REPORT –
Results of Orcutt's Spineflower Mapping and Population Surveys
Cooperative Endangered Species Conservation Fund (Section 6) Grant Agreement No. P1482008
December 5, 2015

Introduction

This report is to provide a summary of the results of Task 1, applied conservation research on Orcutt's spineflower (*Chorizanthe orcuttiana*; "spineflower") consistent with the terms of the Cooperative Endangered Species Conservation Fund (Section 6) Grant Agreement No. P1482008 between The Chaparral Lands Conservancy (TCLC) and California Department of Fish and Wildlife. Under the terms of the grant agreement, applied conservation research includes GIS mapping of suitable habitat soils and population surveys at remaining natural historic documented occurrences and in newly mapped suitable habitat on conserved lands off the Point Loma Navy Base.

Task 1a – GIS Mapping of Suitable Habitat

Under Task 1a, TCLC retained and worked with a GIS contractor to update Dr. Ellen Bauder's (2000[i]) mapping of suitable habitat on conserved lands. Orcutt's spineflower occurrences are strongly correlated with sandy soils near the San Diego coast so GIS mapping followed Bauder's methodology of using soils as a broad-scale proxy for suitable habitat. Maps were created using Bauder's data layers (Carlsbad soils, public or private ownership, and developed or undeveloped) and updated to identify current suitable habitat soils, development, current property ownership and conservation management status, and to incorporate soils data from the Orcutt's spineflower occurrence discovered at Torrey Pines State Natural Reserve Extension (TPSNR Extension) since Bauder's work.

Three sets of maps were produced under Task 1a: *Orcutt's Spineflower Locations and Soils Pre-2015* (Attachment 1); *Orcutt's Spineflower Soils on Conserved Lands* (Attachment 2); and *Orcutt's Spineflower Survey Maps* (Attachment 3). The purpose of the first set of maps was to identify all possible soils occupied by documented spineflower occurrences. The second set of maps applies the soils information from the first set of maps throughout San Diego County overlaid with all conserved

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lands. The third set of maps was created for use during population surveys (Task 1b, below) and applies the soils information from the first maps to specific preserve properties containing greater than 25% spineflower soils and otherwise thought to present the greatest likelihood of supporting undocumented spineflower occurrences.

The first set of maps, *Orcutt's Spineflower Locations and Soils Pre-2015* (Attachment 1) shows all spineflower occurrences documented prior to 2015 with underlying soils for the purpose of identifying all possible soils occupied by documented spineflower occurrences. For these maps, TCLC used soils data from the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) and two sources of Orcutt's spineflower occurrence data: Element occurrences recorded in the California Natural Diversity Data Base (CNDDB) including the CNDDB accuracy of location; and Bauder's (2000) refined mapping of occurrences from CNDDB and San Diego Natural History Museum records and others, digitized for this project. Recorded occurrence data was deemed reliable considering Bauder's thorough research on historic occurrences and was not revised for this project. Bauder and CNDDB occurrences are located in close proximity but are typically far enough apart to be located on different NRCS soils. So both Bauder and CNDDB occurrences were mapped to increase the likelihood of identification of all suitable spineflower soils. These maps show recorded spineflower occurrences on nine NRCS soils including the one spineflower occurrence discovered at TPSNR Extension after Bauder's work on a NRCS soil type that in turn became important in the discovery of new spineflower occurrences in 2015.

The second set of maps, *Orcutt's Spineflower Soils on Conserved Lands* (Attachment 2) applies the soils information from the first set of maps for the purpose of showing suitable spineflower soils throughout San Diego County overlaid with all conserved natural lands. For these maps, TCLC used conserved lands data from two sources: SanGIS, a joint GIS database maintained by the City and County of San Diego; and the San Diego Management and Monitoring Program, a central repository of San Diego natural history and conservation management information maintained by the U.S. Geological Service under contract with the San Diego Association of Governments (SANDAG). These maps show all nine spineflower NRCS soils throughout San Diego County overlaid with conserved natural lands including conserved lands with greater or lesser than 25% of documented spineflower occurrence soils to refine priorities preserve areas for Task 1b population surveys.

The third set of maps, *Orcutt's Spineflower Survey Maps* (Attachment 3) present the same data as the second set of maps but applies the NRCS soils information at a larger scale to specific concentrations of conserved land properties for the purpose of selecting conserved lands properties for Task 1b population surveys. Specific concentrations of conserved land were selected for surveys when they contained greater than 25% spineflower soils and were otherwise thought to present the greatest likelihood of supporting undocumented spineflower occurrences based on site conditions (e.g. the presence of NRCS Loamy Alluvial Land-Huerhuero Complex (LvF3) soil found at or very near most North County San

Diego spineflower occurrences; the interface of NRCS LvF3 soil and Corralitos Loamy Sand (CsB; CsD) soils as documented at three North County San Diego spineflower occurrences; proximity to documented spineflower occurrences; slope aspect, and other factors). The third set of maps contains twenty-four maps showing discreet concentrations of conserved land properties. These maps in turn were used for population surveys of conserved lands properties in spring 2015 (Table 1).

Task 1b – Population Surveys

In spring of 2015, TCLC and TCLC contractors and volunteers[ii] used the *Orcutt's Spineflower Survey Maps* (Attachment 3) for the purpose of conducting population surveys to relocate historic documented occurrences as well as any new occurrences in conserved suitable habitat. Population surveys were initiated on March 16, 2015 following monitoring of the maturity and visibility of spineflower plants at the one the known North County San Diego occurrence at TPSNR Extension. Surveys were conducted into April and ended on April 23 due to significantly reduced visibility of rapidly drying plants. Despite slightly above average total rainfall for the 2015 water year[iii], spring 2015 appears to have been a moderate to poor period for spineflower population surveys based on the timing and amount of rainfall, relatively high winter temperatures, and a comparison of spineflower annual population numbers at TPSNR Extension (Table 2). Rainfall was relatively abundant in late fall 2014 but was relatively low during the winter and early spring with several heat waves and dry conditions in winter 2015 during the main growing period for spineflowers. Approximately two hundred hours of population surveys were conducted by six surveyors at twenty conserved lands properties (Table 1).

Population Survey Results

Population surveys were successful in locating six new, never-before-documented spineflower occurrences (Attachment 4): One at Crest Canyon Preserve; two at Gonzales Canyon Preserve; and three at Sorrento Hills, all of which are located in the northern City of San Diego within a few miles of existing and historic documented occurrences at TPSNR Extension and Main.

The one new occurrence at Crest Canyon Preserve was discovered minutes after initiation of the first day of surveys by volunteer Margaret Fillus[iv] using the Task 1a suitable soils maps. The occurrence size is estimated at greater than 500 plants and is located at the interface of Corralitos Loamy Sand (9 to 15% slopes; CsD) and Loamy Alluvial Land-Huerhuero Complex (LvF3) soils similar to the TPSNR Extension occurrence. Soils are also similar to the Loamy Alluvial Land-Huerhuero Complex soils found at or near historic occurrences in Encinitas, Rancho Santa Fe, TPSNR Main, and Kearny Mesa. Vegetation and terrain at the Crest Canyon occurrence is southern maritime chaparral on a low, hard sandstone bluff and alluvial soils near the canyon floor.

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Table 1
Orcutt's Spineflower Population Survey Sites 2015

Conserved Lands Survey Site	Jurisdiction
Caltrans Batequitos Bluffs	City of Carlsbad
Kelly Ranch Habitat Conservation Area	
La Costa Glen Habitat Conservation Area	
Rancho La Costa Habitat Conservation Area	
City of Encinitas Open Space – Saxony Road	City of Encinitas
Home Depot	
Manchester Mitigation Bank	
Oak Crest Park	
Pacific Pines Racquet Club	
San Diego Botanic Garden	
San Elijo Lagoon Ecological Reserve	
San Dieguito Regional Park	County of San Diego
Carmel Mountain Preserve	City of San Diego
Crest Canyon Preserve	
Gonzales Canyon Preserve	
Overlook Park	
Sorrento Hills	
Torrey Pines State Natural Reserve Extension	
Torrey Pines State Natural Reserve Main	
Scripps Open Space	University of California

Table 2
TPSNR Extension Orcutt's Spineflower Population Counts and Rainfall

Year	Population Count	Rainfall*
2011	2,525	12.7
2012	1,013	7.9
2013	2090	6.55
2014	211	5.09
2015	820	11.91

* San Diego Lindberg Field.

The two new occurrences at Gonzales Canyon were discovered by Jim Rocks of Rocks Biological Consulting and Jon Rebman of the San Diego Natural History Museum, also using the Task 1a suitable soils maps. The estimated size of the two new occurrences is 1,200 plants. The northern Gonzales Canyon occurrence is located at the interface of Corralitos Loamy Sand (0 to 5% slopes; CsB) and Loamy Alluvial Land-Huerhuero Complex (LvF3) soils similar to the Crest Canyon and TPSNR Extension occurrences. The southern Gonazales Canyon occurrence is located on NRCS Terrace Escarpments soils (TeF) similar to one of the two historic documented occurrences at TPSNR Main and the three Sorrento Hills occurrences discovered in 2015. Vegetation and terrain at the Gonzales Canyon occurrence is Diegan coastal sage scrub with the northern occurrence on a low, gently sloping ridge and the southern occurrence on a sloping hillside.

The three new Sorrento Hills occurrences were discovered by Jim Rocks and Jon Rebman, also using the Task 1a suitable soils maps. The estimated size of the three new occurrences is 125 plants. All three Sorrento Hills occurrences are located on NRCS Terrace Escarpments soils (TeF) similar to one of the two historic documented occurrences at TPSNR Main and the southern Gonazales Canyon occurrence discovered in 2015. The southern Sorrento Hills occurrence is also located at the interface of the Terrace Escarpments soils and Corralitos Loamy Sand (9 to 15% slopes) similar to the Crest Canyon and northern Gonzales Canyon occurrences discovered in 2015 and the TPSNR Extension occurrence. Vegetation and terrain at the Sorrento Hills occurrences is southern maritime chaparral at the top of high sandstone bluffs in perched areas of sandy soils.

All six new spineflower occurrences are found with microbiotic soils and relatively low weed cover but highly invasive *Carpobrotus* and *Erharta* species are present and pose a major threat. For the Crest Canyon occurrence, an official trail runs nearby and a regularly used unofficial path runs directly through the occurrence. A disused unofficial path runs directly through the Gonazales Canyon south occurrence. And regularly used unofficial paths run immediately adjacent to all three Sorrento Hills occurrences.

Please see Attachment 5 for a report by Rocks Biological Consulting documenting the extent and results of their population surveys including associated plant species and photographs. The new occurrences have been reported to the California Natural Diversity Database and the San Diego Management and Monitoring Program (Attachment 6).

Surveyors were not successful in relocating any historic documented occurrences despite very focused efforts at Oak Crest Park in Encinitas and TPSNR Main where there are relatively recent documented occurrences. The occurrence at Oak Crest Park has not been observed since 2005 when surveyors found only six plants (Bauder and Sakrison 2010[v]). TCLC visited this site with Jonathan Snapp-Cook who observed the plants in 2005 and found that the former small opening occupied by the species is now

overgrown and with southern maritime chaparral vegetation and many young Torrey Pine trees seeded from nearby landscaping specimens. One occurrence at TPSNR Main has not been observed since its discovery in 1987. This area was thoroughly surveyed in 2015 and found to be heavily infested with mats of Bermuda grass (*Cynodon dactylon*), possibly as a residual effect of a prescribed burn in this area in the 1980s.

Discussion & Conservation Recommendations

The discovery in 2015 of six never-before-documented spineflower occurrences in a less-than-ideal survey season is a very significant positive conservation development for this highly endangered plant, especially given that only four other occurrences had been observed recently prior to 2015. Some budget from this grant for population surveys remains and TCLC intends to conduct additional surveys in spring 2016 as conditions and the project budget allows. But much more spineflower suitable habitat on conserved lands properties was mapped than this grant budget will allow for surveys so additional funding is recommended for future surveys.

As noted in the results of TCLC population surveys, highly invasive exotic plants (*Carpobrotus* and *Erharta* species) are present at the Crest Canyon and Sorrento Hills occurrences and are expected to overrun these occurrences without years of deliberate and consistent control. *Erharta* is still present in very reduced numbers at the TPSNR Extension occurrence following years of control with removal of maturing plants. Spineflowers are small annual plants that grow on very delicate microbiotic soils, both of which are easily crushed. So control of invasive exotic plants amidst spineflower occurrences will necessarily involve careful, near-surgical treatments. TCLC will use funding provided under a separate grant from SANDAG to control exotic invasive plants at spineflower occurrences this winter as part of the stewardship, restoration, and enhancement work described in this grant proposal. But SANDAG funding expires this winter so collaboration with preserve managers and additional funding is recommended for control of exotic invasive plants at spineflower occurrences.

Fencing and closure signs should be installed and existing fencing maintained at and near the Crest Canyon occurrence, Gonzales Canyon south occurrence, all three Sorrento Hills occurrences, and the TPSNR Extension occurrence to reduce the likelihood of trampling by preserve visitors. Trampling of spineflowers and microbiotic soils is also a concern during surveys, population counts, and other scientific activities and should be minimized. For this reason, annual population counts and other invasive scientific activities are not recommended at the newly-discovered occurrences. TCLC has and will continue to use funding provided under a separate grant from SANDAG to construct several hundred of feet of fencing, camouflage unauthorized paths, and to design, prepare and install closure signs. More fencing is needed than is funded by the SANDAG grant so collaboration with preserve

managers and additional funding is recommended for new fencing and longer-term maintenance of fencing and signs at spineflower occurrences.

Spineflower seeds may still be present at the Oak Crest Park occurrence and it's possible that this occurrence could re-express following selective thinning of nearby shrubs and removal of some of the young Torrey Pines that have spread from landscaping specimens. Regeneration of this occurrence with seed collection and seed bulking is important given the isolation of this occurrence from others and the need to establish other occurrences in nearby remaining suitable habitat. Collaboration with the City of Encinitas and funding is recommended for vegetation management at Oak Crest Park and, in the event the occurrence re-appears, seed collection, seed bulking, and use of bulked seed to establish other nearby refugia occurrences.

TCLC is conducting other spineflower conservation work as part of the stewardship, restoration, and enhancement work described in this grant proposal. TCLC has successfully completed project planning and permitting for work to restore and protect Orcutt's spineflower at the Crest Canyon Open Space Preserve, Gonzales Canyon Open Space Preserve, Sorrento Hills Open Space, and TPSNR Extension. Planning and permitting included CEQA compliance, permitting with California Department of Fish and Wildlife, and right-of-entry permits. TCLC contractor Rancho Santa Ana Botanic Garden has collected Orcutt's spineflower seed from all North County San Diego existing occurrences and completed two generations of propagation for seed bulking that resulted in production of over thirty thousand seeds with more expected from an ongoing third generation. Introduction of Orcutt's spineflower seed to attempt to establish new occurrences at TPSNR Extension and Main is planned in fall 2015 with the first major seasonal rainfall. TCLC will also install a rare plants interpretive panel at TPSNR Extension and conduct visitor contact to educate visitors about rare plant values and to discourage off-trail use.

Besides the value of the Task 1a GIS mapping conducted under this grant to identify spineflower suitable habitat for population surveys, this mapping exercise also generated valuable information on the overarching conservation status of the species. Data used to create the second set of maps, *Orcutt's Spineflower Soils on Conserved Lands* (Attachment 2) shows that spineflower NRCS soils are located within approximately seven miles of the coast, that there were approximately 41,613 acres of spineflower NRCS soils prior to conversion of most natural habitats in coastal San Diego County to agriculture and development, that approximately 34,817 acres (84%) of spineflower NRCS soils have been lost to agriculture, development, and other anthropogenic conversion[vi], and approximately 5,987 acres (14%) of spineflower NRCS soils are located on various conserved lands.[vii]

These GIS data and maps could serve as a valuable conservation tool for biologists conducting surveys, and agencies regulating proposed development of remaining, un-conserved spineflower suitable habitat soils. The decision on whether to conduct or require spineflower surveys during project review under the

California Environmental Quality Act (CEQA) has typically been based on whether one of a very few documented occurrences is already known from or very near a particular development property rather than on the presence of suitable soils or other ecological elements of suitable habitat. Considered alongside the lack of coverage for the spineflower under the San Diego MSCP and TCLC's discovery of a relatively large number of new occurrences in suitable soils in a relatively poor survey season, this suggests that many more spineflower occurrences have been lost to development even since state and federal endangered listing of the species. This also suggests that additional spineflower occurrences may still be found on both conserved and un-conserved properties.

TCLC recommends distribution of spineflower soils GIS data and maps to staff at resource agencies and local jurisdictions with encouragement to require thorough, seasonally-appropriate surveys for the species during CEQA review for new projects on any of the remaining spineflower NRCS soils. Most spineflower suitable habitat has already been lost to development or agriculture so preservation of any remaining suitable habitat is considered crucial for survival and recovery of the species.

Attachments

Attachment 1 – *Orcutt's Spineflower Locations and Soils Pre-2015*
Attachment 2 – *Orcutt's Spineflower Soils on Conserved Lands*
Attachment 3 – *Orcutt's Spineflower Survey Maps*
Attachment 4 – *Orcutt's Spineflower Locations and Soils 2015*
Attachment 5 – *Rocks Biological Consulting Report on Results of Orcutt's Spineflower Population Surveys 2015*
Attachment 6 – *Occurrence forms, California Natural Diversity Database and San Diego Management and Monitoring Program*

[i] Bauder, E.T. 2000. Recovery and management of Orcutt's spineflower (*Chorizanthe orcuttiana*). Prepared for California Department of Fish and Game, Contract # FG7643R5. November. 80 pages + appendices.

[ii] Margaret Fillius is a highly-skilled amateur botanist who previously discovered the TPSNR Extension spineflower population.
[iii] October 1, 2014 – September 30, 2015.

[iv] Crest Canyon is mapped as two occurrences but is expected to form a single occurrence depending on the density of intervening chaparral vegetation.

