pesticide applicator and all label instructions shall be followed. Herbicide application shall be conducted by a California-licensed applicator. Invasive species removal should be conducted before seed-set at the appropriate time of year based on the phenology of a given species and potential impacts to the San Diego ambrosia population. Herbicide applications shall avoid the ambrosia stand(s) and at least five

feet around each stand. Extra care shall be taken to prevent overspray into the ambrosia population(s). All invasive species material will be carefully removed from the site and legally disposed of at an appropriate facility.

5.2.4 Monitoring

The translocated population shall be visited monthly during the growth season to monitor ecological functions and check for problems. Site visits may be combined with maintenance visits of the preserve, including the management of the translocated Weld Blvd. population; the PAR has been calculated accordingly. In addition, every three years, a plant count of the translocated population shall be conducted to monitor the functional trend of the translocated population. The count shall be conducted by counting all aerial stems either directly, or through a stratified sampling method (within belt transects or quadrats) and then extrapolating the count to the square footage (square meter) of the translocated population. The three-year counts shall be compared to each other to monitor expansion or contraction of the population. The three-year count data shall be submitted with the annual report of the preserve and also to the San Diego Monitoring and Management Program (SDMMP) data base and shall be available upon request by the City of El Cajon and the regulatory agencies.

5.2.5 Repairs and Remediation

Fire is an important element in the ecology of southern California, but may cause damage to native habitat and species if it burns too hot or too frequently. Any potential damage to the ambrosia population from a fire will be addressed immediately. Based on quantitative data, appropriate adaptive management measures such as repairs and restoration will be undertaken. Furthermore, herbivory damage, such as damage by pocket gophers or ants, will be assessed and repaired. EHC will conduct exploratory methods to further preclude herbivory if it is determined that is compromises the health of the ambrosia population. In severe drought years, EHC may provide supplemental watering if deemed appropriate.

If monitoring data and feedback loops suggest that the population is declining, a threat assessment shall be undertaken and remediation performed accordingly. This may include supplemental watering, replacement of eroded or otherwise lost soil materials (only suitable red clay soils shall be used), pest control, brush removal, or habitat restoration.

5.2.6 Regional Conservation Contribution

Not much is known about the genetics of the San Diego ambrosia population, except for the populations at Mission Trail Regional Park and the San Diego Wildlife Refuge (Friar 2007). Participation in genetic studies is important to ascertain the continued conservation of the species' integrity. Participation is voluntary and should not require funding, and would include providing access for study and research and potentially donating plant materials for genetic analysis without harming the extant population.

5.3 Reporting

Annual reporting shall be conducted as part of the preserve annual reporting and submitted to the USFWS, CDFW, and to the City of El Cajon. Data shall be submitted to the SDMMP data base. The report shall include a maintenance summary, the results of qualitative monitoring and three-year population counts, any graphics or photographs, problems, recommendations for remediation and restoration if necessary, and a summary discussing the ecological function and trend of the population. The report may include both the Occurrence #62 and Occurrence #20 translocations, but shall make a distinction between these two populations.

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Personal Communication:

Dr. Elizabeth Friar. Santa Ana Botanic Garden. Email conversation regarding San Diego ambrosia genetics and translocation distance from genetically distinct populations. 2009.

Appendix A
Site Photos

Photo 1 – Extant San Diego ambrosia population at Oakdale donor site.

Photo 2 – Close-up of 2,000+ stem San Diego ambrosia population.

Photo 3 – Condition of San Diego ambrosia at Oakdale donor site.

Photo 4 – Translocated San Diego ambrosia #20 at Hanson Pond.

