

SPECIAL-STATUS PLANT SPECIES 2019 SPRING/FALL SURVEY RESULTS AND SALVAGE AND RELOCATION PLAN

SONGS Units 2 & 3 Decommissioning Project

Prepared for

SONGS Decommissioning Project Applicant

Fall 2019

Prepared by



SONGS Decommissioning Solutions

San Onofre Nuclear Generating Station
5000 Pacific Coast Hwy., MS D3B
San Clemente, CA 92673

Measures Covered:

California State Lands Commission Mitigation Measure (MM) BIO-1c
California Coastal Commission Special Condition (SC) 13

Table of Contents

LIST OF ACRONYMS.....	iv
SECTION 1 INTRODUCTION	1
1.1 Purpose of Surveys and Development of Salvage and Relocation Plan	2
1.4 Applicable Activities and Project Areas	4
1.5 Timing.....	4
SECTION 2 METHODS.....	8
2.1 Survey Methods	8
2.1.1 Background Data.....	8
SECTION 3 SURVEY RESULTS	13
3.1 Field Survey	13
3.2 Field Survey Results	13
3.2.1 March Survey Results.....	14
3.2.2 May Survey Results	15
3.2.3 September Survey Results	16
SECTION 4 AVOIDANCE.....	18
SECTION 5 SALVAGE.....	19
SECTION 6 PLAN APPROVAL.....	20
SECTION 7 REFERENCES	21

List of Appendices

A	Resumes	
B	Draft Salvage and Relocation Plan	
C	CNDDDB Forms	

List of Figures

Figure 1: Major Project Areas Overview	5
Figure 2: Survey Results	6

List of Tables

Table 1: California Native Plant Society(2019) California Rare Plant Ranks	9
Table 2: Special-Status Species with Potential to Occur on the SONGS Survey Area	10
Table 3: Survey Results	15

LIST OF ACRONYMS

ATS	AECOM Technical Services
CCC	California Coastal Commission
CCH	Consortium of California Herbaria
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
CNPS	California Native Plant Society
CNDDDB	California Natural Diversity Database
CRPR	California Rare Plant Rank
CSLC	California State Lands Commission
ESHA	Environmentally Sensitive Habitat Area
FEIR	Final Environmental Impact Report
GIS	Geographic Information System
GPS	Global Positioning System
MCBCP	Marine Corps Base Camp Pendleton
MM	Mitigation Measures
NRC	Nuclear Regulatory Commission
SC	Special Condition
SCE	Southern California Edison
SDS	SONGS Decommissioning Solutions
SONGS	San Onofre Nuclear Generating Station
USFWS	U.S. Fish and Wildlife Service

SECTION 1 INTRODUCTION

Southern California Edison Company (SCE), San Diego Gas & Electric Company, the City of Anaheim, and the City of Riverside (collectively, Applicant) plan to decommission components of San Onofre Nuclear Generating Station (SONGS) Units 2 & 3 (Project). SONGS is located within the boundaries of the Marine Corps Base Camp Pendleton (MCBCP) on the north San Diego County coast, approximately 50 miles north-northwest of the City of San Diego.

The U.S. Nuclear Regulatory Commission (NRC) has complete oversight and compliance authority over the decommissioning of U.S. nuclear power plants, including radiological aspects of decommissioning. Decommissioning activities will include both offshore and onshore activities. Onshore activities at SONGS are on federally owned lands owned by the Department of Navy.

The California State Lands Commission (CSLC) has jurisdiction over offshore decommissioning activities at SONGS seaward of the ordinary high-water mark. CSLC's approvals related to the decommissioning were limited to its approvals of a lease to replace CSLC Lease No. PRC 6785.1 to allow the Applicant to decommission offshore portions of SONGS Units 2 and 3 within the CSLC jurisdiction (Lease Facilities). The CSLC Lease Facilities are the: SONGS Units 2 and 3 offshore intake and discharge conduits and associated appurtenances; navigational environmental monitoring buoys; and riprap along the shore seaward of the ordinary high-water mark.

To evaluate the potential environmental impacts of the decommissioning activities, the CSLC served as the lead agency and prepared a Final Environmental Impact Report (FEIR) pursuant to the California Environmental Quality Act (CEQA; Pub. Resources Code, § 21000 et seq.). The scope of the FEIR evaluated activities that would occur both onshore and offshore, as summarized in Table 2-1 of the FEIR (hereafter referred to as the Project). The CSLC certified the FEIR for the Project, adopted a Mitigation Monitoring Program (MMP) as set forth in Exhibit C to the CSLC lease, adopted a statement of overriding considerations, and terminated the existing lease and issued a new general Lease No. 6785.1 on March 21, 2019. The MMP included Applicant Proposed Measures (APMs) and Mitigation Measures (MMs).

The California Coastal Commission's (CCC) approvals related to the Project's onshore activities included a Coastal Development Permit (CDP) for the Project activities that would occur in the coastal zone pursuant to the California Coastal Act (Pub. Resources Code, § 30000 et seq.). The CCC reviewed the Project's potential environmental impacts in the Staff Report and addendum Th12a for the CDP, Application No. 9-19-0194. The CCC's review and analysis of CDP applications has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. The CCC adopted the CDP on October 17, 2019 and issued the CDP on October 21, 2019. To address the Project's potential environmental impacts, the CCC incorporated the mitigation measures from the CSLC's Lease for the Project, as otherwise modified by the CCC's Special Conditions (SCs) that were also part of the CCC's approval of the CDP.

The Applicant has worked with the CSLC and CCC to implement the mitigation measures and special conditions to address the potential environmental impacts identified in the CSLC and CCC's environmental review of the Project, including conducting surveys of biological resources. This document includes the survey results of special-status plant species and a Salvage and Relocation Plan

(Plan) for those special-status plant species. SONGS Decommissioning Solutions (SDS), a joint venture between AECOM Technical Services (ATS) and Energy solutions, has been contracted by the Applicant to safely decommission the San Onofre nuclear power plant. SDS will be responsible for implementing the Applicant's responsibility to construct the Project, conduct the surveys described in this report, and implement the Plan.

1.1 Purpose of Surveys and Development of Salvage and Relocation Plan

The CLSC's FEIR for the Project evaluated 12 potential areas of impact related to biological resources and specifically identified the following impact that would be reduced to less than significant levels in part through conducting the surveys summarized in this report and through implementation of the Plan:

- **Impact BIO-1: Contribute to the Loss and Degradation of Sensitive Habitat:** Onshore decommissioning activities could affect rare plants and sensitive habitats. With implementation of MM BIO-1a, MM BIO-1b, and MM BIO-1c, the FEIR concluded impacts related to contributing to the loss and degradation of sensitive habitat would be less than significant.

Further analysis of the Project's potential impacts related to biological resources, as well as analysis of the applicable APMs and MMs, can be found in Chapter 4.4 of the FEIR. The APMs and MMs may also be found in the CSLC Lease.

The summary of survey results and the Plan attached to this report implement MM BIO-1c, which states in full:

- **MM BIO-1c: Rare Plant Surveys.** *The Applicant or its contractor shall implement the following tasks to mitigate the Project's direct and indirect impacts to special-status plants.*
 - **Surveys.** *Prior to initial ground disturbance in areas of disturbed or ruderal vegetation, a California State Lands Commission (CSLC)-approved, qualified plant ecologist or botanist shall conduct surveys for special-status plants (state- and federally- listed threatened and endangered, proposed, petitioned, and candidate plants and California Rare Plant Rank [CRPR] 1 and 2 plants) in all areas subject to ground disturbing activity containing suitable habitat and the surrounding areas within 100 feet when access is feasible. The surveys shall be conducted during the appropriate blooming period(s) according to protocols established by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and California Native Plant Society (CNPS). Surveys shall be valid for a period of 3 years. If vegetation removal or initial site disturbance in a surveyed area does not occur within 3 years, surveys must be repeated. All listed plant species found shall be marked and avoided, if feasible.*

Any populations of special-status plants found during surveys shall be fully described, mapped, and a CNPS Field Survey Form or written equivalent shall be prepared. A report detailing the results of each rare plant survey shall be provided to the CSLC staff 30 days prior to ground disturbance.

- **Avoidance.** *Prior to any grading, vegetation clearing, or site disturbance, the Applicant or its contractor shall delineate the limits of disturbance with lathe, snow fencing, or other suitable markers. Prior to grading or vegetation removal, any populations of special-status plants (and areas of Environmentally Sensitive Habitat Area [ESHA]) identified during the surveys within the Proposed Project footprint and surrounding 100-foot area shall be protected and construction fencing established around each population. The buffer for herbaceous and shrub species shall be, at a minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, in coordination with USFWS and CDFW staffs. If impacts to listed plants cannot be avoided, USFWS and CDFW staffs shall be consulted for authorization, with notification to the CSLC. If Project activities result in the loss of more than 10 percent of an onsite population of any CRPR 1 plant species, mitigation shall be required as described below.*
- **Salvage.** *If Project activities result in the loss of more than 10 percent of an onsite population of any CRPR 1 plant species, the Applicant or its contractor shall develop a Salvage and Relocation Plan based on the life history of the species affected. The Plan shall include at minimum: (a) collection/salvage measures for plants or seed banks, to retain intact soil conditions and maximize success likelihood; (b) details regarding storage of plants or seed banks; (c) location of the proposed recipient site, and detailed site preparation and plant introduction techniques; (d) time of year that the salvage and replanting or seeding will occur and the methodology of the replanting; (e) a description of the irrigation, if used; (f) success criteria; and (g) a detailed monitoring program, commensurate with the Plan's goals.*

In addition, the CCC's final environmental review for the Project found that the Project is consistent with the hazards, marine resources, water quality, view protection, cultural resources, and other relevant policies of the Coastal Act with implementation of 19 Special Conditions. The summary of survey results and the Plan attached to this report address the requirements of Special Condition 13, which states in full:

- **13. Rare Plant Surveys.** *The applicant shall conduct rare plant surveys as described in Exhibit 13. Reports detailing the results of each rare plant survey shall be provided to the Executive Director 30 days prior to ground disturbance. If direct impacts to listed plant species cannot be avoided, the applicant shall provide notification to the Executive Director 30 days prior to ground disturbance. If a rare plant Salvage and Relocation Plan is necessary, a draft plan shall be provided to the Executive Director for review and approval at least 30 days prior to the start of salvage activities. The applicant shall implement the Plan as approved by the Executive Director.*

Pursuant to MM BIO-1c this report detailing the results of each rare plant survey was provided to the CSLC 30 days prior to ground disturbance. In addition, pursuant to MM BIO-1c, in the event that Project activities result in the loss of more than 10 percent of an onsite population of any California Rare Plant Rank (CRPR) 1 plant species, a Salvage and Relocation Plan based on the life history of the species affected has been submitted to CSLC staff for review and approval in consultation with USFWS and CDFW a minimum of 30 days prior to the start of salvage activities. By seeking approval of the Salvage and Relocation Plan in advance of any anticipated salvage activities, the Applicant seeks CLSC approval in order to expedite the salvage and relocation activities in the event those activities become necessary.

For the surveys conducted for this report, the identification of sensitive species of plants was not limited and included all species that are considered special status on the CRPR as well as the California Native Plant Society.

Pursuant to SC 13, this report detailing the results of each rare plant survey was provided to the CCC 30 days prior to ground disturbance. If direct impacts to listed plant species cannot be avoided, the Applicant will provide notification to the CCC 30 days prior to ground disturbance. In addition, the Applicant is submitting the Salvage and Relocation Plan for CCC review and approval a minimum of 30 days prior to the start of salvage activities. By seeking approval of the Salvage and Relocation Plan in advance of any anticipated salvage activities, the Applicant seeks CCC approval in order to expedite the salvage and relocation activities in the event those activities become necessary.

1.4 Applicable Activities and Project Areas

The Project includes the SONGS onshore facility plus a 25-foot buffer on the southeast (to the pedestrian walkway) and northwest (to the railroad right-of-way) as shown in Figure 1¹. The areas surveyed as summarized in this report and the Salvage and Relocation Plan applies to all areas subject to ground disturbing activity containing suitable habitat and the surrounding areas within 100 feet when access is feasible as shown in Figure 2.

1.5 Timing

The requirements of MM BIO-1c and SC 13 are applicable to before and during Project activities that involve ground disturbing activities in areas containing suitable habitat and the surrounding areas within 100 feet when access is feasible.

¹ Figure 1 shows the location of the “Protected Area”, which is defined as an area encompassed by physical barriers to which access is controlled from a nuclear regulatory perspective and does not indicate any plant or wildlife sensitivities or protections.

Figure 1: Major Project Areas Overview

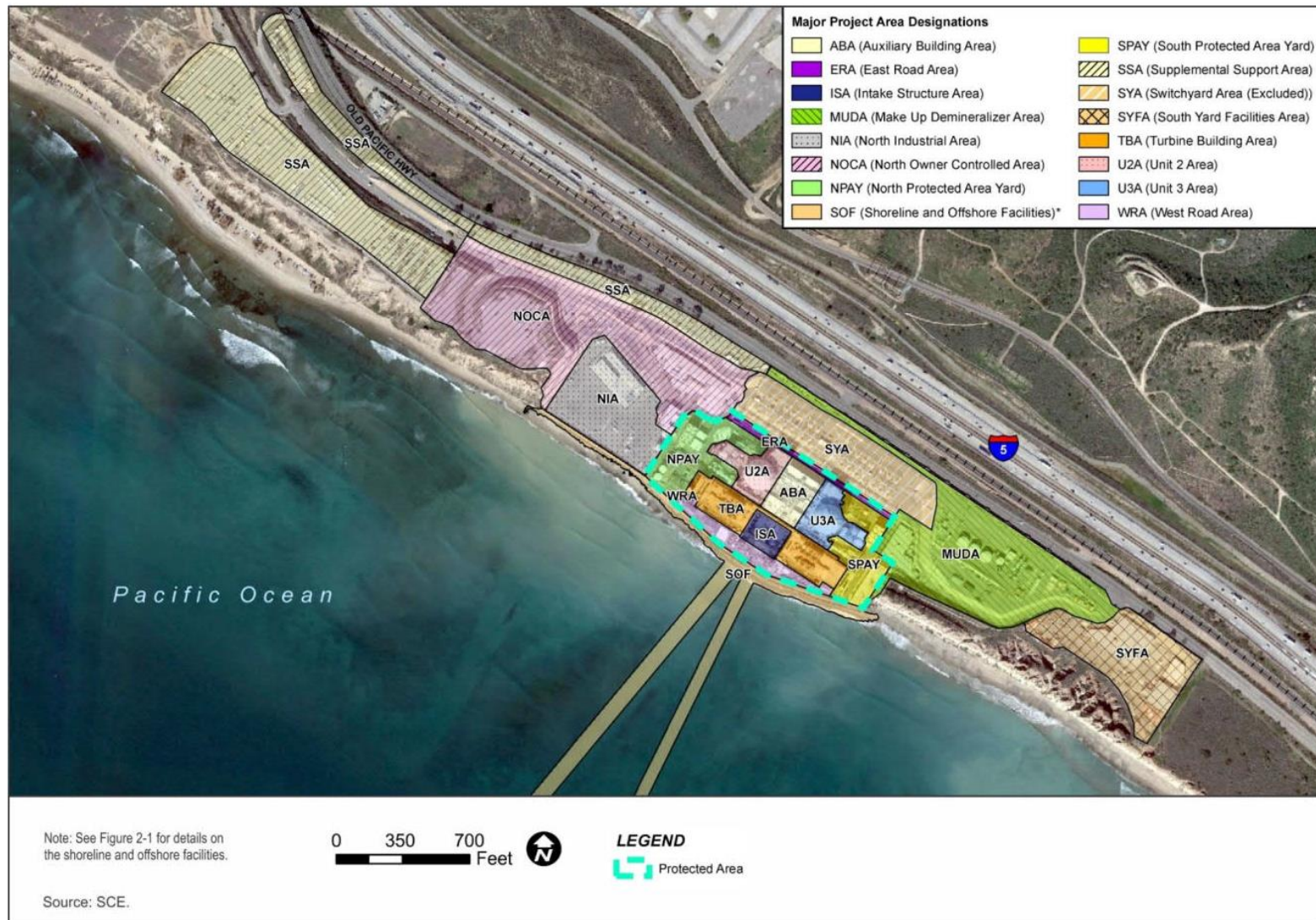


Figure2: SurveyResults



This page intentionally left blank

SECTION 2 METHODS

MM BIO-1c and SC 13 require a preconstruction survey for special-status plant species during the appropriate blooming period(s) and prior to initial ground disturbance. In order to conform to protocols established by California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS), surveys were conducted in March, May, and September 2019 by California State Lands Commission (CSLC)-approved², qualified plant ecologists/botanists (resumes provided in Appendix A) in anticipation of a 2019 start of decommissioning activities.