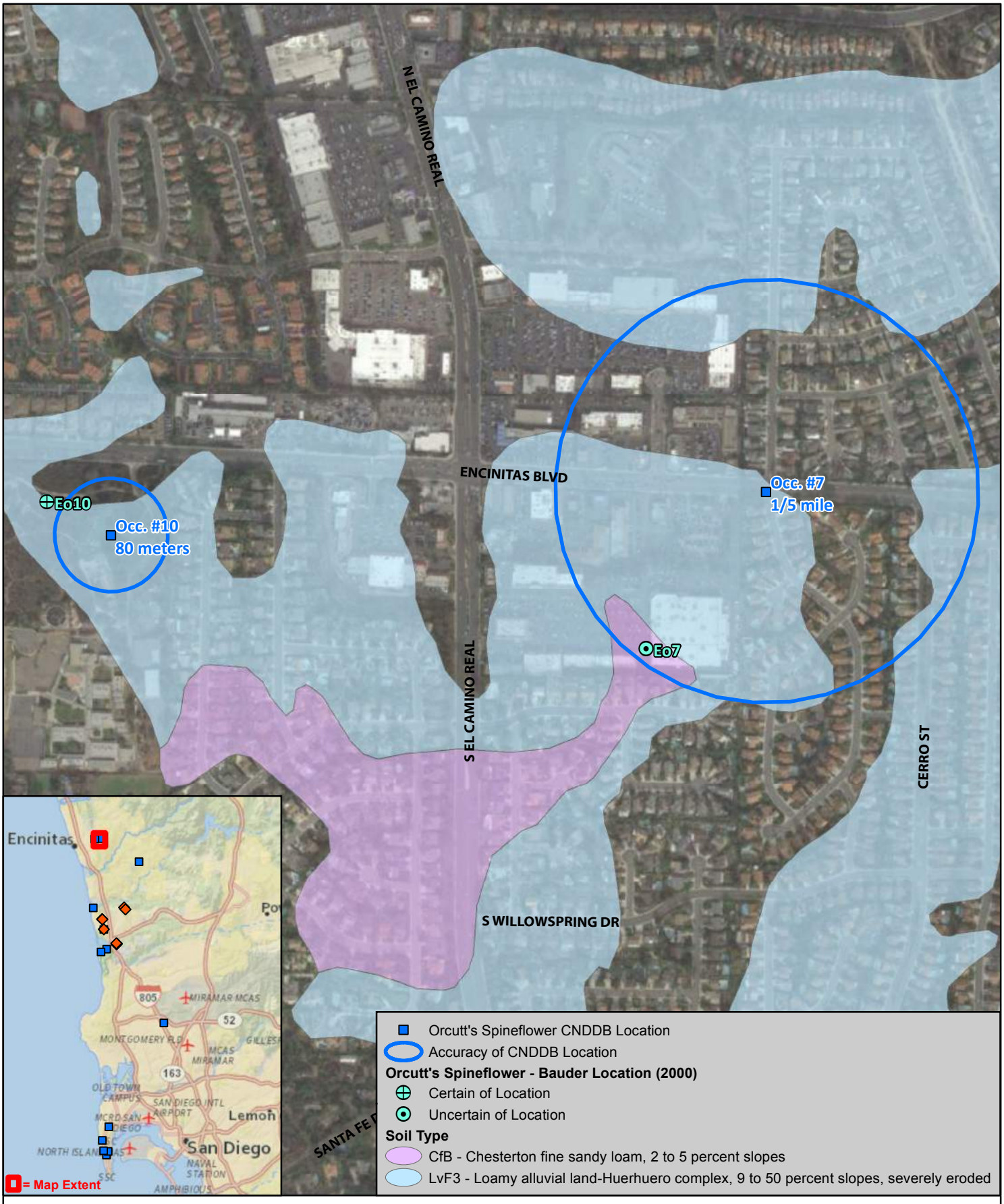
[v] Bauder, E.T., and J. Sakrison. 2010. *Chorizanthe Orcuttiana* (Orcutt's Spineflower) Final Report. Prepared for: Natural Resources Office Southwest Division Naval Facilities Engineering Command and Natural Resources Office Navy Region Southwest Naval Air Station North Island, Contract #s: N68711-04-LT-A0058 N68711-05-LT-A0051 Department of the Navy. 12 pages + appendices.

[vi] Spineflower NRCS soils lost to development are approximate and were calculated using the SanGIS 2012 database of Holland native vegetation. SanGIS categories "Disturbed Habitat", "Eucalyptus Woodland", "General Agriculture", "N/A", "TBD", and "Urban/Developed" are considered lost to development, agriculture, or other conversion.

[vii] Please note that a much smaller portion of NRCS soils ever supported (or currently supports) very fine-scale spineflower suitable habitat characteristics (e.g. gently sloping sandy soil in openings amidst chaparral or sage scrub vegetation with particular associated plants). GIS mapping is not possible for very fine-scale elements and for this project was only intended to identify possible spineflower suitable habitat at the scale of entire conserved properties to be refined with site-specific population surveys.

Attachment 1

Orcutt's Spineflower Locations and Soils Pre-2015



Orcutt's Spineflower Locations & Soils Pre-2015
Encinitas

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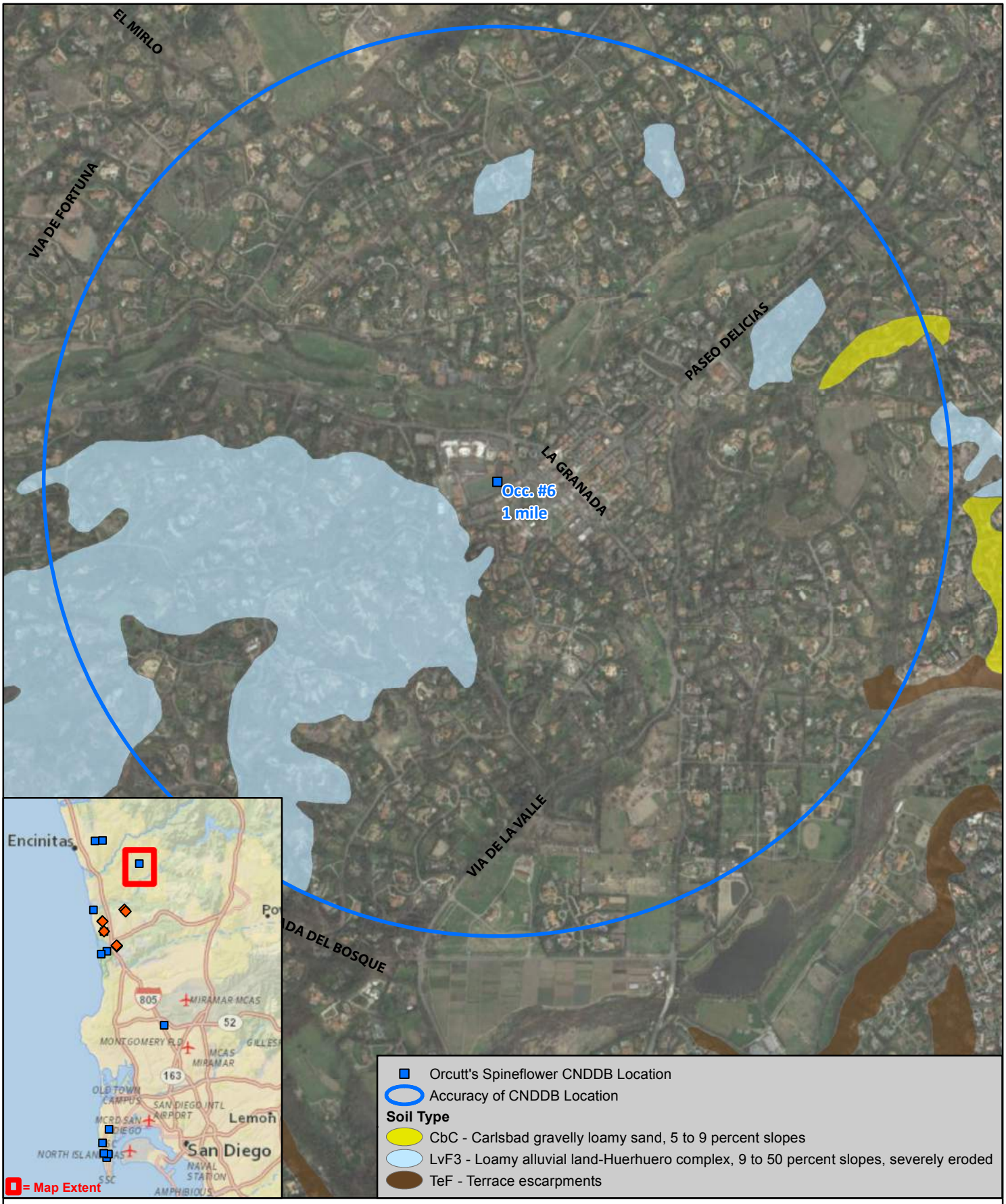
N 0 600 Feet



Orcutt's Spineflower Locations & Soils Pre-2015
Rancho Santa Fe

The Chaparral Lands Conservancy

N 0 1,500 Feet

Orcutt's Spineflower Locations & Soils Pre-2015
Del Mar

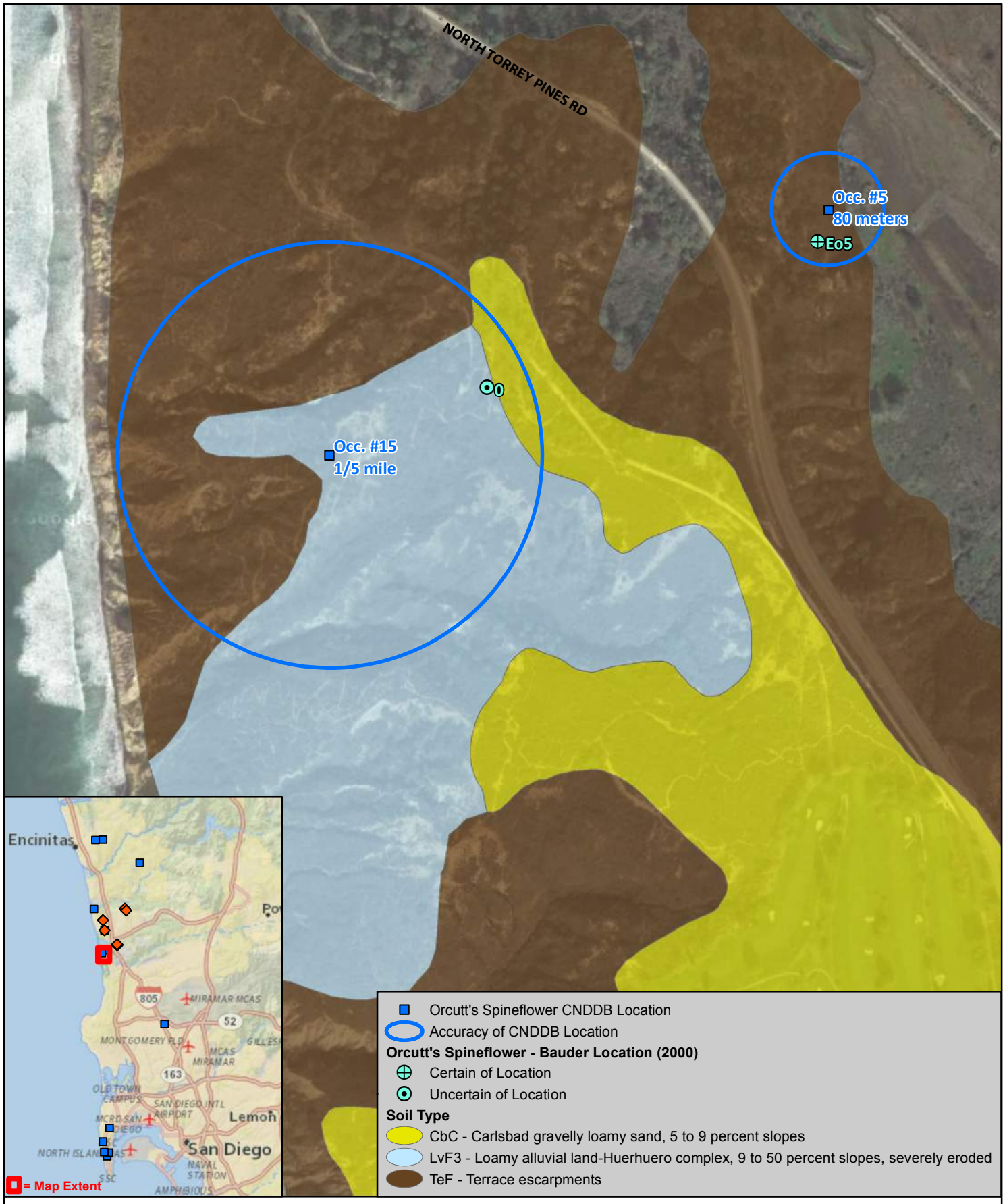
The Chaparral Lands Conservancy

N 0 600 Feet

The Chaparral Lands Conservancy

N 0 600 Feet

Orcutt's Spineflower Locations & Soils Pre-2015
Torrey Pines Natural State Reserve Extension



Orcutt's Spineflower Locations & Soils Pre-2015
Torrey Pines Natural State Reserve Main

The Chaparral Lands Conservancy

N 0 600 Feet

Orcutt's Spineflower Locations & Soils Pre-2015
Kearny Mesa

The Chaparral Lands Conservancy

N 0 1,000 Feet

Orcutt's Spineflower Locations & Soils Pre-2015
Point Loma North

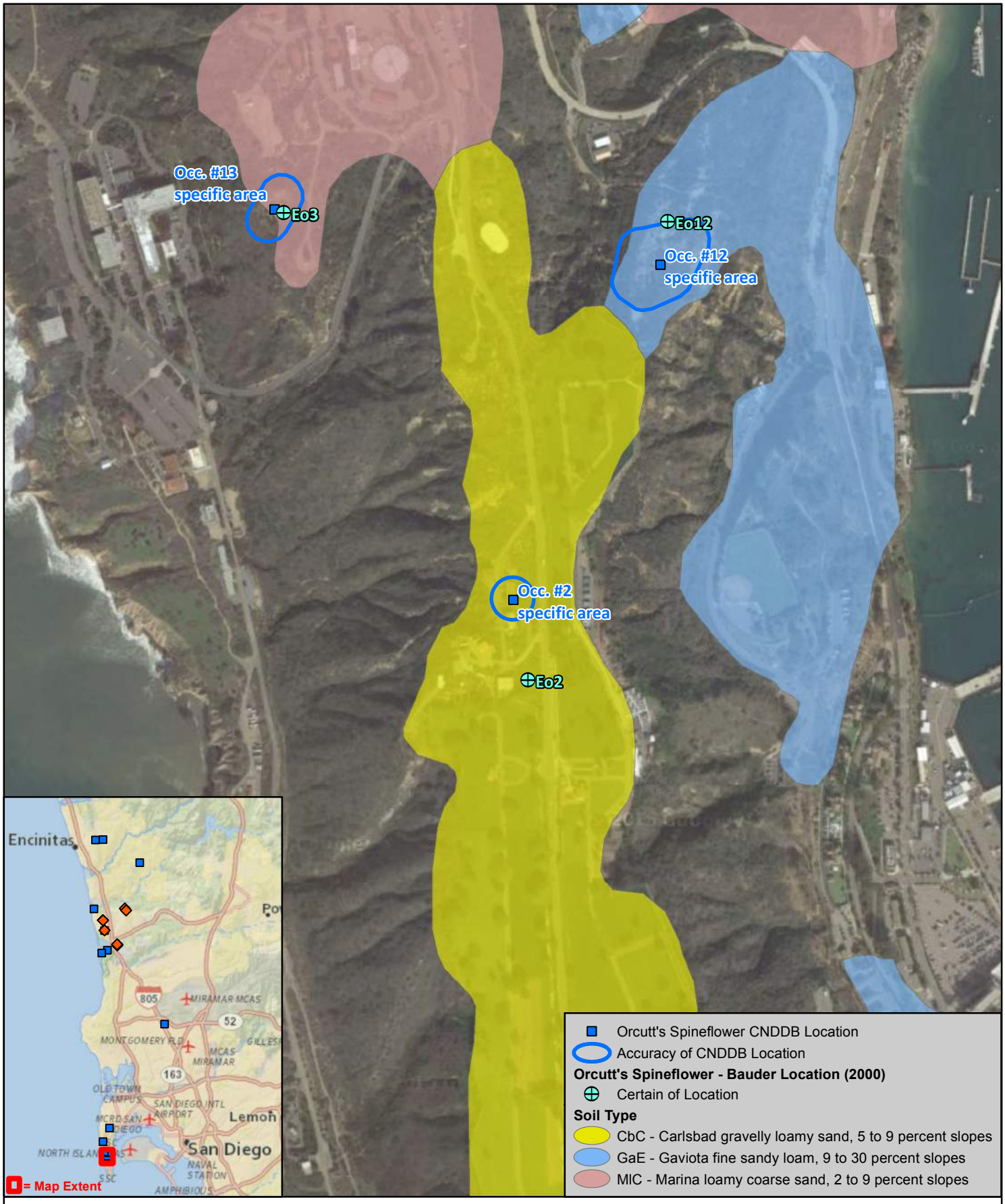
The Chaparral Lands Conservancy

N 0 1,000 Feet

Orcutt's Spineflower Locations & Soils Pre-2015
Point Loma Central

The Chaparral Lands Conservancy

N 0 600 Feet



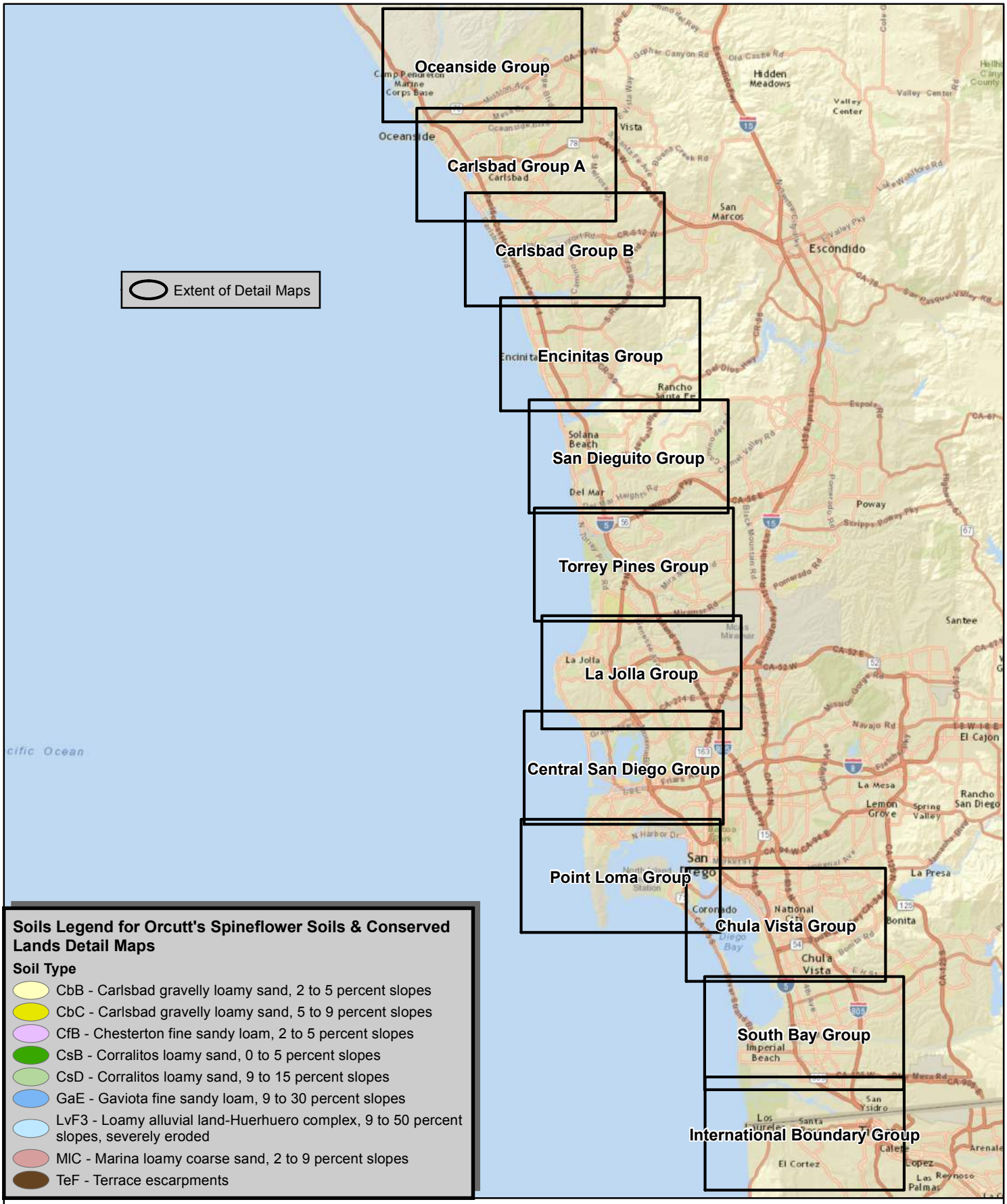
Orcutt's Spineflower Locations & Soils Pre-2015
Point Loma South

The Chaparral Lands Conservancy

N 0 600 Feet

Attachment 2

Orcutt's Spineflower Soils on Conserved Lands



Map Key and Soils Legend for Orcutt's Spineflower Soils on Conserved Lands Detail Maps

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N

0 6 Miles

I-5 NB
I-5 SB
DOUGLAS DR
NORTH RIVER RD
VANDEGRIFT BL
SR-76 WB
N SANTA FE AV
OLD GROVE RD
SR-76 EB
MISSION AV
EL CAM REAL
OCEANSIDE BL

