FINAL

2025 Targeted Monitoring Plan Habitat Condition Report

San Luis Rey River Park and Bottle Peak, Lusardi Creek, Del Dios Highlands, Boulder Oaks, and Ramona Grasslands County Preserves

JUNE 2026

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1 Introduction

1.1 Background

As a participant in the Multiple Species Conservation Program (MSCP) and the adopted South County MSCP Subarea Plan, the County of San Diego (County) is obligated to conduct biological monitoring of habitats and species covered by the MSCP to ensure that the MSCP biological conservation goals and conditions for species coverage are being met. The County Department of Parks and Recreation (DPR) prepared a Targeted Monitoring Plan (TMP) (ESA and ICF 2015) to provide detailed specifications for implementation of monitoring and adaptive management within 10 County-owned and managed conserved lands (parks and preserves) (Preserve Group 1) overseen by DPR. The TMP was revised in December 2022 (ESA and ICF 2022) to incorporate 10 additional parks and preserves (Preserve Group 2) and again in August 2024 (ESA 2024) to incorporate 11 additional parks and preserves (Preserve Group 3). These 31 parks and preserves fall within the South County MSCP Subarea Plan Area and the draft North County MSCP Plan Area. The draft North County MSCP Plan Area preserves are included currently due to the number of sensitive on-site resources that require their conservation and management. In total, the TMP addresses monitoring and adaptive management within 31 parks and preserves including 23 plant and wildlife species and two habitat types.

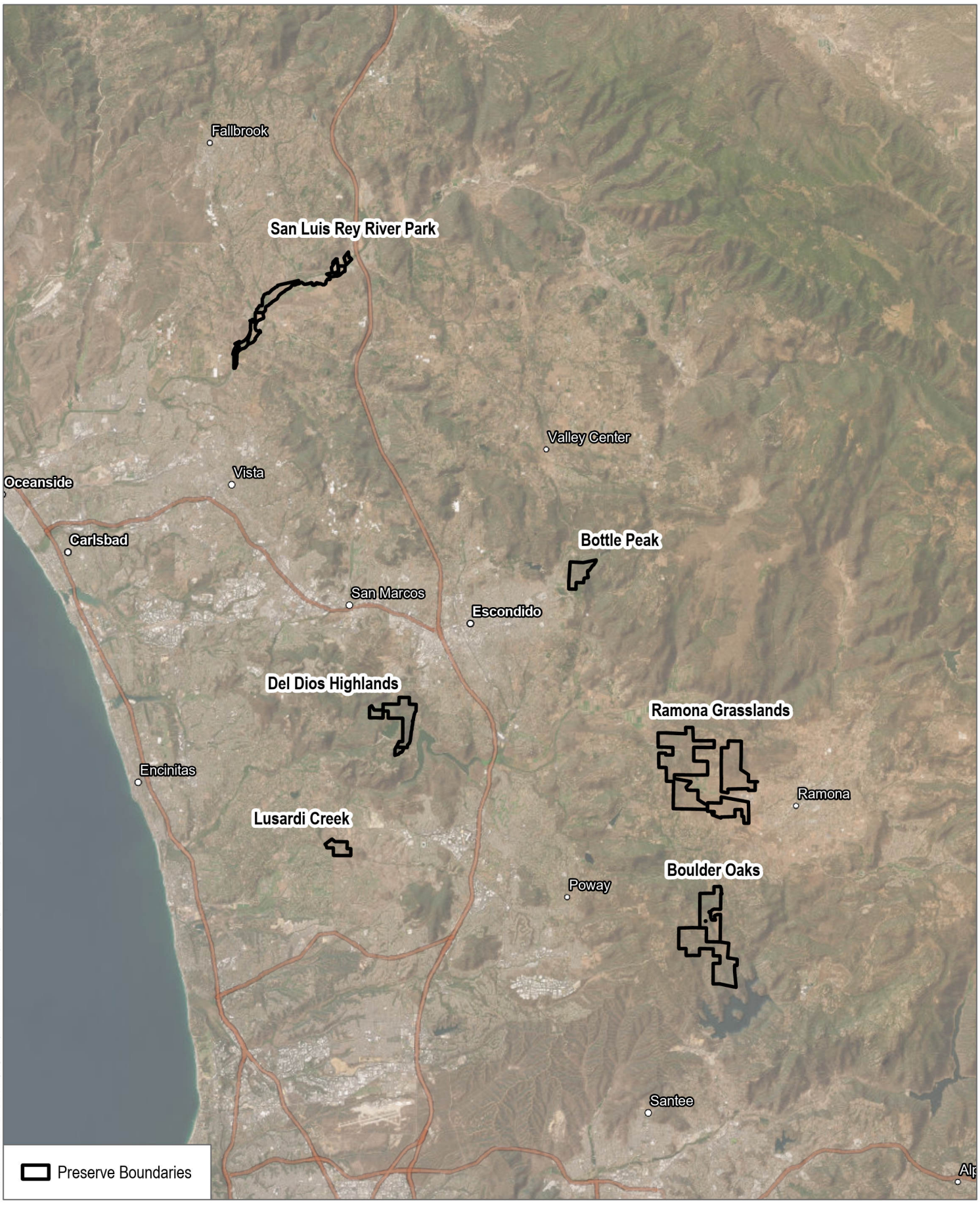
The TMP is an adaptive implementation plan that includes focused goals and objectives for target resources and detailed monitoring protocols. It is intended to achieve the management directives for species per the adopted South County MSCP Subarea Plan Framework Management Plan (County of San Diego 2001). The regional framework that guides monitoring at the preserve level has been refined over time and is still evolving through a collaborative effort among U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW) (collectively known as the Wildlife Agencies), MSCP jurisdictions, and outside scientific experts. It is understood by all stakeholders (e.g., state and federal resource agencies, municipal and county agencies, land managers) that adaptive management is an iterative process in which lessons are learned and used to further refine priorities, goals, objectives, and monitoring methods.

The TMP addresses monitoring and management within the following 31 parks and preserves: El Monte County Park, Louis A. Stelzer County Park, San Luis Rey River Park, Tijuana River Valley Regional Park, and Barnett Ranch, Bottle Peak, Boulder Oaks, Del Dios Highlands, Dictionary Hill, El Capitan, Escondido Creek, Furby-North, Hellhole Canyon, Iron Mountain, Keys Creek, Lakeside Linkage, Lawrence and Barbara Daley, Los Peñasquitos Canyon, Lusardi Creek, Mountain Meadow, Mount Olympus, Oakoasis, Peutz Valley, Ramona Grasslands, Sage Hill, Santa Margarita, Simon, Skyline, Stoneridge, Sycamore Canyon/Goodan Ranch, and Wilderness Gardens County Preserves.

During the 2025 reporting period, Dudek performed vegetation and invasive non-native plant species mapping and habitat condition assessments throughout six parks/preserves subject to TMP monitoring: San Luis Rey River Park (approx. 765 acres), Bottle Peak County Preserve (approx. 381 acres), Lusardi Creek County Preserve (approx. 226 acres), Del Dios Highlands County Preserve (approx. 782 acres), Boulder Oaks County Preserve (approx. 2,015 acres), and Ramona Grasslands County Preserve (approx. 3,491 acres excluding Metzler and Ramona Carroll/Trussell properties) (Figure 1).

This Habitat Condition Assessment Report documents the methodology used for vegetation and invasive non-native plant species mapping and habitat assessments at each of the six parks/preserves and provides the results of these assessments along with site-specific adaptive management recommendations to support the County's ongoing efforts to maintain and enhance MSCP and draft North County MSCP properties.

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SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 12,000 24,000 Feet

FIGURE 1

Regional Overview of Mapped Preserves

TMP Habitat Condition Report

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2 Methods

2.1 Desktop Review and Pre-Field GIS Analysis

Prior to initiating field efforts, Dudek conducted a desktop review using ArcGIS Pro to evaluate existing mapping data for each County park/preserve, as provided by DPR. Dudek also initiated an image-segmentation–based digital vegetation mapping workflow to explore whether segmentation could improve delineation of vegetation boundaries.

During this exploratory phase, segmentation was tested across multiple parameter settings; however, the method produced small segments that did not correspond well to ecologically meaningful vegetation units. When segment size parameters were increased to reduce over-segmentation, the resulting polygons frequently merged multiple distinct vegetation communities into single units. These outcomes limited the utility of segmentation for creating accurate vegetation boundaries that could be reliably evaluated in the field.

Given these constraints, Dudek employed a modified approach. Historical vegetation linework provided by DPR was incorporated into ArcGIS Pro and used as a basemap foundation. Dudek GIS staff refined this baseline by manually drawing additional polygons where aerial imagery revealed clear vegetation pattern boundaries. These draft mapping layers were uploaded to ArcGIS Field Maps to support systematic field verification and classification during on-site surveys.

This hybrid approach retained the advantages of a pre-field digital mapping phase while ensuring that the resulting polygons were interpretable, ecologically accurate, and efficient to assess during fieldwork.

2.2 Field-Based Mapping and Habitat Condition Assessment

Vegetation Mapping

Dudek biologists conducted vegetation mapping as outlined in the TMP for 2025 within each of the six County parks/preserves. Dudek biologists traversed each County property on foot, verifying the vegetation communities and linework for each of the polygons in ArcGIS Field Maps. Adjustments to the polygon shapes and classifications were made as needed based on vegetation observed in the field. In instances where extremely dense vegetation or steep slopes/rocky cliffs prevented safe access, mapping was conducted using binoculars from a distance. Vegetation communities and land cover types were recorded based on both the Vegetation Classification Manual for Western San Diego County (VCM) (Sproul et al. 2011) and the Holland classification system modified by Oberbauer (Oberbauer et al. 2008) in accordance with County DPR habitat identification guidelines (County of San Diego 2010) and the TMP.

Once field-based mapping was completed acreages of vegetation communities and land cover types present within each of the parks/preserves were analyzed in ArcGIS Pro; they are provided in the following sections of this report in a table crosswalk format and depicted in each corresponding figure. The Holland-Oberbauer classification system classifies disturbed or developed areas in various categories that do not have a direct crosswalk under the VCM, which describes only native and naturalized vegetation types. To provide a higher level of detail using the VCM, these disturbed or developed land cover types were displayed under the alliance level in the crosswalk tables and

associated figures. In addition, potential trails were categorized separately (Holland: 11300 Disturbed – Roads and Trails; VCM: Disturbed Roads and Trails) from other disturbed habitat (Holland 11000 Disturbed Habitat; VCM Disturbed Habitat). Figures also contain "County DPR Trails" line data, which was retrieved from the DPR Trail layer on SanGIS and contains trails that are open to the public, trails that are not open to the public (such as fire roads and internal access roads), and un-official non-County trails. Any disturbed roads and trails areas that do not align with the DPR Trail layer were defined as "Potentially Unauthorized Trails" on the figures and discussed in the threats assessment sections of the results. Scientific nomenclature and common names used in this report follow *The Jepson Manual: Vascular Plants of California*, Second Edition (Baldwin et al. 2012).