Consistent with these requirements, AECOM Technical Services (ATS) conducted floristic, protocol-level rare plant surveys within areas subject to ground-disturbing activity containing suitable habitat and the surrounding areas within 100 feet when access was feasible (Survey Area) on 11 and 12 March, 21 and 22 May, and 4 September 2019. Initial surveys were conducted in 2 months in 2019 (11 and 12 March and 21 and 22 May). These survey dates corresponded to the peak bloom periods of the majority of species that were considered to have potential to occur in the Survey Area. A single day follow up survey was conducted on September 4 to detect any fall flowering special-status plant species. Pursuant to MM BIO-1c, survey results shall be valid for a period of 3 years.

This section includes a detailed description of the survey methodology and actions required to implement MM BIO-1c and SC 13 in the Survey Area. The Project shall also comply with applicable states and federal regulations.

2.1 Survey Methods

Under the California Native Plant Society (CNPS) guidelines (CNPS 2001), protocol-level rare plant surveys should be conducted in a manner that will locate any rare plant species that may be present. The CNPS guidelines state that surveys should be conducted “at the proper time of year when rare, threatened, or endangered species are both evident and identifiable.” Usually this is when the plants are in bloom; however, there are species that are identifiable outside of the blooming period because non-floral structures (e.g., leaves, roots) are sufficient to make a species determination and/or floral structures (e.g., fruits, buds) are necessary to be in a state of maturity beyond or prior to the documented blooming period. When rare plants are known to occur in the type(s) of habitat present in the Survey Area, nearby accessible occurrences of the plant (reference sites) should be observed to determine that the plants are identifiable at the time of the survey. In addition, the CDFW (CDFW 2009) and the USFWS (USFWS 1996) give detailed instructions pertaining to the adequacy of surveys and results. The following March, May and September 2019 survey reports provide details related to precipitation and other conditions that may have affected the survey results and also include detailed information about the results of previous surveys conducted in the Survey Area.

2.1.1 Background Data

Rare plants are defined here to include (1) all plants that are federal- or state-listed as rare, threatened or endangered, (2) all federal and state candidates for listing, (3) all plants included in Ranks 1 through 4

² CSLC Approved resumes for Thomas A. Oberbauer and Fred Sproul on My 15, 2019.

of the CNPS Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2017a), and (4) plants that qualify under the definition of “rare” in CEQA Section 15380. As prescribed in MM BIO-1c and SC 13, qualified and CSLC-approved botanists conducted floristic, protocol-level rare plant surveys for special-status plants (state- and federally- listed threatened and endangered, proposed, petitioned, and candidate plants and CRPR 1 and 2 plants) in all suitable habitat areas subject to ground disturbing activity and the surrounding areas within 100 feet when access was feasible on 11 and 12 March, 21 and 22 May, and 4 September 2019. The survey dates corresponded to the peak blooming periods for observing and accurately identifying hundreds of plant species in San Diego County, including species with a moderate or high potential to occur in the Survey Area. The definitions for CNPS’s California Rare Plant Ranking system are summarized below in Table 1. Ranks at each level also include a threat rank.

Table 1: California Native Plant Society (2019) California Rare Plant Ranks

CNPS CRPR	Definition
1A	Plants presumed extirpated in California and either rare or extinct elsewhere
1B	Plants rare, threatened, or endangered in California and elsewhere
2A	Plants presumed extirpated in California but common elsewhere
2B	Plants rare, threatened, or endangered in California but more common elsewhere
3	Review List: Plants about which more information is needed
4	Watch List: Plants of limited distribution
Threat Ranks	
0.1	Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Moderately threatened in California (20–80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

A background information search was conducted to identify potential rare plant species that may occur in the Survey Area vicinity. A table of these species, which summarizes their protection status, blooming period and source of distribution information is provided in Table 2. All rare plants documented within the vicinity of the Survey Area were then assessed based on associated vegetation communities, soil affinity, associated species, topographic position, shade tolerance, distribution tolerance, elevation, and population distribution to determine the potential for these species to occur in the Survey Area.

Table 2: Special-Status Species with Potential to Occur on the SONGS Survey Area

Species	Flowering Time from CNPS Inventory and Collections California Consortium of Herbaria http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl	Life Form	CNPS (2019) CRPR and Threat Ranking	Source of Distribution Information
Red sand verbenia (<i>Abronia maritima</i>)	February to October but collections mostly March through June; has a long period of visibility if present	Herbaceous Perennial	4.2	In FEIR as detected
Aphanisma (<i>Aphanisma blitoides</i>)	February to June and collections from same period; has a long period of visibility if present	Herbaceous Annual	1B.2	In FEIR as potential to occur and locations included in the CNDDDB ¹
Palmer sagebrush (<i>Artemisia palmeri</i>)	May to September but flowers are inconspicuous	Woody Shrub	4.2	Presented in Table F1-1 in Appendix F of the FEIR; San Diego Natural History Museum has location approximately 3.3 miles away in drainage bottom
Coulter's saltbush (<i>Atriplex coulteri</i>)	March to October	Herbaceous Perennial	1B.2	CNPS lists collection nearby at San Onofre Bluffs campground and locations listed in CNDDDB
South Coast shadscale (<i>Atriplex pacifica</i>)	March to October but collections mostly April to June; small plant difficult to find	Herbaceous Annual	1B.2	In FEIR as potential to occur and locations in CNDDDB
San Diego sunflower (<i>Bahiopsis laciniata</i>)	February to June but collections mostly April to June	Perennial Shrub	4.3	San Diego Natural History Museum has location less than 3 miles away
Thread-leaved brodiaea (<i>Brodiaea filifolia</i>)	March to June but collections mostly May to early June	Herbaceous Perennial	1B.1	In FEIR as potential to occur and locations in CNDDDB
Lewis' evening-primrose (<i>Camissoniopsis lewisii</i>)	Mostly March to May	Herbaceous Annual	3	San Diego Natural History Museum has location south of the facility
Paniculate tarplant (<i>Deinandra paniculata</i>)	April to November but most collections June and July	Herbaceous Annual	4.2	Presented in Table F1-1 in Appendix F of the FEIR; San Diego Natural History Museum has location less than 3 miles away

Species	Flowering Time from CNPS Inventory and Collections California Consortium of Herbaria http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl	Life Form	CNPS (2019) CRPR and Threat Ranking	Source of Distribution Information
Blochman's dudleya (<i>Dudleya blochmaniae</i>)	April to June but most collections May	Small Herbaceous Perennial	1B.1	In FEIR as potential to occur and locations in CNDDB
Many stemmed dudleya (<i>Dudleya multicaulis</i>)	April to June but most collections May	Small Herbaceous Perennial	1B.2	In FEIR as potential to occur and locations in CNDDB
Sticky dudleya (<i>Dudleya viscida</i>)	May to June but most collections June and July	Perennial Succulent	1B.2	In FEIR as potential to occur
Pendleton button celery (<i>Eryngium pendletonense</i>)	April to June but most collections May and June	Herbaceous Perennial	1B.1	Mapped in FEIR and locations in CNDDB
Palmer's grapplinghook (<i>Harpagonella palmeri</i>)	March to May with most collections April to May	Herbaceous Annual	4.2	Locations in CNDDB
Vernal barley (<i>Hordeum intercedense</i>)	March to June but most collections April and May	Herbaceous Annual	3.2	Mapped in FEIR
Decumbent goldenbush (<i>Isocoma menziesii decumbens</i>)	April to November but most collections July to October	Perennial Shrub	1B.2	San Diego Natural History Museum has location less than 3 miles away and locations in the CNDDB
Coulter's goldfields (<i>Lasthenia glabrata coulteri</i>)	February to June but most collections April and May	Herbaceous Annual	1B.1	Referenced in FEIR as having a high potential to occur near the proposed Project area and California Consortium of Herbaria has location from San Onofre Creek area and listed in CNDDB
Robinson's pepper grass (<i>Lepidium virginicum robinsonii</i>)	January to July but most collections February to April	Herbaceous Annual	4.3	San Diego Natural History Museum has location less than 3 miles away and locations in CNDDB
California boxthorn (<i>Lycium californicum</i>)	March to June, July, August but most collections March to May	Woody Shrub	4.2	Mapped in FEIR
Small-flowered microseris (<i>Microseris douglasii</i> ssp. <i>platycarpa</i>)	March to May with most collections March and April	Herbaceous Annual	4.2	Mapped in FEIR
Little mousetail (<i>Myosurus minimus</i>)	March to June but most collections April and May	Herbaceous perennial	3.1	Mapped in FEIR and locations listed

Species	Flowering Time from CNPS Inventory and Collections California Consortium of Herbaria http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl	Life Form	CNPS (2019) CRPR and Threat Ranking	Source of Distribution Information
				in CNDDDB
Prostrate vernal pool navarretia (<i>Navarretia prostrata</i>)	April to June but most collections April and early May	Herbaceous Annual	1B.1	Listed in the FEIR as recorded within 2 miles of the Project; CNPS Inventory lists collection near San Onofre State Beach and locations in CNDDDB
White rabbit tobacco (<i>Pseudognaphalium leucocephalum</i>)	August to December and collections are within that time frame	Herbaceous Perennial	2B.2	Presented in Table F1-1 in Appendix F of the FEIR; San Diego Natural History Museum has location less than 3 miles away and locations in CNDDDB
Chaparral ragwort (<i>Senecio aphanactis</i>)	January to April (May) but most collections March	Herbaceous Annual	2B.2	In FEIR as potential to occur and locations included in CNDDDB
Estuary seablite (<i>Suaeda esteroa</i>)	July to October with most collections July to September	Herbaceous Perennial	1B.2	Locations included in CNDDDB
Woolly seablite (<i>Suaeda taxifolia</i>)	July to October with most collections within that time frame	Succulent Leaved Perennial Shrub	4.2	Mapped in FEIR

¹ CNDDDB is the California Natural Diversity Database

SECTION 3 SURVEY RESULTS

3.1 Field Survey

ATS conducted floristic, protocol-level rare plant surveys within the SONGS Survey Area on 11 and 12 March and 21 and 22 May 2019. Prior to the field survey effort, ATS reviewed the California Natural Diversity Database (CNDDDB) (CDFW 2019), the Consortium of California Herbaria (CCH) database (CCH1 2019), and the San Diego Natural History Museum plant atlas map data (San Diego Natural History Museum 2019) to determine which species have been documented in the vicinity of the Survey Area. A list of special-status species with potential to occur on the site was generated along with their flowering period (Table 2). It was determined by the qualified botanists that conducting surveys in March, May, and potentially early fall would provide optimum timing to identify the plants. The surveys were conducted during the appropriate blooming period(s) according to protocols established by the USFWS, CDFW, and CNPS.

Surveys were conducted by trained botanists approved by CSLC and familiar with the flora of Southern California. Qualifications and resumes of those botanists are provided in Appendix A. The surveys were conducted using wandering transects and were floristic in nature (i.e., all plants observed were identified to the lowest level possible to determine rarity, often subspecies or variety). The survey dates in March, May and September 2019 encompassed the peak bloom periods for the rare species with potential to occur. Rainfall preceding the surveys was generally slightly above normal.

Survey Area included all potentially natural habitats and semi-disturbed habitats within the mapped Project boundary and within 100 feet of the surrounding boundary. This included the slopes around the flat circular area referred to as the “reservoir site” and all other areas subject to ground-disturbing activities. The only exceptions were the vertical cliffs and eroded canyons between the bluff tops and the slope bottom that were inaccessible due to unstable terrain. Special-status species were identified on site, as well as those plants that could potentially correspond to species afforded regulatory special status.

3.2 Field Survey Results

In total, 26 special-status plant species were identified as potentially occurring in the Survey Area. Of these, two special-status plant species were detected, but no state or federally listed plant species were observed.

The surveys utilized existing special-status plant data collected for the Project, as well as Geographic Information System (GIS) data provided by SCE, with the primary purpose of locating special-status plant individuals. All occurrences were recorded using a Dual Universal Global Positioning System (GPS) receiver (2.5 meter accuracy) using the Fulcrum data collection system on an Apple iPhone 8. The surveys will be valid for a period of 3 years. If vegetation removal or initial site disturbance in a surveyed area does not occur within 3 years, the surveys will be repeated.

Field surveys consisted of examination of all areas on foot subject to ground disturbing activity containing suitable habitat and the surrounding areas within 100 feet when access is feasible. There were some areas west of the Survey Area that were not accessible on foot due to terrain. The 2019 rainfall season has been 16.12 inches at San Onofre (National Weather Service 2019a), and San

Clemente received 13.36 inches of precipitation (National Weather Service 2019b). According to the Weather Channel (2019), however, the mean precipitation at San Clemente is 11.57 inches (Climate-Data.org 2019), which would make this season slightly above normal, and the 16.12 inches at San Onofre also slightly above normal. Therefore, because rainfall was above normal through the region, this was generally a very good rainfall season for the growth of annual plants and flowering of perennial shrubs, particularly plants that are responsive to the rainfall and weather patterns observed.

3.2.1 March Survey Results

No special-status rare plant species, as defined in MM BIO-1c (i.e., “*state- and federally- listed threatened and endangered, proposed, petitioned, and candidate plants and California Rare Plant Rank [CRPR] 1 and 2 plants*”) were documented within the Survey Area. However, two plant species with lower-sensitivity status were documented during the survey, and are discussed for informational purposes, to accurately characterize the Project site and buffer area.

Two species of special-status plants were found during the surveys: small flowered microseris (*Microseris douglasii* ssp. *platycarpha*) and California boxthorn (*Lycium californicum*). Immature tarplants observed had the potential to be the paniculate tarplant (*Deinandra paniculata*). The identification was confident for the microseris and boxthorn, but the *Deinandra* could not be confirmed until the plants flowered in May. An additional plant, Lewis’s evening primrose (*Camissoniopsis lewisii*), had a potential to be present but the plants observed were not developed enough to make a determination. These species are listed in Table 3.

Small flowered microseris is a small ephemeral annual plant that grows in openings and edges of shrubby habitat. It has the general growth pattern of a small dandelion type of plant but with distinctive characteristics such as nodding fruit and specific pappus characters. It was found in one location on a small hill located to the east of the railroad spur line and north of a loop of an unnamed road that intersects with Beach Club Road. A population of approximately 200 seedlings was observed. They were in vegetative form except for one old fruit. The plant has very distinctive fruits that remain after it has flowered. It flowers in March to May. Its location is visible on the map in Figure 2: Survey Results.

California boxthorn is a low shrub with spiny stems and small succulent ephemeral leaves. It has small pale white and purple flowers and small red berry-like fruit. It was documented on bluffs and steep slopes along the west side of the Survey Area and was relatively common in those locations with a large number of total plants estimated at approximately 260 individuals. Locations are marked on the map in Figure 2.

Paniculate tarplant is an annual that can grow to nearly a meter tall during good rainfall seasons. It has yellow flowers that grow in clusters on the end of the stems. Their growth pattern is characteristic with multiple spreading branches where flowers occur at the ends of the stems. Seedling plants were found in good numbers, in the range of multiple dozens. Skeletons from the previous rainfall season, probably 2017, have the growth form that would indicate that they are the paniculate tarplant. However, to determine they are not a more common species of *Deinandra*, it was necessary to observe them when they flowered in May. It was found in the same general area as the *Microseris* in an area that may have been disturbed in the past by a vehicle track. The plant grew on openings and the edge of grassy areas.

Lewis’s evening primrose is an annual plant with small yellow flowers. A specimen of a *Camissoniopsis* species was observed on the terrace/bluff top adjacent to the “reservoir” site. It had characteristics that

could be *Camissoniopsis lewisii* or the more common species, *Camissoniopsis robusta*, but the key to its identification is fruits, which were not yet present when the site was surveyed in March. It was resurveyed in May and the plant was not found. Because the habitat in which the *Camissoniopsis* was found was not the typical habitat for *Camissoniopsis lewisii* and the habitat was more consistent with habitat for the common *Camissoniopsis robusta*, and the plant was not found when resurveyed in May, *Camissoniopsis lewisii* was not maintained on the rare plant list.