Orcutt's Spineflower Soils on Conserved Lands*

>25% Soils

<25% Soils

* See Map Key for full soils legend

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N

0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - Oceanside Group

SR-76 EB
SR-76 WB
MISSION AV
N COAST HY
EL CAM REAL
OCEANSIDE BL
OLIVE DR
N EMERALD DR
N MELROSE DR
N SANTA FE AV
S SANTA FE AV
W VISTA WY
HACIENDA DR
SR-78 WB
SR-78 EB
COLLEGE BL
S COAST HY
I-5 SB
MARRON RD
EMERALD DR
SUNSET DR
VISTA WY
BASSWOOD AV
LAKE BL
CANNON RD
CARLSBAD VILLAGE DR
I-5 NB
TAMARACK AV
CARLSBAD BL
S MELROSE DR

Orcutt's Spineflower Soils on Conserved Lands*
- >25% Soils
- <25% Soils

* See Map Key for full soils legend

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N 0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - Carlsbad Group A

TAMARACK AV
CANNON RD
CANNON RD
CANNON RD
CARLSBAD BL
CARLSBAD BL
PALOMAR AIRPORT RD
COLLEGE BL
EL CAM REAL
EL FUERTE ST
S MELROSE DR
SR-78 WB
SR-78 EB
W SAN MARCOS BL
S RANCHO SANTA FE RD
POINSETTIA LN
MELROSE DR
POINSETTIA LN POINSETTIA LN
I-5 NB
I-5 SB
MELROSE DR
SAN ELIJO RD
LA COSTA AV

Orcutt's Spineflower Soils on Conserved Lands*
>25% Soils
<25% Soils
* See Map Key for full soils legend

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N

0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - Carlsbad Group B

CARLSBAD BL
N COAST HIGHWAY 101
I-5 SB
EL CAM REAL
LA COSTA AV
CALLE BARCELONA
RANCHO SANTA FE RD
OLIVENHAIN RD
LEUCADIA BL
N EL CAM REAL
S RANCHO SANTA FE RD
ENCINITAS BL
SANTA FE DR
I-5 NB
S COAST HIGHWAY 101
BIRMINGHAM DR
S EL CAM REAL
LA BAJADA
DEL DIOS HY
LA GRANADA
PASEO DELICIAS
VIA DE LA VALLE
SAN ELIJO AV

Orcutt's Spineflower Soils on Conserved Lands*
- >25% Soils
- <25% Soils
- Orcutt's Spineflower CNDDB Location
- Accuracy of CNDDB Location

Orcutt's Spineflower - Bauder Location
- Certain of Location
- Uncertain of Location

* See Map Key for full soils legend

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N

0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - Encinitas Group

SAN ELIJO AV
S COAST HIGHWAY 101
MANCHESTER AV
N HIGHWAY 101
S HIGHWAY 101
LOMAS SANTA FE DR
LOMAS SANTA FE DR
VIA DE LA VALLE
EL CAMINO REAL
I-5 NB
I-5 SB
CAM DEL MAR
DEL MAR HEIGHTS RD
CARMEL VALLEY RD
SR-56 EB SR-56 WB

Orcutt's Spineflower Soils on Conserved Lands*
- >25% Soils
- <25% Soils
- Orcutt's Spineflower CNDDB Location
- Accuracy of CNDDB Location
- Orcutt's Spineflower - TCLC Certain of Location (2015)

Orcutt's Spineflower - Bauder Location
- Uncertain of Location

* See Map Key for full soils legend

The Chaparral Lands Conservancy

N

0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - San Dieguito Group

CAM DEL MAR
CARMEL VALLEY RD
NORTH TORREY PINES RD
SR-56 WB
SR-56 EB
I-5 SB
CARMEL MTN RD
I-5 LOCAL BYPASS
I-805 NB
I-5 SB LOCAL BYPASS RA
CAM SANTA FE
MIRA MESA BL
MIRAMAR RD
I-805 SB
GENESEE AV
I-5 NB
EXECUTIVE DR
LA JOLLA VILLAGE DR

Orcutt's Spineflower Soils on Conserved Lands*
- >25% Soils
- <25% Soils
- Orcutt's Spineflower CNDDB Location
- Accuracy of CNDDB Location
- Orcutt's Spineflower - TCLC Certain of Location (2015)

Orcutt's Spineflower - Bauder Location
- Certain of Location
- Uncertain of Location

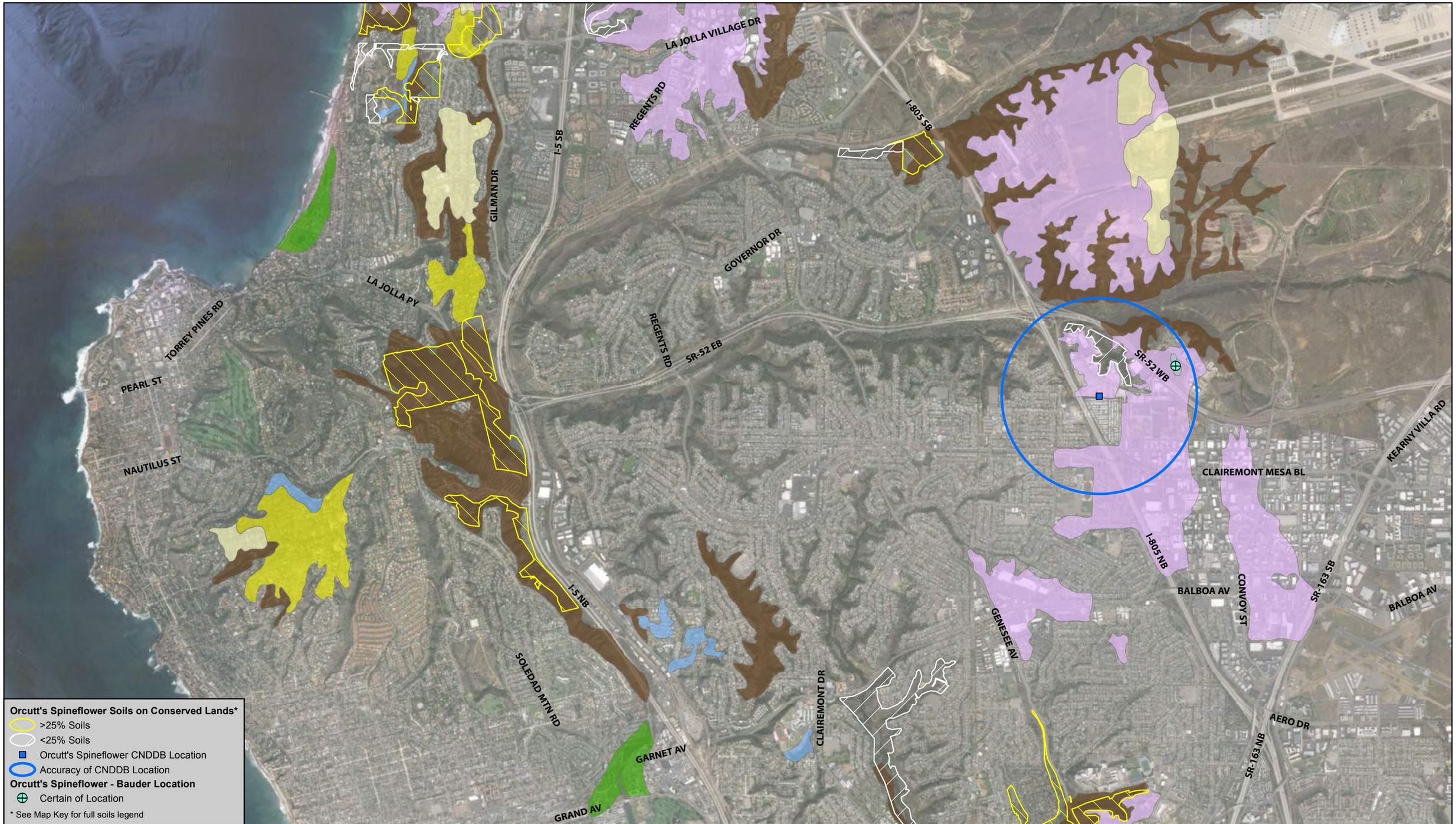
* See Map Key for full soils legend

The Chaparral Lands Conservancy

N

0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - Torrey Pines Group



The Chaparral Lands Conservancy

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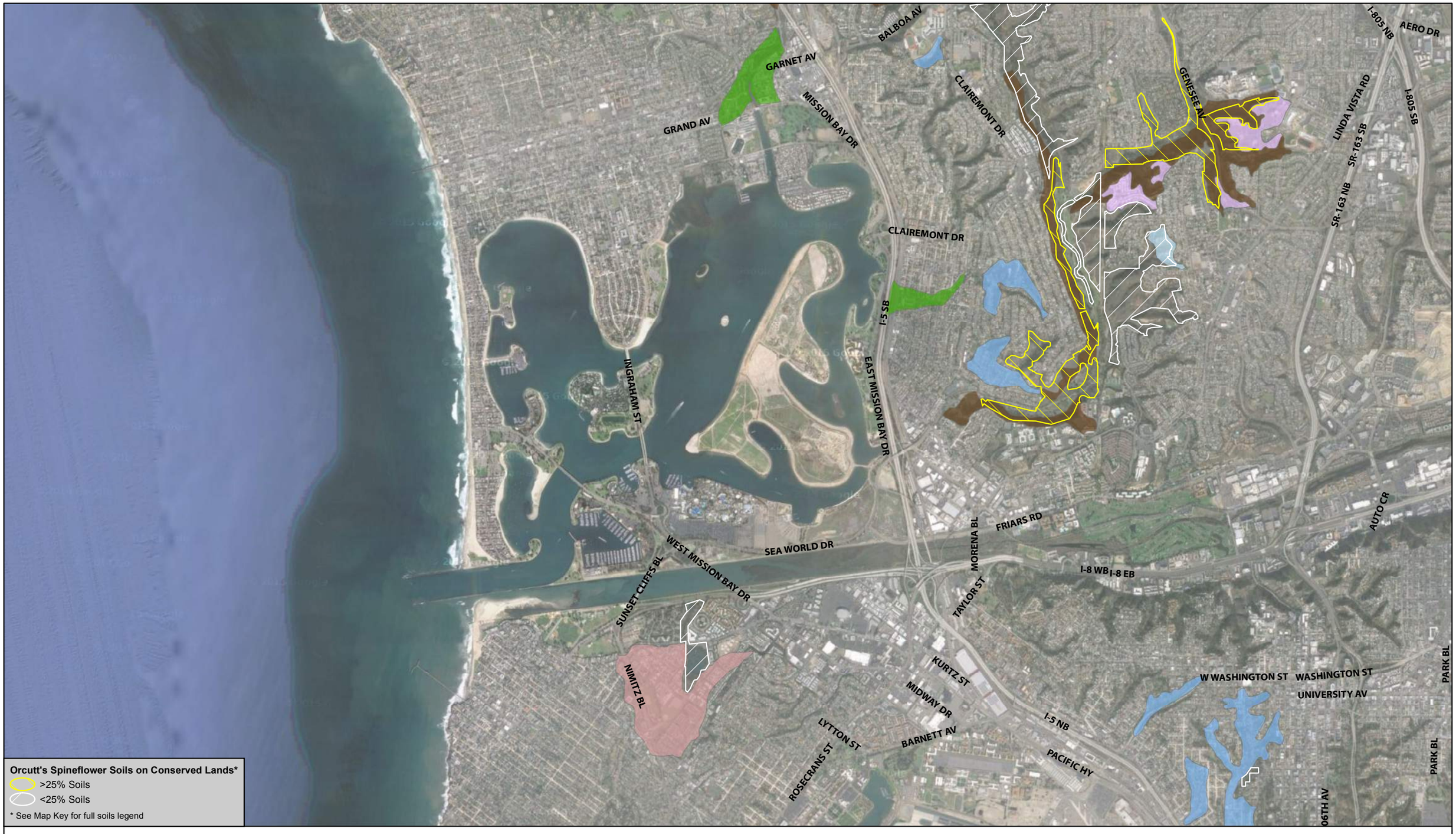
Orcutt's Spineflower Soils on Conserved Lands
Detail Map - La Jolla Group



The Chaparral Lands Conservancy

N

0 3,000 Feet

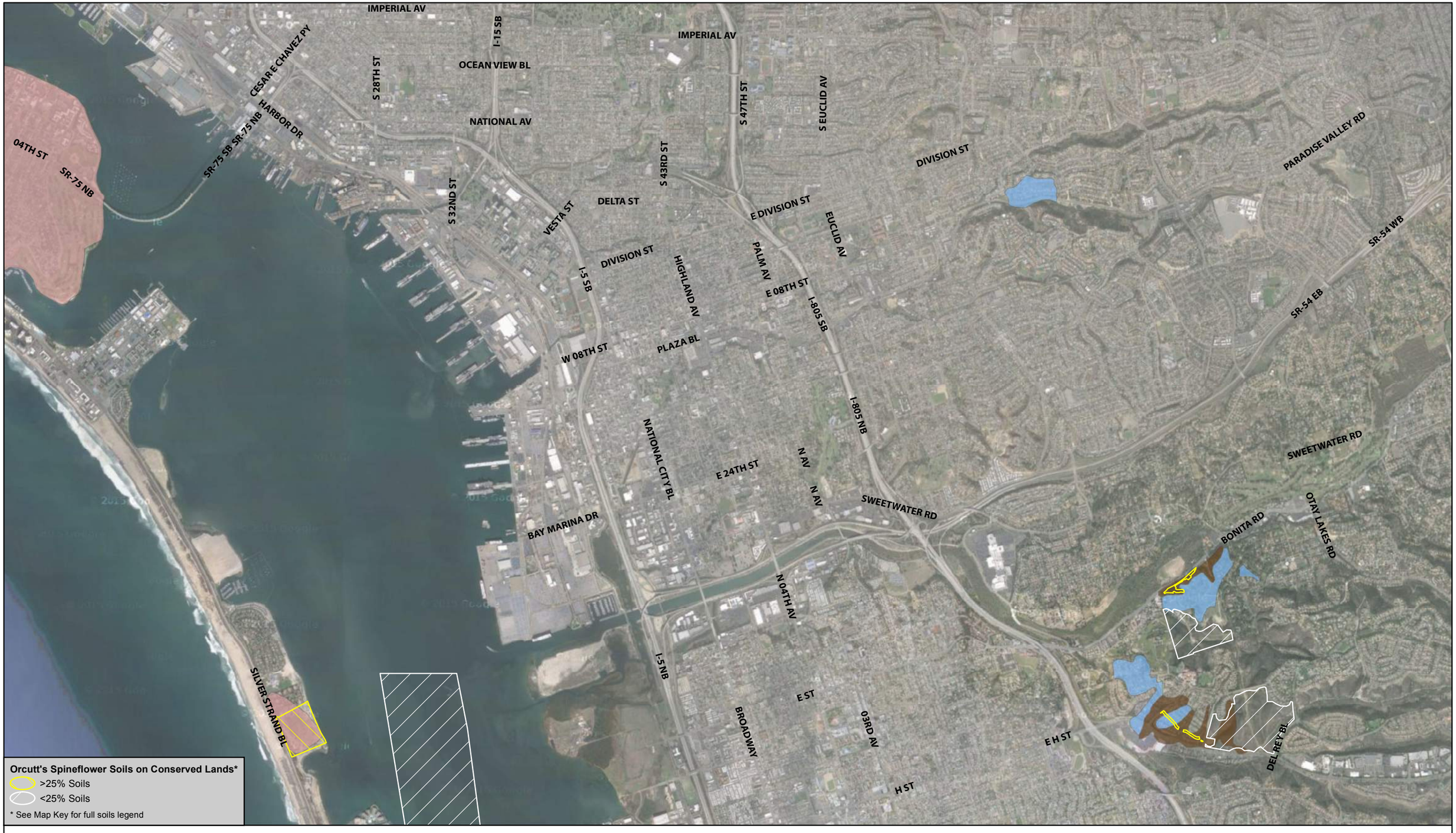
Orcutt's Spineflower Soils on Conserved Lands
Detail Map - Central San Diego Group

The Chaparral Lands Conservancy

N

0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - Point Loma Group



Orcutt's Spineflower Soils on Conserved Lands*

>25% Soils

<25% Soils

* See Map Key for full soils legend

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N 0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - Chula Vista Group

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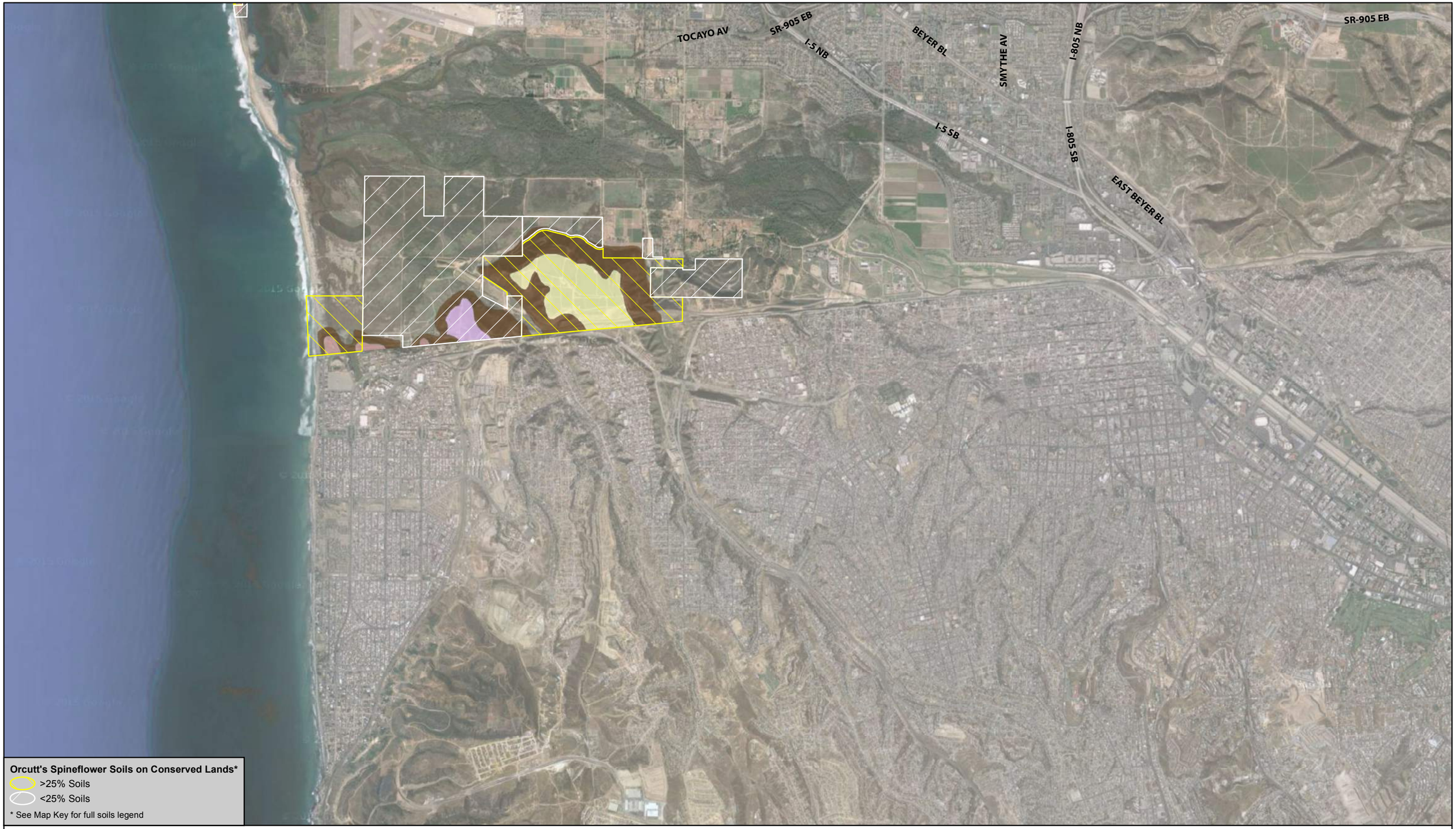
N