Invasive Non-Native Plant Observations

Mapping of invasive non-native plants focused on plant species listed in the California Invasive Plant Council (Cal-IPC) Inventory of invasive plants. Species that are too common and widespread for effective treatment, like common non-native grasses and filaree (*Erodium* spp.), were not mapped but were noted and described for each park/preserve in this report. Invasive non-native plant species mapping was conducted concurrently with vegetation mapping and included assessments of new invasions and re-invasions within each County preserve, focusing on areas where invasive non-native plants have been detected in the past but also documenting new occurrences. Invasive non-native plant species mapping was conducted with GPS and focused on highly invasive perennials described in the regional monitoring plans (e.g., tamarisk [*Tamarix* spp.], pampas grass [*Cortaderia* spp.], fennel [*Foeniculum vulgare*]) or specific highly invasive annuals which might be controlled with appropriate management activities (e.g., stinkwort [*Dittrichia graveolens*]). Invasive non-native plant mapping efforts focuses on areas of management concern, such as disturbed areas, recently burned areas, and areas with access where management can be performed. Invasive species listed in the *Management Priorities for Invasive Non-native Plants: A Strategy for Regional Implementation, San Diego County, California* (CBI, DENDRA, Inc., and Cal-IPC 2012) were also noted in this reporting effort.

Incidental Sensitive Plant and Wildlife Observations

Incidental special-status plant and animal species observed during habitat and invasive non-native plant mapping efforts were noted and recorded/mapped via GPS. Species were considered special-status if they were carried a state or federal listing status or were included in the County of San Diego Sensitive Plant and Animal Lists (County of San Diego 2010), draft North County MSCP covered species list, or had a California Rare Plant Rank (CNPS 2025). These species are listed in tables along with their sensitivity status (federal, state, San Diego County Special-Status List, and California Native Plant Society [CNPS] California Rare Plant Rank [CNPS 2025]) and an indication of whether they are covered species under the Multiple Species Conservation Program (MSCP) or the draft North County MSCP, as well as any relevant observations pertaining to the species occurrence. All species locations are depicted in corresponding figures by park/preserve.

Threats Assessment

Dudek biologists also conducted general habitat condition and threats assessments at each of the County properties. Specific threats assessed included invasive non-native plants, unauthorized habitat disturbance (e.g., illegal trails, dumping/trash, etc.), evidence of fire, plant disease, and other potential threats related to the disturbance categories outlined in the *Management and Monitoring Strategic Plan (MSP Roadmap) 2025 Rare Plant Inspect and Manage (IMG) Monitoring Protocol for Occurrences on Conserved Lands in Western San Diego*

County (SDMMP 2025), in addition to previously identified disturbances/stressors in Appendix A, the Habitat Condition Assessment Memorandum for the 2021 TMP Resource-Specific Monitoring Annual Report (ESA 2022). Disturbances and stressors within each park/preserve were noted and described in tables by preserve, along with a brief discussion of the severity and extent within the park/preserve. The severity rank is based on the threats assessment format used for the San Diego Management and Monitoring Program (SDMMP) Rare Plant Inspect and Manage (IMG) protocol, where "1" indicates no sign of disturbance occurs within the preserve and "7" indicates that the disturbance occurs in greater than or equal to 75 percent of the preserve.

Type Conversion

The data collected as part of the vegetation mapping effort in this report for Lusardi Creek, Del Dios Highlands, Boulder Oaks, and Ramona Grasslands County Preserves was compared to the previous vegetation mapping effort conducted in 2015 and described in the *CMP Preserves Plant Surveys Report* (ICF International 2015) to detect potential type conversions within each preserve. The data collected for San Luis Rey River Park was compared to the previous vegetation mapping effort conducted in 2011 and 2018 through park inventory surveys. The data collected for Bottle Peak County Preserve was compared to the previous vegetation mapping effort conducted in 2014 through inventory surveys. The Holland-Oberbauer vegetation mapping was used to compare the acreages by habitat type, including developed, disturbed, herbaceous, scrub, chaparral, woodland, forest, riparian, and unvegetated (water). The calculated difference between the previous mapping efforts and the 2025 mapped acreage by total habitat type is provided in table format to depict the level of quantitative change within each preserve. It should be noted, however, that this analysis has several limitations, including deviations in mapping that occur as a result of methodology advancements in field mapping technology and as a result of the individual perspective of the biologist; variations in community boundaries and feasibility of walking each vegetation community boundary; and compositional integrity and species composition variations from year to year. The fire history of each park/preserve (Table 1) was also referenced in the discussion of potential causes for changes in habitat types (California Department of Forestry and Fire Protection; U.S. Department of Agriculture Forest Service Region 5; Bureau of Land Management; National Park Service; and Contract Counties, 2025).

Table 1. Fire History by Park/Preserve

Fire Name[1]	Fire Year	Area of Park/Preserve Burned (acres)
San Luis Rey River Park		
Clancy	1957	16.09
Vuelta	2007	116.30
Highway	2014	0.24
Lilac	2017	443.66
Bottle Peak County Preserve		
Oakvale Lodge	1955	293.39
Bear Ridge	1962	14.09
Bottle Peak	1989	158.01
Guejiuto	1993	39.89
Paradise	2003	380.14
Lusardi Creek County Preserve		
Unnamed	1943	225.66

Table 1. Fire History by Park/Preserve

Fire Name[1]	Fire Year	Area of Park/Preserve Burned (acres)
Unnamed	1979	119.16
Witch	2007	183.07
Bernardo	2014	102.86
Del Dios Highlands County Preserve		
Unnamed	1919	172.56
Unnamed	1943	220.90
Elfin	1980	34.68
Israel	1985	24.84
Paint	1990	175.88
Del Dios	1997	534.50
Witch	2007	95.58
Boulder Oaks County Preserve		
Unnamed	1910	165.75
Unnamed	1913	2009.26
Unnamed	1938	372.96
Iron Mountain	1953	12.31
Pearson Peak #2	1958	121.64
Klondike	1972	172.56
Bowles	1984	743.59
Poway	1995	635.62
Cedar	2003	2014.94
Ramona Grasslands County Preserve		
Unnamed	1913	107.96
Clevenger Canyon	1955	2.72
Unnamed	1967	906.39
Unnamed	1970	141.74
Clevenger	1975	953.27
Rangeland	1975	203.52
Highland Valley Rd.	1987	127.55
Witch	2007	2405.04

[1]Fire burn history data was downloaded from the SANGIS/SANDAG Regional Data Warehouse and contains historical wildfire perimeter data from the California Department of Forestry and Fire Protection, U.S. Department of Agriculture Forest Service Region 5, Bureau of Land Management, National Park Service, and contract counties.

3 San Luis Rey River Park

3.1 Park Description

San Luis Rey River Park is an approximately 765-acre open space park comprising multiple non-contiguous parcels acquired and managed by the County of San Diego. It is located between the unincorporated communities of Bonsall and Fallbrook, extending along a 9-mile stretch of the San Luis Rey River corridor in northern San Diego County. The park is situated between Interstate 15 and East Vista Way, generally paralleling State Route (SR) 76. It is located north of the San Luis Rey River, extending west from the Old Bonsall Bridge and east toward Pala Mesa, and includes sections bisected by both Willow Glen Road and Gird Road.

3.2 Vegetation Mapping

A total of 19 Holland-Oberbauer vegetation communities and 30 VCM vegetation communities were mapped, along with four land cover types. These communities and land cover types are shown in Table 2 and Figure Set 2 (Figures 2-1 through 2-5) and 3 (Figures 3-1 through 3-5). Representative photos of the park and its vegetation communities are included in in Attachment A.

Table 2. Vegetation Communities Crosswalk: San Luis Rey River Park

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Scrub			
32000 Coastal Scrub	4.29 Coastal Goldenbrush Alliance	4.29.1 Menzie's Goldenbrush Provisional Association	0.53
	4.32 Deerweed Alliance	4.32.1 Deerweed Association	0.79
	4.46 Western Poison Oak Alliance	4.46.1 Poison Oak-California Sagebrush /Giant Wildrye Association	0.39
32500 Diegan Coastal Sage Scrub	4.7 California Sagebrush – California Buckwheat Alliance	4.7.1 California Sagebrush – California Buckwheat – Laurel Sumac Association	2.02
	4.22 California brittle bush Alliance	4.22.1 California brittlebush-California sagebrush Association	0.93
	4.23 California Buckwheat Alliance	4.23.1 California Buckwheat Association	5.54
	4.24 California Buckwheat-White Sage Alliance	4.24.1 California Buckwheat-White Sage Association	0.15
32530 Diegan Coastal Sage Scrub: Baccharis-dominated	4.12 Desert Broom Provisional Alliance	4.12.1 Desert Broom Association	0.13

Table 2. Vegetation Communities Crosswalk: San Luis Rey River Park

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Herbaceous			
42100 Native Grassland	5.19 Creeping Wildrye Alliance	5.19.1 Creeping Wildrye Association	0.05
42120 Valley Sacaton Grassland	5.14 Saltgrass Alliance	5.14.1 Saltgrass-Annual Grasses Association	12.44
42200 Non-Native Grassland	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	200.36
42210 Non-Native Grassland: Broadleaf Dominated	5.7 Black Mustard and Other Mustards Semi-Natural Stands	5.7 Black Mustard and Other Mustards Semi-Natural Stands	6.30
Marsh			
52410 Coastal and Valley Freshwater Marsh	5.35 Cattail Alliance	5.35.2 Broadleaf Cattail Association	1.27
Riparian			
61300 Southern Riparian Forest	3.4 Western Sycamore Alliance	3.4.3 Western Sycamore-Coast Live Oak Association	3.42
61310 Southern Coast Live Oak Riparian Forest	3.6 Coast Live Oak Alliance	3.6.3 Coast Live Oak – Arroyo Willow Association	0.20
61320 Southern Arroyo Willow Riparian Forest	3.10 Arroyo Willow Alliance	3.10.1 Arroyo Willow Association	5.99
61330 Southern Cottonwood-Willow Riparian Forest	3.5 Fremont's Cottonwood Alliance	3.5.1 Fremont's Cottonwood/Mulefat Association	0.09
		3.5.2 Fremont's Cottonwood – Goodding's Black Willow/Mulefat Association	432.51
62500 Southern Riparian Woodland	3.4 Western Sycamore Alliance	3.4.1 Western Sycamore/Mulefat Association	4.38
		3.4.2 Western Sycamore – Fremont Cottonwood/ Arroyo Willow Association	8.10
	3.8 Goodding's Black Willow Alliance	3.8.1 Goodding's Black Willow Association	0.09
63310 Mule Fat Scrub	4.11 Mule Fat Alliance	4.11.1 Mule Fat Association	9.68
63320 Southern Willow Scrub	4.36 Arrowweed Alliance	4.36.1 Arrowweed Association	4.00

Table 2. Vegetation Communities Crosswalk: San Luis Rey River Park

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
	Sandbar Willow Alliance	Sandbar Willow Alliance	4.64
	3.9 Red Willow Alliance	3.9.1 Red Willow Association	5.05
65000 Non-Native Riparian	3.12 Tamarisk spp. Semi-Natural Stands	3.12 Tamarisk spp. Semi-Natural Stands	0.93
Woodland			
71160 Coast Live Oak Woodland	3.6 Coast Live Oak Alliance	3.6.1 Coast Live Oak - California Sagebrush Association	0.14
		3.6.4 Coast Live Oak- Poison Oak - Grass Association	0.32
79000 Non-Native Woodland	N/A	Non-Native Woodland[a]	8.57
79100 Eucalyptus Woodland	3.2 Eucalyptus Semi-Natural Stands	3.2 Eucalyptus Semi-Natural Stands	0.75
Unvegetated (Water)			
64100 Open Water	N/A	Open Water[b]	0.51
Disturbed/Developed[b]			
11300 Disturbed Habitat	N/A	Disturbed Habitat	35.98
12000 Urban/Developed	N/A	Urban/Developed	8.02
18000 General Agriculture	N/A	General Agriculture	0.27
		Total[c]	**764.55**

Notes:

[a] Non-native woodland is not a recognized vegetation type in the San Diego Vegetation Classification Manual, but it is recognized as a woodland type in the Holland-Oberbauer system. For this reason, it is included under the broader woodland vegetation category in this table and in Figure Set 3 (Holland-Oberbauer Mapping). In contrast, Figure Set 2 (San Diego Vegetation Classification Manual Mapping) classifies it as a Disturbed/Developed vegetation community because the Manual does not acknowledge non-native woodland as a distinct type. At San Luis Rey River Park, this vegetation consists of ornamental, non-native pines and other planted ornamental trees located along the former golf course and in other previously landscaped areas of the preserve.