Table 3: Survey Results

Species	CNPS (2019) and State CRPR Ranking	Survey Results*
Lewis' evening-primrose (<i>Camissoniopsis lewisii</i>)	3	Potentially documented on the terrace/bluff top adjacent to the "reservoir" site. During the May survey, the plant was not relocated. Since it was not typical habitat for the Lewis' evening-primrose, the plant seen earlier which lacked identifying fruits was not considered to be the Lewis' evening primrose.
Paniculate tarplant (<i>Deinandra paniculata</i>)	4.2	Potentially documented in the general vicinity east of the railroad spur line, and north of an unnamed road that intersects with Beach Club Road. However, when surveyed in May, it was found not to be Paniculate tarplant but the common Fascicled tarplant (<i>Deinandra fasciculata</i>).
California boxthorn (<i>Lycium californicum</i>)	4.2	260 individuals documented on bluffs and steep slopes on the west side of the Survey Area.
Small-flowered microseris (<i>Microseris douglasii</i> ssp. <i>platycarpa</i>)	4.2	200 seedlings documented east of railroad spur line, and north of an unnamed road that intersects with Beach Club Road.

*No rare plants, as defined in MM BIO-1c (i.e., "state- and federally- listed threatened and endangered, proposed, petitioned, and candidate plants and California Rare Plant Rank [CRPR] 1 and 2 plants") were documented in the Survey Area. However, lower-sensitivity status species were documented, and are discussed to accurately characterize the Project site and buffer area.

None of these plants are considered to be highly sensitive and none are proposed for listing as threatened or endangered by the USFWS or CDFW. Since these species are not within the definition of rare plants per MM BIO-1c, translocation would not be necessary for any of them if they were to be impacted by the Project. However, lower-sensitivity status species were documented, and are discussed to accurately characterize the project site and buffer area.

For the March surveys, some of the plants were in a vegetative form such that an accurate identification was not possible during survey; their presence was planned to be confirmed on subsequent survey(s). A specific concentrated effort was made to identify the plants that have early flowering periods, particularly the chaparral ragwort (*Senecio aphanactis*). Areas that appeared to be potential habitat for this species were examined closely, but it was not found. Survey results were documented on CNDDDB forms, provided as Appendix C.

3.2.2 May Survey Results

No special-status rare plant species, as defined in MM BIO-1c (i.e., "state- and federally- listed threatened and endangered, proposed, petitioned, and candidate plants and California Rare Plant Rank [CRPR] 1 and 2 plants") and by CCC as CRPR ranks 1, 2 and 3 were documented within the study area during the May survey effort.

The surveys that were conducted on May 21 and 22 involved walking the Survey Area (the same areas that were surveyed in March). Specific effort was made to search for additional spring flowering plants including Aphanisma (*Aphanisma blitoides*), Coulter's saltbush (*Atriplex coulteri*), South Coast shadscale (*Atriplex pacifica*), and Palmer's grapplinghook (*Harpagonella palmeri*). However, they were not found. Furthermore, no additional special-status species were found. In addition, the plants that had a potential to be Paniculate tarplant (*Deinandra paniculata*) were definitively found not to be that plant but instead were more fascicled tarplant (*Deinandra fasciculata*). The plants that were thought to potentially be Lewis' evening-primrose (*Camissoniopsis lewisii*), but could not be identified to species level with the March surveys, were not able to be re-found. The location that they occurred seems to have been grazed by small mammals so no *Camissoniopsis* was found at all in the location where they were discovered before. Because it was not considered to be prime habitat for Lewis' evening-primrose and the botanists were not able to re-find it during a period of time that it would have supported fruits that were key to identifying the species, it is assumed that the plants that were found were not the rare Lewis' evening-primrose but were instead the more common robust sun cup (*Camissoniopsis robustus*) because the habitat did not contain sandy soils that are more typical of the habitat for Lewis' evening primrose.

However, one other plant species with lower-sensitivity status (i.e., not considered rare plants per the MM BIO-1c definition or required for protection by CCC as ranks S1, S2 or S3) that was documented during the May survey (and previously during the March survey), is discussed for informational purposes, to accurately characterize the Project site and buffer area, as follows. Additional locations were marked for the California boxthorn (*Lycium californicum*), however, they are all located on the bluff areas that would not likely be impacted by the Project. Therefore, for both the March and May surveys, only two species of special-status plants (but not rare plants per the definition provided in MM BIO-1c or required to be protected by CCC, pursuant to Special Condition 13) have been confirmed to be on the site, the Small-flowered microseris (*Microseris douglasii* ssp. *platycarpa*; CRPR 4.2) and the California boxthorn (CRPR 4.2). It is estimated that the total mapped distribution of the boxthorn includes approximately 400 to 500 plants. More precise numbers are not possible because a number of the plants are located on steep cliffs and it is difficult to distinguish between individuals and clusters of individuals in some cases.

The San Diego Sunflower (*Bahiopsis laciniata*) was found in the Survey Area where it was planted along a concrete channel adjacent to the fence on the southern quarter of the site (Figure 2) as part of an earlier revegetation. While it is considered a special-status species where it naturally occurs, it is often used for revegetation. The location on the Survey Area is not considered a natural occurrence and would not warrant special consideration. Further, the location of the San Diego Sunflower, as shown on Figure 2, is outside of the Project's disturbance limits and activities will not directly impact the plant.

3.2.3 September Survey Results

The September survey was scheduled to detect the fall flowering plants that may not have been visible or distinguishable during the March and May survey periods. In general, plants are more visible while they are in flower. A survey was conducted on a single day, September 4. The survey was more abbreviated because the fall flowering species with potential to occur have requirements for open habitats, which reduced the length of time needed to complete the survey. Areas with dense shrub vegetation were not resurveyed because they did not provide appropriate habitat for the fall flowering plants. Areas not resurveyed in September include the area with natural vegetation west of the Old

Pacific Highway and east of Beach Club Road on the northeastern portion of the site, the densely vegetated bluff tops on the southwest portion of the site and the dense portions of the vegetation on the east side of the Old Pacific Highway across from the parking areas. Specific emphasis was placed on finding fall flowering white rabbit tobacco (*Pseudognaphalium leucocephalum*), decumbent goldenbush (*Isocoma menziesii decumbens*), paniculate tarplant (*Deinandra paniculata*), and Coulter's saltbush (*Atriplex coulteri*).

Areas that were resurveyed included the small mesa portion near the junction of the rail line spur, the area north of the parking areas, the bluff tops on the northwest side of the facility including the west side of the central circular parking area referred to as the "reservoir", the natural habitat areas around the "reservoir" site and terraces around the central parking area within the facility, the south end of the site and bluffs north of the southwest corner, and the vegetation along the east side of the Old Pacific Highway across from the parking area where it was not too dense to support potential habitat for the fall flowering species.

More common fall flowering plants such as the *Isocoma menziesii menziesii* were in full flower as an indication of the health and vigor of the vegetation overall and the fact that the conditions were favorable for observing the fall flowering special-status plants if they were present on the site. However, none of the fall flowering special-status species with a potential to occur on the site were found during the September 4 survey.

In summary, other than the California boxthorn and the small-flowered microseris, no sensitive status plants of any kind were found in the surveys conducted this year.

SECTION 4 AVOIDANCE

None of the rare plants, as defined in MM BIO-1c, were documented within the Survey Area during the March and May 2019 botanical surveys of the SONGS site. The September survey for fall flowering plants confirmed the absence of the rare plant species addressed by the MM; therefore, no avoidance measures will be necessary, and the Project would not result in any direct or indirect impacts to these species. However, should any rare plants, as defined in the MM, be found prior to any grading, vegetation clearing, or site disturbance, an addendum to this report and Plan will be prepared and appropriate avoidance measures would be implemented.

Pursuant to MM BIO-1c, if any rare plants as defined in the MM are discovered, prior to grading or vegetation removal, any populations of special-status plants (and areas of ESHA) will be protected and construction fencing will be established around each population. The buffer for herbaceous and shrub species shall be, at a minimum, 100 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, in coordination with USFWS and CDFW. If impacts to listed plants cannot be avoided, USFWS and CDFW will be consulted for authorization, with notification to the CSLC. Further information on avoidance methods is provided in the draft Salvage and Relocation Plan (Appendix B).

Additionally, as required by the MM and SC, the Applicant has prepared a Draft Salvage and Relocation Plan (Appendix B) in the event that Project activities result in the loss of more than 10 percent of an onsite population of any CRPR 1 plant species. The Applicant requests that the Draft Salvage and Relocation Plan be proactively reviewed and approved by all pertinent regulatory agencies in order to avoid delays during decommissioning should salvage become necessary. The Plan will only be implemented if Project activities result in the loss of more than 10 percent of an onsite population of any CRPR 1 plant species. The Plan may be implemented or adjusted and implemented as specific circumstances warrant to meet the requirements of Special Condition 13 of CDP 9-19-0194. At this time, no CRPR 1 plant species are known to occur within or adjacent to the site, and therefore, it is anticipated that the Salvage and Relocation Plan will not need to be implemented for the Project.

During the March and May surveys, other special-status plants (CRPR Rank of 3 or 4) were documented outside of the SONGS site in the 100-foot buffer zone area and are in areas that are not planned for disturbance due to Project activities. These lower-sensitivity plant species are not addressed by the MM; therefore, no avoidance measures will need to be implemented for these species, and no conflict will exist between the operations to decommission the facility and the special-status plants that have been identified. The majority of the CRPR Rank 3 or 4 plants documented, the California boxthorn, is found on the bluff tops to the west of the site. The population of the small flowered microseris is located on a hilltop to the east of the existing railroad spur line.

SECTION 5 SALVAGE

Additionally, MM BIO-1c and SC 13 require that if Project activities result in the loss of 10 percent of an onsite population of any California Rare Plant Rank (CRPR) 1, 2 or 3 plant species, a Salvage and Relocation Plan (the Plan) is required to be submitted to CSLC and CCC for review and approval in coordination with USFWS and CDFW. As such, the draft Plan (Appendix B) has been prepared to proactively consult and obtain approval from the agencies in the event that salvage is required in order to prevent delays during decommissioning from the requisite consultation and approval.

The Plan includes: (a) collection/salvage measures for plants or seed banks, to retain intact soil conditions and maximize success likelihood; (b) details regarding storage of plants or seed banks; (c) location of the proposed recipient site, and detailed site preparation and plant introduction techniques; (d) time of year that the salvage and replanting or seeding will occur and the methodology of the replanting; (e) a description of the irrigation, if used; (f) success criteria; and (g) a detailed monitoring program, commensurate with the Plan's goals.

No CRPR 1, 2, or 3 plants were identified during spring surveys, therefore salvage is not required at this time. Should subsequent findings occur in areas subject to ground-disturbing activity containing suitable habitat and the Project will result in the loss of more than 10 percent of an onsite population of any CRPR 1, 2 or 3 plant species, salvage will occur in accordance with the approved Salvage and Relocation Plan (Appendix B).

SECTION 6 PLAN APPROVAL

This rare plant survey report and Plan has been prepared to address MM BIO-1c and SC 13. The survey results have been provided to the CSLC and CCC 30 days prior to ground disturbance. The Applicant requests review and approval of the draft Salvage and Relocation Plan from the CSLC and CCC. If necessary, the Plan may be amended to reflect any information contained within subsequent clearance and approval documents.

SECTION 7 REFERENCES

- Aspen Environmental Group. 2019. Final Environmental Impact Report for the San Onofre Nuclear Generating Station (SONGS) Units 2 & 3 Decommissioning Project (State Clearinghouse No. 2016071025; CSLC EIR Number: 784; PRC 6785.1). Prepared for the California State Lands Commission. Aspen Environmental Group. February.
- California Coastal Commission. 2019. Staff Report and Addendum for the San Onofre Nuclear Generating Station (SONGS) Units 2 & 3 Decommissioning Project. October. San Francisco, CA.
- California Coastal Commission. 2019. Coastal Development Permit for Permit Application No. 9-19-0194. October. San Francisco, CA.
- California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database (CNDDB). CNDDB Maps and Data accessed through licensing agreement. <https://www.wildlife.ca.gov/data/cnddb/maps-and-data> Accessed February 25, 2019.
- California Native Plant Society (CNPS). 2019. Inventory of Rare and Endangered Plants. <http://www.rareplants.cnps.org/index.html> Accessed April 1, 2019.
- California State Lands Commission. 2019. Lease No. PRC 6785.1. March. Sacramento, CA.
- Climate-Data.Org. 2019. Climate San Clemente, California. <https://en.climate-data.org/north-america/united-states-of-america/california/san-clemente-16020/> Accessed June 3, 2019.
- Consortium of California Herbaria (CCH1). 2019. Featuring California vascular plant data from the Consortium of California Herbaria and other sources. <http://ucjeps.berkeley.edu/consortium/> Accessed February 26, 2019.
- National Weather Service. 2019a. San Onofre total rainfall for water year (Oct 1—Sept 30). <https://www.wrh.noaa.gov/mesowest/timeseries.php?sid=SOFC1&table=1&banner=off> Accessed April 1, 2019.
- National Weather Service. 2019b. San Clemente total rainfall for water year (Oct 1—Sept 30). <https://www.wrh.noaa.gov/mesowest/timeseries.php?sid=E5232&table=1&banner=off>.
- San Diego Natural History Museum. 2019. Map San Diego and Imperial Plant Species in the SDNHM Herbarium Collection <http://sdplantatlas.org/GMap/GMapSpeciesMap.htm>. Accessed February 26, 2019.

This page intentionally left blank.

Appendix A

Resumes

This page intentionally left blank.

Thomas A. Oberbauer

Scientist III, Biology

Education

MS, Biology, Ecology Emphasis, San Diego State University, 1978
BS, San Diego State University, 1975

Affiliation

San Diego Natural History Museum Board Secretary, California Native Plant Society

Selected Publications/Presentations

Oberbauer, Thomas, A. 2010. Fire on Guadalupe Island: Old wounds, new opportunity. *Fremontia* 37:3-11

San Diego County Department of Planning and Land Use. 2009. Vegetation Management Report: A Report on Vegetation Management in the Unincorporated Area of San Diego County. County of San Diego. https://www.sandiegocounty.gov/content/dam/sdc/pds/mscp/docs/MARCH_25_2009_VEG_MNGMT_REPT.pdf Principal author of this report to the San Diego County Board of Supervisors which involved workshop with fire scientists and practitioners.

Oberbauer, Thomas A. 2009. Fire on Guadalupe Island: Old wounds, new opportunity. *Fremontia* 37:3–11.

Oberbauer, Thomas A. 2007. Loss of 500-year-old Sugar Pines during October 2003 fire storms. *Fremontia* 35:18–24.

Oberbauer, Thomas A. 2005. A comparison of estimated historic and current vegetation community structure on Guadalupe Island, Mexico. *Proceedings of the sixth California Channel Islands Symposium*, Ventura, California, Dec. 1–3, 2003. David K. Garcelon and Catherin A. Schwemm, eds. National Park Service Technical Publication CHIS-05-01, pp. 143–153.

Betzler, Joseph, Jay Diffendorfer, Scott Fleury, Mary Ann Hawke, Michael Cline, Scott Morrison, Greg Nichols, Thomas Oberbauer, Carlton Rochester, Mark Webb, Kathy S. Williams . 2003. A summary of the affected flora and fauna in the San Diego County fires of 2003. Attachment to the Baer Report. 36 pages plus appendices. <http://www.sdfirerecovery.net/documents/BAER%20Team%20reports/BAER%20Team%20Report.htm> Wrote sections on effects of fire on vegetation.

Oberbauer, Thomas A. 1999. Analysis of Vascular Plant Species Diversity of the Pacific Coast Islands of Alta and Baja California. *In*. *Proceedings of the Fifth California Islands Symposium*, March 29 to April 1, 1999. D.R. Browne, K.L. Mitchell, and H.W. Chaney, eds. Santa Barbara Museum of Natural History, Santa Barbara. pp. 201–211 (CD).

Oberbauer, Thomas A. 1997. San Diego County: Peninsular Ranges. *In*. *California's Wild Gardens, a Living Legacy*. Phyllis Faber, ed. California Native Plant Society, California Department of Fish and Game. pp. 188–189.

Oberbauer, Thomas A. 1997. The Sierra de San Pedro Martir. *Fremontia* 24(4):20–24.

Oberbauer, Thomas. 1996. Terrestrial Vegetation Communities in San Diego County. Based on Holland's Descriptions. Department of Planning and Land Use handout.

Oberbauer, Thomas A. 1991. San Diego County Planning Efforts to Preserve Oak Woodlands. *In* *Proceedings of the Symposium on Oak Woodlands and Hardwood Rangeland Management*; October 31 – November 2, 1990; Davis, California, Standiford, Richard B., tech. coord. USDA Forest Service Gen. Tech. Rep. PSW-126. pp. 250–254.