0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - South Bay Group



Orcutt's Spineflower Soils on Conserved Lands*

>25% Soils

<25% Soils

* See Map Key for full soils legend

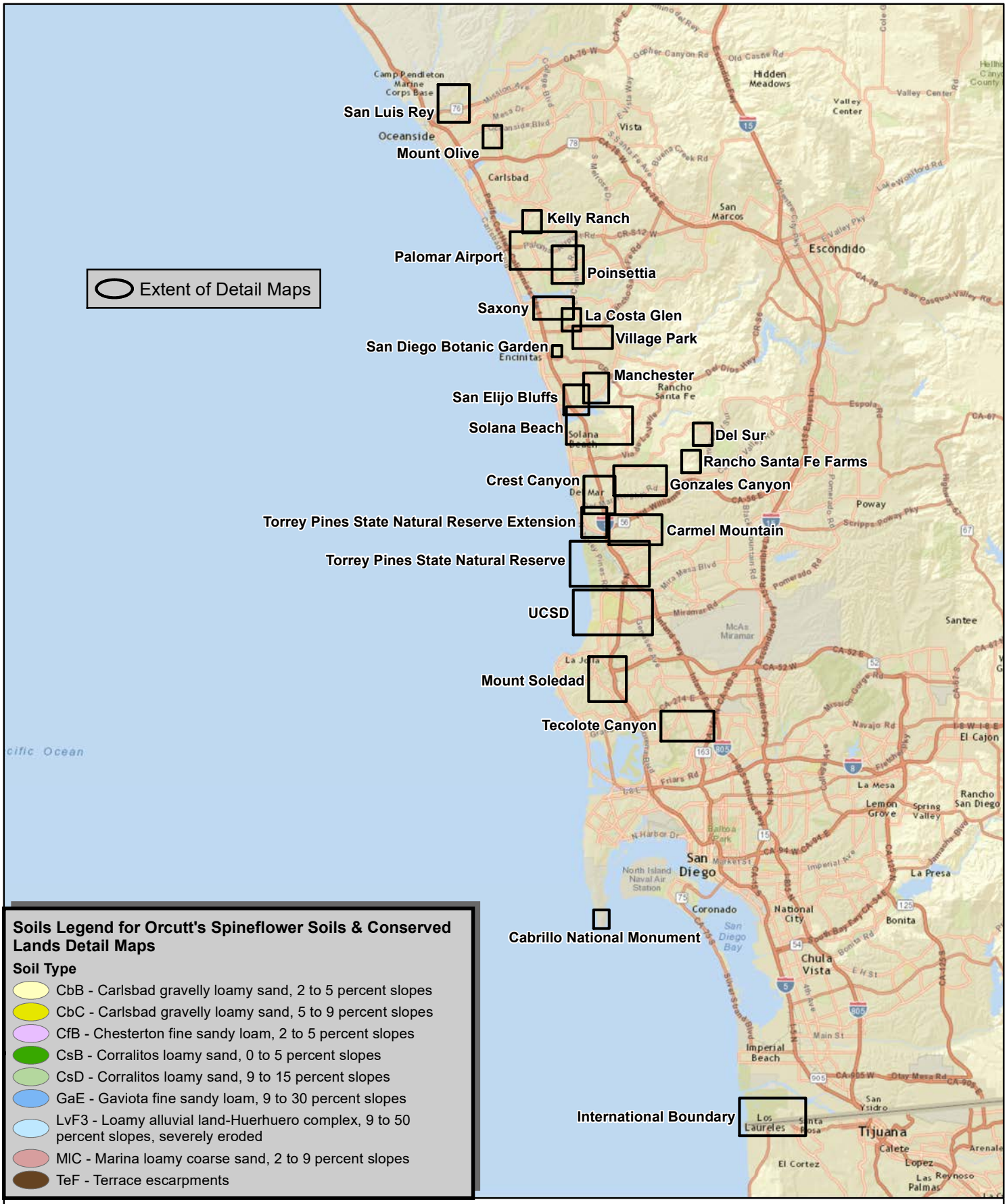
The Chaparral Lands Conservancy

N

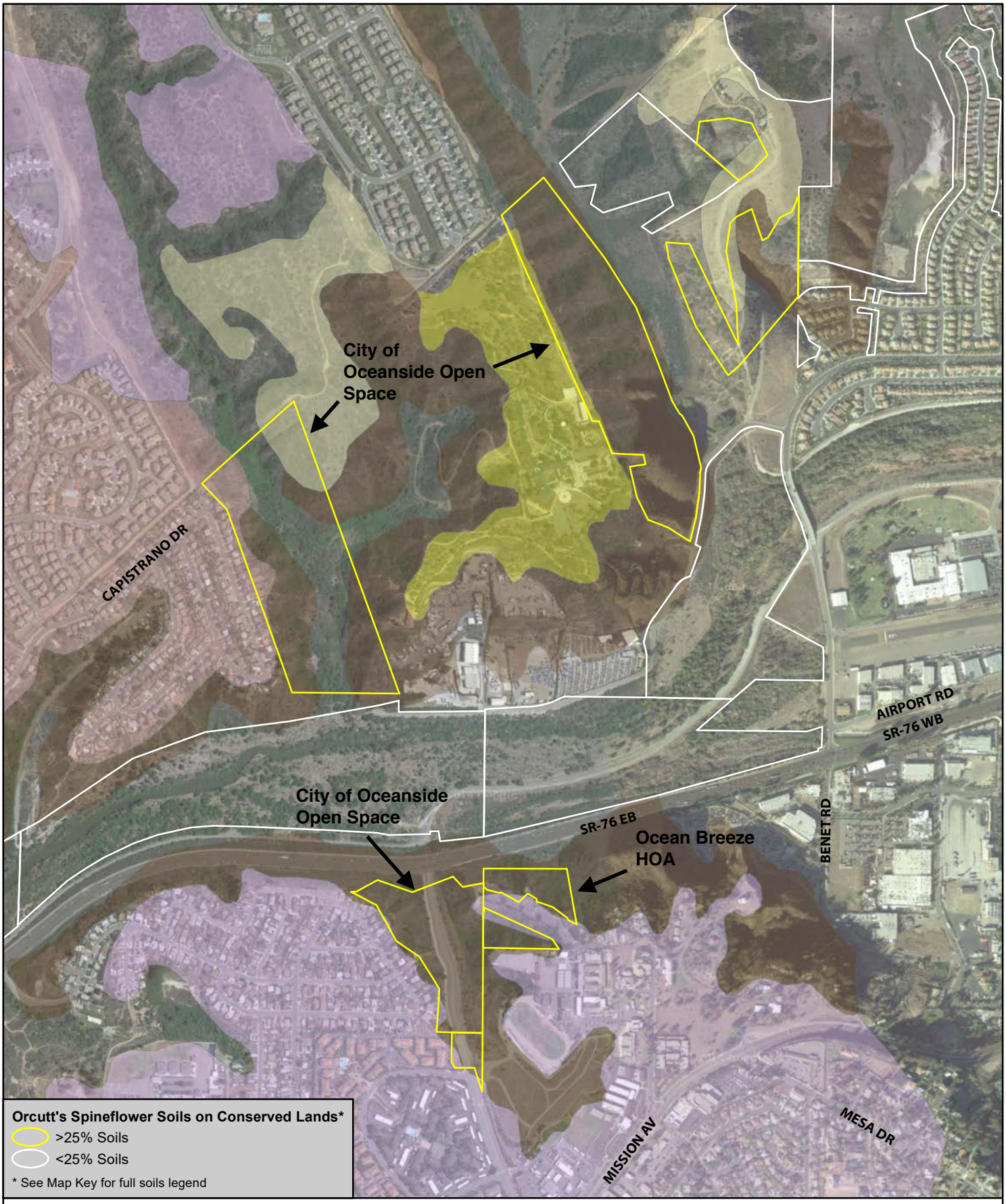
0 3,000 Feet

Orcutt's Spineflower Soils on Conserved Lands
Detail Map - International Boundary Group