[b] The San Diego Vegetation Classification Manual only classifies vegetated areas. The disturbed land cover types were described and displayed under the association level to provide additional detail in the mapping. This allows for changes in vegetation (e.g., unvegetated to vegetated) to be tracked over time.

[c] Total may not match sum of individual acreages listed due to rounding.

3.3 Invasive Non-Native Plant Observations

A total of 20 limited to high-risk invasive/non-native plant species were detected within the San Luis Rey River Park. Most are displayed in Figure Set 4 (Figures 4-1 through 4-5), but several non-native grasses were too widespread to map throughout the park. Their names, along with their Cal-IPC ranking and their San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012) are listed in Table 3. Brief notes about occurrences and management recommendations are also provided.

Table 3. Invasive Non-Native Plant Species: San Luis Rey River Park

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Arundo donax	Giant reed	High	Very High	Several relatively small and isolated patches throughout the park. Risk of spreading.	Remove and monitor
Avena barbata[a]	Slender wild oat	Moderate	—	Throughout non-native grasslands.	Monitor
Bromus diandrus[a]	Ripgut brome	Moderate	—	Throughout non-native grasslands.	Monitor
Bromus rubens[a]	Red brome	High	—	Throughout non-native grasslands.	Monitor
Callistemon viminalis	Weeping bottlebrush	Not listed	—	Not listed by Cal-IPC but known to readily spread into natural areas.	Monitor
Cortaderia selloana	Pampas grass	High	High	One observation in the southwestern portion of the park.	Monitor
Eucalyptus sp.	Eucalyptus	Watch to Limited	—	Several individuals and patches throughout the riparian corridor of the southwestern portion of park. Risk of spreading.	Monitor
Festuca perennis[a]	Italian rye grass	Moderate	—	Throughout non-native grasslands.	Monitor
Foeniculum vulgare	Fennel	Moderate	Very High	Few observations in uplands/grassland of central portion of park. Risk of spreading.	Treat and/or monitor
Hirschfeldia incana	Shortpod mustard	Moderate	—	Several observations in uplands/grasslands throughout park. Risk of spreading.	Treat and/or monitor
Hordeum murinum[a]	Hare barely	Moderate	—	Throughout non-native grasslands.	Monitor
Marrubium vulgare	Horehonund	Limited	—	Limited to few areas of uplands in	Monitor

Table 3. Invasive Non-Native Plant Species: San Luis Rey River Park

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
				southwestern portion of park.	
Nicotiana glauca	Tree tobacco	Moderate	—	Several significant populations observed throughout uplands/grasslands of park.	Treat and monitor
Pinus halepennsis	Aleppo pine	Not listed	—	Not listed by Cal-IPC but known to readily spread into natural areas.	Monitor
Ricinus communis	Castorbean	Limited	—	Limited to few areas of southwestern portion of park.	Monitor
Schinus molle	Peruvian peppertree	Limited	—	Limited to few areas of southwestern portion of park.	Monitor
Schinus terebinthifolius	Brazilian peppertree	Moderate	—	Limited to few areas of northeastern portion of park.	Monitor
Tamarix ramosissima	Tamarisk	High	—	Widespread throughout central and southwestern portions of the park.	Remove and monitor
Tribulus terrestris	Puncturevine	Limited	—	Limited to few areas of uplands in northeastern and southeastern portion of park.	Monitor
Washingtonia robust	Washington fan palm	Moderate	—	Limited to few areas of southwestern portion of park.	Monitor

Note:

[a] These non-native grass species were not mapped due to their widespread nature but were observed throughout non-native grassland areas of the park.

Cal-IPC Ranking

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.
Alert – An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.
Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.
San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012)
Very High – Level 1 Surveillance. Low effort required to achieve goal of regional surveillance, early detection, rapid response.
High – Level 2 Eradication. Moderate effort required to achieve goal of eradication with regionally coordinated control program.
Medium – Level 3 Containment. Funding typically available for re-treatments or control of small populations. Goal is eradication with coordinated programs by management unit or watershed.
Medium – Level 4 Directed Management. Area may be managed effectively, with slow re-invasion. Goal is to control within reserve or sub-management unit to benefit NCCP resources.
Low – Level 5 Directed Suppression. Control is typically of short-term benefit (rapid re-invasion) without active restoration. Goal is suppression, typically to allow recovery disturbed site, improve re-vegetation success, or benefit NCCP resources.
Management Recommendations
Note that more than one management recommendation may be suggested
Monitor – This recommendation involves monitoring for new or expanding infestations of invasive plant species within the park or preserve, beyond the areas currently documented. If monitoring identifies a new outbreak or rapid spread, more intensive management actions, such as treatment or removal, should be implemented. Monitoring may also be necessary after treatment or removal of certain species to detect and address resprouting.
Treat (including drill and kill) – This recommendation includes the application of herbicide to invasive plant species using spot-spray or broadcast-spray methods, as appropriate, or the *drill-and-kill* method for large woody species. "Drill and kill" is a woody-plant control technique in which holes are drilled into the trunk of a live tree and herbicide is injected directly into the cuts/holes, resulting in the tree's mortality. Dead trees are left as standing snags, offering beneficial ecological structure and perching habitat. This method is often more practical and less impactful than chipping or removing woody biomass from sensitive or difficult-to-access areas.
Remove – This recommendation involves complete removal and off-site disposal of biomass for species known to aggressively resprout from cuttings or those with highly invasive seedheads. In these cases, leaving biomass on site poses a significant risk of reinfestation without intensive monitoring and follow-up treatment, making full removal the preferred approach.

3.4 Incidental Special-Status Plant and Wildlife Observations

No special-status plants and 6 special-status wildlife species were incidentally detected during mapping efforts at San Luis Rey River Park. They are listed in Table 4, along with information about their listing status. Their observation locations within the park are displayed in Figure Set 5 (Figures 5-1 through 5-5).

Table 4. Incidental Special-Status Plant and Animal Observations: San Luis Rey River Park

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County MSCP Covered Species	California Rare Plant Rank	Notes
Animals						
Accipiter cooperii	Cooper's hawk	—/—	Group 1	—	—	Observed along far southern park boundary.
Baeolophus inornatus	Oak titmouse	BCC/—	—	—	—	Heard and observed within the southern

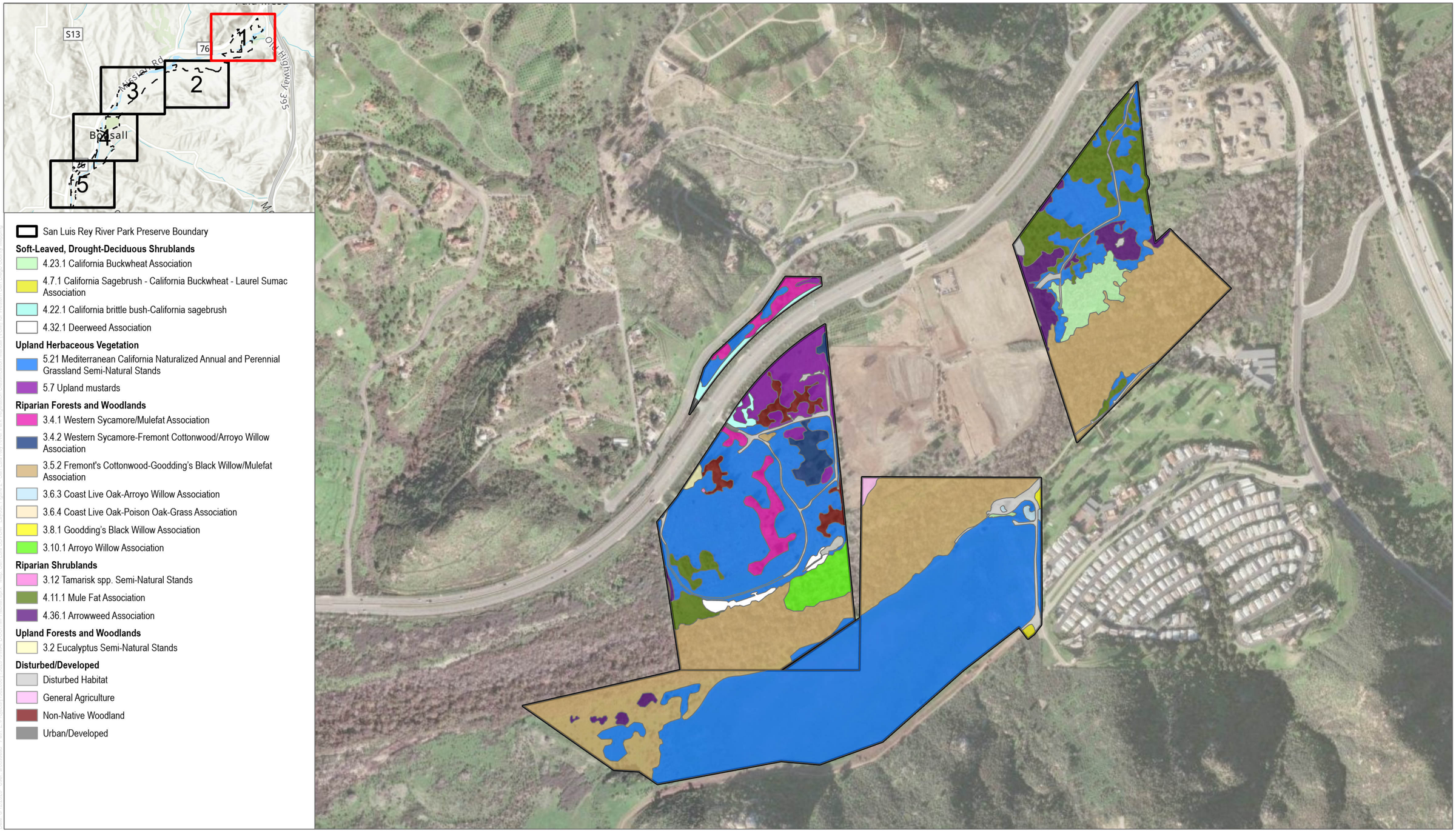
Table 4. Incidental Special-Status Plant and Animal Observations: San Luis Rey River Park

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County MSCP Covered Species	California Rare Plant Rank	Notes
						central portion of the park on the fringes of riparian woodland habitat.
Buteo lineatus	Red-shouldered hawk	—/—	Group 1	—	—	Heard and observed within the southern central portion of the park on the fringes of riparian woodland habitat.
Cathartes aura	Turkey vulture	—/—	Group 1	—	—	Observed flying over the central portion of the park.
Dryobates nuttallii	Nuttall's woodpecker	BCC/—	—	—	—	Heard and observed in the northeastern and southern riparian corridor of the park.
Icteria virens	Yellow-breasted chat	—/—	Group 1	—	—	Heard and observed in the central riparian corridor of the park.
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC	Group 1	Covered	—	Heard and observed in upland grassland/woodland habitat in the northeastern portion of the park, outside of the river corridor. Adjacent coastal sage scrub outside park likely provides main habitat for this species.
Pyrocephalus rubinus	Vermillion flycatcher	—/—	Group 1	—	—	Observed just outside of park boundary in central portion of the park.
Sialia mexicana	Western bluebird	—/—	Group 2	—	—	Observed in non-native grassland in the southern central portion of the park, along the eastern park boundary.