Oberbauer, Thomas A., and Julie M. Vanderwier. 1991. The vegetation and geologic substrate association and its effect on development in Southern California. *In* Abbott, Patrick L., and William J. Elliot. *Environmental Perils San Diego Region*. San Diego Association of Geologists. Pp 203–212. With table of vegetation acreages.

Oberbauer, Thomas A. 1986. Environmental Planning in the Otay Border Area. *In*. *Ecologia Y Frontera: Universidad Autonoma de Baja California Instituto de Investigacione Economics y Socials*. Juan Alvarez Lopez (Compilador).

Oberbauer, Thomas A. 1982. The Pros and Cons of Controlled Burning. *Fremontia* 10(2):16-18.

Oberbauer, Thomas A. and Michael U. Evans. 1981. The Challenge of Vegetation Management at the Local Level. *In*. *Proceedings of the Symposium on Dynamics and Management of Mediterranean-type Ecosystems*. Conrad, C. E. and W. C. Oechel eds. Pacific Southwest Forest and Range Experiment Station, Berkeley, California. General Technical Report PSW-58. pp. 523-527.

Oberbauer, T. A. 1978. The distribution of dynamics of San Diego County grasslands. M.S. Thesis, San Diego State University, 120 p. With vegetation map. Studied effects of fire and other disturbance on interface between grasslands and chaparral and coastal sage scrub.

Oberbauer, Thomas A. 1978. San Diego County and its Rare Plants. *Fremontia* 5(4):12–15.

Experience

Thomas Oberbauer has 44 years of professional experience as a biologist and conservation manager in the San Diego region. He has a wide range of experience including more than 15 years overseeing the preparation and implementation of three Multiple Species Conservation Program (MSCP) Plans for San Diego County, vegetation mapping and assessing the effects of fire on vegetation. He also has expertise with the distribution, natural history, and habitat requirements of rare and endangered species within the Southern California region, particularly native plants but also wildlife. He has an extensive history of working on fire management issues, writing articles about fire and preparation of reports documenting the effects of fire. He has written a number of publications on the subject. Mr. Oberbauer authored a vegetation management report for the unincorporated area of San Diego County that discussed the status of vegetation and its relationship to fire hazards. For planning issues, he has conducted and managed biological studies, and has prepared and evaluated numerous environmental documents for land use projects, including general plan revisions and land development permits. He also managed the preparation of a Special Area Management Plan (SAMP) for the Otay River Watershed. Mr. Oberbauer also has extensive background concerning the laws and regulations associated with federal and state rare and endangered species and the California Environmental Quality Act (CEQA).

Project Experience

County of San Diego, North County Multiple Species Conservation Program (MSCP) Plan, San Diego County, CA

Mr. Oberbauer oversaw the MSCP plan for Northern San Diego County. It identifies areas intended for conservation and areas where development may take place, generating mitigation that assists in assembling a preserve. Its goal is to obtain coverage for 63 species of plants and animals, including a proposed plan for Ramona vernal pools. He supervised staff and consultants who prepared reports and documents for the plan. Mr. Oberbauer reviewed all documents in detail before they were released for comment by either the wildlife agencies or the public. He oversaw discussions with a formal stakeholder group, including the wildlife agencies, builder groups, environmental groups, and the San Diego County Farm Bureau. He attended the majority of the meetings with the wildlife agencies for discussing the concepts of conserved and potentially impacted areas within the plan. Mr. Oberbauer was the lead county contact for

Independent Science Advisors, which met to discuss the scientific approach used for the plan. The plan included a significant amount of modeling of habitat to assist in the identification of important areas. The scientific approach included a species predictive model that was created by Mr. Oberbauer that delineates the distribution of all sensitive species in San Diego County. Mr. Oberbauer also oversaw the first half of the preparation of an East County MSCP plan, including working with independent science advisors, working with a stakeholder group, and generating a draft map for review. Through AECOM, work on North County plan has continued with San Diego County since 2014.

Naval Facilities Engineering Command Southwest, Fire Management Plan for Mission Gorge Recreational Facility; Murphy Canyon Vernal Pool Preserve; and Chollas Heights, Eucalyptus Ridge, and Howard Gilmore Terrace Natural Areas, Naval Base San Diego, CA

Led the technical analysis for preparation of a Fire Management Plan to reduce wildfire potential and prevent the loss of human life, facilities, natural and cultural resources, and other military assets due to wildfire on five Navy properties and adjacent land and neighborhoods. The five properties lie within wildland-urban interface zones.

San Clemente Island Rare Plants

Prepared detailed technical status reports for *Acmispon argophyllus adsurgens*, *Acmispon dendroideus traskiae*, *Castilleja grisea*, *Delphinium variegatum kinkiense*, *Lithophragma maximum*, *Malacothamnus clementinus*, *Malva assurgentiflora*, *Poa thomasi* and *Sibara filifolia* which are endangered and sensitive species of plants on San Clemente Island. Included brief field assessment of populations, comprehensive review of current distributions and evaluation of conservation.

Endangered Plant Surveys, Camp Pendleton

Participated in month long series of protocol field surveys for rare and endangered plants on the western portion of Camp Pendleton. These surveys included collecting GPS data and population numbers, phenology, habitat, surrounding species and other data for *Brodiaea filifolia* and *Eryngium pendletonense* and other sensitive plants observed.

Rare Plant Management Plan, Camp Pendleton

A key author of a management plan for five rare and endangered species of plants on Camp Pendleton. They included a report for thread-leaved brodiaea (*Brodiaea filifolia*) and a separate report for Nuttall's acmispon (*Acmispon prostrata*), Encinitas baccharis (*Baccharis*

vanessae), San Diego button celery (*Eryngium aristulatum parishii*), Pendleton button celery (*Eryngium pendletonense*), and spreading navarretia (*Navarretia fossalis*).

San Diego County Board of Supervisors, Vegetation Management Report, San Diego County, CA

Mr. Oberbauer authored a report on the status of vegetation and its relationship to fire in the unincorporated area of the county. This report included a summary of input from independent scientists and practitioners regarding the effects of vegetation management with the goal of reducing fire hazard while maintaining viability. The report also discussed tools for a variety of vegetation treatment options. [Prior to AECOM]

County of San Diego, South County MSCP Plan, San Diego County, CA

The South County MSCP obtained coverage for 85 species of plants and animals. Mr. Oberbauer's role was preparing and reviewing text for the plan and implementing ordinances. He had initial input in the Biological Mitigation Ordinance and the Implementing Agreement. He was also involved with stakeholder groups and discussions with wildlife agencies. The initial stakeholder group included builders, property owners, environmental groups, the San Diego County Farm Bureau, and two members of the San Diego County Board of Supervisors. The South County MSCP plan includes vernal pool areas associated with Otay Mesa mint, California orcutt grass, San Diego and Riverside fairy shrimp, San Diego button celery, spreading navarretia, and little mouselail. The South County MSCP plan indicated that avoidance of impacts is the first priority for vernal pool habitats. [Prior to AECOM]

County of San Diego, Otay Mesa Vernal Pool Plan, San Diego County, CA

Mr. Oberbauer prepared a draft plan for the protection of vernal pools on East Otay Mesa. It involved mapping and identifying potential and known vernal pool habitats, as well as preparing a report describing the resource and field evaluation of important vernal pool areas. It also involved identifying the most important vernal pools that had Otay Mesa mint, California orcutt grass, San Diego fairy shrimp, San Diego button celery, and little mouselail. Otay Mesa mint was the primary focus of this plan. Plan implementation also involved the preparation of a vernal pool designator for the San Diego County Zoning Ordinance. [Prior to AECOM]

County of San Diego, Resource Conservation Areas, San Diego County, CA

Mr. Oberbauer identified locations in San Diego County with specific resources that are of special importance. The areas identified as Resource Conservation Areas were mapped and placed in the General Plan Conservation Element. Implementation measures were also identified so that these areas be given special consideration for their known resource value. Vernal pools on east Otay Mesa were identified as some of the resources mapped as Resource Conservation Areas. [Prior to AECOM]

AECOM, Biological Surveys of 13 SDG&E properties, San Diego County, CA

Performed full biological surveys for plants and animals to evaluate potential to use sites as mitigation lands.

AECOM, Vegetation Map of Ocotillo Wells OHV Park, San Diego and Imperial Counties, CA

Prepared vegetation classification system and map of 100,000 acre Ocotillo Wells OHV Park.

AECOM, Vegetation Map of San Diego County, CA

Performed major role in mapping western half of San Diego County following the Sawyer-Keeler Wolf classification system for San Diego Association of Governments (SANDAG).

AECOM, Map of Tecate Cypress, San Diego County, CA

Prepared detailed Arcmap GIS map for *Hesperocyparis forbesii* in San Diego County for SANDAG.

Fred Sproul

Senior Botanist

Education

BS, Biology, San Diego State University, 1980

Professional Affiliation

Member, California Native Plant Society
Member San Diego Natural History Museum
Member Southern California Botanists
Parabotanist with SD Herbarium
Friend of Jepson Herbarium

License

Maintain current CDFW plant collecting permit

Fred Sproul is a field botanist, naturalist, and teacher with more than 30 years of experience as a professional biologist conducting and managing environmental studies. Having worked for a broad range of public agencies, large-scale developers, private individuals, and foundations, Mr. Sproul's professional skills and experience are widely sought for practical revegetation advice and rare plant identification.

Since 1983, Mr. Sproul has implemented and monitored more than 24 successful riparian and upland restoration projects in San Diego, Los Angeles, Orange, and Riverside counties. He has specialized knowledge with the revegetation of habitats that include vernal pools, alkali marsh, freshwater marsh, and cottonwood/willow woodland. He also has specialized botanical skills in the study of vernal pools, native grasslands, rare plants of gabbro soils, sand dune habitat, coastal sage, chaparral, the local montane habitats and Sonoran and Mojavean desert floras.

Monitoring Experience**Marine Corps Base Camp Pendleton**

As a biologist familiar with the Arroyo Toad I was assigned to observe and assure no jeopardy would be posed during drilling of soil core samples by Nino-Moore and Associates at a wastewater treatment facility.

Marine Corps Base Camp Pendleton

As a biologist I was part of the Varanus Biological team that monitored during the early migration of Least Bell's Vireo. The project was an emergency construction of a temporary dike along the Santa Margarita River after the Basilone bridge washed out and heliport was damaged after the 1993 flood.

Ramona Grasslands Preserve, San Diego Department of Parks and Recreation

As a biologist familiar with Stephen's Kangaroo Rat and Arroyo Toad I assisted monitoring the drilling of post holes for a cement rail fence that was being constructed to develop a recreational trail. Holes all had to be checked before and during daily construction, any animals moved out of harm's way and holes covered adequately before daily work ended.

La Costa Glen Retirement Community, Carlsbad, California

As a wetland biologist for Planning Systems, I set up and monitored a barrier to protect the willow riparian habitat during the grading of the project.

Eastlake Village, Chula Vista, California

As a biologist for the City of Chula Vista I monitored the permitted removal of Diegan Coastal Sage Scrub in preparation for grading the project.

Fiber Optics cable installation Eugene, Oregon

As a wetland biologist for Jones & Stokes I monitored the digging, boring and reburial of a fiber optics cable in the Union Pacific Railroad right-of-way. My responsibility was to assure no wetland encroachment occurred during construction.

Project Experience

Army Corps of Engineers, Grants, New Mexico

As a botanist I reviewed data and conducted an off-season for two federally listed plants that may have been impacted by a toxic material clean-up. The Pecos sunflower (*Helianthus paradoxa*), an wetland affiliated species associated with Native American domestication, and Zuni fleabane (*Erigeron rhizomatous*), a soil endemic on selenium and uranium bearing soils. I also prepared a list of suggested grass species and methods for restoration of the excavation site.

Naval Air Weapons Station China Lake, Ridgecrest, California

As a botanist I briefly toured the North Range and prepared a Preliminary Draft Environmental Impact Statement for the renewal of the public land withdrawal from the Bureau of Land Management.

Naval Base Coronado, Silver Strand Training Complex South (SSTC-S)

As a botanist I conducted sensitive plant surveys and mapped vegetation at SSTC-S and prepared a Preliminary

Draft Environmental Impact Statement for development of the site for construction of an expansion training the facility.

Confidential project-Rare Plant and Vegetation Mapping, Protocol Surveys, Campo, CA

Mr. Sproul lead field work as Senior Botanist in the floral inventory and focused rare plant surveys at Campo Reservation. Rare plants were documented with individual GPS locations and population numbers. Additionally, vegetation communities were recorded and mapped.

SANDAG San Diego Regional Vegetation Map, San Diego CA

SANDAG has undertaken to create a fine-scale vegetation map for approximately 450,000 acres of Habitat Preserve and Conserved Lands in western San Diego County. Through the guidance of an oversight committee, SANDAG has opted to use a hierarchical classification system based on the California Department of Fish and Game standards for the classification of vegetation. This classification system is based on a repeatable scientific approach and includes statistical analysis vegetation and environmental data. We are conducting the data collection and analysis, in concert with the CDFG Vegetation Classification and Mapping Program, to create this new classification system for the San Diego region. Mr. Sproul has collected Rapid Assessment data in Toughbook format in many parts of San Diego county for this project.

Tijuana Border Field State Park Least Bell's Vireo Protocol Survey, San Diego, CA

As a biologist, participated in a protocol survey for the presence, location and abundance of least Bell's vireo at Tijuana Border Field State Park. Participated in the study to conduct focused surveys to determine the presence or absence, spatial distribution, and territory size of the federally listed endangered least Bell's vireo (*Vireo bellii*) within the Border Field State Park in compliance with the Biological Opinion issued by the U.S. Fish and Wildlife Service for the Goat Canyon Enhancement Project.

NAVFAC Southwest U.S. Marine Corps Base Camp Pendleton Military Family Housing Project - Rodeo Grounds Site, San Diego County, CA

As a biologist, mapped vegetation and projected the potential for sensitive plant presence on Stuart Mesa as well as interpreting the previously unrecorded vernal pools on the site of a proposed military housing project.

Caltrans and South Bay Expressway State Route 125 South Quino Checkerspot Butterfly and Vernal Pool Restoration Area on Johnson Canyon, San Diego County, CA

As a biologist, participated in conducting Quino checkerspot butterfly focused protocol-level adult surveys on the Johnson Canyon mitigation site and Johnson Canyon Open Space Preserve in Otay Mesa for the State Route 125 South project.

MCB Camp Pendleton San Diego Fairy Shrimp/Riverside Fairy Shrimp Survey

As a biologist, participated with a large team of biologists in a protocol survey of the distribution, abundance, and presence of two endangered fairy shrimp species in approximately 900 vernal pools for base-wide management of the vernal pool resource by the Land Management Branch at Environmental Security, Camp Pendleton.

San Diego County Department of Public Works Ramona Air Center Vernal Pool and Sensitive Plant Survey

As a biologist, conducted vernal pool survey on a future expansion of the aviation services for the Ramona Airport. A 50-acre area was evaluated for sensitive plant species and vernal pools by different criteria to justify their being classified as such; US Army Corps of Engineers (1997), Bauder and McMillan (1998) and Draft North County Multiple Species Conservation Plan.

Solar Millennium Power Projects, Mojave Desert, CA

As a biologist, participated with the botany field effort during a focused rare plant survey for six special status plants that had the potential to occur within the impact area of a planned solar energy project located in the western Mojave desert. Over 2,000 acres of land was surveyed for the target rare plant species, in addition to a 1-mile buffer zone. Vegetation mapping and an inventory of any special status wildlife was also conducted.

MCB Camp Pendleton Grow the Force Vegetation Mapping and Sensitive Plant Survey, San Diego, CA

As a biologist, produced vegetation maps for multiple sites base-wide for Grow the Force project and participated in preparation of an Environmental Assessment. These rare plant surveys included protocol *Brodiaea filifolia* surveys on Stuart Mesa, Basilone Road and Mike Training area.

MCB Camp Pendleton Survey/Inventory of Pendleton Button-Celery

As a botanist, participated with the second year of basewide surveys for *Brodiaea filifolia* and *Eryngium pendletonense* in which additional outlying areas along MACS road, MARSOC and 41 Area LZ were covered to further quantify the extent of their populations.

MCAS Miramar Sensitive Plant Survey, San Diego County, CA

As a biologist, performed sensitive plant surveys on MCAS Miramar, Fallbrook NWS and San Clemente Island that also included long-term vegetation trend monitoring. Work was performed prior to joining this firm.