Attachment 3
Orcutt's Spineflower Survey Maps



Map Key and Soils Legend for Orcutt's Spineflower Survey Maps

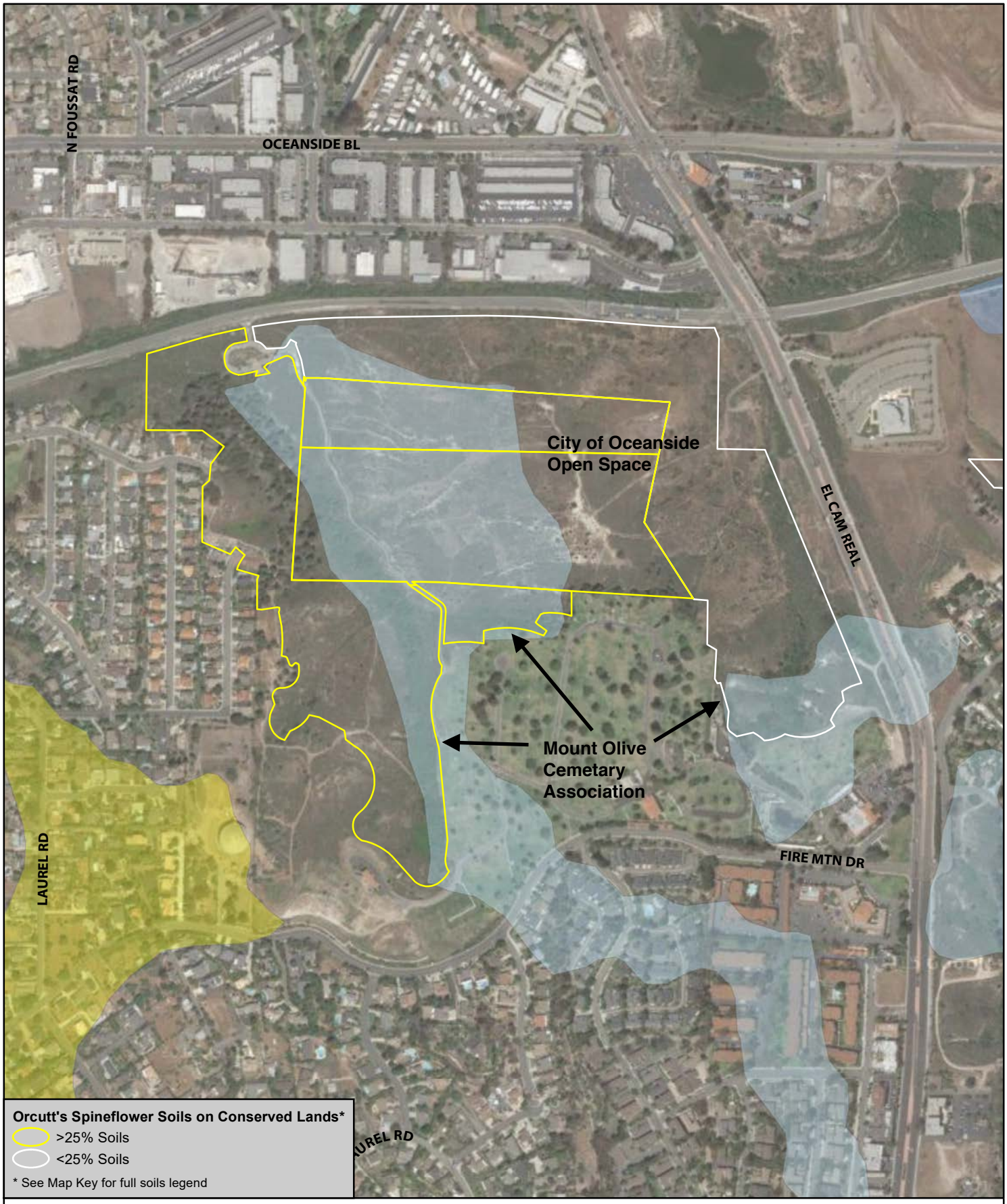


The Chaparral Lands Conservancy

N

0 1,000 Feet

Orcutt's Spineflower Survey Maps
San Luis Rey

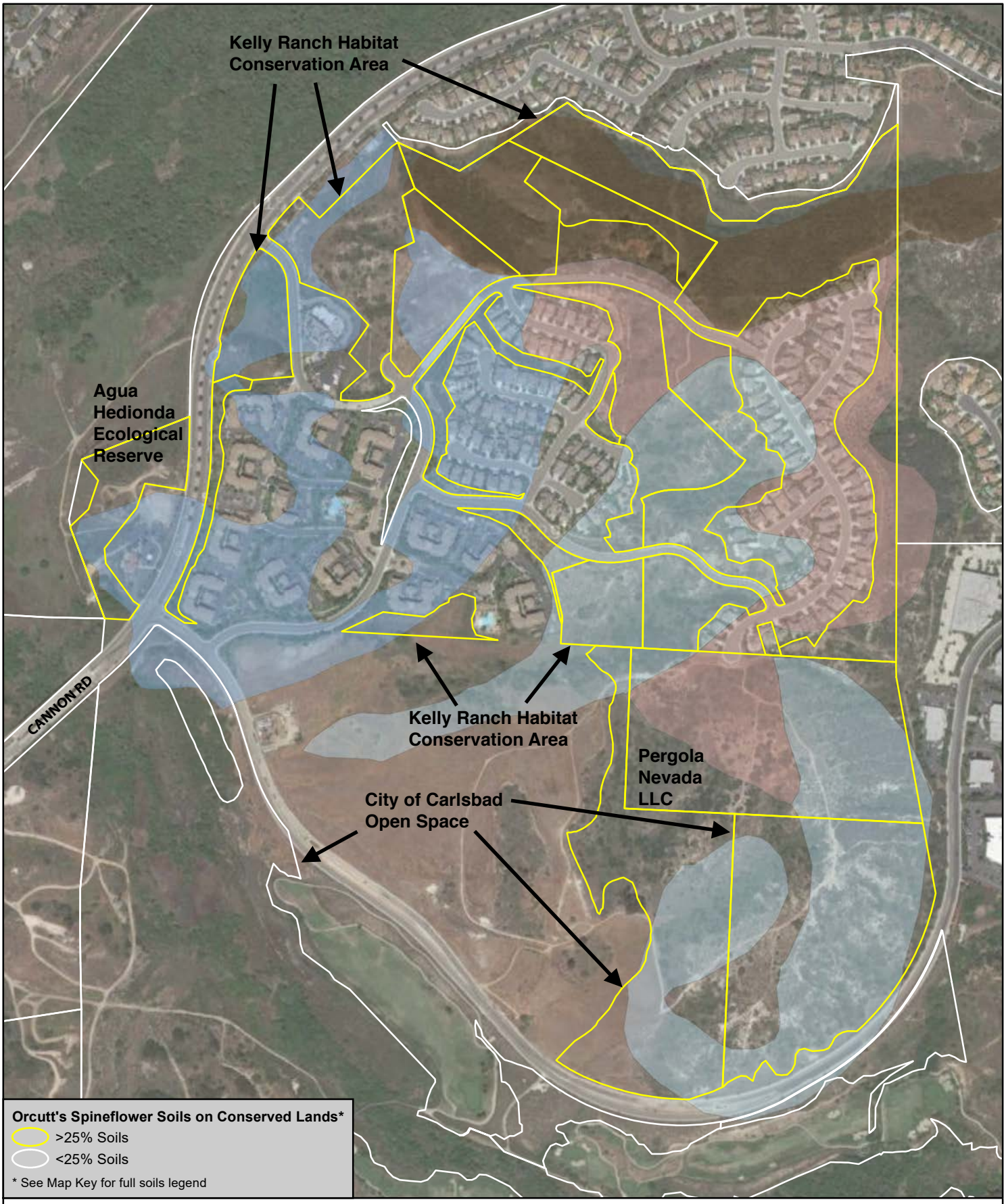


The Chaparral Lands Conservancy

N

0 600 Feet

Orcutt's Spineflower Survey Maps
Mount Olive

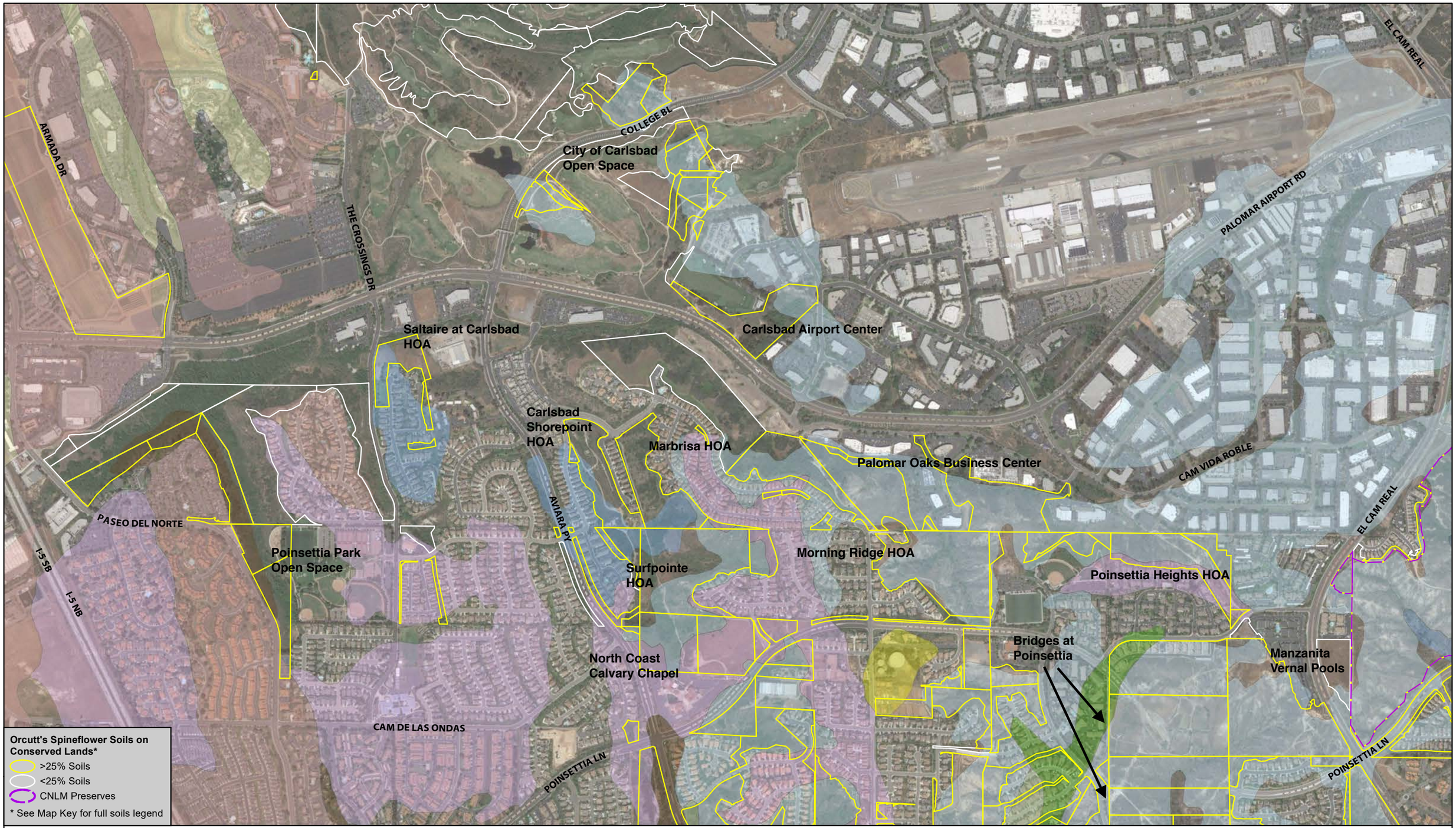


The Chaparral Lands Conservancy

N

0 600 Feet

Orcutt's Spineflower Survey Maps
Kelly Ranch

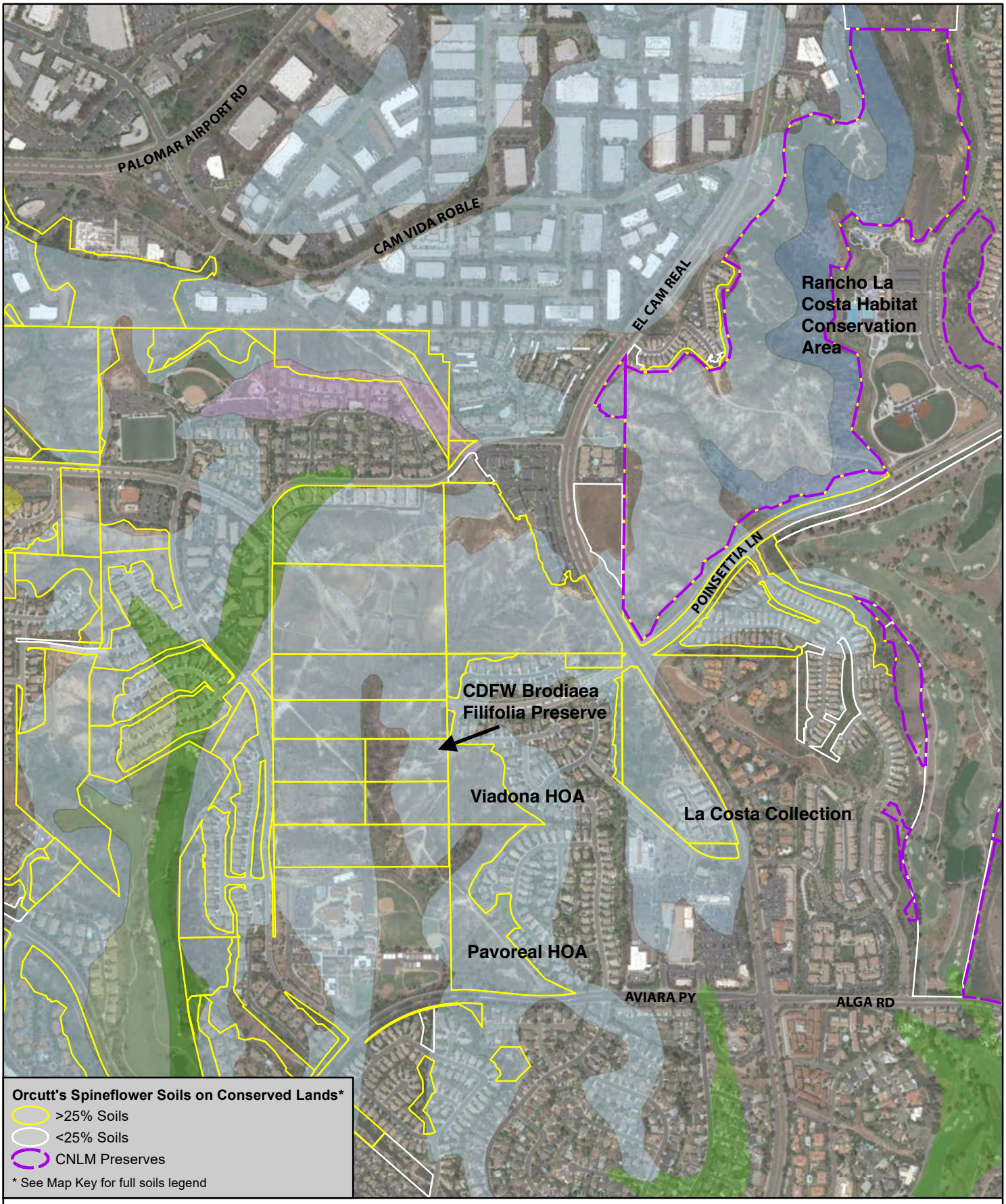


The Chaparral Lands Conservancy

N

0 1,000 Feet

Orcutt's Spineflower Survey Maps
Palomar Airport

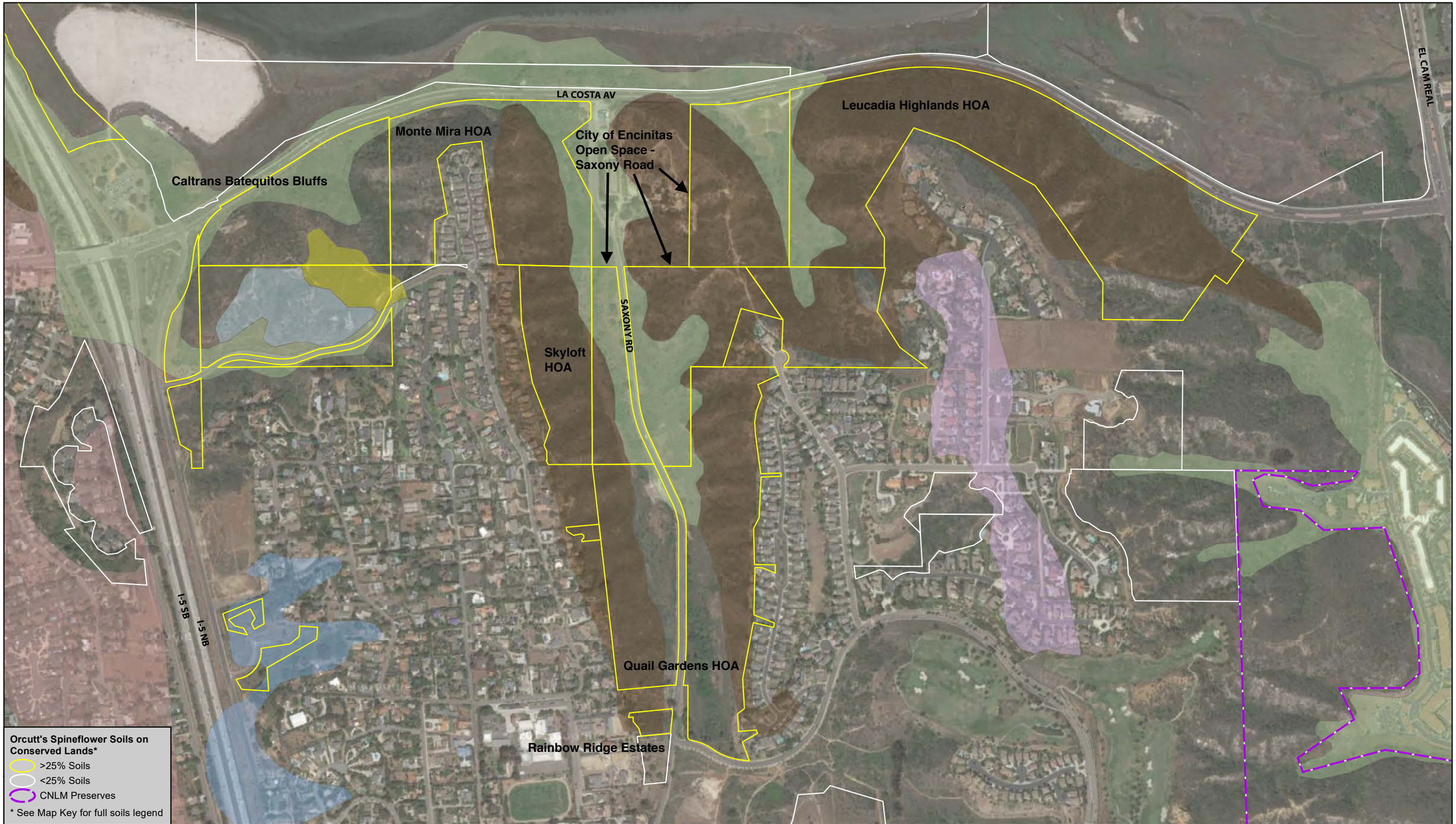


The Chaparral Lands Conservancy

N

0 1,000 Feet

Orcutt's Spineflower Survey Maps
Poinsettia

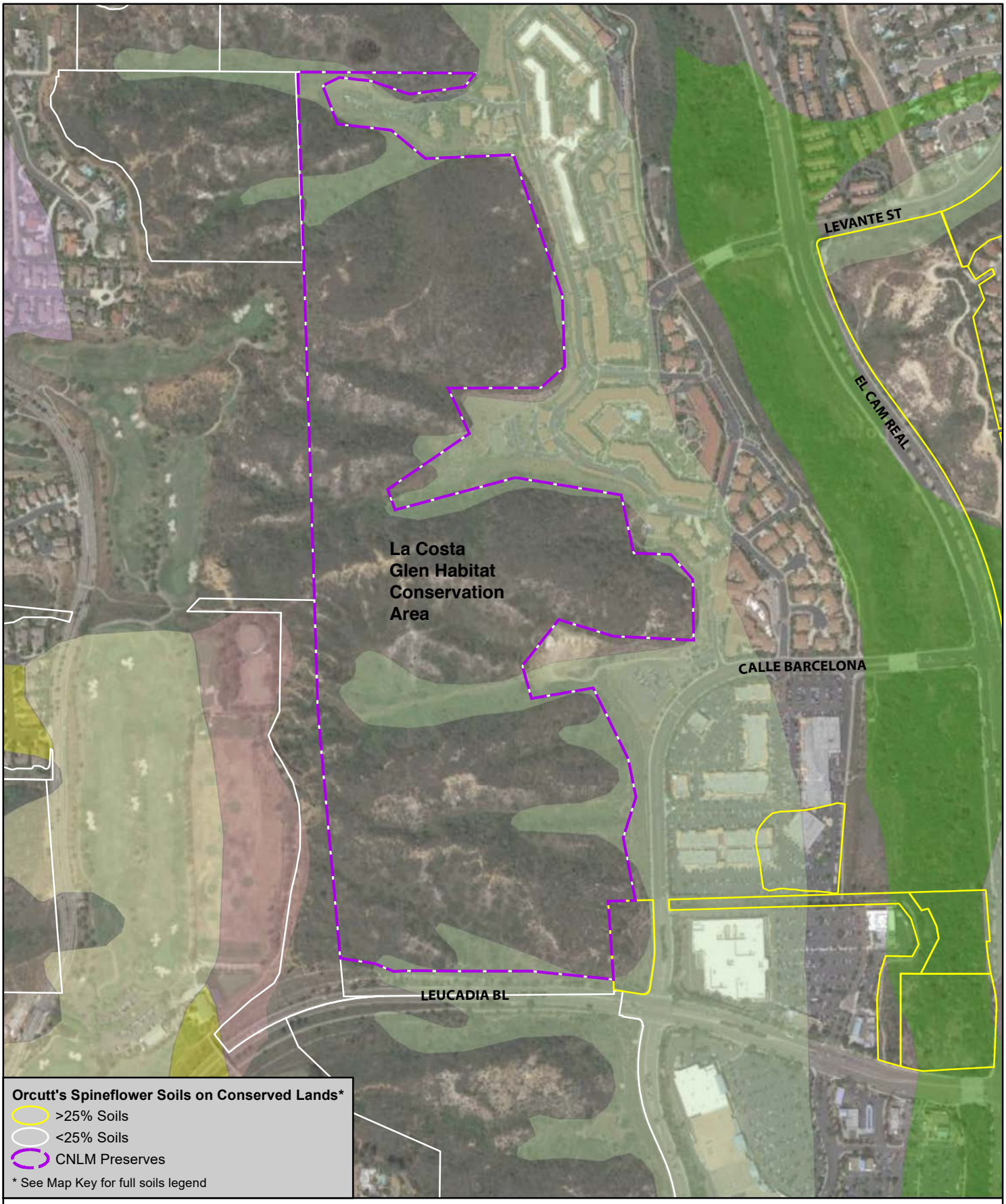


The Chaparral Lands Conservancy