Table 4. Incidental Special-Status Plant and Animal Observations: San Luis Rey River Park

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County MSCP Covered Species	California Rare Plant Rank	Notes
Vireo bellii pusillus	Least Bell's vireo	FE/CE	Group 1	Covered	—	Observed throughout the riparian corridor of the park. This species is well-known from the San Luis Rey River corridor.
Setophaga petechia	Yellow warbler	—/SSC	Group 1	—	—	Observed along easternmost park boundary, adjacent to Rancho Monserate Golf Course.

Notes:
Federal/State Status
FE – Federally Endangered
FT – Federally Threatened
BCC – USFWS Bird of Conservation Concern
CE – California Endangered
CT – California Threatened
SSC – CDFW Species Special Concern
San Diego County Special Status List
LIST A (Plants rare, threatened or endangered in California and elsewhere)
LIST B (Plants rare, threatened or endangered in California but more common elsewhere)
LIST C (Plants which may be quite rare, but need more information to determine their true rarity status)
LIST D (Plants of limited distribution and are uncommon, but not presently rare or endangered)
Group 1 Animals: includes those that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met
Group 2 Animals: includes those species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action
California Rare Plant Rank
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
For each California Rare Plant Rank, threat ranks (e.g., 1B.3) are determined as follows:
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)



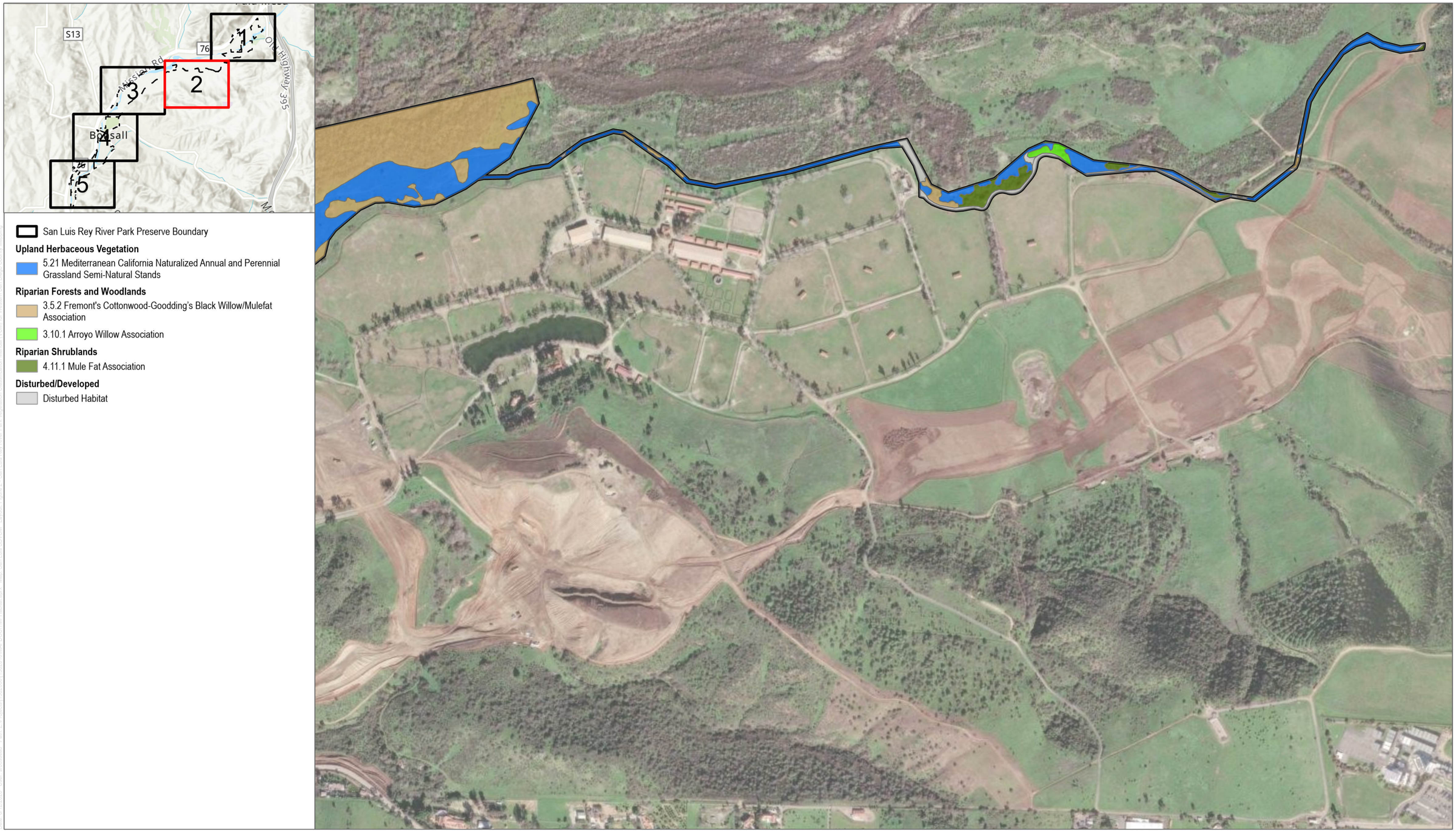
SOURCE: ESRI Aerial Imagery 2025

DUDEK

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FIGURE 2 - 1

San Luis Rey River Park Vegetation Classification Manual (VCM) for Western San Diego County Mapping



SOURCE: ESRI Aerial Imagery 2025

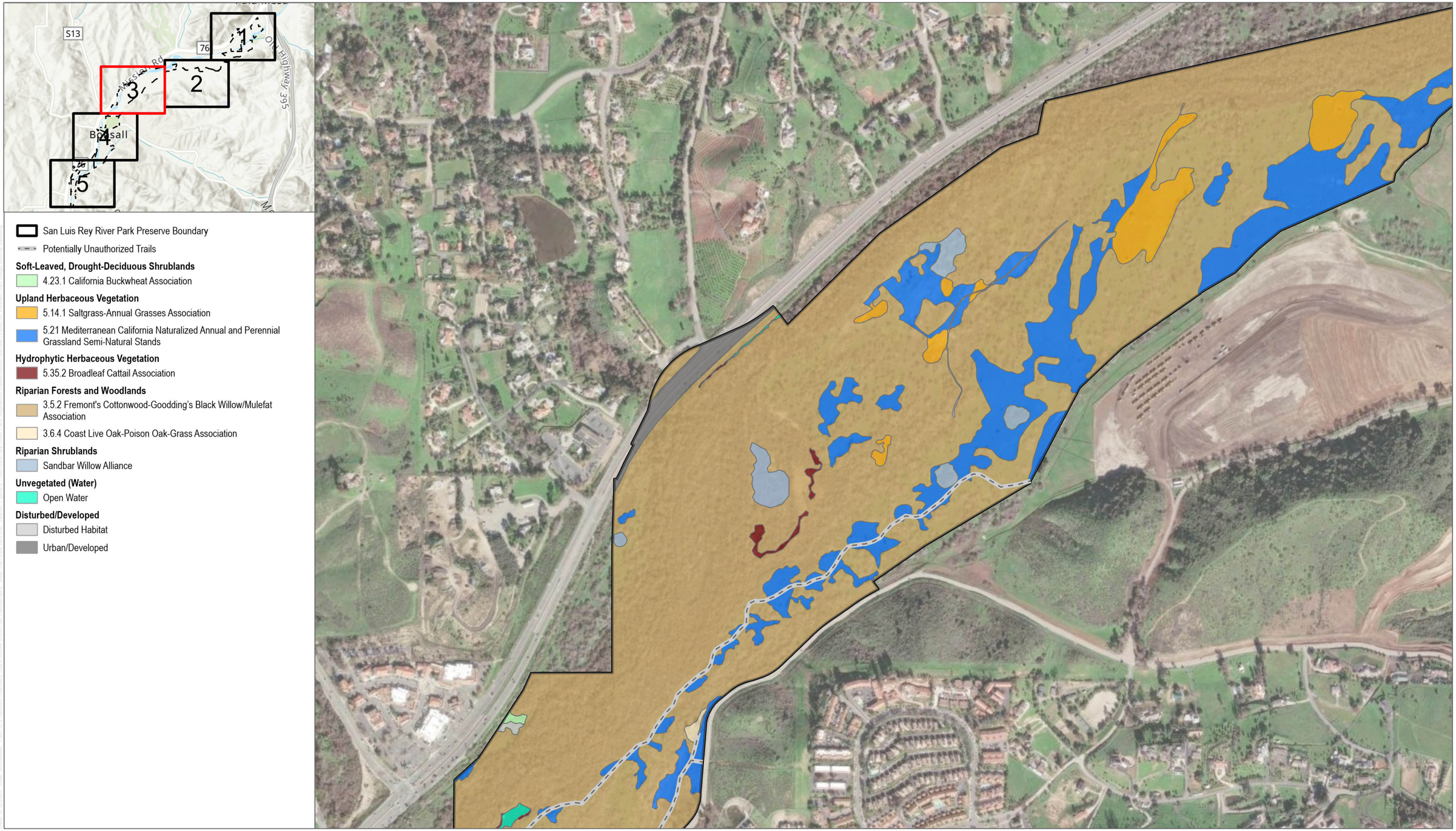
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FIGURE 2 - 2

San Luis Rey River Park Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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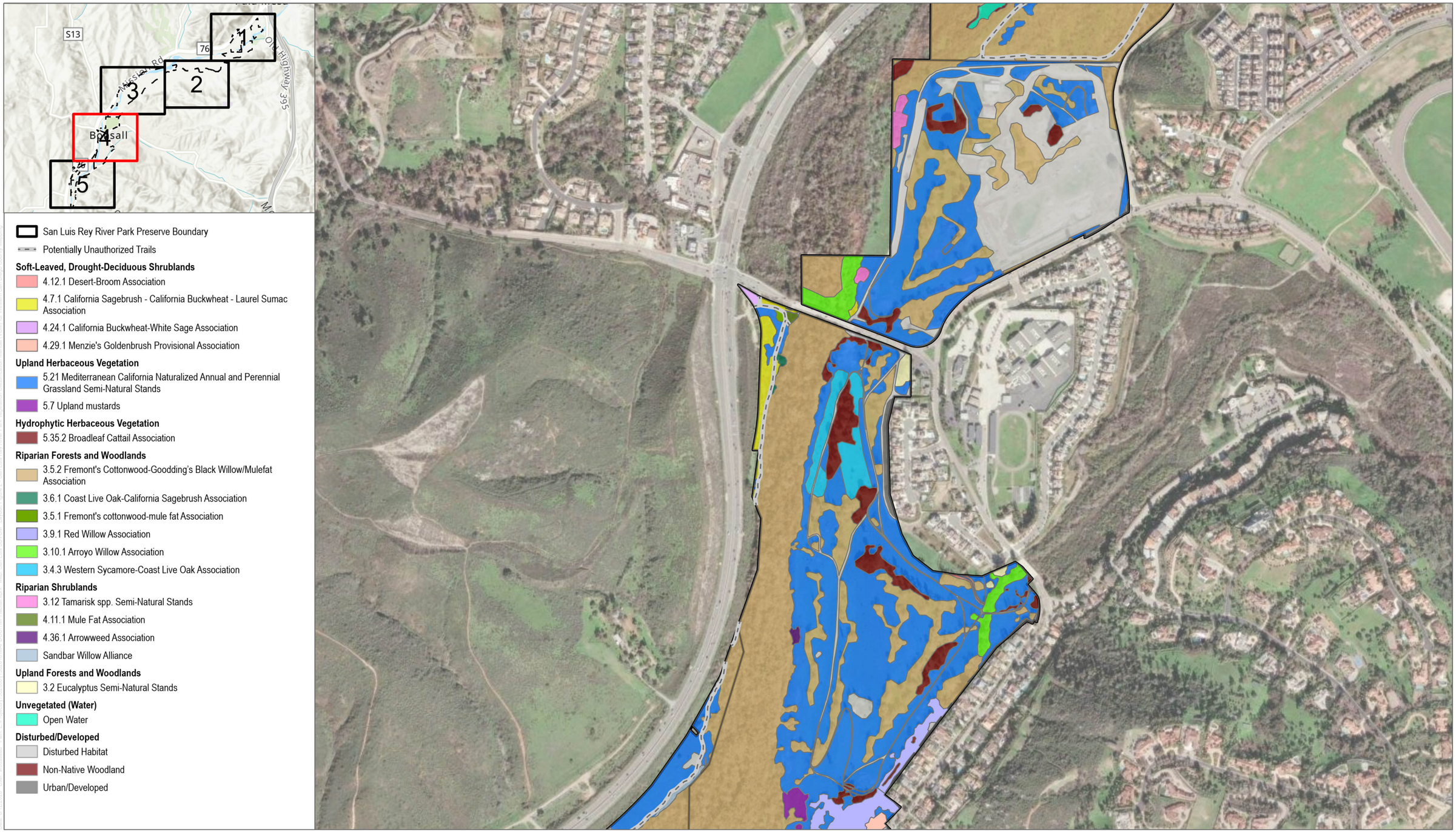
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FIGURE 2 - 3