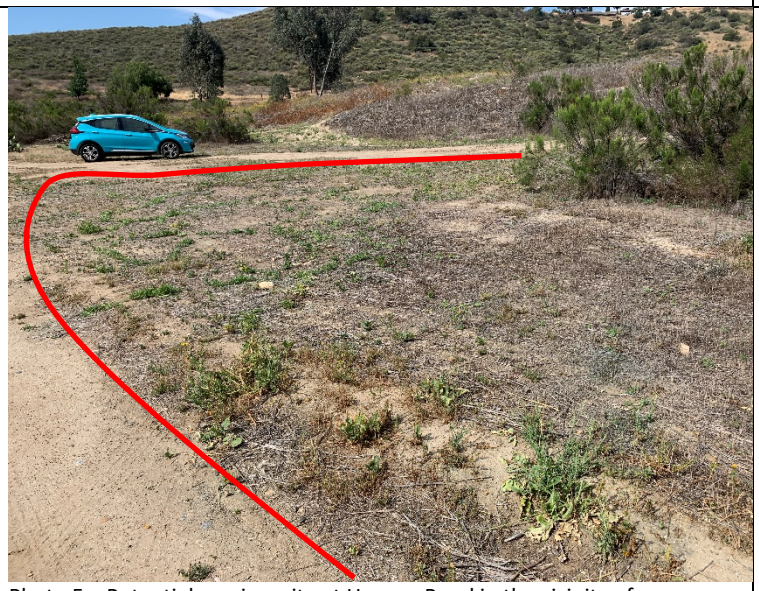

Photo 5 – Potential receiver site at Hanson Pond in the vicinity of Population #20.

Photo 6 – Potential receiver site at Hanson Pond in the vicinity of Population #20.

Appendix B
Property Record Analysis (PAR) Output

Annual Long-term Management Costs

Task List	Specification	Unit	No. Units	Cost/Unit	Frequency per year	Total Annual Cost	Assumptions
Facilities Maintenance/Access Control							N/A
SUBTOTAL CAPITAL IMPROVEMENTS						***$0.00***	
Monitoring							
Biologist II	Monitoring	L. Hours	1.50	$100	1.00	$150.00	Qualitative monitoring visit monthly during the growing season (6 months) to check for habitat integrity, invasives, etc.; visit the population to confirm positive trend; will be combined with other visits to Hanson Pond; therefore, the costs are adjusted to 15 min./month (1.5 hours/year).
Biologist III	Monitoring	L. Hours	2.00	$120	0.30	$72.00	Quantitative monitoring visit annually in the spring; conduct a stem count or population patch size estimate (stratified sampling method, based on 2,000 stems); includes travel.
SUBTOTAL BIOLOGICAL MONITORING						***$222.00***	
Habitat Management							
Equipment, materials	Mowing and dethatching; access controls; fence repair	Fixed Price	1.00	$150	2.00	$300.00	equipment use; based on 1,000 sf; will be conducted with management of translocation #62; mower rental would be shared; does not include dumping fees.
Labor	Maintenance supervisor/pest applicator	L. Hours	2.00	$80	2.00	$160.00	invasive species control and site maintenance; based on 1,000 sf; will be conducted with management of translocation #62
Labor	Weeding and dethatching	L. Hours	2.00	$65	2.00	$260.00	manual invasive species control; mowing, thatch removal; based on 1,000 sqft; will be conducted with management of translocation #62
SUBTOTAL BIOLOGICAL MANAGEMENT						***$720.00***	
Reporting							
Biologist II	Annual report (add to)	L. Hours	1.00	$100	1.00	$100.00	report w/annual data and logs; combined with other management reports
GIS Staff/Biologist II	GIS Data Submittals	L. Hours	0.50	$90	1.00	$45.00	report graphics
SUBTOTAL REPORTING						***$145.00***	
TOTAL						**$1,087.00**	
Contingencies		8				$11.60	Emergency fund (fire, flood, windfall, vandalism, etc.)
Administrative Overhead		3				$4.35	Accountants, technical, clerical, contract managers, lawyers, etc.
SUBTOTAL CONTINGENCIES/ADMINISTRATION						***$15.95***	
GRAND TOTAL						**$1,102.95**	

Total Cost for Management

Total Start-up Costs		$0.00
Annual Costs to be Generated by Endowment Account	$1,102.95	
Net Annual of Return	4.25%	
ENDOWMENT NEEDED		$25,404.20
Total Management Funds Required		**$25,404.20**

based on San Diego Foundation Annual Rate of Return

Personnel	Labor Rate
Biologist III	$120
Biologist II	$100
GIS Staff	$90
Pest Applicator	$80
Maintenance Staff	$65