N

0 610 Feet

Orcutt's Spineflower Survey Maps
Saxony



The Chaparral Lands Conservancy

N

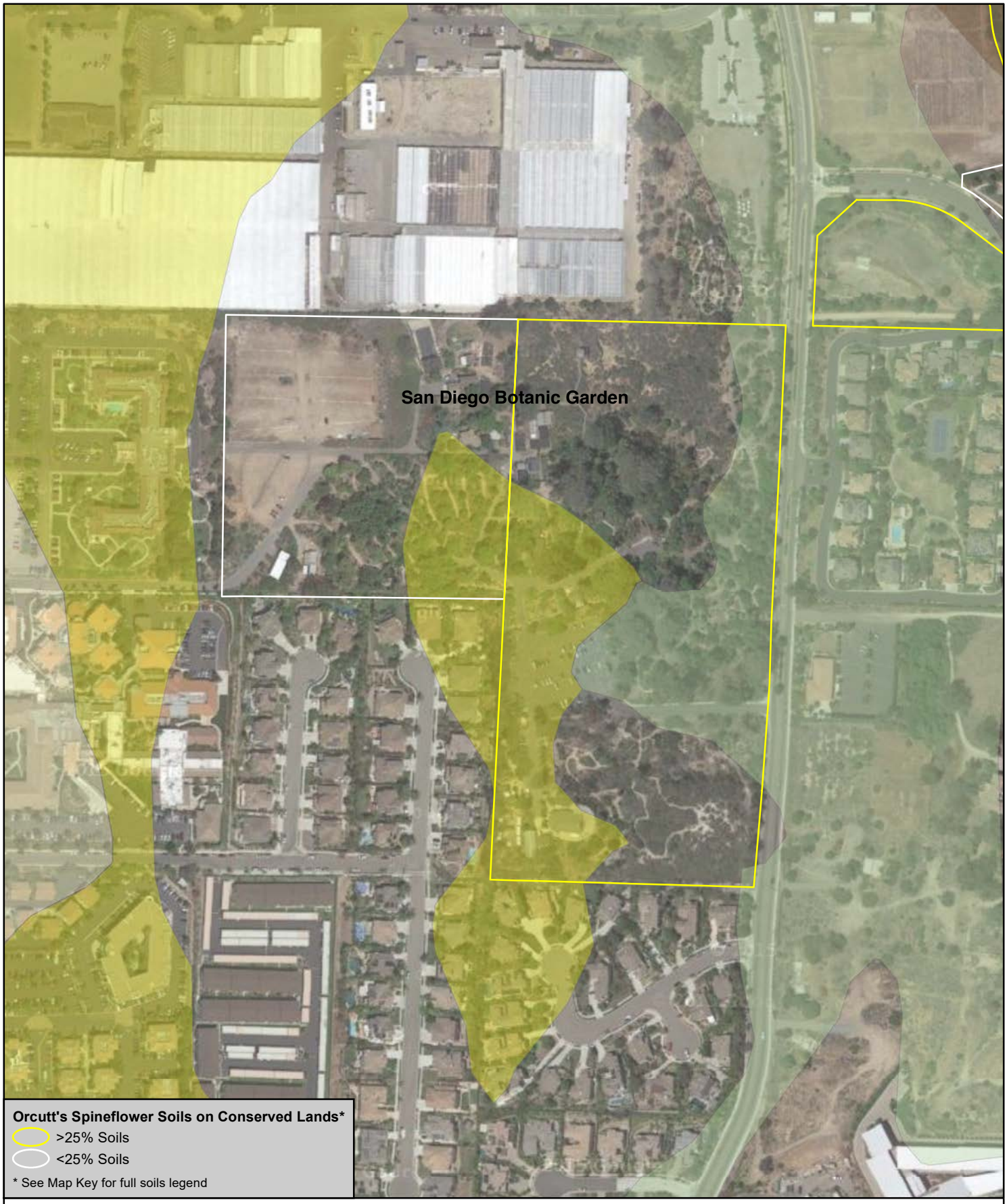
0 600 Feet

Orcutt's Spineflower Survey Maps
La Costa Glen

The Chaparral Lands Conservancy

0 610 Feet

Orcutt's Spineflower Survey Maps
Village Park

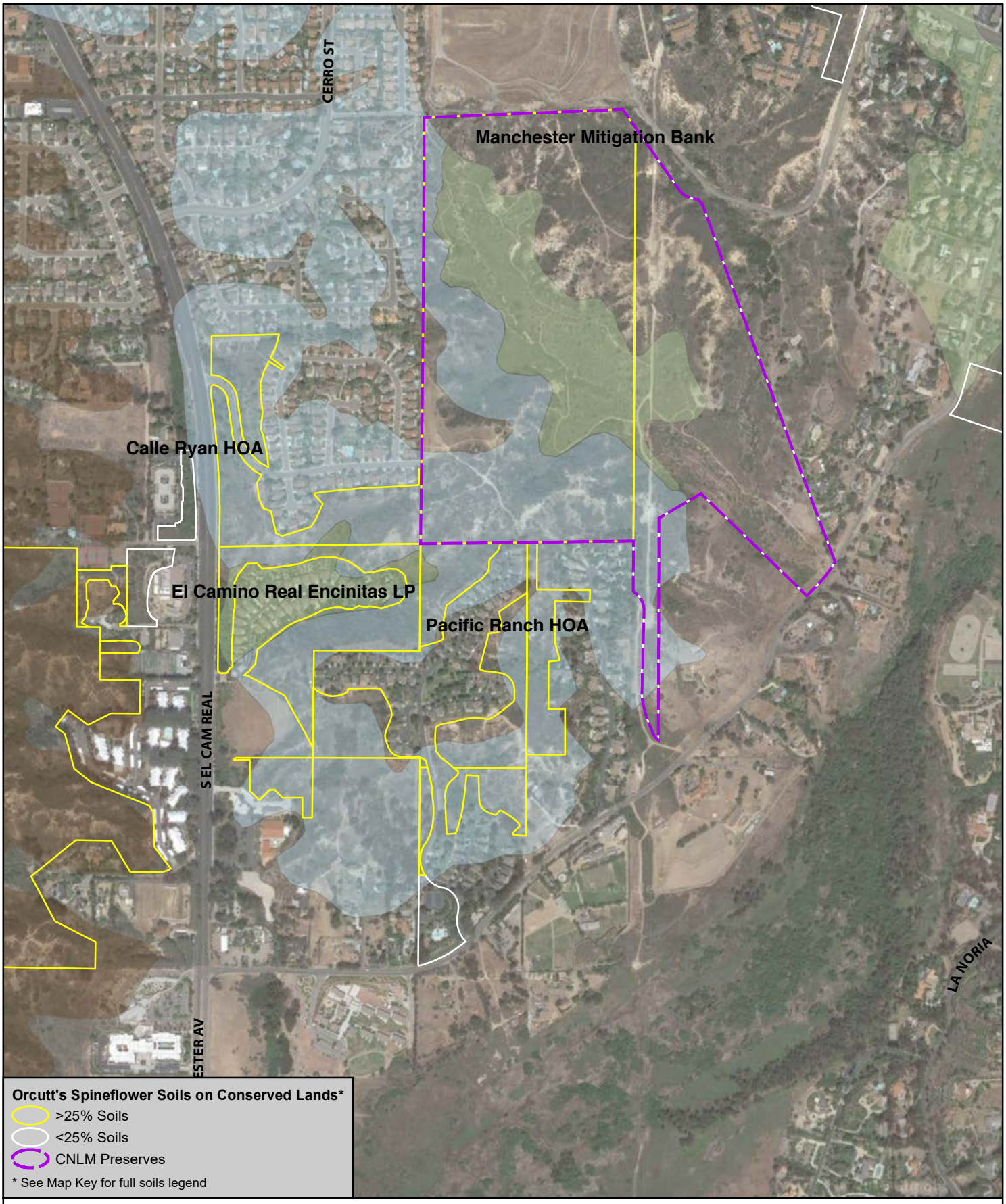


The Chaparral Lands Conservancy

N

0 300 Feet

Orcutt's Spineflower Survey Maps
San Diego Botanic Garden

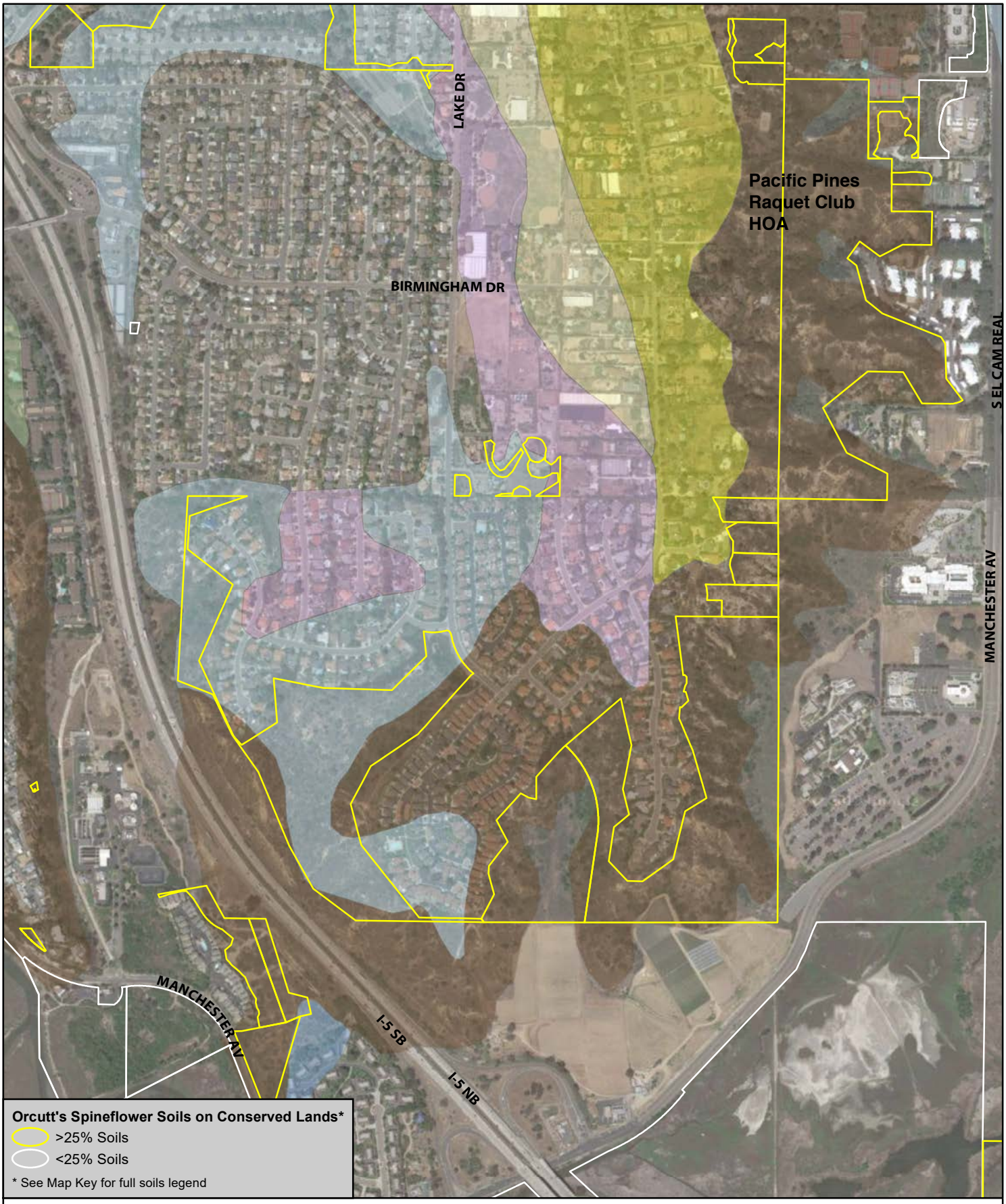


The Chaparral Lands Conservancy

N

0 800 Feet

Orcutt's Spineflower Survey Maps
Manchester

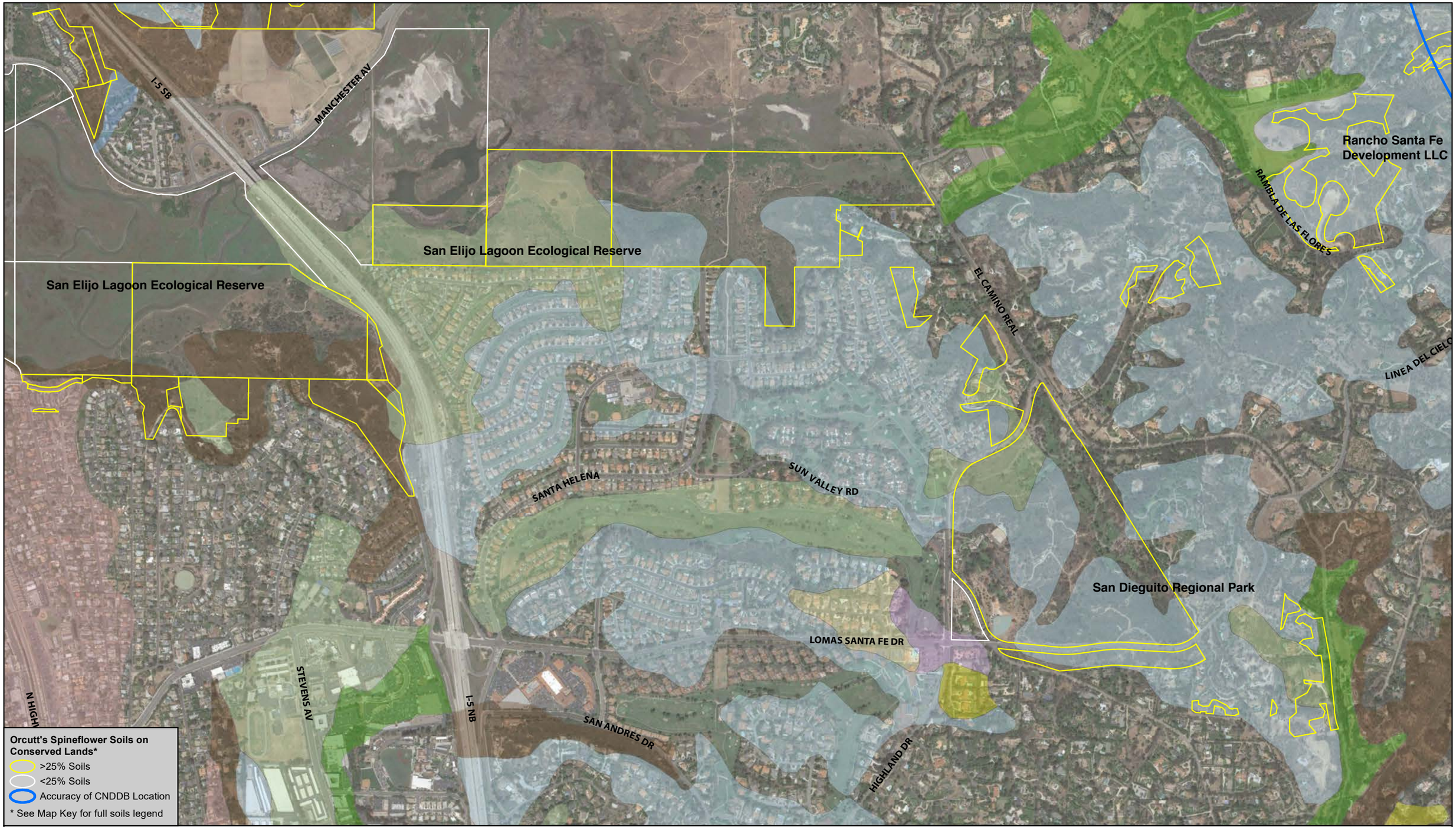


The Chaparral Lands Conservancy

N

0 800 Feet

Orcutt's Spineflower Survey Maps
San Elijo Bluffs



The Chaparral Lands Conservancy

N 0 1,000 Feet

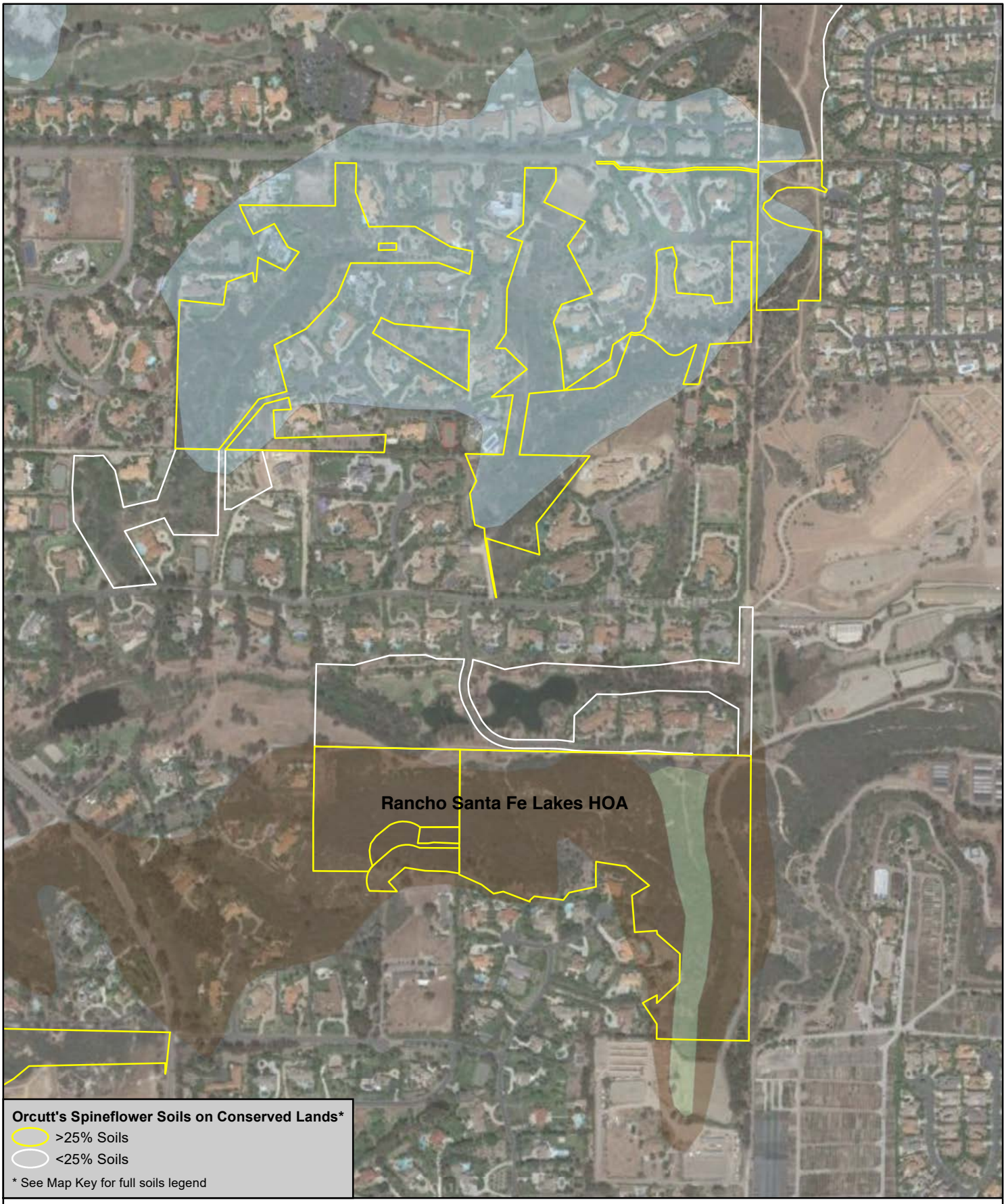
Orcutt's Spineflower Survey Maps
Solana Beach