San Diego County, Department of Parks and Recreation HCP Preserve System, San Diego County, CA

As a biologist, organized and conducted monitoring of grasslands, riparian, vernal pools, alkali playas, and other wetlands of the Ramona grasslands ecosystem and contributed to management planning for this area as part of the San Diego County's MHCP preserve system. Work was performed prior to joining this firm.

San Diego County Water Authority Water Conveyance System, Imperial and San Diego Counties, CA

As a biologist, surveyed drill sites for a water conveyance system from Imperial County to San Diego County. Work was performed prior to joining this firm.

Bureau of Land Management and California Native Plant Society Imperial Sand Dunes, Imperial County, CA

As a biologist, conducted sensitive walking and vehicular plant surveys spanning 4 years through all portions of the Imperial (Alogodones) Sand Dunes for the BLM under a cooperative project with the California Native Plant Society. Work was performed prior to joining this firm.

Bureau of Land Management, Bureau of Indian Affairs Vegetation Monitoring, Escondido, CA

As a biologist, performed vegetation monitoring of wildfire seed applications: Paradise Fire (San Diego, California), and Rodeo-Chediski Fire (Arizona) for the BLM, Bureau of Indian Affairs. Work was performed prior to joining this firm.

Sunrise Powerlink Survey and Vegetation Mapping, Escondido, CA

As a biologist, conducted sensitive plant survey and vegetation mapping for SDG&E Sunrise Powerlink Project. Work was performed prior to joining this firm.

San Clemente Island Sensitive Plant Survey, San Clemente, CA

As a biologist, conducted sensitive plant survey for U.S. Navy on San Clemente Island for future Marine Corp training areas. Work was performed prior to joining this firm.

California Coastal Commission Peñasquitos Lagoon Weed Identification, San Diego County, CA

As a biologist, performed weed identification and other native plant identification for the lagoon enhancement project.

Fallon Naval Air Base Survey, Fallon, NV

Performed vegetation identification and conducted a bird survey. Work was performed prior to joining this firm.

San Diego County Open Space Program, Borrego Springs Mapping, San Diego County, CA

As a botanist familiar with large-scale vegetation mapping, managed a team of botanists for interpreting and mapping vegetation. This was a 3-year project that utilized infrared aerial photos of an 800-square-mile area of land that were integrated into a GIS database system with the Multiple Species Conservation Plan and other open space programs within the county. Work was performed prior to joining this firm.

Plant Ecology Projects

San Diego State University, Systems Ecology Research Group USDA Anti-Desertification Project, AZ and CA

As a biologist, conducted water potential measurements and plant respiration on a variety of plants in the chaparral/creosote scrub ecotone. The objective was to collect baseline data for the USDA Anti-Desertification Project conducted in Arizona and California. Work was performed prior to joining this firm.

Ecometrics Shipley Reserve Post-Fire Vegetation Monitoring, Riverside County, CA

Recordation of plant cover and abundance data on coastal sage scrub and chaparral habitat to determine if vegetation types had been changed as a result of wildfire. This work was conducted in Riverside County at the Shipley Reserve at

Domenigoni reservoir. Work was performed prior to joining this firm.

City of Escondido Lake Wohlford Dam Replacement Project

Conducted vegetation mapping and rare plant survey 2013 and prepared Biotechnical report for the proposed rebuilding of the Lake Wohlford Dam and including analysis of impacts for restoring the reservoir to its full capacity.

Habitat Restoration and Field Survey Projects

Conservation Biology Institute Vegetation Mapping and Survey, San Diego County, CA

As a botanist, provided vegetation mapping and survey of several rare plant populations on Crestridge and Marron Valley MSCP preserves in the spring and summer of 2000. Significant populations of Lakeside ceanothus (*Ceanothus cyaneus*) and San Diego haseanthus (*Dudleya variegata*) and a previously unknown population of San Diego thornmint (*Acanthomintha illicifolia*) were discovered, all of which were inventoried and mapped. Mapping was done on images produced by ADAR false color IR by San Diego State University. In spite of the poor resolution and variability in color, great improvements were made in this baseline data compilation for the purposes of the preparation of management planning. Work was performed prior to joining this firm.

Volcan Mountain Preserve Foundation Wilderness Preserve, San Diego County, CA

As a biologist, prepared a biological technical study of the Volcan Mountain Wilderness Preserve. This land was assessed for its biological resources in preparation for a management plan. Vegetation mapping, numerous sensitive resource surveys, and management recommendations were assembled over a 10-year period utilizing dozens of independent surveys.

U.S. Navy Natural Resources San Clemente Island Ecological Analysis, San Clemente, CA

As a biologist, conducted an ecological analysis of nest sites for the endangered San Clemente Island shrike. Part of a team that surveyed for four sensitive plant species and performed an island-wide survey for the San Clemente Island sage sparrow. Work was performed prior to joining this firm.

San Diego County, Department of Public Works Botanical Survey and Revegetation, Carlsbad, CA

As a biologist, provided as-needed botanical survey and revegetation consultation. Among the projects studied were two bridge replacements, road widening, and an open space land dedication analysis. Work was performed prior to joining this firm.

San Diego County, Department of Public Works Feasibility and Constraints Studies, Carlsbad, CA

As a biologist, participated in feasibility and constraints studies that assisted in land development analysis. Projects included La Costa Glen and Kelly Ranch as well as land development investigations for Lucky Stores, Albertson's, Carlsbad Lutheran Church, Hughes Corporation, and Mira Costa College. Work was performed prior to joining this firm.

California State Parks Revegetation of Coastal Sage Scrub, San Clemente, CA

Project manager for siting appropriate microhabitats and planting a large number of native shrubs, bunchgrasses, and ephemeral succulents in the highly dissected cliffs of San Clemente state beach in an effort to restore the coastal sage scrub community. Work was performed prior to joining this firm.

Nevada Natural Heritage Program, NV

Over a 2-year period, conducted rare plant surveys during the brief sub-alpine spring and alkaline playa habitats in preparation for determination of federal listing status. Work was performed prior to joining this firm.

Riparian Woodland Enhancement, Camino Bernardo, CA

Implemented and monitored 2-acre riparian woodland enhancement project. This involved the widening of an existing creek that feeds an off-site lake. All slopes were hand-seeded with locally acquired plant species of the coastal sage scrub. Incorporated a wetland understory of grasses and rushes that provided erosion and ground cover even before the willow canopy closed. This project excelled because of retrofitting the wetland understory, a canal irrigation system, and the establishment of willows and cottonwoods from tall (15-foot) cuttings. Work was performed prior to joining this firm.

City of Laguna Hills Vernal Pool Restoration, Laguna Hills, CA

Advised the Laguna Hills Greenbelt Committee on the restoration of their vernal pools in Laguna Canyon. A large open space preserve dedicated by the Irvine Corporation

necessitates the restoration of at least one large wetland/vernal pool. Determined the ecological character, description of methods, and appropriate plant species.

Sensitive Plant Survey, Fort Irwin Army Base, CA

Performed a survey of approximately 200,000 acres in the Eastern Mojave Desert for sensitive plant species. This project necessitated some very remote traveling in the Silurian Valley and Avawatz Mountains with helicopter assistance. Work was performed prior to joining this firm.

Cajon Pipeline Company Crude Oil Pipeline EIR, Mojave Desert, CA

As team leader in the preparation of an EIR, led a botanical team in surveying two alternate routes in the Mojave Desert for the location of a crude-oil pipeline. Wrote the botanical portion of the EIR with recommendations for reducing or mitigating impacts to Mojave spiny herb (*Chorizanthe spinosa*), its desert pavement habitat, and Joshua trees (*Yucca brevifolia*). Work was performed prior to joining this firm.

Domenigoni Valley Reservoir, Shipley Reserve, Hemet, CA

Botanist and co-researcher for the study of post-fire coastal sage scrub and chaparral vegetation according to detailed quantitative transects. Work was performed prior to joining this firm.

Department of Water Resources Groundwater Recharge Facility, Hemet, CA

Working with Michael Brandman Associates, surveyed several routes and alternate locations for the location of a groundwater recharge facility south of Bakersfield. Some of the sensitive plants sought were Bakersfield atriplex (*Atriplex tularensis*), desert bird's beak (*Cordylanthus eremicus*), alkali mariposa lily (*Calochortus striatus*) and Hoover's woolly star (*Eriastrum hooveri*). Work was performed prior to joining this firm.

Los Angeles Municipal Water District EIS for Pipeline Alignments, Los Angeles, CA

In preparation of an EIS, conducted and led a botanical survey and report for eight alternative pipeline alignments from Castaic Reservoir to Simi Valley for the Los Angeles Municipal Water District. The area traversed a diverse region that may support over 40 sensitive plants, and 8 rare plant communities. Recorded and classified all vegetation, mapped, and produced a report for a programmatic feasibility study of the project. Two California endangered plants, the Santa

Susana tarplant (*Hemizonia minthornii*) and Lyon's pentachaeta (*Pentachaeta lyonii*), were located as well as such habitats as Valley oak, California live oak, California walnut woodlands, western cottonwood, willow riparian woodlands, and alluvial scrub. Work was performed prior to joining this firm.

Fallon Naval Air Station EIS for a Geothermal Power Plant, Fallon, NV

For Fallon Naval Air Station in Fallon, Nevada, helped prepare an EIS while working for MBA in San Diego. Thorough botanical field investigations were conducted and the technical appendix was written for the botanical section for all of the alternatives connected with a proposed geothermal power plant. Work was performed prior to joining this firm.

MCB Camp Pendleton Sensitive Plant Species Survey, Camp Pendleton, CA

Participated in a 3-year survey project for sensitive plant species on the entire base. Some significant findings included new San Diego County records for pitcher sage (*Salvia spathacea*) and southern mountain misery (*Chamaebatia australis*) as well as many new locations for vernal pool species, such as Sticky dudleya (*Dudleya viscida*), many-stemmed dudleya (*Dudleya multicaulis*), and many other sensitive taxa. Work was performed prior to joining this firm.

North County Landfill EIR, San Marcos, CA

Participated as botanist in the fieldwork and preparation of the EIR. Issues that were resolved included impacts to occupied California gnatcatcher habitat, redirection of Copper Creek, several sensitive chaparral plant species, native grassland, and Engelman oak woodland. Work was performed prior to joining this firm.

Los Angeles International Golf Course Tujunga Wash, Pasadena, CA

Advised in the selection and monitoring of a several-acre test plot of over 70 species of native grasses and wildflowers intended for 60 acres of berms and margins of playing surfaces of the golf course in Tujunga, California. Some of the most important grass species were Nodding needlegrass, meadow barley, buffalo grass, creeping wildrye, and red fescue. Work was performed prior to joining this firm.

California State Park and Recreation Department Malibu Creek State Park Field Trials, Los Angeles, CA

With Land Restoration Associates, designed and conducted field trials for the restoration of the native grasslands at

Malibu Creek State Park. A variety of container and direct seed plantings were made of purple needlegrass and creeping wildrye as well as several shrub species and valley oak. These trials and the method were developed into a restoration plan for California State Park and Recreation Department in Sacramento. Work was performed prior to joining this firm.

U.S. Forest Services Cleveland National Forest, Camp Pendleton, CA

Compiled status reports for 15 sensitive plant species in the 250,000-acre Laguna-Morena Demonstration project area of San Diego County. The work involved detailed mapping, data collection, photography, and management recommendations for the U.S. Forest Service. Work was performed prior to joining this firm.

Vernal Pool Projects

Resource Inventory at G Parcel, San Diego, CA

Participated in a natural resource inventory of the 200-acre "G" parcel on Marine Corps Air Station. Several new populations of Poway mint (*Monardella linoides* ssp. *viminea*) were discovered, over 200 vernal pools were assessed for fairy shrimp and mapped by GPS, and an updated detailed vegetation map was prepared. Work was performed prior to joining this firm.

U.S. Navy Miramar Naval Air Station Vernal Pool Field Survey, San Diego, CA

For Michael Brandman Associates, managed the field survey of vernal pools on Miramar Naval Air Station, San Diego. This project involved the most extensive and intact vernal pools in San Diego County. The results of the survey of thousands of pools were compiled into a database management system, which was then used to create an extensive mapping program and management plan. Work was performed prior to joining this firm.

Baldwin Corporation Vernal Pool Assessment, San Diego, CA

Led two teams of botanists in the assessment and enumeration of vernal pools on Otay Mesa, Lower Otay Lakes, and Proctor Valley areas of the Otay Ranch. Michael Brandman and Associates and RECON conducted this effort for the Baldwin Corporation. Trained a team that mapped and inventoried approximately 18,000 acres with several concentrations of hundreds of pools. Work was performed prior to joining this firm.

**Huffman and Associates Sensitive Plant Surveys,
Sacramento, CA**

Conducted sensitive plant surveys on 10 properties in the Sacramento area. Helped monitor the second year's results of 60 created vernal pools on the Stanford Ranch near Roseville, California. Work was performed prior to joining this firm.

Appendix B

Draft Salvage and Relocation Plan

This page intentionally left blank.

SPECIAL-STATUS PLANT SPECIES
SALVAGE AND RELOCATION PLAN
SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)
UNITS 2 & 3 DECOMMISSIONING PROJECT
FINAL

Prepared for

SONGS Decommissioning Project Applicant

Fall 2019

Prepared by



SONGS Decommissioning Solutions
San Onofre Nuclear Generating Station
5000 Pacific Coast Hwy., MS D3B
San Clemente, CA 92673

Measures Covered:

California State Lands Commission Mitigation Measure (MM) BIO-1c
California Coastal Commission Special Condition (SC) 13

This page intentionally left blank.

TABLE OF CONTENTS

	<u>Page</u>
SECTION 1.0 – INTRODUCTION	1
SECTION 2.0 – OBJECTIVES	2
SECTION 3.0 – MITIGATION MEASURE AND SPECIAL CONDITION REQUIREMENTS	3
SECTION 4.0 – PLAN IMPLEMENTATION	5
4.1 PRE-DECOMMISSIONING SURVEYS AND AVOIDANCE MEASURES.....	5
4.2 TARGET SPECIAL-STATUS PLANT SPECIES FOR SALVAGE AND RELOCATION	6
4.3 SPECIAL-STATUS PLANT SPECIES SALVAGE AND RELOCATION METHODS	11
4.3.1 Seed Collection and Planting	Error! Bookmark not defined.
4.3.2 Transplanting	12
SECTION 5.0 – MAINTENANCE	ERROR! BOOKMARK NOT DEFINED.
SECTION 6.0 – RESTORATION MONITORING.....	ERROR! BOOKMARK NOT DEFINED.
6.1 MONITORING, SUCCESS CRITERIA, AND REMEDIAL MEASURES.....	ERROR! BOOKMARK NOT DEFINED.
6.1.1 Record Keeping	Error! Bookmark not defined.
6.1.2 Reporting.....	Error! Bookmark not defined.
6.1.3 Special Status Plant Survey Report (Pre-decommissioning Approach).....	Error! Bookmark not defined.
6.1.4 Annual Reports.....	15
6.2 SPECIAL-STATUS PLANT SPECIES SALVAGE AND RELOCATION COMPLETION.....	16
SECTION 7.0 – REFERENCES	17

LIST OF TABLES

	<u>Page</u>
Table 1: CRPR 1 Plant Species with a Moderate or High Likelihood of Occurrence or Present Within the Study Area.....	10
Table 2: Restoration Monitoring Success Criteria for CRPR 1 Plant Species . Error! Bookmark not defined.	

LIST OF FIGURES

	<u>Page</u>
Figure 1: Terrestrial Study Area Land Cover Types.....	7
Figure 2: Special-status Plant Occurrences.....	8

LIST OF ATTACHMENTS

Attachment A: Restoration Approach for Target Special-Status Plant Species

ACRONYM LIST

CCC – California Coastal Commission

CDP – Coastal Development Permit

CDFW – California Department of Fish and Wildlife

CNPS – California Native Plant Society

CSLC – California State Lands Commission

CRPR – California Rare Plant Rank

FEIR – Environmental Impact Report

ESHA – Environmentally Sensitive Habitat Area

FE – Federally Endangered

FT – Federally Threatened

GIS – Geographic Information System

GPS – Global Positioning System

HRS – Habitat Restoration Specialist

SCE – Southern California Edison

SONGS – San Onofre Nuclear Generating Station

SE – State Endangered

SSC – Structures, Systems, and Components

USFWS – U.S. Fish and Wildlife Service

This page intentionally left blank

SECTION 1.0 – INTRODUCTION

This Plan is based on information in the Final Environmental Impact Report (FEIR) for the San Onofre Nuclear Generating Station (SONGS) Units 2 & 3 (Project) and satisfies the requirements of Mitigation Measure (MM) BIO-1c from the FEIR (Aspen Environmental Group 2019) from the California State Lands Commission and Special Condition (SC) 13 from the California Coastal Commission's (CCC) approval of the Coastal Development Permit (CDP) for the Project. MM BIO-1c states that the Applicant or its contractor shall implement the following tasks to mitigate the Project's direct and indirect impacts to special-status plants: 1) special-status plants survey prior to initial ground disturbance; 2) avoidance of special-status plants to the maximum extent practicable; and 3) salvage of special status plants if Project activities result in the loss of more than 10 percent of an onsite population of any CRPR 1 plant species. The SC requires that if a rare plant Salvage and Relocation Plan is necessary, a draft plan shall be provided to the Executive Director for review and approval at least 30 days prior to the start of salvage activities. As such, this Plan has been prepared and submitted to CSLC, CCC, CDFW, and USFWS to proactively consult and obtain approval from the agencies in the event that salvage is required in order to prevent delays during decommissioning from the requisite consultation and approval.