San Luis Rey River Park Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

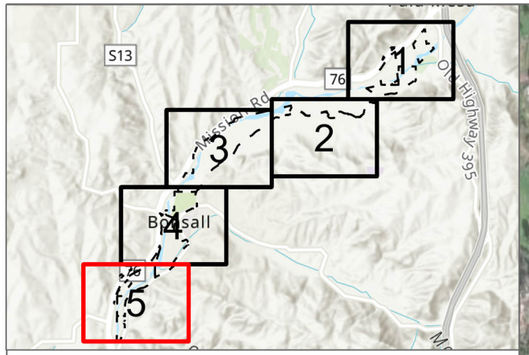
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FIGURE 2 - 4

San Luis Rey River Park Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



San Luis Rey River Park Preserve Boundary

Potentially Unauthorized Trails

Soft-Leaved, Drought-Deciduous Shrublands

- 4.23.1 California Buckwheat Association
- 4.46.1 Poison Oak-California Sagebrush/Giant Wildrye Association
- 4.7.1 California Sagebrush - California Buckwheat - Laurel Sumac Association
- 4.29.1 Menzie's Goldenbrush Provisional Association

Upland Herbaceous Vegetation

- 5.14.1 Saltgrass-Annual Grasses Association
- 5.19.1 Creeping Wildrye Association
- 5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands
- 5.7 Upland mustards

Riparian Forests and Woodlands

- 3.4.1 Western Sycamore/Mulefat Association
- 3.4.2 Western Sycamore-Fremont Cottonwood/Arroyo Willow Association
- 3.5.2 Fremont's Cottonwood-Goodding's Black Willow/Mulefat Association
- 3.9.1 Red Willow Association

Riparian Shrublands

- 3.12 Tamarisk spp. Semi-Natural Stands
- 4.11.1 Mule Fat Association
- Sandbar Willow Alliance

Disturbed/Developed

- Disturbed Habitat
- Urban/Developed

SOURCE: ESRI Aerial Imagery 2025

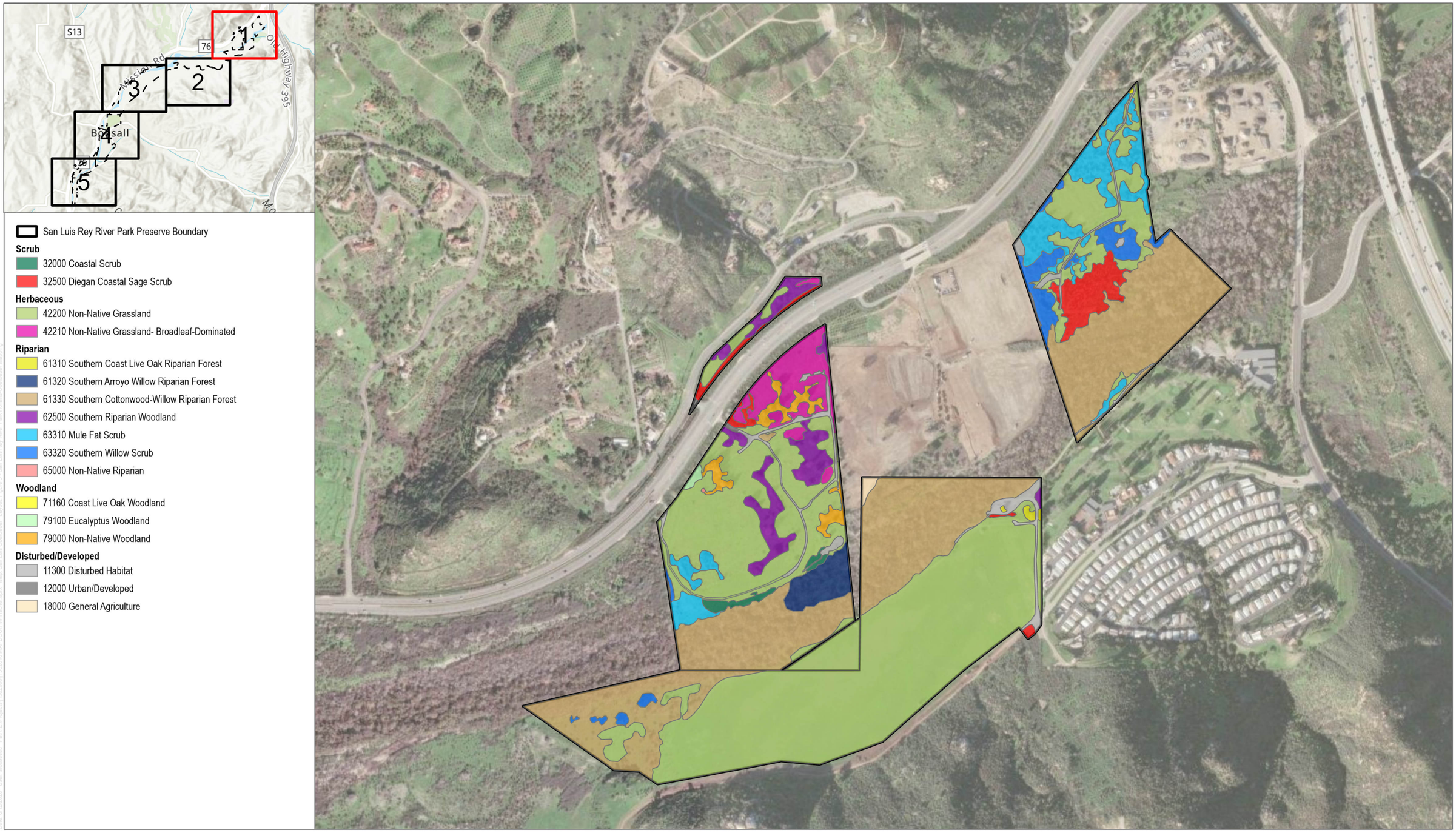
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FIGURE 2 - 5

San Luis Rey River Park Vegetation Classification Manual (VCM) for Western San Diego County Mapping

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SOURCE: ESRI Aerial Imagery 2025

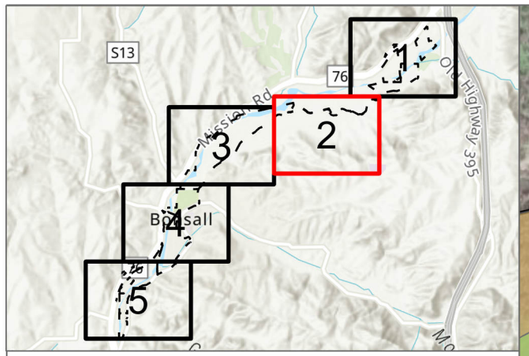
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FIGURE 3 - 1

San Luis Rey River Park Holland-Oberbauer Mapping

TMP Habitat Condition Report



San Luis Rey River Park Preserve Boundary

Herbaceous

42200 Non-Native Grassland

Riparian

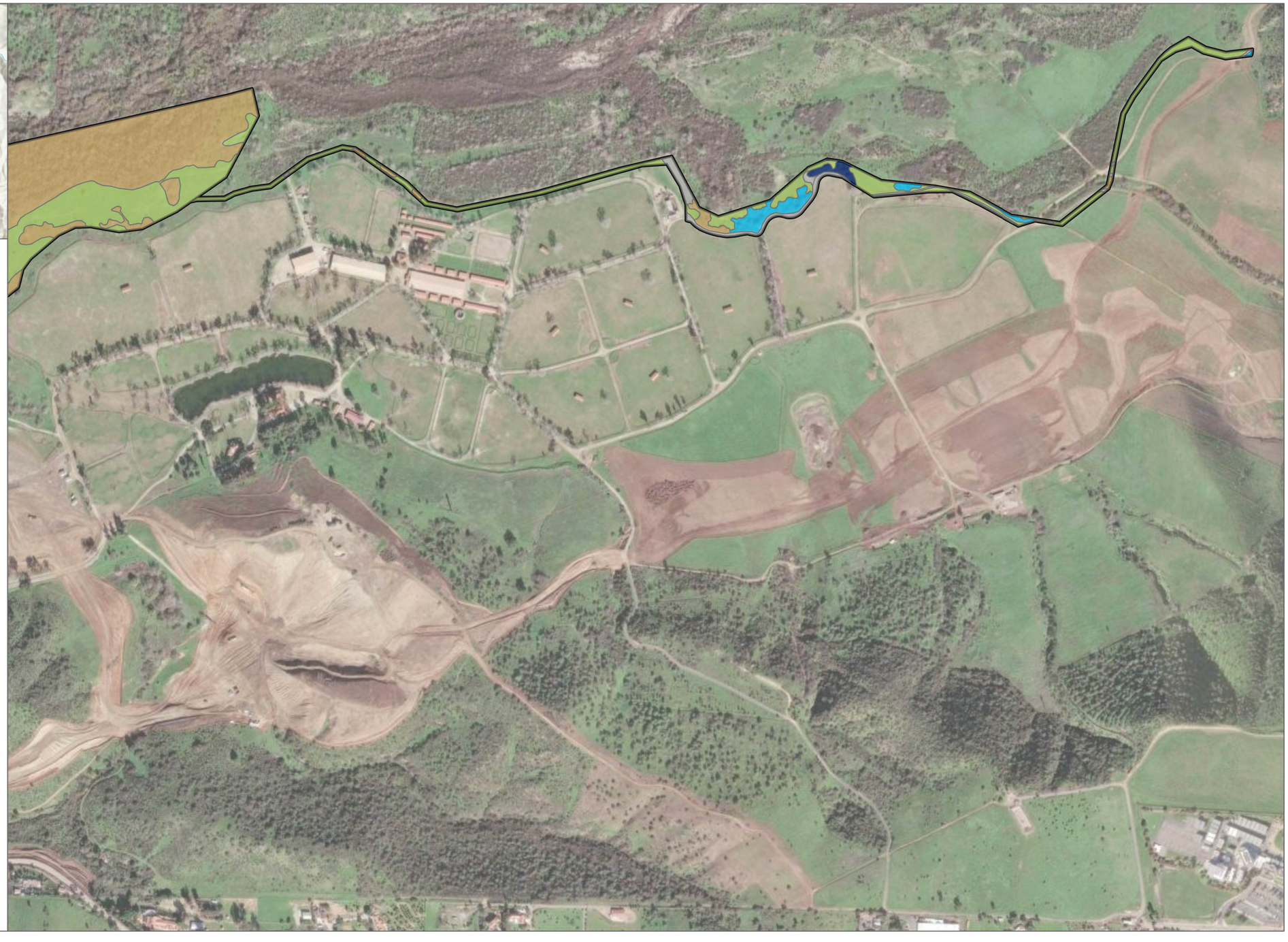
61320 Southern Arroyo Willow Riparian Forest