The Chaparral Lands Conservancy

N

0 600 Feet

Orcutt's Spineflower Survey Maps
Del Sur

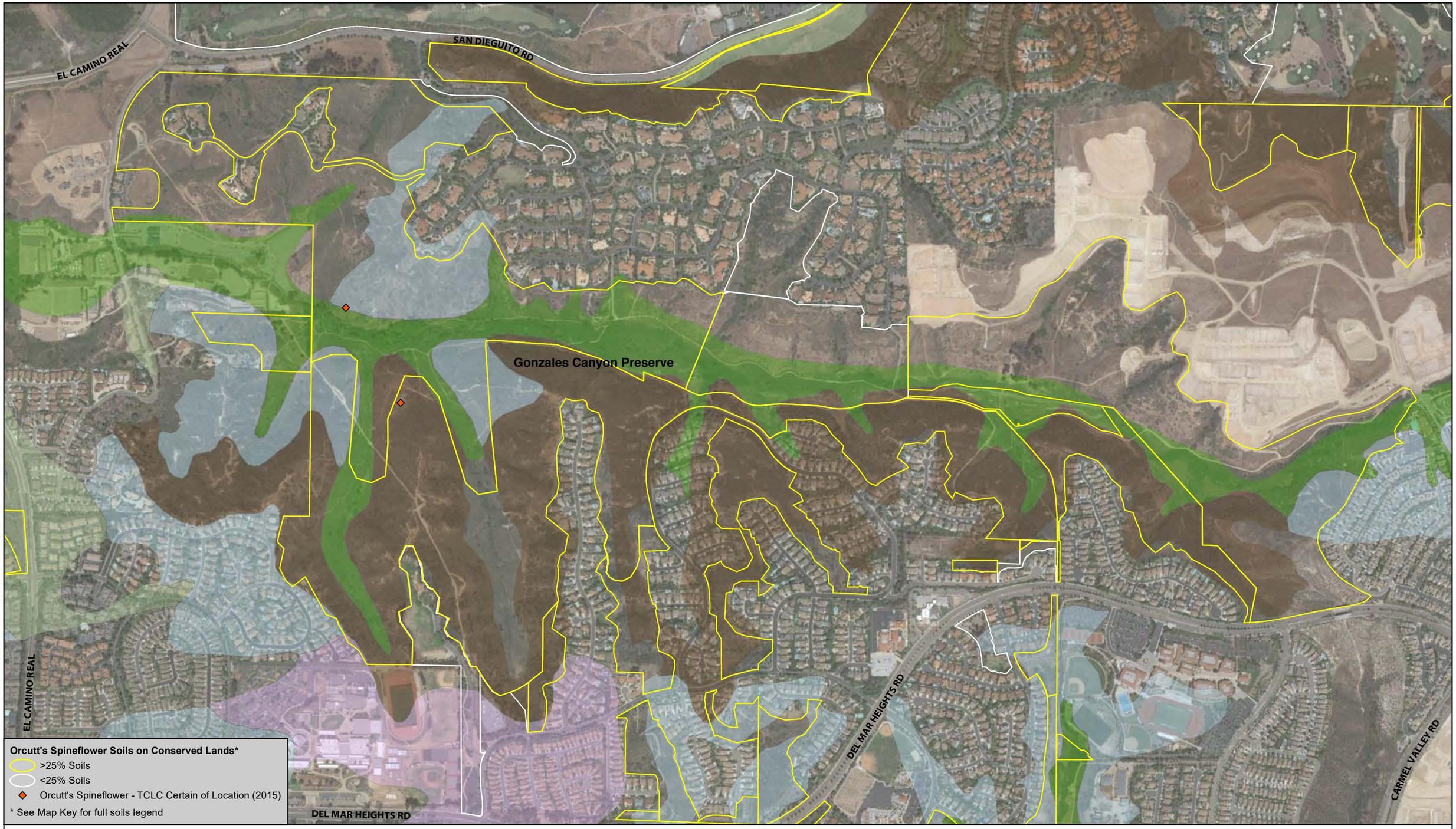


The Chaparral Lands Conservancy

N

0 600 Feet

Orcutt's Spineflower Survey Maps
Rancho Santa Fe Farms

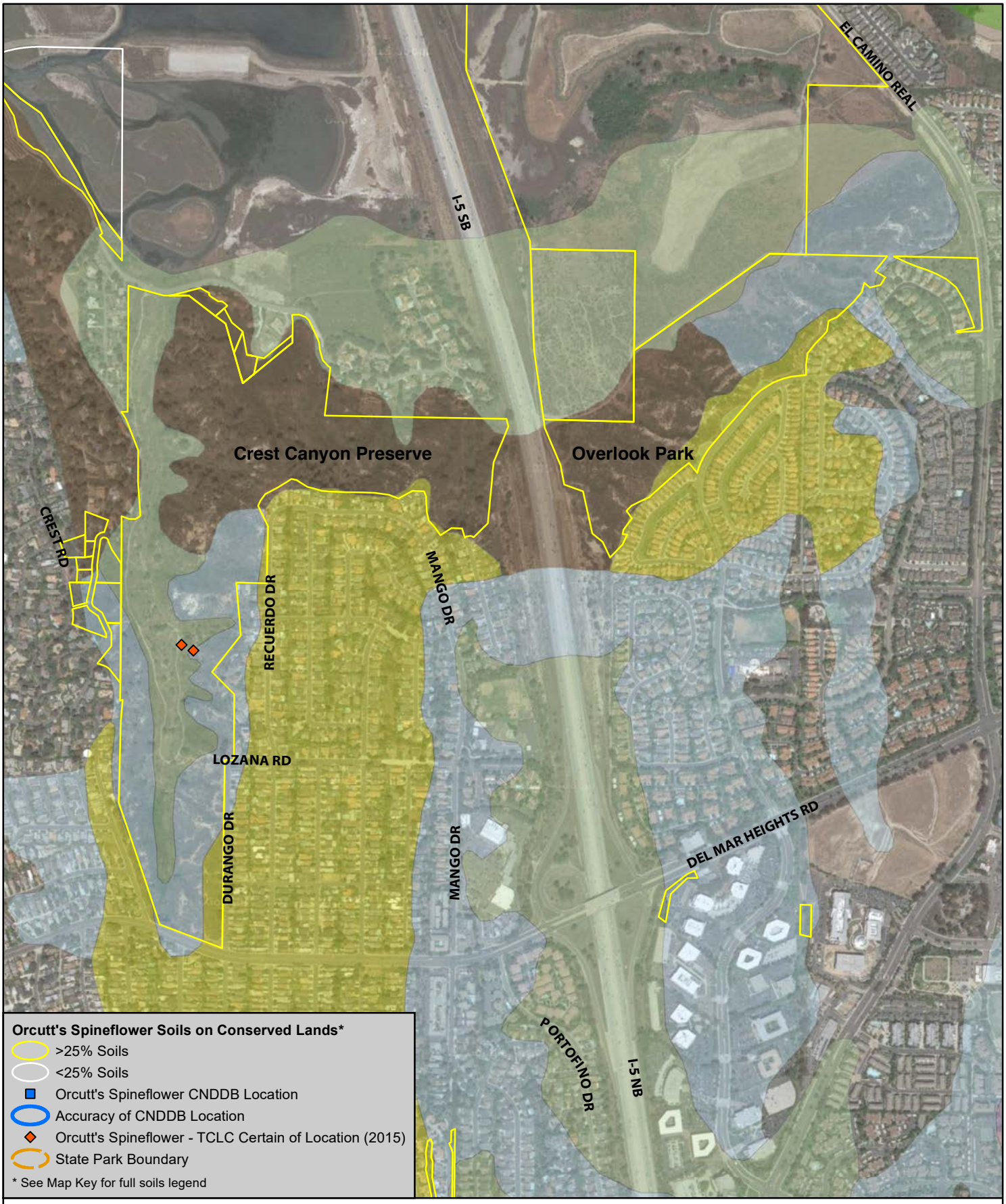


The Chaparral Lands Conservancy

N

0 810 Feet

Orcutt's Spineflower Survey Maps
Gonzales Canyon

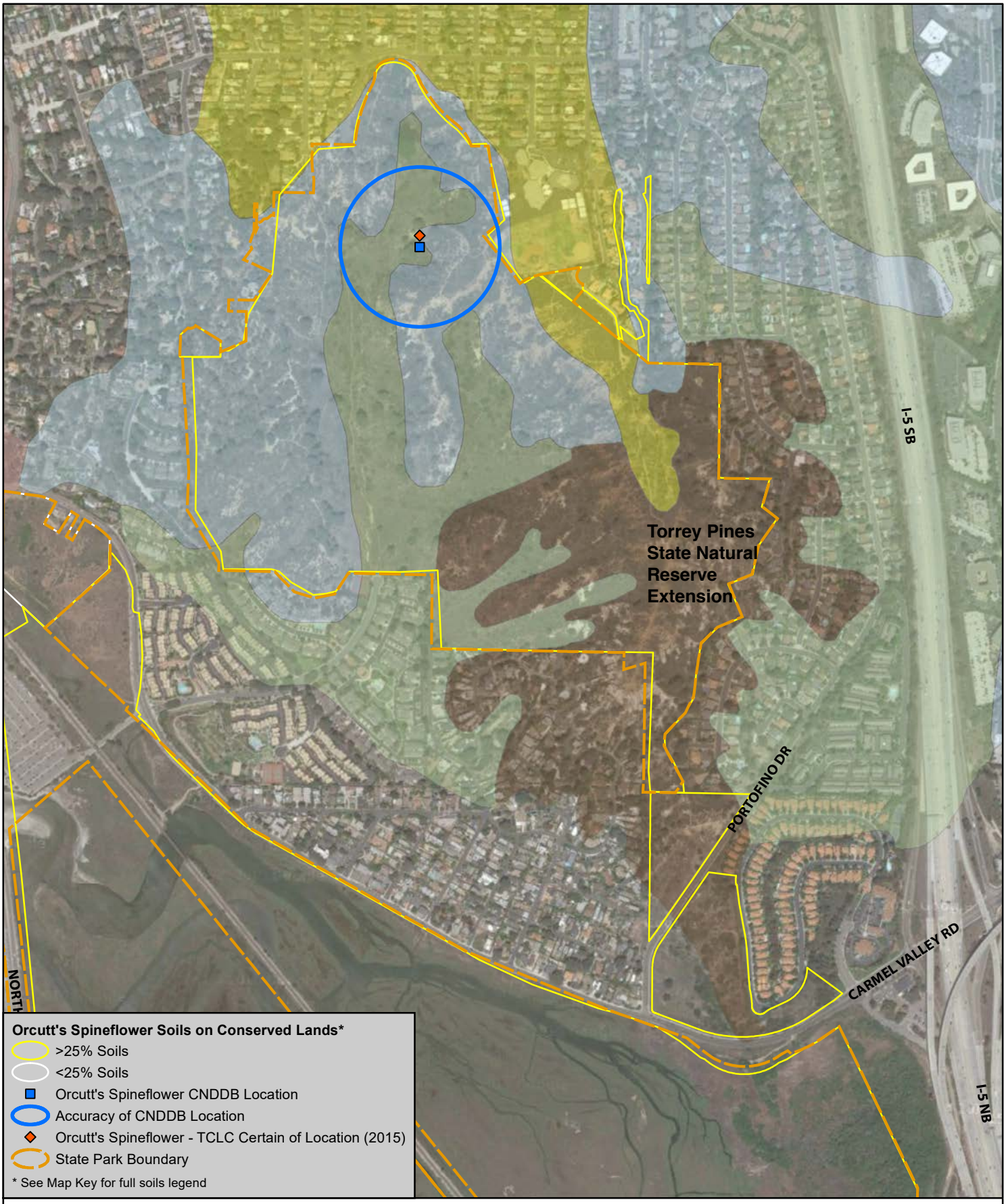


The Chaparral Lands Conservancy

N

0 1,000 Feet

Orcutt's Spineflower Survey Maps
Crest Canyon

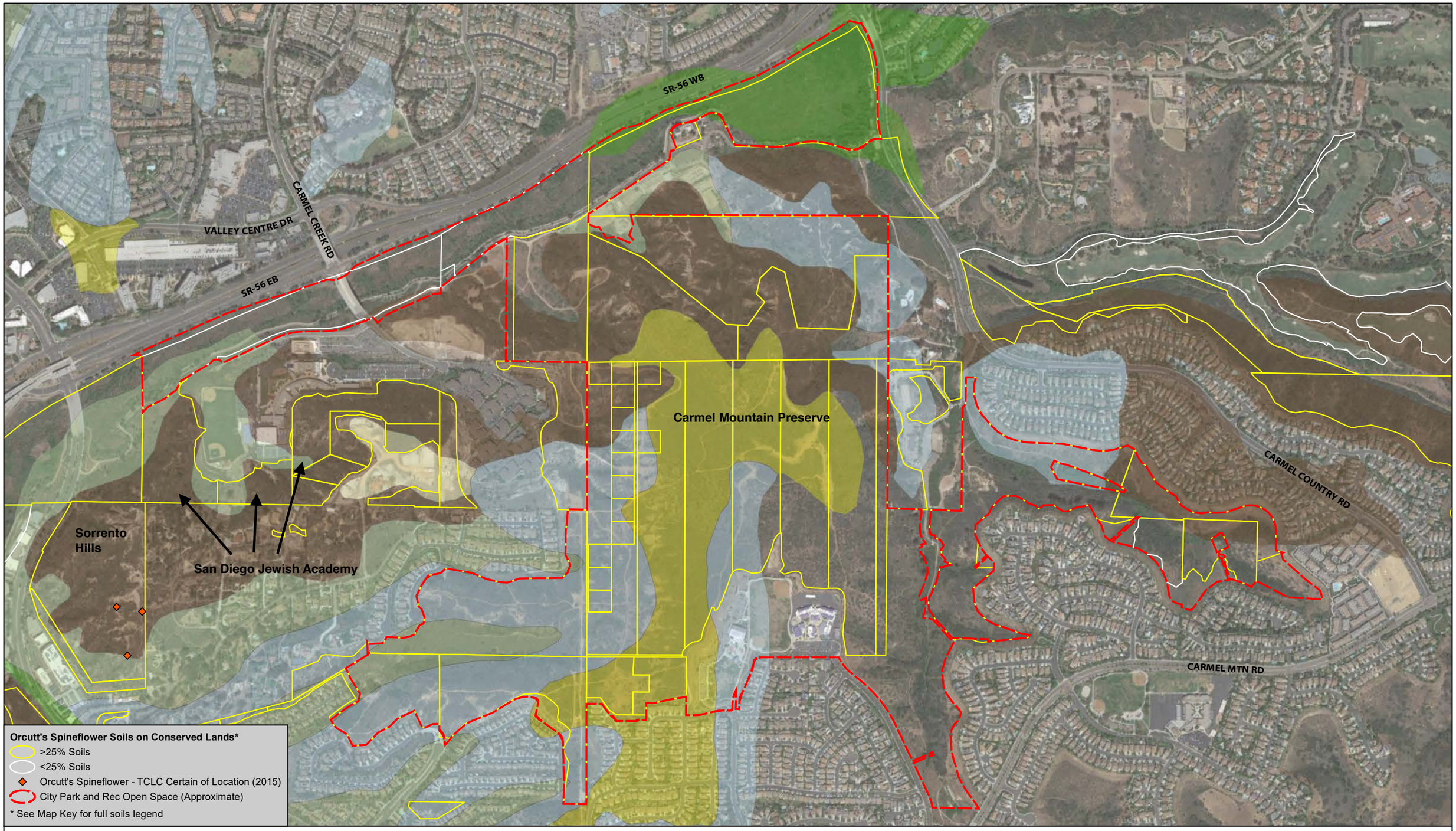


The Chaparral Lands Conservancy

N

0 800 Feet

Orcutt's Spineflower Survey Maps
Torrey Pines State Natural Reserve Extension

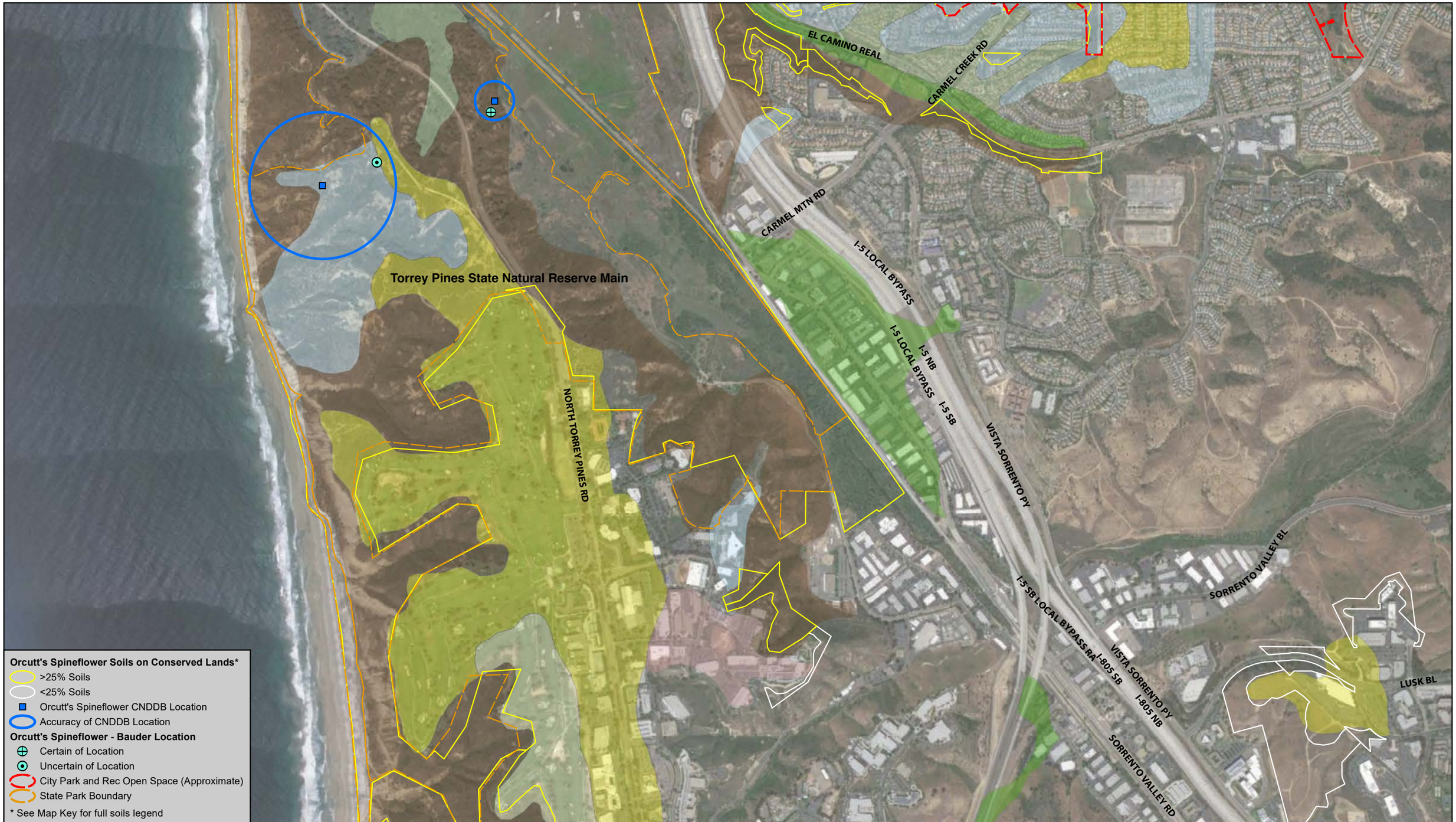


The Chaparral Lands Conservancy

N

0 810 Feet

Orcutt's Spineflower Survey Maps
Carmel Mountain



Orcutt's Spineflower Survey Maps
Torrey Pines State Natural Reserve

Torrey Pines Glider Port

Scripps Open Space

Skeleton Canyon Preserve

NORTH TORREY PINES RD

I-5 SB

I-5 NB

I-805 SB

SORRENTO VALLEY RD

MIRA MESA BL

I-805 NB

REGENTS RD

EASTGATE ML

EXECUTIVE DR

GENESEE AV

LA JOLLA VILLAGE DR

LA JOLLA SHORES DR

LA JOLLA SCENIC WY

TORREY PINES RD

GILMAN DR

VILLA LA JOLLA DR

LEBON DR

NOBEL DR

TOWNE CENTRE DR

NOBEL DR

Orcutt's Spineflower Soils on Conserved Lands*

- >25% Soils
- <25% Soils
- UCSD Open Space
- State Park Boundary

* See Map Key for full soils legend

The Chaparral Lands Conservancy

N

0 1,200 Feet

Orcutt's Spineflower Survey Maps
UCSD

The Chaparral Lands Conservancy

N

0 1,200 Feet

Orcutt's Spineflower Survey Maps
Mount Soledad

The Chaparral Lands Conservancy

N

0 810 Feet

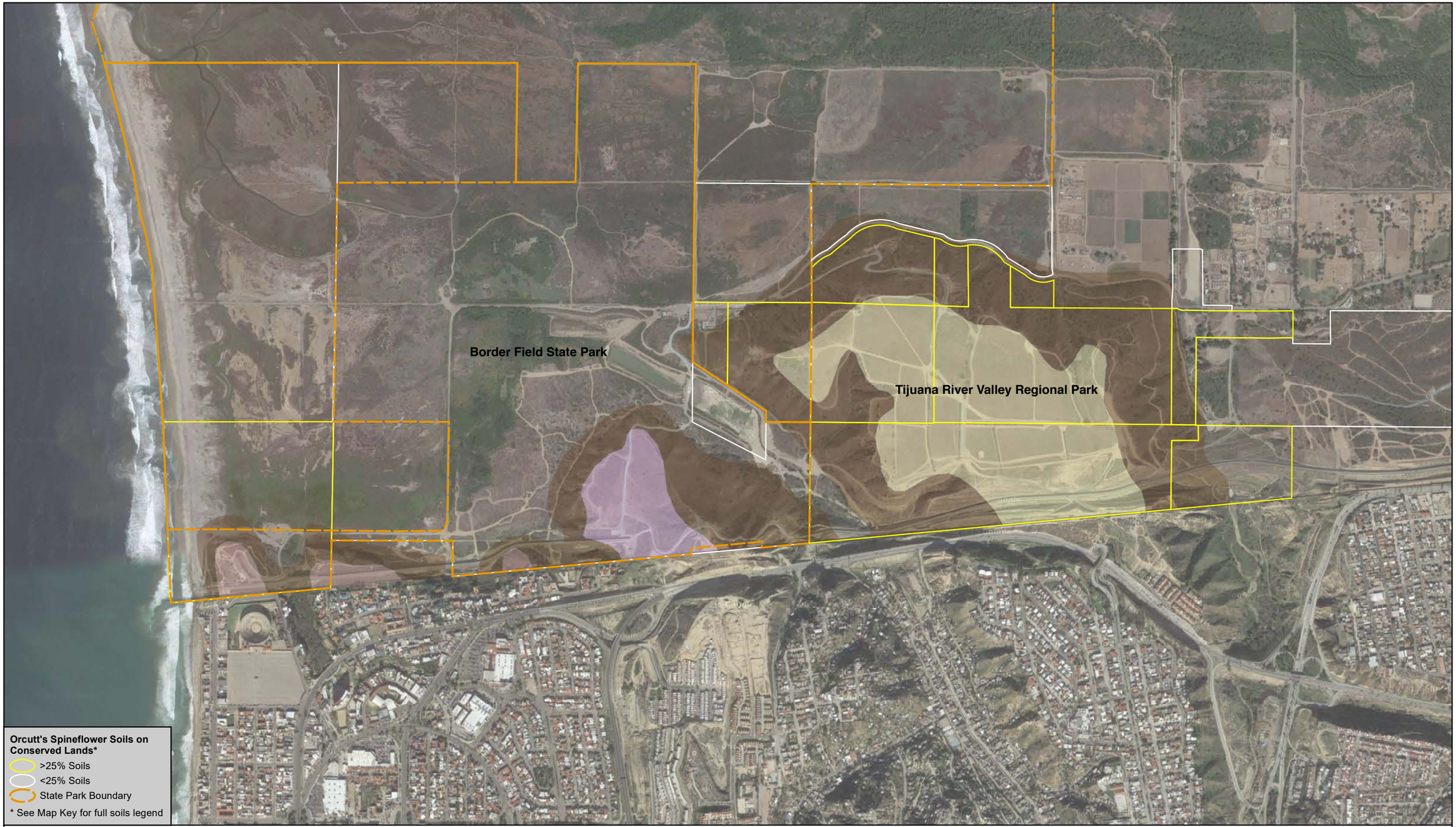
Orcutt's Spineflower Survey Maps
Tecolote Canyon

The Chaparral Lands Conservancy

N

0 500 Feet

Orcutt's Spineflower Survey Maps
Cabrillo National Monument



The Chaparral Lands Conservancy

N

0 1,000 Feet

Orcutt's Spineflower Survey Maps
International Boundary

Attachment 4

Orcutt's Spineflower Locations and Soils 2015

The Chaparral Lands Conservancy

0 500 Feet

Orcutt's Spineflower Locations & Soils 2015
Crest Canyon

The Chaparral Lands Conservancy

N 0 600 Feet

Orcutt's Spineflower Locations & Soils 2015
Gonzales Canyon

Orcutt's Spineflower Locations & Soils 2015
Sorrento Hills

The Chaparral Lands Conservancy

N 0 400 Feet

The Chaparral Lands Conservancy

N 0 600 Feet

Orcutt's Spineflower Locations & Soils Pre-2015
Torrey Pines Natural State Reserve Extension

Attachment 5

Rocks Biological Consulting Report on Results of Orcutt's Spineflower Population Surveys 2015

ROCKS
BIOLOGICAL CONSULTING

December 8, 2015

The Chaparral Lands Conservancy
Attn: Mr. David Hogan
P.O. Box 141
Mount Laguna, CA 91948

Subject: Orcutt's Spineflower (*Chorizanthe orcuttiana*) Rare Plant Survey Results

Mr. Hogan:

This letter presents the results of Orcutt's spineflower (***Chorizanthe orcuttiana***) surveys conducted by Rocks Biological Consulting for The Chaparral Lands Conservancy (TCLC) in the County of San Diego, California in April 2015. Orcutt's spineflower was detected in five populations at two survey locations during the 2015 surveys.

Surveys were conducted at nine preserve locations from April 1 through April 23, 2015 (Table 1) in suitable habitat as shown in maps provided by TCLC. Five previously undocumented Orcutt's spineflower populations were located at two preserve locations in the north-coastal City of San Diego: Gonzales Canyon and Sorrento Hills (aka Carmel Mountain-West). Both of these sites are owned by the City of San Diego Park and Recreation Department and are preserved as open space. The Gonzales Canyon location is also part of the Pacific Highlands Ranch Natural Resources Management Plan area.

The Gonzales Canyon populations occur in openings within Diegan coastal sage scrub habitat (***Artemisia californica-Eriogonum fasciculatum*** Alliance). In 2015, Orcutt's spineflower were observed at two discreet subpopulation locations totaling approximately 1,200 plants within an approximately 250 square meter area.

The Sorrento Hills populations occur in openings within southern maritime chaparral habitat (***Ceanothus verrucosus*** Alliance). In 2015, Orcutt's spineflower was observed at three discreet subpopulation locations totaling approximately 125 plants within an approximately 150 square meter area.

All five populations were observed on similar sandy soils but in varying aspects and slopes. One Gonzales Canyon population was found on a gently sloping ridge-top with a southwest aspect while the other was on a moderately sloping hillside with a west aspect. The Sorrento Hills populations were found on gentle to moderately sloping patches of sandy soil on steep ridge-tops with south and east aspects. All populations are found in high quality, relatively undisturbed habitat with some cryptogamic soils and few weeds. Populations were noted to co-occur with several species at both sites, including ***Corethrogyne filaginifolia*** var***. linifolia*** (Del Mar sand aster)***; Chorizanthe procumbens*** (prostrate spineflower)***, Camissoniopsis***

2621 DENVER STREET, SUITE B ● SAN DIEGO, CA 92110-3300
619.701.6798 ● INFO@ROCKSBIO.COM

bistorta (California sun cup)***, Cryptantha intermedia*** var***. intermedia*** (Nievitas cryptantha)***, Stipa coronata*** (giant stipa) and ***Cardionema ramossissimum*** (tread lightly)***.***

Three of the five populations are subject to pedestrian and or equestrian use on nearby paths which could adversely impact the small, fragile populations and associated cryptogamic soils. Access control is recommended for both sites.