SECTION 2.0 – OBJECTIVES

This Plan describes the avoidance techniques for special-status plant species in all areas subject to ground disturbing activities, salvage and relocation techniques for target CRPR 1 plants that may be present should avoidance not be possible and identifies the Applicant's responsibilities in this process. Specific information is also included regarding the monitoring of CRPR 1 plant salvage and relocation through established success criteria. Details regarding plant salvage and documentation are included in the Plan. The management practices and activities are intended to accomplish the following objectives:

- describe avoidance techniques for special-status plant species;
- identify any CRPR 1 plant species subject to a loss of more than 10 percent of an onsite population and describe a targeted approach;
- describe salvage, transplantation, and/or seeding techniques for CRPR 1 plant species that cannot be avoided;
- document where CRPR 1 plant species salvage and relocation activities are feasible and biologically preferred;
- allow the Habitat Restoration Specialist(s) (HRS) flexibility in prescribing and/or modifying salvage and relocation measures within the context of agency-approved mitigation requirements and based on site-specific conditions; and
- establish success criteria and monitoring requirements and methodologies that are consistent with agency-approved practices for salvaged and relocated special-status plants.

SECTION 3.0 – MITIGATION MEASURE AND SPECIAL CONDITION REQUIREMENTS

The FEIR MM BIO-1c conditions that pertain to the implementation of this Plan are listed in this section. This measure requires mitigation for the Project's direct and indirect impacts to special-status plants. Specifically, the measure states:

MM BIO-1c: Rare Plant Surveys. The Applicant or its contractor shall implement the following tasks to mitigate the Project's direct and indirect impacts to special-status plants.

Surveys. Prior to initial ground disturbance, a California State Lands Commission (CSLC)-approved, qualified plant ecologist or botanist shall conduct surveys for special-status plants (state- and federally- listed threatened and endangered, proposed, petitioned, and candidate plants and California Rare Plant Rank [CRPR] 1 and 2 plants) in all areas subject to ground disturbing activity containing suitable habitat and the surrounding areas within 100 feet when access is feasible. The surveys shall be conducted during the appropriate blooming period(s) according to protocols established by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and California Native Plant Society (CNPS). Surveys shall be valid for a period of 3 years. If vegetation removal or initial site disturbance in a surveyed area does not occur within 3 years, surveys must be repeated. All listed plant species found shall be marked and avoided, if feasible.

Any populations of special-status plants found during surveys shall be fully described, mapped, and a CNPS Field Survey Form or written equivalent shall be prepared. A report detailing the results of each rare plant survey shall be provided to the CSLC staff 30 days prior to ground disturbance.

Avoidance. Prior to any grading, vegetation clearing, or site disturbance, the Applicant or its contractor shall delineate the limits of disturbance with lathe, snow fencing, or other suitable markers. Prior to grading or vegetation removal, any populations of special-status plants (and areas of Environmentally Sensitive Habitat Area [ESHA]) identified during the surveys within the Proposed Project footprint and surrounding 100-foot area shall be protected and construction fencing established around each population. The buffer for herbaceous and shrub species shall be, at a minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, in coordination with USFWS and CDFW staffs. If impacts to listed plants cannot be avoided, USFWS and CDFW staffs shall be consulted for authorization, with notification to the CSLC. If Project activities result in the loss of more than 10 percent of an onsite population of any CRPR 1 plant species, mitigation shall be required as described below.

Salvage. If Project activities result in the loss of more than 10 percent of an onsite population of any CRPR 1 plant species, the Applicant or its contractor shall develop Salvage and Relocation Plan based on the life history of the species affected. The Plan shall include at minimum: (a) collection/salvage measures for plants or seed banks, to retain intact soil conditions and maximize success likelihood; (b) details regarding storage of plants or seed banks; (c) location of the proposed recipient site, and detailed site preparation and plant introduction techniques; (d) time of year that the salvage and replanting or seeding will occur and the methodology of the replanting; (e) a description of the irrigation, if used; (f) description of site maintenance; and (g)

a detailed monitoring program, success criteria, and remedial measures commensurate with the Plan's goals.

The Salvage and Relocation Plan shall be submitted to CSLC staff for review and approval by CSLC staff in consultation with USFWS and CDFW staffs, a minimum of 30 days prior to start of salvage activities.

This Plan provides the methods for surveys and avoidance, as well as the approach by species for salvage if impacts to CRPR 1 special-status plants are unavoidable and impacts result in loss of more than 10 percent of onsite population.

In addition, Special Condition 13 from the CCC states:

- **13. Rare Plant Surveys.** The applicant shall conduct rare plant surveys as described in Exhibit 13. Reports detailing the results of each rare plant survey shall be provided to the Executive Director 30 days prior to ground disturbance. If direct impacts to listed plant species cannot be avoided, the applicant shall provide notification to the Executive Director 30 days prior to ground disturbance. If a rare plant Salvage and Relocation Plan is necessary, a draft plan shall be provided to the Executive Director for review and approval at least 30 days prior to the start of salvage activities. The applicant shall implement the Plan as approved by the Executive Director.

SECTION 4.0 – PLAN IMPLEMENTATION

This plan describes techniques for avoiding special-status plants should they be encountered in the disturbance area or 100-foot buffer area. In addition, the Applicant and its contractors will ensure that any CRPR 1 plant species that cannot be avoided (e.g., more than 10% of onsite population impacted) are salvaged, relocated, and satisfactorily reestablished per the guidance in the mitigation measures. The Plan has been prepared to incorporate performance-based best management practices and assigns a plant ecologist and HRS, approved by the CSLC, to oversee the salvage and relocation effort.

To improve the chances of success, the HRS will, to the extent feasible:

- prioritize transplantation of CRPR 1 plant species into areas adjacent to where the same species is already present, or where the species has been present in the past but has been extirpated;
- identify receptor sites (e.g., special-status plant restoration areas) within suitable habitat; and
- minimize impacts to other native vegetation during transplantation.

The Applicant has identified two HRSs to administer this Plan and evaluate the proposed methods for salvage and relocation of special-status plant species. The credentials of the HRSs will be submitted to the CSLC for approval and they may be contacted at the following address and phone numbers:

<p>Cecilia Meyer Lovell AECOM Technical Services, Inc. 401 W A Street, Suite 1200 San Diego, CA 91001 Office: (619) 610-7588 Cell: (619) 925-9381</p>	<p>Linda Robb AECOM Technical Services, Inc. 401 W A Street, Suite 1200 San Diego, CA 91001 Office: (619) 610-7600 Cell: (714) 478-0755</p>
---	---

The HRSs will be on-call and available to assist the Applicant and its contractors during the first phase of decommissioning and CRPR 1 plant salvage and relocation activities. Any modifications to this Plan will be reviewed and approved by the CSLC and CCC. Additionally, the CSLC will review and authorize any modifications to the implementation methods as long as the changes comply with the Plan and are approved by an HRS.

4.1 PRE-DECOMMISSIONING SURVEYS AND AVOIDANCE MEASURES

Impacts to special-status plant species identified during the pre-decommissioning surveys or during monitoring activities that cannot be avoided will be quantified during the appropriate timeframe¹ to accurately estimate the population size at that point in time for that particular location. For large populations (more than 1,000 individuals), an appropriate sampling method (e.g., quadrats) will be used.

¹ The appropriate timeframe for estimating annual species and some perennial species is typically during a plant's blooming and/or fruiting period. For these species, a combination of previous and future focused rare plant survey count data collected for the Project; SCE provided data; and required pre-activity surveys will be used to establish the population size prior to initial ground disturbance for work areas where impacts cannot be avoided.

For example, direct counts or direct counts within multiple quadrats will be averaged and multiplied by the size of the population (e.g., square feet) to extrapolate the number of individuals for the population. For smaller populations (less than 1,000 individuals), direct counts will be made. All available mapping and population count data, including SCE provided data, will be used to identify special-status plant locations. With extended drought, populations of special-status plant species may be depressed; therefore, as described above, the Project will rely on all available data (historic and current) to estimate special-status plant population size. Due to the small size of the impact and buffer areas associated with this Project, it is anticipated that most special-status plant individuals within a population will be directly counted. The HRS will determine the appropriate sampling method for each population/occurrence.

All special-status plant species found will be marked and avoided, if feasible. Prior to any grading, vegetation clearing, or site disturbance, the limits of disturbance will be delineated with lathe, snow fencing, or other suitable markers. Prior to grading or vegetation removal, any populations of special-status plants identified during the surveys within the Project footprint and surrounding 100-foot area will be protected and fencing established around each population. The buffer for herbaceous and shrub species will be, at a minimum, 100 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, in coordination with USFWS and CDFW staffs. If impacts to listed plants cannot be avoided, USFWS and CDFW staffs will be consulted for authorization, with notification to the CSLC and the CCC.

4.2 TARGET SPECIAL-STATUS PLANT SPECIES FOR SALVAGE AND RELOCATION

Within the FEIR, vegetation communities and special-status plant species with the potential to occur within each community were described by CH2M Hill (2016a) and are presented below. The terrestrial study area included the SONGS facility plus a 25-foot buffer on the southeast (to the pedestrian walkway) and northwest (to the railroad right-of-way). Figure 1: Terrestrial Study Area Land Cover Types graphically depicts the vegetation communities within the study area. The CRPR 1 plant species that may occur within or near the study area are identified in Table 1 and graphically depicted in Figure 2: Special-status Plant Occurrences. This Plan will focus on those CRPR 1 plant species that could potentially experience a loss of more than 10 percent of an onsite population resulting from Project activities. It should be noted that of the vegetation communities described below, developed and ruderal/disturbed areas are the only vegetation communities planned for disturbance. The study area described in the FEIR included a larger area (e.g. buffer area) than the planned impact area and included several native vegetation communities.

Figure 1: Terrestrial Study Area Land Cover Types

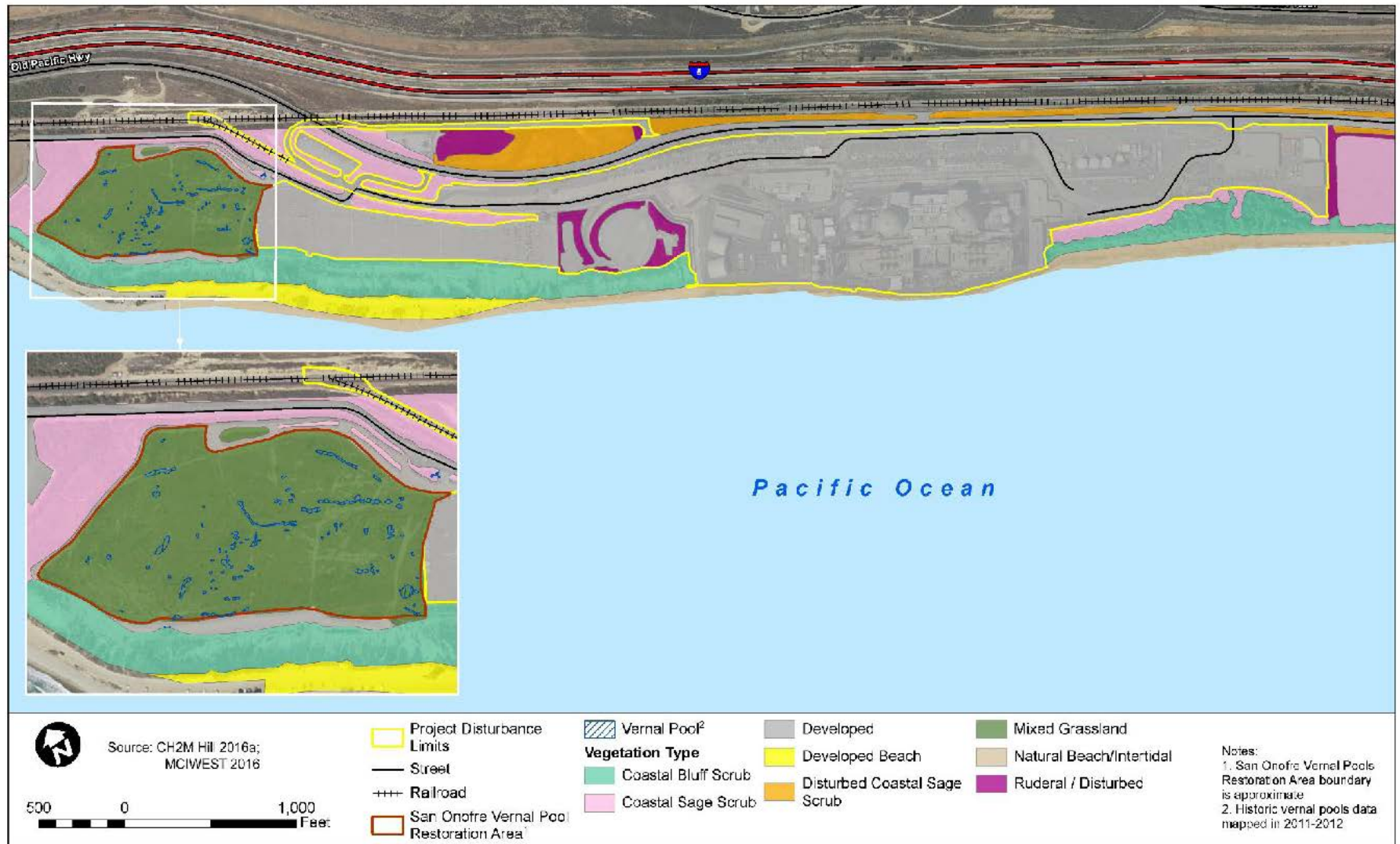
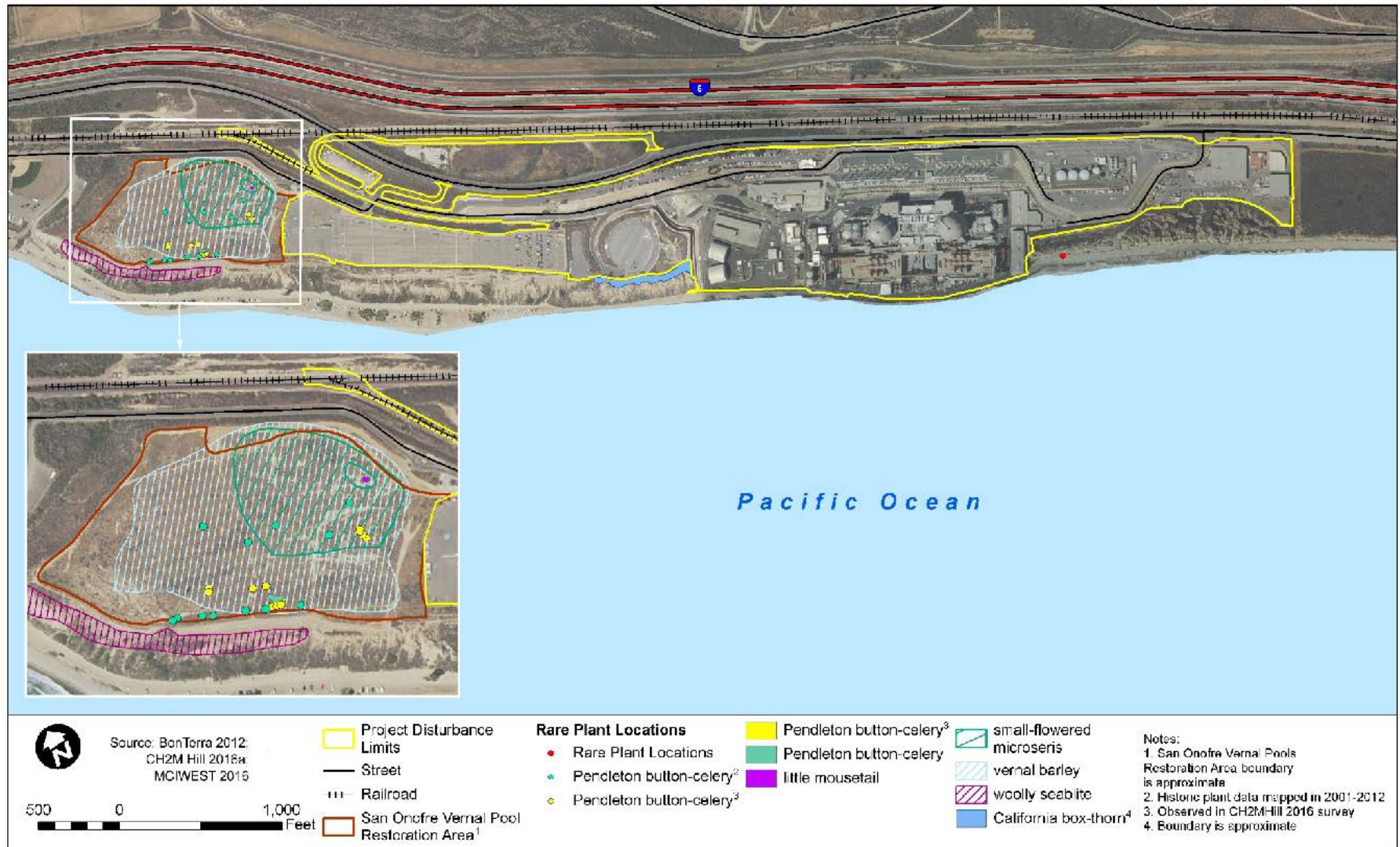


Figure 2: Special-status Plant Occurrences



CRPR 1 plant species were not identified within the areas planned for disturbance during the 2019 Rare Plan Surveys. However Additional surveys may occur for these species in the future if vegetation removal or initial site disturbance in a surveyed area does not occur within 3 years. Therefore, this plan is being written to address how to proceed should a CRPR 1 plant species be identified in the disturbance areas at a future point in time.