61330 Southern Cottonwood-Willow Riparian Forest

63310 Mule Fat Scrub

Disturbed/Developed

11300 Disturbed Habitat



SOURCE: ESRI Aerial Imagery 2025

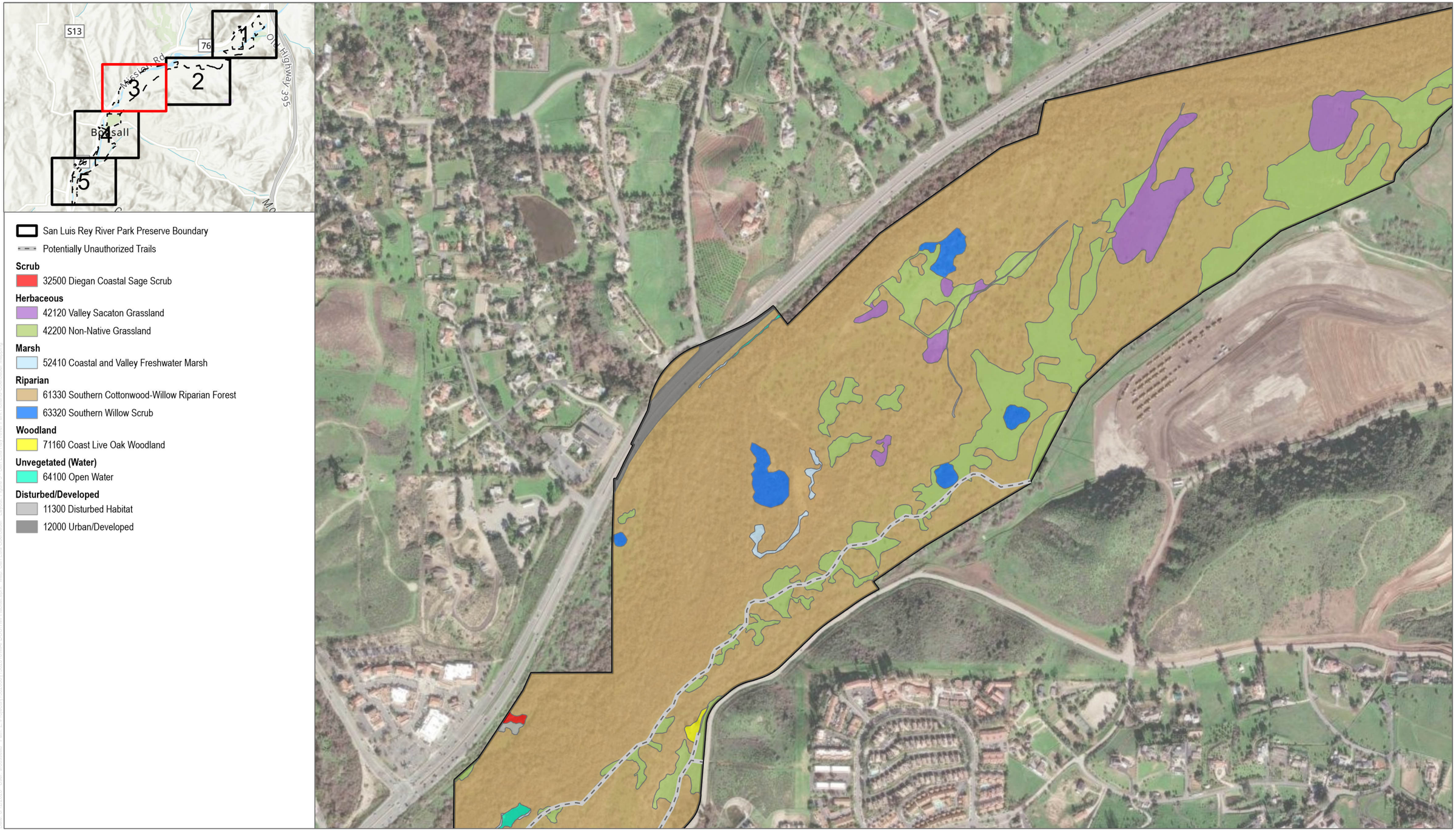
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FIGURE 3 - 2

San Luis Rey River Park Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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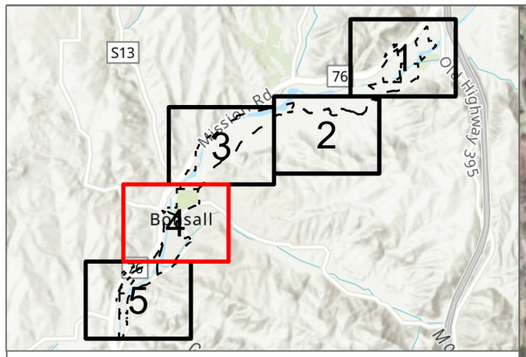
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FIGURE 3 - 3

San Luis Rey River Park Holland-Oberbauer Mapping

TMP Habitat Condition Report



San Luis Rey River Park Preserve Boundary

Potentially Unauthorized Trails

Scrub

- 32000 Coastal Scrub
- 32500 Diegan Coastal Sage Scrub
- 32530 Diegan Coastal Sage Scrub: Baccharis-dominated

Herbaceous

- 42200 Non-Native Grassland
- 42210 Non-Native Grassland- Broadleaf-Dominated

Marsh

- 52410 Coastal and Valley Freshwater Marsh

Riparian

- 61300 Southern Riparian Forest
- 61320 Southern Arroyo Willow Riparian Forest
- 61330 Southern Cottonwood-Willow Riparian Forest
- 63310 Mule Fat Scrub
- 63320 Southern Willow Scrub
- 65000 Non-Native Riparian

Woodland

- 71160 Coast Live Oak Woodland
- 79100 Eucalyptus Woodland
- 79000 Non-Native Woodland

Unvegetated (Water)

- 64100 Open Water

Disturbed/Developed

- 11300 Disturbed Habitat
- 12000 Urban/Developed

SOURCE: ESRI Aerial Imagery 2025

DUDEK

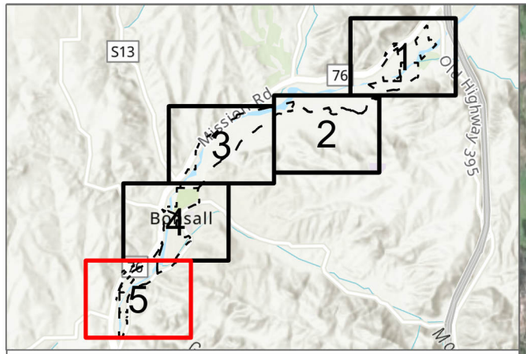
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FIGURE 3 - 4

San Luis Rey River Park Holland-Oberbauer Mapping

TMP Habitat Condition Report



San Luis Rey River Park Preserve Boundary

Potentially Unauthorized Trails

Scrub

- 32000 Coastal Scrub
- 32500 Diegan Coastal Sage Scrub

Herbaceous

- 42100 Native Grassland
- 42120 Valley Sacaton Grassland
- 42200 Non-Native Grassland
- 42210 Non-Native Grassland- Broadleaf-Dominated

Riparian

- 61330 Southern Cottonwood-Willow Riparian Forest
- 62500 Southern Riparian Woodland
- 63310 Mule Fat Scrub
- 63320 Southern Willow Scrub
- 65000 Non-Native Riparian

Disturbed/Developed

- 11300 Disturbed Habitat
- 12000 Urban/Developed

SOURCE: ESRI Aerial Imagery 2025

DUDEK

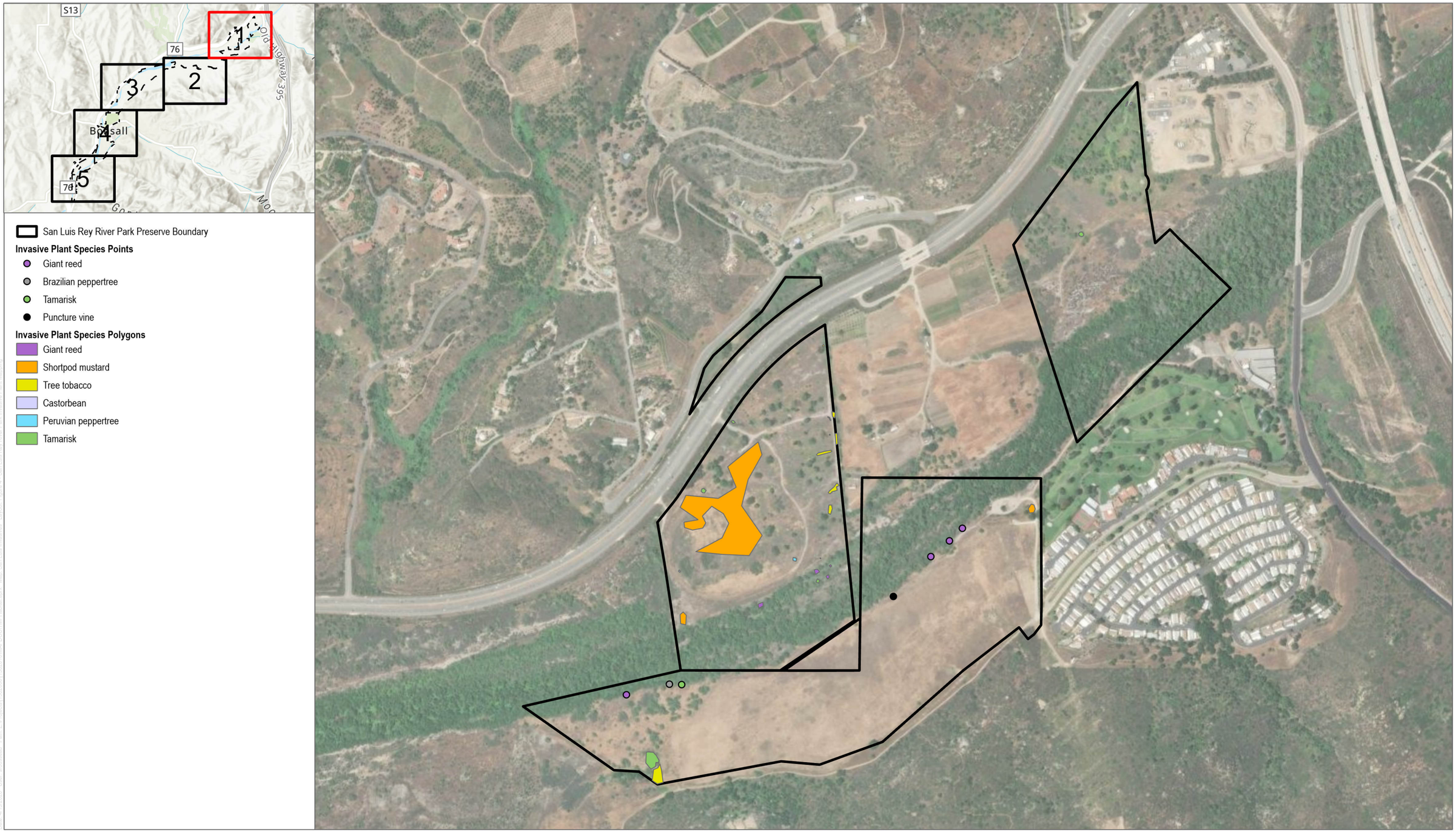
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FIGURE 3 - 5