Please do not hesitate to contact me at (619) 843-6640 if you have any questions or concerns about this report.

Sincerely,

Jim Rocks
Principal Biologist

Enclosures: Survey Dates and Personnel
Site Photos
SDMMP Monitoring Forms for Species Observances

Table 1. Survey Dates and Personnel

Date	3/30/2015	4/1/2015	4/6/2015	4/7/2015	4/9/2015	4/13/2015	4/22/2015	4/23/2015	4/28/2015
Site	Torrey Pines Ext.*	Carmel Mtn	Torrey Pines SNR Main	Gonzales Cyn	Sorrento Hills	Overlook Park	Manchester and San Elijo	Saxony and Village Park	Gonzales Cyn & Sorrento Hills
Survey Time	1300-1530	0915-1745	0900-1600	0840-1515	1150-1515	1300-1705	0820-1600	0905-1705	3.75 hr
Temp (ºF) Start-End	68-68	68-66	65-71	72-74	72-69	74-73	67-72	68-70	Seed collection
Sky Cover (%)	25	20%-10%	20%-10%	0%-0%	0%-0%	0%-0%	100%-75%	100%-10%	-
Wind Speed (mph)	1-4	2-6; 1-4	2-8; 1-4	0-1; 2-4	1-4; 1-4	1-3; 1-3	0-3; 0-4	0-2; 1-4	-
Personnel	JR, LR, MF	JR, DH	JR	JR, JPR	JR	JR, MR, AB	JR, LR	JR, MF	JR

* Population check/project meeting

JR = Jim Rocks: DH = David Hogan; JPR = Jon P. Rebman; LR = Lee Ripma; MR = Melanie Rocks; AB = Annabelle Bernabe (City escort); MF = Margaret Fillius

2015 Orcutt's Spineflower Surveys
Site Photos

Photo 1. View of Orcutt's Spineflower habitat at Gonzales Canyon (occurrence #1)

Photo 2. View of Orcutt's Spineflower habitat at Gonzales Canyon (occurrence #2)

Photo 3. View of Orcutt's Spineflower habitat at Sorrento Hills.

Photo 4. View of Orcutt's Spineflower habitat at Sorrento Hills.

Photo 5. View of Orcutt's Spineflower habitat at Torrey Pines Extension.

Photo 6. View of survey area at Torrey Pines Main. Orcutt's Spineflower was not observed.

Photo 7. View of survey area at Overlook Park. Orcutt's Spineflower was not observed.

Photo 8. View of survey area southwest of the Manchester Preserve. Orcutt's Spineflower was not observed.

Photo 9. View of survey area at San Elijo Bluffs. Orcutt's Spineflower was not observed. Note infestation of Perennial veldtgrass (***Ehrharta calycina***)

Photo 10. View of survey area at Village Park west. Orcutt's Spineflower was not observed.

Attachment 6

Occurrence Report Forms, California Natural Diversity Database and San Diego Management and Monitoring Program

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy):

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name:

Common Name:

Species Found? ☉ Yes ☐ No _____ If not found, why?

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

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

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: _____

Address: _____

_____

E-mail Address: _____

Phone: _____

Plant Information

Phenology:

_____ % 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)

Crest Canyon

County: _____ Landowner / Mgr: _____

Quad Name: _____ Elevation: _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ☐ M ☐ S ☐ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, 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:

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):*

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: _____

Threats: _____

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	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

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

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy):

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name:

Common Name:

Species Found? ☉ Yes ☐ No _____ If not found, why?

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

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

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: _____

Address: _____

_____

E-mail Address: _____

Phone: _____

Plant Information

Phenology:

_____ % 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)

Gonzales Canyon

County: _____ Landowner / Mgr: _____

Quad Name: _____ Elevation: _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ☐ M ☐ S ☐ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, 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:

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):*

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: _____

Threats: _____

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	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

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

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy):

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name:

Common Name:

Species Found? ☉ Yes ☐ No _____ If not found, why?

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

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

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: _____

Address: _____

_____

E-mail Address: _____

Phone: _____

Plant Information

Phenology:

_____ % 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)

Sorrento Hills

County: _____ Landowner / Mgr: _____

Quad Name: _____ Elevation: _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ☐ M ☐ S ☐ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, 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:

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):*

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: _____

Threats: _____

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	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

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

MSP - Rare Plant Occurrence Monitoring Form 2015

Scientific Name:	Chorizanthe orcuttiana	Common Name:	Orcutt's spineflower
Existing MSP Occurrence?	no	MSP Occurr. ID:	
CNDDB Elem. Occur. #:		Translocated?	no
Preserve:	Gonzales Canyon / Pacific Highlands Ranch NRMP	Mgmt Unit	
Land Owner:	City of San Diego	Land Mangr:	City of San Diego Park and Recreation Department
Occurrence Name:		Sample Point #:	
Surveyors:	Jim Rocks and Dr. Jon Rebman	Affiliation	Rocks Bio Consulting and SD Natu
Date:	4/7/15	Time Start:	8:15a
Time Finish:	4:30p		

I. OCCURRENCE STATUS - *Assess # plants in both species-specific **sampling area** (typically 10-m radius circle) & in **current mapped extent.** See p. 4 for definitions of categories describing phenology & evidence of herbivory, disease & stunted growth within the sampling area. Record any notes on p. 3.*

# Plants/Current Mapped Extent:	1200	exact count or estimate?	estimate (extrapolate partial ct)	uncert.	low
Area of Current Mapped Extent:	250	units	sq meters	exact (GPS) or estim?	estimate
Species Found in Maximum Extent?	yes	if not found, known or suspected reason:			
# Plants/Sampling Area	1200	exact count or estimate?	estimate (1ks,10ks)	uncert.	low
Sample Area Radius (m)					
Phenology In Sampling Area (1-6):	Vegetative		Flowering	1 (0%)	Fruiting	5 (50% to <75%)
	Dead	2 (>0% to <1(	Flowering & Fruiting	3 (10% to <25%)		
Evidence in Sampling Area (1-6):	Herbivory	1 (0%)	Disease	1 (0%)	Stunted Growth	1 (0%)
Is Sampling Area within Current Mapped Extent?	yes					
Collection (if not collected previously)?	yes					
If yes: Collector	Dr. Jon Rebman	Collection #	unk.		
Museum/Herbarium	SD Natural History Museum				

II. SAMPLING AREA LOCATION & SITE PHOTOMONITORING

GPS Accuracy: +/-	15	accur. units:	feet	Datum:	WGS84
coord. system	UTM (m)				
Coordin's at Center of Plc	Preserve Occurrence #1	E:	478971	N:	3647854
Coordin's at Center of Plc	Preserve Occurrence #2	E:	479105	N:	3647588
Camera type:	n/a				
Locat. 1 Coord.--E, N			Direction facing		Height	
Camera angle		Photo #		File location	
Locat. 2 Coord.-- E,N			Direction facing		Height	
Camera angle		Photo #		File location	

III. ASSOCIATED SPECIES *If need more room, record additional data and any notes on page 3.*

species/substrate	% Cover	Collection #, or NC if not collected	species/substrate	% Cover	Collect.# or NC if not collected
Chorizanthe procumbens	5		Artemisia californica	10	
Camissoniopsis bistorta	2		Cardionema ramosissima	1	
Lasthenia coronaria	2		Salvia mellifera	5	
Acmispon glaber var. glaber	2		Plantago erecta	1	
Corethrogyne filaginifolia var. linifolia	3		Cirsium occidentale var. californicum	1	
Chaenactis glabriuscula var. glabriuscula	2				
Bromus rubens	3				
Eriogonum fasciculatum var. foliolosum	15				
Cryptantha intermedia var. intermedia	2				
Rhus integrifolia	5				
Erysimum ammophilum	1				
Heterotheca sessiliflora ssp. sessiliflora	1		**bare ground**	20	
Stipa coronata	2		**rock**		
Croton californicus	2		**litter**	5	

COVER: Total % Cover:	65	%Herb:	25	%Shrub:	40	%Tree:	0

(top 4 rows auto-fill from page 1)

Scientific Name:	Chorizanthe orcuttiana	MSP Occur. ID:	0
Preserve:	Gonzales Canyon / Pacific Highlands Ranch NRMP		
Occurrence Name:	0		
Surveyors:	Jim Rocks and Dr. Jon Rebman	Affiliation:	Rocks Bio Consulting and S
Date:	4/7/15	Time Start: 8:15a	Time Finish: 4:30p

IV. **HABITAT ASSESSMENT IN SAMPLING AREA** - Assess habitat covariates within **species-specific sampling area (typically 10-m radius circle)**. Vegetation alliance/association can be assigned using San Diego vegetation key (AECOM 2012) in the office or field, using "Associated Species" data from page 1. See page 4 for definitions of habitat assessment categories. Record any notes on page 3.

SANDAG 2012 Vegetation Alliance/Association: Artemisia californica-Eriogonum fasciculatum-Alliance

Cover classes (1-6)

Cryptogamic Crust Cover:	2 (>0% to <1(	Thatch Cover	2 (>0% to <10%)
Thatch Depth Average (cm)	1	Thatch Depth max (cm)	1
Dead Standing Biomass	yes		
If yes, cover/species class	3%/shrub	Average height (cm)	20

Mammal Species Activity (categ. 1-4)

Feral pig activity	1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.
ground squirr. activity	1 = No ground squirrel burrows detected.
gopher activity	1 = No pocket gopher mounds detected.
Sampling area representative of mapped occurrence?	yes (If no, note differences on page 3)

VI. **THREATS ASSESSMENT IN MAXIMUM EXTENT** - Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. See page 4 for definitions of threat assessment categories. Record notes on page 3. See Argentine Ant Protocol (USGS 2015) for setting up bait, etc.

Surrounding Land Use/Activity at, or Adjacent to, Site: hiking trail goes through middle of population of approximately 350 individuals near the s

Argentine ant abundance at bait station (1-4)

Time start		Temp start		Time end	Temp end
Ant sample collected?		Ant sample #		Ant Station Photo #	

DISTURBANCES (Rank each as 1-6):

Non-native forbs	1 = No sign of d	feral pig activity	1 = No sign o	altered hydrology	1 = No sign of disturbance
Non-native grasses	3 = Disturbance	trampling	3 = Disturban	erosion	1 = No sign of disturbance
Non-native woody pl.	1 = No sign of d	vandalism	1 = No sign o	urban runoff	1 = No sign of disturbance
competitive native pl.	3 = Disturbance	current grazing	1 = No sign o	slope movement	1 = No sign of disturbance
dumping/trash	1 = No sign of d	historic grazing	1 = No sign o	soil compaction	1 = No sign of disturbance
encampments	1 = No sign of d	historic agriculture	1 = No sign o		

fuel modification zone/fire break	1 = No sign of di		
road construction/maintenance	1 = No sign of di	if present, describe:	
illegal vegetation clearing	1 = No sign of di	if present, describe:	
brush management/restoration	1 = No sign of disturbance within maxinum extent or in adjacent 10 m buffer.		
ORV activity	1 = No sign of di	if present, describe:	
Evidence of recent fire	1 = No sign of disturbance within maxinum ext		
If sign of recent fire, year burned?			

Trails	3 = Disturbance present in >0% to <10% of area			If trails are present, are they authorized?	unknown		
Type of trail use	hiking	yes	biking	no	equestrian	no	dog	no
	service vehicles		other				
	illegal trail use?	2 = Disturbance	describe:	ears to be unauthorized, but this should be confirmed with the City			
Other disturbance?		describe:					

MSP-Management Needs and Notes 2015

(top 2 rows auto-fill from page 1)

Scientific Name: Chorizanthe orcuttiana

MSP Occur ID. 0

Date: 4/7/15

VI. MANAGEMENT RECOMMENDATIONS

block, close and sign unauthorized trail that cuts through portion of ocurrence

VII. MANAGEMENT ACTIONS IN LAST YEAR

none - this is a newly discovered occurrence

VIII. CNDDB SPECIES DETECTED (list any plant or animal species to add to the CNDDB)

Heterotheca sessiliflora ssp. sessiliflora

NOTES

This is a newly discovered population of Chorizanthe orcuttiana. As a result, some of the monitoring requirements in this protocol were not recorded such as camera angle, direction, etc.

MSP - Rare Plant Occurrence Monitoring Form 2015

Scientific Name:	Chorizanthe orcuttiana	Common Name:	Orcutt's spineflower
Existing MSP Occurrence?	no	MSP Occurr. ID:	
CNDDB Elem. Occur. #:		Translocated?	no
Preserve:	Sorrento Hills / Carmel Mountain - West	Mgmt Unit	
Land Owner:	City of San Diego	Land Mangr:	City of San Diego Park and Recreation Department
Occurrence Name:		Sample Point #:	
Surveyors:	Jim Rocks, Melanie Rocks, Annabelle Bernabe	Affiliation	Rocks Bio Consulting and City of S
Date:	4/9/15	Time Start:	1100a
		Time Finish:	400p

I. OCCURRENCE STATUS - *Assess # plants in both species-specific **sampling area** (typically 10-m radius circle) & in **current mapped extent.** See p. 4 for definitions of categories describing phenology & evidence of herbivory, disease & stunted growth within the sampling area. Record any notes on p. 3.*

# Plants/Current Mapped Extent:	125	exact count or estimate?	estimate (extrapolate partial ct)	uncert.	low
Area of Current Mapped Extent:	150	units	sq meters	exact (GPS) or estim?	estimate
Species Found in Maximum Extent?	yes	if not found, known or suspected reason:			
# Plants/Sampling Area	125	exact count or estimate?	estimate (1ks,10ks)	uncert.	low
Sample Area Radius (m)					
Phenology In Sampling Area (1-6):	Vegetative	Flowering	1 (0%)	Fruiting	5 (50% to <75%)
	Dead	2 (>0% to <1(	Flowering & Fruiting	3 (10% to <25%)	
Evidence in Sampling Area (1-6):	Herbivory	1 (0%)	Disease	1 (0%)	Stunted Growth 1 (0%)
Is Sampling Area within Current Mapped Extent?	yes				
Collection (if not collected previously)?	no				
If yes: Collector		Collection #			
Museum/Herbarium					

II. SAMPLING AREA LOCATION & SITE PHOTOMONITORING

GPS Accuracy: +/-	15	accur. units:	feet	Datum:	WGS84
coord. system	UTM (m)				
Coordin's at Center of Plc	Preserve Occurrence #1 E:	478084	N:	3643357	
Coordin's at Center of Plc	Preserve Occurrence #2 E:	478046	N:	3643248	
Coordin's at Center of Plc	Preserve Occurrence #3 E:	478014	N:	3643381	
Camera type:	n/a				
Locat. 1 Coord.--E, N			Direction facing		Height
Camera angle		Photo #	File location		
Locat. 2 Coord.-- E,N			Direction facing		Height
Camera angle		Photo #	File location		

III. ASSOCIATED SPECIES *If need more room, record additional data and any notes on page 3.*

species/substrate	% Cover	Collection #, or NC if not collected	species/substrate	% Cover	Collect.# or NC if not collected
Chorizanthe procumbens	5		Stylocline gnaphaloides	1	
Camissoniopsis bistorta	2		Cardionema ramosissima	1	
Navarettia hamata ssp. leptantha	2		Salvia mellifera	2	
Acmispon glaber var. glaber	2		Pterostegia drymarioides	1	
Corethrogyne filaginifolia var. linifolia	3		Pellaea andromedifolia	1	
Crocanthemum scoparium	2				
Bromus rubens	3				
Eriogonum fasciculatum	5				
Cryptantha intermedia var. intermedia	2				
Ceanothus verrucosus	5				
Yucca schidigera	2				
Adenostoma fasciculatum	4		**bare ground**	30	
Stipa coronata	2		**rock**		
Antirrhinum nuttallianum	2		**litter**	5	

COVER: Total % Cover:	50	%Herb:	25	%Shrub:	25	%Tree:	0

(top 4 rows auto-fill from page 1)

Scientific Name:	Chorizanthe orcuttiana	MSP Occur. ID:	0
Preserve:	City of San Diego		
Occurrence Name:	Sorrento Hills / Carmel Mountain - West		
Surveyors:	Jim Rocks, Melanie Rocks, Annabelle Bernabe	Affiliation:	Rocks Bio Consulting and (
Date:	4/9/15	Time Start: 1100a	Time Finish: 400p

IV. **HABITAT ASSESSMENT IN SAMPLING AREA** - Assess habitat covariates within **species-specific sampling area (typically 10-m radius circle)**. Vegetation alliance/association can be assigned using San Diego vegetation key (AECOM 2012) in the office or field, using "Associated Species" data from page 1. See page 4 for definitions of habitat assessment categories. Record any notes on page 3.

SANDAG 2012 Vegetation Alliance/Association: Ceanothus verrucosus alliance

Cover classes (1-6)

Cryptogamic Crust Cover: 2 (>0% to <1(Thatch Cover: 2 (>0% to <10%)

Thatch Depth Average (cm): 1 Thatch Depth max (cm): 1

Dead Standing Biomass: yes

If yes, cover/species class: 3%/shrub Average height (cm): 20

Mammal Species Activity (categ. 1-4)

Feral pig activity: 1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.

ground squirr. activity: 1 = No ground squirrel burrows detected.

gopher activity: 1 = No pocket gopher mounds detected.

Sampling area representative of mapped occurrence? yes (If no, note differences on page 3)

VI. **THREATS ASSESSMENT IN MAXIMUM EXTENT** - Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. See page 4 for definitions of threat assessment categories. Record notes on page 3. See Argentine Ant Protocol (USGS 2015) for setting up bait, etc.

Surrounding Land Use/Activity at, or Adjacent to, Site: deep, incised hiking trail runs immediatley adjacent to the bulk of the population.

Argentine ant abundance at bait station (1-4)

Time start: Temp start: Time end: Temp end:

Ant sample collected? Ant sample #: Ant Station Photo #:

DISTURBANCES (Rank each as 1-6):

Non-native forbs	1 = No sign of d	feral pig activity	1 = No sign o	altered hydrology	1 = No sign of disturbance
Non-native grasses	3 = Disturbance	trampling	3 = Disturban	erosion	1 = No sign of disturbance
Non-native woody pl.	1 = No sign of d	vandalism	1 = No sign o	urban runoff	1 = No sign of disturbance
competitive native pl.	3 = Disturbance	current grazing	1 = No sign o	slope movement	1 = No sign of disturbance
dumping/trash	1 = No sign of d	historic grazing	1 = No sign o	soil compaction	1 = No sign of disturbance
encampments	1 = No sign of d	historic agriculture	1 = No sign o		

fuel modification zone/fire break: 1 = No sign of di

road construction/maintenance: 1 = No sign of di if present, describe:

illegal vegetation clearing: 1 = No sign of di if present, describe:

brush management/restoration: 1 = No sign of disturbance within maxinum extent or in adjacent 10 m buffer.

ORV activity: 1 = No sign of di if present, describe:

Evidence of recent fire: 1 = No sign of disturbance within maxinum ex(

If sign of recent fire, year burned?

Trails: 3 = Disturbance present in >0% to <10% of area If trails are present, are they authorized? unknown

Type of trail use

hiking: yes biking: no equestrian: no dog: no

service vehicles: other:

illegal trail use? 2 = Disturbance describe: ears to be unauthorized, but this should be confirmed with the City

Other disturbance? describe:

MSP-Management Needs and Notes 2015

(top 2 rows auto-fill from page 1)

Scientific Name: Chorizanthe orcuttiana

MSP Occur ID. 0

Date: 4/9/15

VI. MANAGEMENT RECOMMENDATIONS

block, close and sign unauthorized trail that runs immediately adjacent to population

VII. MANAGEMENT ACTIONS IN LAST YEAR

none - this is a newly discovered occurrence

VIII. CNDDB SPECIES DETECTED (list any plant or animal species to add to the CNDDB)

Ceanothus verrucosus

NOTES

This is a newly discovered population of Chorizanthe orcuttiana. As a result, some of the monitoring requirements in this protocol were not recorded such as camera angle, direction, etc.