Coastal sage scrub is common in the terrestrial study area (19.3 acres) and is characterized by California sagebrush (*Artemisia californica*) in association with other shrubs and sub-shrubs including coyote bush (*Baccharis pilularis*), elderberry (*Sambucus nigra* ssp. *carulea*), lemonade berry (*Rhus integrifolia*), laurel sumac (*Malosoma laurina*), bladder-pod (*Peritoma arborea*), California brittlebush (*Encelia californica*), common deerweed (*Acmispon glaber* var. *glaber*), and California buckwheat (*Eriogonum fasciculatum*). Special-status species with the potential to occur in this area include thread-leaved brodiaea (*Brodiaea filifolia*; SE, FT, CRPR 1B.1), Aphanisma (*Aphanisma blitoides*; CRPR 1B.2), and many stemmed dudleya (*Dudleya multicaulis*; CRPR 1B.2), while Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*; CRPR 1B.1) and chaparral ragwort (*Senecio aphanactis*; CRPR 2.B.2) have been recorded within 3 miles of the Project site.

Disturbed coastal sage scrub (8.21 acres) generally occurs along existing roads in areas between Old Pacific Highway and the railroad tracks in the northern part of the study area. Compared to undisturbed coastal sage scrub, this has a lower cover of California sagebrush, higher cover of coyote brush, and numerous and co-dominant non-native species including castor bean (*Ricinus communis*), poison hemlock (*Conium maculatum*), black mustard (*Brassica nigra*), and pride of Madeira (*Echium candicans*).

Coastal bluff scrub (21.03 acres) occurs along hillslopes and cliffs on the southern side of the study area facing the ocean. Hill slopes in the southeastern portion are steep (vertical in places). Vegetation in this area is sparse and occurs mostly on a narrow terrace above high tide at the base of the cliffs. Common plant species include quailbush (*Atriplex lentiformis*), crystalline iceplant (*Mesembryanthemum crystallinum*), croceum iceplant (*Malephora crocea*), bladderpod, and Menzies's goldenbush (*Isocoma menziesii*). Sensitive plants with potential to occur in this community include (but are not limited to) south coast saltscale (*Atriplex pacifica*; CRPR 1B.2), sticky dudleya (*Dudleya viscida*; CRPR 1B.2), and Pendleton button-celery (*Eryngium pendletonense*; CRPR 1B.1). Red sand verbena (*Abronia maritima*; CRPR 4.2), California box-thorn (*Lycium californicum*; CRPR 4.2), and woolly seablite (*Suaeda taxifolia*; CRPR 4.2) were detected within this habitat.

Mixed grassland (14.09 acres), characterized by annual grasses, weedy forbs, native forbs, shrubs, and dense patches of crystalline iceplant, overlaps with mapped vernal pool habitat in the San Onofre Vernal Pool Restoration area. Common species include slender wild oat, soft chess (*Bromus hordeaceus*), rip-gut brome and red brome grasses, tocalote, fennel, Russian thistle (*Salsola tragus*), California sage, and California buckwheat. Although not detected, sensitive species include intermediate mariposa lily (*Calochortus weedii* var. *intermedius*; CRPR 1B.2), long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*; CRPR 1B.2), and Palmer's grappling hook (*Harpagonella palmeri*; CRPR 4.2).

Vernal pool habitat in the study area is adjacent to, but outside of, the Project disturbance limits. Vegetation in vernal pool habitat (0.42 acre) is sparse and includes native woolly marbles (*Psilocarphus brevissimus*), and non-native hyssop loosestrife (*Lythrum hyssopifolia*), Italian ryegrass (*Festuca perennis*), curly dock (*Rumex crispus*), and rabbitsfoot grass (*Polypogon monspeliensis*). Sensitive species include (but are not limited to) San Diego button-celery (*Eryngium aristulatum* var. *parishii*; SE, FE, CRPR 1B.1),

Pendleton button-celery, vernal barley (*Hordeum intercedens*; CRPR 3.2), small-flowered microseris (*Microseris douglasii* ssp. *platycarpa*; CRPR 4.2), and little mousetail (*Myosurus minimus* ssp. *apus*; CRPR 3.1). Yellow-rayed lasthenia (*Lasthenia glabrata* ssp. *Coulteri*; CRPR 1.B.1) and prostrate vernal pool navarretia (*Navarretia prostrata*; CRPR 1B.1) were recorded within 2 miles of the Project.

Ruderal and disturbed areas (4.55 acres) are characterized by non-native plant species such as hottentot-fig (*Carpobrotus edulis*), crystalline iceplant, and black mustard. Common associated species include red brome, Russian thistle, sour clover (*Melilotus indicus*), poison hemlock, tocalote, and castor bean. Native species such as deerweed, bladder-pod, telegraph weed (*Heterotheca grandiflora*), California sagebrush, and California buckwheat are sparsely distributed. Ruderal/disturbed vegetation was typically identified adjacent to, or surrounded by, developed areas.

Developed beach (2.78 acres) includes San Onofre State Beach area in the northwestern portion of the study area, above the natural beach/intertidal area and below the coastal bluffs and cliffs. Development includes parking areas, restrooms, showers, and picnic areas. Coulter's saltbush (*Atriplex coulteri*; CRPR 1B.2) was recorded at San Onofre State Beach campground, but most vegetation consists of planted California fan palms (*Washingtonia filifera*) and clumps of giant reed (*Arundo donax*).

Developed areas (103.04 acres) in the terrestrial study area include SONGS buildings and infrastructure, parking lots, roads, trails, storage yards, an artificial basin, and concrete v-ditches for stormwater conveyance generated within the North Owner Controlled Area and Supplemental Support Areas (see Figure 2-2 of the FEIR) of the onshore site facilities. Vegetation associated with these areas includes various ornamental trees, shrubs, and perennials such as pine (*Pinus* sp.), eucalyptus (*Eucalyptus* spp.), honeysuckle (*Lonicera* sp.), and oleander (*Nerium oleander*).

Table 1: CRPR 1 Plant Species with a Moderate or High Likelihood of Occurrence or Present Within the Study Area

Scientific Name	Common Name	Status
<i>Aphanisma blitoides</i>	Aphanisma	CRPR 1B.2
<i>Atriplex coulteri</i>	Coulter's saltbush	CRPR 1B.2
<i>Atriplex pacifica</i>	South coast saltscale	CRPR 1B.2
<i>Brodiaea filifolia</i>	Thread-leaved brodiaea	SE, FT, CRPR 1B.1
<i>Calochortus weedii</i> var. <i>intermedius</i>	Intermediate mariposa lily	CRPR 1B.2
<i>Chorizanthe polygonoides</i> var. <i>longispina</i>	Long-spined spineflower	CRPR 1B.2
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	Blochman's dudleya	CRPR 1B.1
<i>Dudleya multicaulis</i>	Many stemmed dudleya	CRPR 1B.2
<i>Dudleya viscida</i>	Sticky dudleya	CRPR 1B.2
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego button-celery	SE, FE, CRPR 1B.1
<i>Eryngium pendletonense</i>	Pendleton button-celery	CRPR 1B.1
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Yellow-rayed lasthenia.	CRPR 1.B.1
<i>Navarretia prostrata</i>	Prostrate vernal pool navarretia	CRPR 1B.1

Note: Study area includes native habitat areas outside the planned disturbance area; assuming avoidance for shrubs with a moderate potential to occur such as decumbent goldenbush (*Isocoma menziesii* var. *decumbens*) and Nuttall's scrub oak (*Quercus dumosa*).

FE = Federally endangered

FT = Federally threatened

SE = State endangered

CRPR 1B = Rare or endangered in California and elsewhere

4.3 SPECIAL-STATUS PLANT SPECIES SALVAGE AND RELOCATION METHODS

If Project activities will result in the loss of more than 10 percent of an onsite population of any CRPR 1 plant species, then the Applicant will implement the guidance in this Plan based on the life history of the species affected. The Plan includes: (a) collection/salvage measures for plants or seed banks, to retain intact soil conditions and maximize success likelihood; (b) details regarding storage of plants or seed banks; (c) location of the proposed recipient site, and detailed site preparation and plant introduction techniques; (d) time of year that the salvage and replanting or seeding will occur and the replanting methodology; (e) a description of the irrigation, if used; (f) description of site maintenance; and (g) a detailed monitoring program, success criteria, and remedial measures. Attachment A: Restoration Approach for Target Special-Status Plant Species, contains a list of all plant species identified as having a moderate or high potential to occur within the study area as identified in the FEIR and provides details regarding the appropriate restoration method. These methods are further described below.

4.3.1 Collection/Salvage Measures for Plants or Seed Banks

CRPR 1 plant seed for restoration will be collected, in accordance with collection requirements, from previously identified occurrences within the survey areas to the maximum extent practicable or an adjacent area given landowner approval. All seed material will be collected by an approved CSLC seed collector. Species' flowering periods, annual rainfall patterns, and elevation, as well as the general field variability of plant populations, all influence when seed is set. Seed collection will occur at the end of the growing season when seed is ripe. The approximate seed collection window is included in Attachment A: Restoration Approach for Target Special-Status Plant Species. To accommodate variability in timing of seed collection from year to year, the HRS will verify the collection window for each species and collection managers will inspect native seed sources prior to mobilizing crews in order to identify optimal collection times for the desired species. In addition, CRPR 1 plant seed may be collected for multiple species during the same visit when possible. All seed collections will be labelled and stored by species and collection date and location (e.g., each CRPR 1 plant species will be collected and stored separately). In addition, a permit will be required if seed collection is planned from state or federally listed species. Availability of seed may be limited by various environmental factors (e.g., drought during the collection period), so flexibility in species selection and subsequent application rates will be necessary.

Within areas proposed for vegetation clearing, all of the available seed will be collected. All seed material will be weed-free; separated; and clearly labeled with the date of collection, location, and species by scientific name. All seed material will also be weighed, cleaned (and dried), and, where feasible based on the amount of seed collected, tested for purity and germination. No more than 1 percent of the collected seed per species will be subject to testing. Testing will not be conducted on a species if more than 1 percent of the collected seed is required for testing to achieve valid results.

4.3.2 Storage of Plants or Seed Banks

After cleaning and drying, special-status plant seeds will be stored in a cool, dry environment in sealed containers that are labelled with the date of collection, location, and scientific name. The storage facility will provide a cool, dry environment with protection from the elements, proper air circulation, and appropriate shelving for storage.

The preferred method that can be implemented once seed is collected is to grow container plants in a nursery setting. The container plants can then be used for direct planting or seed bulking, depending on the species. For species where it is difficult to collect enough seed initially, due to limited number of plants

and/or the species that have low seed counts, growing the plants in containers provides additional options to plant the containers and/or collect additional seed. This approach, in combination with seed collection, will be employed as determined by the HRS for specific CRPR 1 species to achieve the mitigation requirements.

In addition to seed collection and planting, seedbank topsoil removal and salvage may be conducted for CRPR 1 plant species with the potential to be impacted, if recommended by HRS. Seedbank topsoil and salvage will occur prior to topsoil removal during initial ground disturbing activities. In work areas where collection of seedbank topsoil is planned, the top 0.5 inch to 4.0 inches of topsoil will be salvaged from areas of appropriate habitat or soil conditions.

The seedbank topsoil will be stockpiled and clearly labeled for species, collection location, and collection date. The seed bank topsoil will be stored at an appropriate location on-site or off-site until ground disturbance is complete. For off-site storage, which will typically be used for smaller quantities (e.g., less than 0.5 cubic yard), seed bank topsoil will be stored on tarps or in open boxes in a cool, dry environment with protection from the elements and proper air circulation. This facility could be a shed or house in the vicinity of the Project.

Once ground disturbance is complete, the seedbank topsoil will be returned to the location where it was removed or, if that is infeasible, to a nearby portion of the temporary impact area with appropriate conditions (e.g., slope, aspect, and habitat-type). Seedbank topsoil salvage will take place outside of the growing season, either before annual species have germinated or after they have set seed.

4.3.3 Proposed Recipient Site and Replanting Methodology

Should a CRPR 1 species be identified for salvage and transplanting prior to initial ground disturbance, the following methods will be utilized. Transplanting will be accomplished by using hand tools to dig around the stem of the plant at a distance of least four times the plant's width, where feasible, to minimize root damage and impacts to other native vegetation. All transplants will be excavated with a shovel just below the root ball of the plant. Mechanized removal may be appropriate in instances where larger perennial shrubs will benefit from more extensive excavation than will be possible by using only hand-held digging tools, or where perennial rhizomatous plants will benefit from more extensive horizontal excavation to minimize damage to their root systems, which are often spread out over larger areas.

Once excavation is complete, the plant will be lifted out of the excavation area. The plant will then be placed with a similar aspect in a similar-sized hole in suitable habitat outside of the disturbance corridor. If direct transfer is not possible, the plants will be placed temporarily in containers, and placed onsite until planting time (if transplantation is to occur within 3 days) or taken to an off-site nursery location for care and maintenance until they are replanted. While being stored (either on-site or in a nursery setting), plants will be kept in a shade house and watered as appropriate to promote survivorship and to limit root rot. The intent is to transplant salvaged individuals within 1 year of excavation to avoid root bound plants. If storage is needed for longer, plants will be evaluated to determine if transfer to a larger container is needed. Excavation and transplanting will be planned for fall and winter to support establishment of the plants and minimize the need for supplemental watering but could occur at other times of years with the appropriate supplemental watering.

The HRS will prioritize transplantation of CRPR 1 plant species in areas where the same species is already present or has been present in the past and where adequate room exists for the spread of the plant population. Transplantation sites will be evaluated for appropriate soils based on soils mapping data as

well as on the ground site condition evaluation by the HRS. The HRS, when determining the appropriate location for the transplanted individuals, will ensure that no habitat conversion is planned in the receiving sites. In addition, the HRS will ensure minimal impacts to other native vegetation and will prioritize transplantation in suitable habitat areas that are disturbed but have potential for restoration. Approved receptor sites for these species will be documented and submitted to the CSLC prior to initial ground disturbance, including notes on storage location and conditions (e.g., planned watering regime).

All plants to be transplanted will be clearly labeled with the date of collection, location, and species by scientific name. For most species, weekly watering will be appropriate for maintenance without causing issues with root rot. If plants are dormant at the time of salvage, it may be appropriate to not water the salvaged individuals until transplantation, but this will be determined based on species requirements and conditions at the time of salvage by the HRS. Appropriate storage methods will be determined by the HRS based on specific site conditions and species requirements for each species. Transplants will be placed in their final locations as soon as practical to minimize the risk of plant mortality. To avoid the introduction of pathogens in nursery settings, the HRS will verify that best practices, such as clean soil and containers and other greenhouse equipment, are being implemented as well as inspecting plants when delivered to the receptor site.