San Luis Rey River Park Holland-Oberbauer Mapping

TMP Habitat Condition Report

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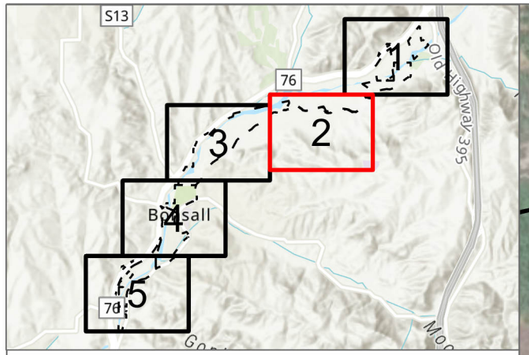
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FIGURE 4 - 1

San Luis Rey River Park Invasive Plant Mapping

TMP Habitat Condition Report



San Luis Rey River Park Preserve Boundary

Invasive Plant Species Polygons

Giant reed

Tree tobacco

SOURCE: ESRI Aerial Imagery 2025

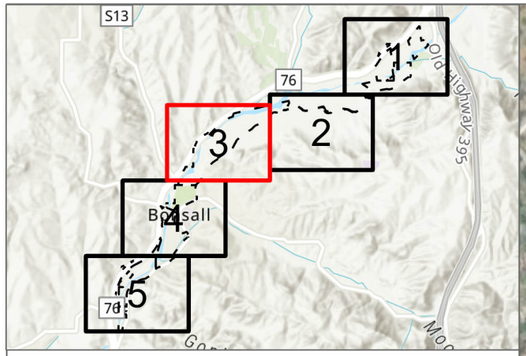
DUDEK

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FIGURE 4 - 2

San Luis Rey River Park Invasive Plant Mapping

TMP Habitat Condition Report



San Luis Rey River Park Preserve Boundary

Invasive Plant Species Points

- Giant reed
- Fennel
- Tree tobacco
- Tamarisk

Invasive Plant Species Polygons

- Giant reed
- Shortpod mustard
- Tamarisk

SOURCE: ESRI Aerial Imagery 2025

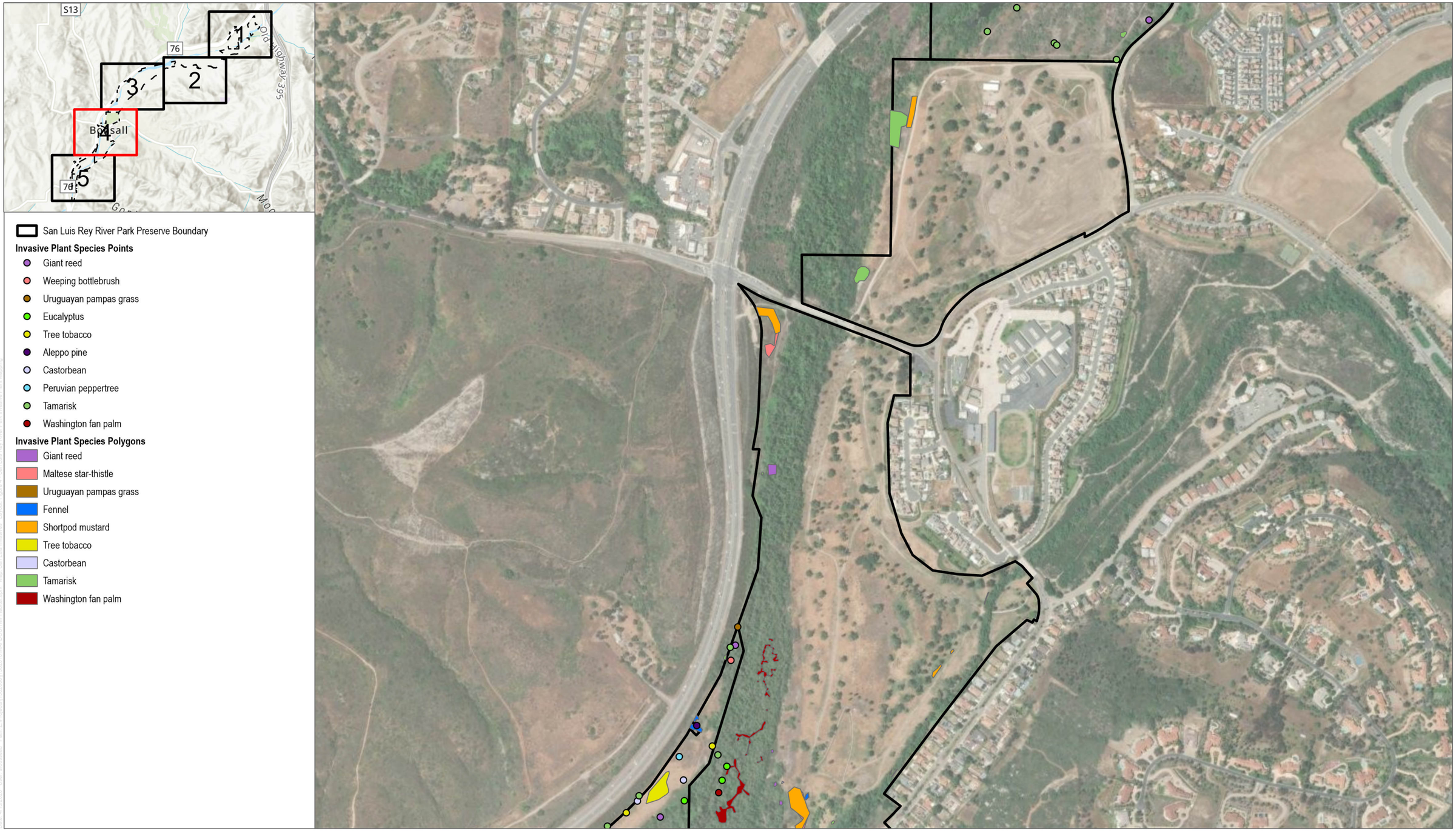
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FIGURE 4 - 3

San Luis Rey River Park Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

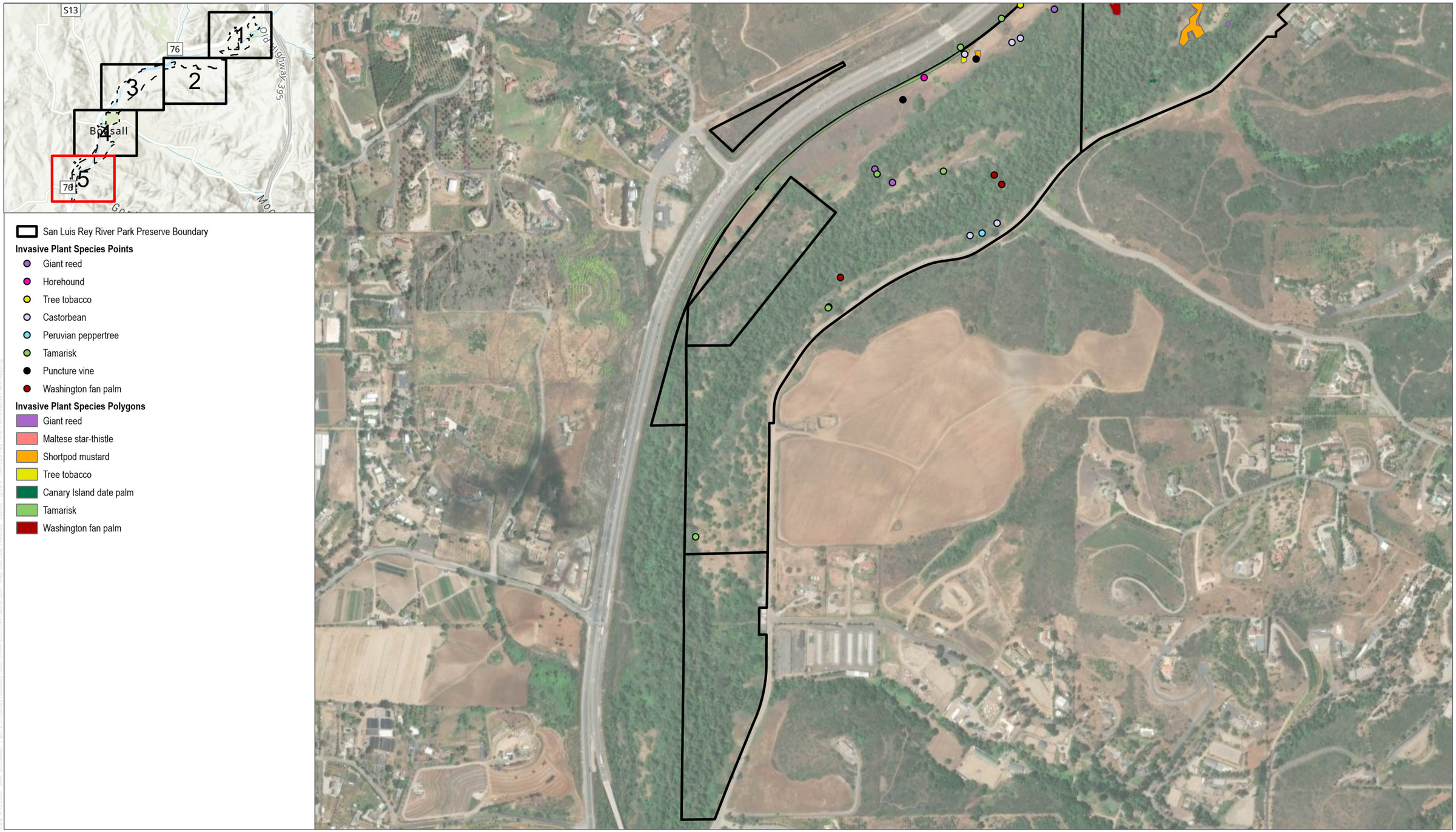
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FIGURE 4 - 4