4.3.4 Description of the Irrigation

Irrigation at the translocation site will be installed or watering will be conducted as appropriate for the species and conditions at time of translocation. Depending on the translocation site, an irrigation system may already be installed. In that case, irrigation timing will be set appropriately for the species and conditions. Irrigation timing may need to be changed per quarter or as appropriate for the conditions and species. Monitoring of irrigation and or watering success will initially be conducted weekly to ensure successful translocation, then monthly or as noted in the monitoring schedule noted below to ensure irrigation or watering is appropriate without causing root rot.

4.3.5 Site Maintenance

After CRPR 1 plant species restoration and seeding, site maintenance visits will occur once per month for the first year, once per quarter for the second year, and twice per year during the spring and the fall during the third year. As recommended by the HRS, maintenance activities will include weed treatment, supplemental watering, erosion control, remedial seeding/planting, fencing, or other requirements needed to achieve success. These site maintenance visits will coincide, to the extent feasible, with project-wide restoration maintenance.

4.3.6 Monitoring Program, Success Criteria, and Remedial Measures

The following subsections describe the monitoring methods, success criteria, and reporting of CRPR 1 plant species.

After salvage and relocation have been completed, the HRS will monitor the CRPR 1 plant species. Monitoring for maintenance activities will occur, at a minimum, once per month for the first year, once per quarter for the second year, and twice per year during the spring and the fall of the third year. This monitoring will focus on identifying the health of the restored individuals, recommending appropriate maintenance activities, and verifying that the recommended maintenance activities have been conducted. This includes identifying potential problems associated with weeds, herbivory, drought stress, etc. The

HRS will prepare a maintenance monitoring checklist to be used in the field during these visits. The maintenance monitoring checklist will be provided to the CSLC.

Monitoring for performance in relation to the success criteria will occur once annually at the appropriate phenological stage for each CRPR 1 species. The HRS will collect pertinent information through direct observation, including data on germination success, plant density, and survivorship of the plants within the relocation areas. Performance monitoring will be conducted to increase knowledge of these plants and their restoration efforts.

Restoration of the CRPR 1 plant species will be considered successful if the success criteria are met during the 3-year maintenance and monitoring period. The seed collection and planting success criteria are described in Table 2. The success criteria require that each restoration area achieve 80 percent of the CRPR 1 plant cover and density in the restoration area relative to an adjacent reference area. Reference areas will be in an area similar to the impact area. The success criteria also require evidence of reproductive success at each restoration area.

Density will be measured by a direct count of individuals for occurrences of less than 1,000 individuals and direct count or quadrat sampling for occurrences greater than 1,000 individuals. Special-status plant cover will be measured using the CNPS Relevé Protocol. In addition, CRPR 1 plant species that are being restored, nearby reference populations (e.g., different than the adjacent reference populations) will be identified and checked each year to determine the appropriate monitoring window and inform annual variations that may be due to varying climatic conditions each year.

Table 2: Restoration Monitoring Success Criteria for CRPR 1 Plant Species

Targeted Restoration Approach	Success Criteria	
Seed collection and planting	Evaluate area and number of impacts to maintain an impact level less than 10%. Plant enough individuals so that the offset for impacts when added to the population that remains is less than 10% lower than the original population	Evidence of reproductive success at each restoration area (e.g., produce flower and seed)

Note: If propagules of the subject species were not present within the salvaged soil, then species that have been subject to the soil block salvage method may not be observed within the receptor sites during years when these species and/or other bulbiferous/cormose/rhizomatous species are observed in the reference areas. In such a case, the species compositions of the receptor site and the adjacent reference site will be assessed for similarity to determine the success of the soil transplantation.

Monitoring and maintenance site visits will continue for up to 3 years following initial seeding. If a CRPR 1 species meets its primary success criteria during any year of the 3-year monitoring period, the restoration effort for that species will be considered successful and the Applicant will have met its mitigation obligations. For CRPR 1 plants where seeding is the preferred method for restoration, should success criteria have not been met after 2 growing seasons, then plants will be propagated at a nursery for transplantation to the restoration areas at the appropriate time of year (e.g., late fall, early winter). Propagation may start earlier at the discretion of the HRS.

Over the course of the 3-year maintenance and monitoring period, the Applicant will have demonstrated due diligence in attempting to reestablish CRPR 1 plant species and will have contributed to the knowledge and conservation of these species through their actions. Therefore, if remedial measures initiated by the Applicant are not successful over the 3-year restoration program, the CSLC may determine that the mitigation requirements for these species have been met. If restoration of specific species in certain areas is not feasible after the end of the 3-year monitoring period and the CSLC does not determine that the Applicant has met their mitigation obligations, the impacts in these areas may be considered permanent. The Applicant will compensate for permanent impacts to those specific CRPR 1 plant species. The Applicant will work with the appropriate agencies (e.g.; USFWS and CDFW with notification to the CSLC and CCC) to determine an off-site restoration, land preservation, or land enhancement at an existing special-status plant population that is unaffected by the Project.

4.3.6.1 Record Keeping

The Applicant will record and store all data associated with maintenance and performance monitoring for each CRPR 1 plant for which restoration is implemented.

The HRS will be responsible for updating existing records and adding new records during each monitoring year.

4.3.6.2 Annual Reports

Annual performance monitoring will include:

- documenting the population size of restored annual and bulbiferous and rhizomatous species within the disturbed areas;
- comparing restored populations to previously undisturbed reference sites within or near the Project area;
- comparing the species composition to previously undisturbed reference sites within or near the Project area;
- documenting the health and survival of transplanted individual perennial species; and
- conducting photographic documentation of transplanted/seeded individuals/populations and the surrounding undisturbed sites.

The Applicant will submit a Special-Status Plant Species Salvage and Relocation Report to the CSLC and CCC each of the 3 monitoring years. The report will include the following:

- an introduction;
- salvage approach implemented for each special-status plant species impacted;
- maintenance and monitoring methods for receptor sites and reference areas;
- maintenance activities conducted;

- monitoring results;
- a discussion of results compared to performance; and
- a conclusion and recommendations.

4.4 SPECIAL-STATUS PLANT SPECIES SALVAGE AND RELOCATION COMPLETION

The salvage and relocation of the CRPR 1 plant species within the Project area will be considered complete when the 3-year monitoring period is over or the primary success standards are met. The Applicant will notify the CSLC and the CCC whether the success standards have been met for the Project in the annual reports. If success standards are not met for each species impacted by the Project by the third year or at any time during the maintenance and monitoring period, the appropriate agencies (e.g.; USFWS and CDFW with notification to the CSLC and the CCC) will be consulted to determine how the impacts should be mitigated. Potential solutions may include continuing monitoring and maintenance of the CRPR 1 plants in restoration and/or enhancement areas, or an acknowledgement that the restoration effort to date has contributed to the conservation, knowledge, and understanding of these species and the Applicant has met their mitigation obligations. If impacts are determined to be permanent by the CSLC and/or the CCC, the Applicant will compensate for those specific special-status plant species, which may include off-site restoration, land preservation, or land enhancement.

SECTION 5.0 – REFERENCES

- Aspen Environmental Group. 2019. Final Environmental Impact Report for the San Onofre Nuclear Generating Station (SONGS) Units 2 & 3 Decommissioning Project. Prepared for the California State Lands Commission. February.
- California Coastal Commission (CCC). 2019. "Staff Report W20a for Coastal Development Permit Application No. 09-19-0194." September 26, 2019.
- California Native Plant Society (CNPS). 2013. *Inventory of Rare, Threatened, and Endangered Plants*. Online ed., Version 7- 13mar. Sacramento, California: CNPS. Available at <http://www.cnps.org/inventory>.
- California State Lands Commission. 2019. Lease No. PRC 6785.1. March. Sacramento, CA.
- CH2M Hill. 2016. Biota Technical Report, SONGS Decommissioning Project and Geodatabase SONGS Terrestrial Bio GIS 2016.gdb. Prepared for Southern California Edison. September. CH2M Hill, Inc., Santa Ana, CA. p. 60.
- CNPS. 2000. Relevé Protocol. CNPS Vegetation Committee. Online. http://cnps.org/cnps/vegetation/pdf/cnps_releve_protocol_20070823.pdf. Site visited July 2016.

ATTACHMENT A – RESTORATION APPROACH FOR TARGET SPECIAL-STATUS PLANT SPECIES

Restoration Approach	Species	Sensitivity Status ¹	Habit/Growth Form	Soils/Habitat	Blooming Period	Seed Collection Window
Seeding and/or Seedbank Topsoil Salvage	<i>Aphanisma blitoides</i> Aphanisma	1B.2	annual herb	Sandy or gravelly soils; coastal bluff scrub, coastal dunes, and coastal scrub	Feb.-June	June-August
Seeding and/or Seedbank Topsoil Salvage	<i>Atriplex coulterii</i> Coulter's saltbush	1B.2	perennial herb	Alkaline or clay soils; coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland	Mar.-Oct.	Oct.-Dec.
Seeding and/or Seedbank Topsoil Salvage	<i>Atriplex pacifica</i> South coast saltscale	1B.2	annual herb	Coastal bluff scrub, coastal dunes, coastal scrub, and playas	Mar.-Oct.	Oct.-Dec.
Seeding/or Seedbank Topsoil Salvage Federally listed need permit for seeds	<i>Brodiaea filifolia</i> thread-leaved brodiaea	FT/SE/1B.1	perennial bulbiferous herb	Often clay; chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools	Mar.-June	June-July
Seeding/or Seedbank Topsoil Salvage	<i>Calochortus weedii</i> var. <i>intermedius</i> Intermediate mariposa lily	1B.2	perennial herb (bulb)	Rocky, calcareous; chaparral, coastal scrub, valley and foothill grassland	May-July	June-August
Seed Collection and Propagation	<i>Chorizanthe polygonoides</i> var. <i>longispina</i> long-spined spineflower	1B.2	annual herb	Often clay; chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools	Apr.-July	June-August
Seeding/or Seedbank Topsoil Salvage	<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i> Blochman's dudleya	1B.1	perennial herb	Rocky, often clay ; coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland	Apr.-June	June-July
Seeding/or Seedbank Topsoil Salvage	<i>Dudleya multicaulis</i> Many-stemmed dudleya	1B.2	perennial herb	Often clay; chaparral, coastal scrub, valley and foothill grassland	Apr.-July	June-August
Seed Collection/Plant Salvage & Transplantation	<i>Dudleya viscida</i> Sticky dudleya	1B.2	perennial herb	Rocky; coastal bluff scrub, chaparral, cismontane woodland, and coastal scrub	May-June	June-August

Restoration Approach	Species	Sensitivity Status ¹	Habit/Growth Form	Soils/Habitat	Blooming Period	Seed Collection Window
Seed Collection and Dispersal. Federally listed need permit for seeds	<i>Eryngium aristulatum</i> var. <i>parishii</i> San Diego button-celery	FE/SE/1B.1	annual or perennial herb	Mesic; coastal scrub, valley and foothill grassland, and vernal pools	Apr.-June	June-August
Seed Collection and Dispersal	<i>Eryngium pendletonense</i> Pendleton button-celery	1B.1	perennial herb	Clay, vernal mesic; coastal bluff scrub, valley and foothill grassland, and vernal pools	Apr.-July	June-September
Seeding and/or Seedbank Topsoil Salvage	<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields	1B.2	annual herb	Coastal salt marshes, playas, and vernal pools	Feb.-June	May-July
Seed Collection and Dispersal	<i>Navarretia prostrata</i> Prostrate vernal pool navarretia	1B.1	annual herb	Mesic; coastal scrub, meadows and seeps, valley and foothill grass-land (alkaline), and vernal pools	Apr.-July	June-August

Note: ¹ Sensitivity Status

Federal

FE = Federally Listed Endangered

FT = Federally Listed Threatened

State

SE = State Listed Endangered

SR = State Listed Rare

Other

List A, B, or D = California Rare Plant Rank per California Native Plant Society Inventory

0.1, 0.2, or 0.3 = Threat Ranking

This page intentionally left blank.

Appendix C

CNDDDB Forms

This page intentionally left blank.

Appendix C

CNDDDB Forms

This page intentionally left blank.

For Office Use Only

Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 03/12/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Deinandra paniculata*

Common Name: San Diego Tarplant

Species Found? ☒ Yes ☐ No need flowers to verify

Yes

No

If not found, why?

Total No. Individuals: 30 Subsequent Visit? ☐ Yes ☐ No

Is this an existing NDDDB occurrence? ☐ No ☐ Unk.

Yes, Occ. #

Collection? If yes:

Number

Museum / Herbarium

Reporter: Oberbauer, Sproul

Address: AECOM 401 West A Street Suite 1200

San Diego, CA 92101

E-mail Address: tom.oberbauer@aecom.com

Phone: 619 993 0788

Plant Information

Phenology:

100

% vegetative

% flowering

% fruiting

Animal Information

adults

juveniles

larvae

egg masses

unknown

☐ wintering

☐ breeding

☐ nesting

☐ rookery

☐ burrow site

☐ lek

☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: San Diego

Landowner / Mgr: Marines Camp Pendleton

Quad Name: San Clemente

Elevation: 26.7 meters

T 9s R 7w Sec 24, 1/4 of 1/4, Meridian: H ☐ M ☐ S ☐

Source of Coordinates (GPS, topo. map & type): _____

T R Sec , 1/4 of 1/4, Meridian: H ☐ M ☐ S ☐

GPS Make & Model: _____

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐

Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ **OR** Geographic (Latitude & Longitude) ☐

Coordinates: 33.3761340519724 -117.564687710365

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Coastal sage scrub habitat with Artemisia californica and Baccharis pilularis.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: _____

Visible disturbances: plants may be growing on opening edge caused by vehicle track in the past

Threats: none

Comments:

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? ☐ yes ☐ no

For Office Use Only

Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 03/12/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Deinandra paniculata*

Common Name: San Diego Tarplant

Species Found? ☐ Yes ☐ No need flowers to verify
If not found, why?

Total No. Individuals: 30 Subsequent Visit? ☐ Yes ☐ No

Is this an existing NDDDB occurrence? ☐ No ☐ Unk.
Yes, Occ. # _____

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Oberbauer, Sproul

Address: AECOM 401 West A Street Suite 1200
San Diego, CA 92101

E-mail Address: tom.oberbauer@aecom.com

Phone: 619 993 0788

Plant Information

Phenology:
100
% vegetative % flowering % fruiting

Animal Information

adults # juveniles # larvae # egg masses # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: San Diego Landowner / Mgr: Marines Camp Pendleton
Quad Name: San Clemente Elevation: 26.7 meters
T 9s R 7w Sec 24, ___ 1/4 of ___ 1/4, Meridian: H ☐ M ☐ S ☐
T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ☐ M ☐ S ☐
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ **OR** Geographic (Latitude & Longitude) ☐
Coordinates: 33.3761340519724 -117.564687710365

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Coastal sage scrub habitat with Artemisia californica and Baccharis pilularis.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: _____

Visible disturbances: plants may be growing on opening edge caused by vehicle track in the past

Threats: none

Comments:

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? ☐ yes ☐ no

For Office Use Only

Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 03/12/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Deinandra paniculata*

Common Name: San Diego Tarplant

Species Found? ☐ Yes ☐ No need flowers to verify
If not found, why?

Total No. Individuals: 30 Subsequent Visit? ☐ Yes ☐ No

Is this an existing NDDDB occurrence? ☐ No ☐ Unk.
Yes, Occ. # _____

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Oberbauer, Sproul

Address: AECOM 401 West A Street Suite 1200
San Diego, CA 92101

E-mail Address: tom.oberbauer@aecom.com

Phone: 619 993 0788

Plant Information

Phenology:
100
% vegetative % flowering % fruiting

Animal Information

adults # juveniles # larvae # egg masses # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: San Diego Landowner / Mgr: Marines Camp Pendleton
Quad Name: San Clemente Elevation: 26.7 meters
T 9s R 7w Sec 24, 1/4 of 1/4, Meridian: H ☐ M ☐ S ☐
T _____ R _____ Sec _____, 1/4 of 1/4, Meridian: H ☐ M ☐ S ☐
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ OR Geographic (Latitude & Longitude) ☐
Coordinates: 33.3761340519724 -117.564687710365

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Coastal sage scrub habitat with Artemisia californica and Baccharis pilularis.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: _____

Visible disturbances: plants may be growing on opening edge caused by vehicle track in the past

Threats: none

Comments:

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? ☐ yes ☐ no