San Luis Rey River Park Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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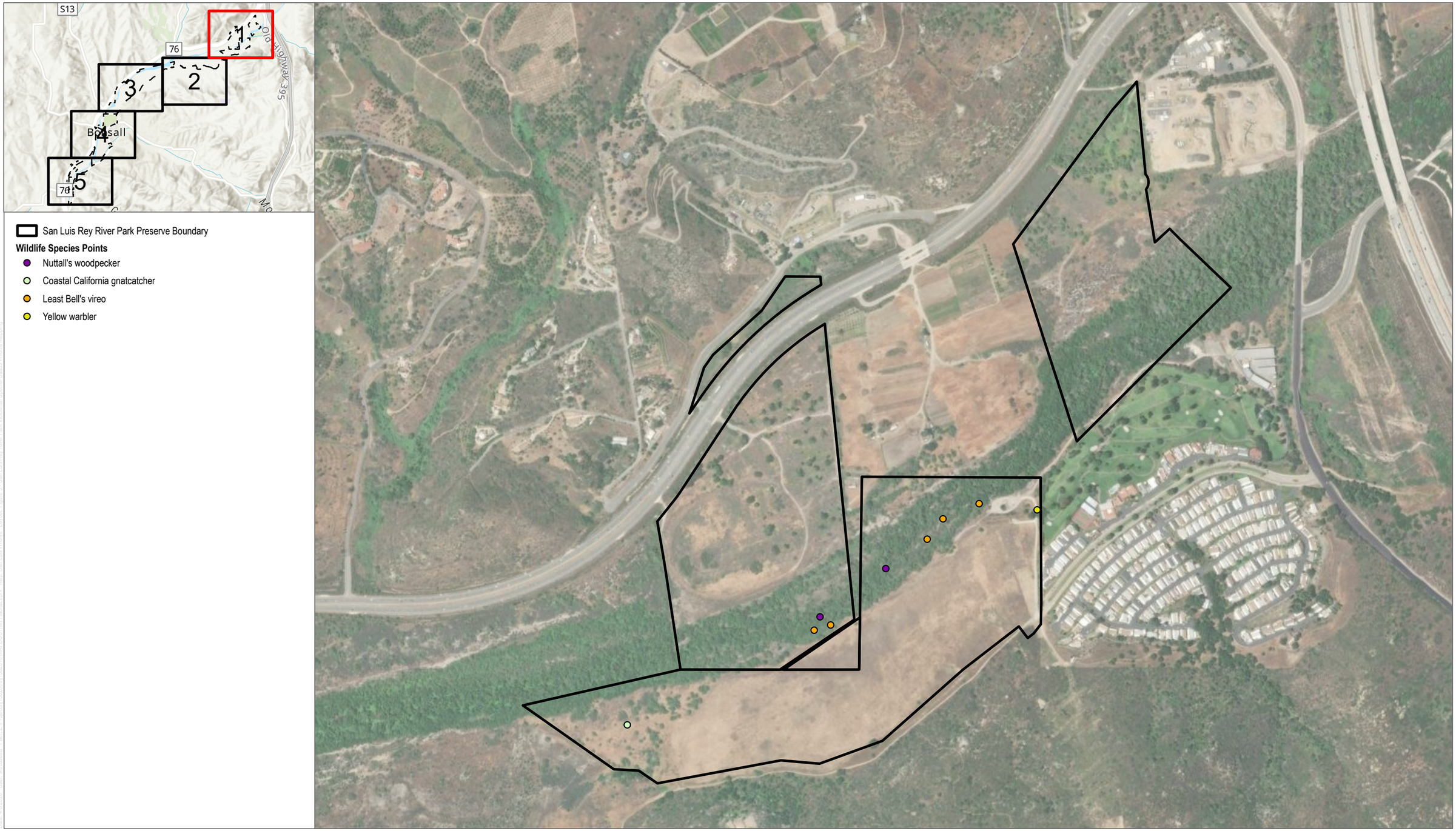
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FIGURE 4 - 5

San Luis Rey River Park Invasive Plant Mapping

TMP Habitat Condition Report

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SOURCE: ESRI Aerial Imagery 2025

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FIGURE 5 - 1

San Luis Rey River Park Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



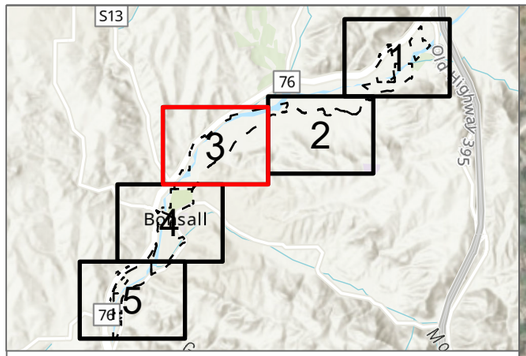
SOURCE: ESRI Aerial Imagery 2025

FIGURE 5 - 2

San Luis Rey River Park Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report

DUDEK



San Luis Rey River Park Preserve Boundary

Wildlife Species Points

- Least Bell's vireo
- Vermilion flycatcher
- Yellow-breasted chat

SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 5 - 3

San Luis Rey River Park Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 5 - 4

San Luis Rey River Park Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 5 - 5

San Luis Rey River Park Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report

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3.5 Threats Assessment

During vegetation mapping and habitat surveys, Dudek biologists conducted a threats assessment which noted and analyzed specific threats to native habitat within the park and ranked them according to the disturbance categories outlined in the *Management and Monitoring Strategic Plan (MSP Roadmap) 2025 Rare Plant Inspect and Manage (IMG) Monitoring Protocol for Occurrences on Conserved Lands in Western San Diego County* (SDMMP 2025), in addition to previously identified disturbances/stressors in Appendix A, the Habitat Condition Assessment Memorandum for the 2021 TMP Resource-Specific Monitoring Annual Report (ESA 2022). Disturbances/stressors at San Luis Rey River Park are presented in Table 5.

Table 5. Threats Overview: San Luis Rey River Park

Disturbances/ Stressors	Severity (Extent)	Discussion
Invasive plants (non-native grasses and forbs)	5	Invasive plants occur throughout much of the park and are most prominent in open areas. Large areas densely populated with non-native grass are primarily dominated by *Bromus diandrus*. Larger highly invasive plants are present as well. Tamarisk is scattered throughout the park, and some patches of giant reed were observed near water.
Altered fire regime or risk of catastrophic fire	3	Non-native grasses throughout the park may contribute to increased dry fuel loads, increasing risk of fire. The last significant fire in the area was the Lilac Fire in 2017, and significant dry fuel load has not accumulated since. Riparian areas are typically less prone to catastrophic fires and have fire regimes with long return intervals between burns. Accordingly, catastrophic fire risk is low, but still present. A relatively recent burn suggests that the area is not expected to be subject to significant naturally caused fire in the coming years.
Unauthorized human use (e.g., off-road vehicles, encampments, unauthorized trails, shooting, poaching, and/or dumping)	3	Evidence of illegal dumping was observed primarily near the shoulders of West Lilac Road and State Route 76. Dumping and trash affects a small percentage of the edges of the park overall. The park is currently closed to the public, but there were several unauthorized trails where active pedestrian and equestrian use was observed. Pedestrian use of an unauthorized trail leading to a set of encampments in the riparian corridor was observed east of the intersection of Mission Road and Camino Del Rey in the central portion of the park. Equestrian use was observed on an extensive, well-defined unauthorized trail in the southern portion of the park that originates near the intersection of Old River Road and Gopher Canyon Road. Other unauthorized trails showing evidence of somewhat recent use, including evidence of tire tracks, were observed in portions of the park north of Camino Del Rey and west of W Lilac Road.
Erosion	1	There were no major erosion concerns noted along the main stem of the San Luis Rey River or in other areas of the park.
Small, isolated occurrences vulnerable to loss of genetic diversity and to extirpation due to environmental stochasticity or	1	No small, isolated, or vulnerable species occurrences were observed. Rare bird species like least Bell's vireo are distributed throughout the riparian corridor of the San Luis Rey River, beyond the boundaries of the park.

Table 5. Threats Overview: San Luis Rey River Park

Disturbances/ Stressors	Severity (Extent)	Discussion
catastrophic disturbance		
Altered hydrology (e.g., urban runoff, flood control facilities)	3	Hydrology in the San Luis Rey River has been partially modified by upstream urban development. Increased impervious surfaces throughout the watershed likely contribute to higher volumes and velocities of urban runoff, altering the river's natural flow regime. However, concrete channelization, levees, and other flood control features are not as prevalent on the river within or upstream of the park, especially compared to other rivers and waterways in southern California.
Herbivory (e.g., seed, vegetation)	1	No abnormal signs of herbivory were observed. Evidence of grazing was not observed.
Detrimental edge effects from adjacent urban development	2	Residential development, active agricultural operations, and roads immediately adjacent to the park may increase chances of unauthorized public access and accelerate invasive plant species introduction. Wildlife may be affected by noise and night lighting nearby.

Notes:
Disturbance Categories within Park
1 – No sign of disturbance within park
2 – Disturbance does not occur within park, but is detected adjacent to park boundaries
3 – Disturbance occurs in >0% to <10% of park
4 – Disturbance occurs in 10 to <25% of park
5 – Disturbance occurs in 25 to <50% of park
6 – Disturbance occurs in 50 to <75% of park
7 – Disturbance occurs in ⩾ 75% of park

3.6 Type Conversion

In order to detect potential type conversions within the park, Holland-Oberbauer vegetation was used to compare the acreage of each habitat type that was previously mapped with the current acreage by habitat type (Table 6).

Table 6. Type Conversion Assessment Based On Holland-Oberbauer Mapping: San Luis Rey River Park

Habitat Type	Acres in 2011/2018[a]	Acres in 2025	Difference in Acreage
Developed	9.52	8.02	-1.5
Disturbed (incl. Agriculture)	167.20	36.25	-130.95
Herbaceous	45.31	219.15	+173.84
Scrub	3.43	10.48	+7.05
Woodland	4.80	9.48	+4.68
Riparian (incl. Marsh)	435.26	480.66	+45.4
Unvegetated (water)	0	0.51	0.51

a. Data are based on vegetation mapping conducted in approx. 478 acres of the park in 2011 (DUDEK 2011) and approx. 188 acres in 2018 (ICF 2019).

Historical vegetation mapping for the park only accounted for approximately 666 acres of the approximately 765-acre park. This is due to acquisitions of new parcels since the previous vegetation mapping efforts in 2011 and 2018. Accordingly, increases in habitat type acreage may be directly related to these acquisitions.

However, the significant decrease in disturbed habitat from 2011/2018 to 2025 is the result of disturbed areas of a former golf course in the center of the property transitioning to herbaceous non-native grasslands and native riparian forest.

Other differences in habitat type acreages are less significant and may be from a combination of different mapping methods/accuracy, and the acquisition of new parcels to the park since the last vegetation mapping efforts in 2011/2018.

Adaptive Management Recommendations

Invasive Non-Native Plant Species Management

As discussed in the invasive non-native plant observations section, several invasive non-native plant species were detected within the park. For each species, a recommended action was identified consisting of either removal, treatment, and/or monitoring. Near-term removal of giant reed and tamarisk is recommended, if feasible, to prevent further spread throughout the riparian corridor. Treatment of eucalyptus and non-native palms is also recommended; methods like drill and kill will leave beneficial standing snags and reduce removal effort and cost. Treatment and follow-up monitoring of perennial upland grassland invasives like tree tobacco, fennel, castorbean, and fountain grass are also recommended. Final implementation of management activities and treatment methods shall be determined by DPR based on priority.

Habitat Enhancement/Restoration Opportunities

- **Riparian enhancement.** Removal of perennial invasive plants within the riparian corridor and planting with willows and other native riparian tree and shrub species would be a simple and effective way to enhance the riparian habitat in the park.
- **Former Golf Course.** The former golf course in the center of the park offers a unique restoration opportunity to transition non-native herbaceous grasslands into a mosaic of oak and riparian woodland adjacent to the main riparian corridor of the San Luis Rey River. Small stands of non-native woodland in these areas would also benefit from replacement with native woodland species.

Encroachment

- **Access control and encampment removal.** Ensure that fencing and signage is adequate to deter unauthorized access at locations of repeated unauthorized entry. Dudek identified the intersection of Mission Road and Camino Del Rey in the central portion of the park as the highest priority location for improved access control. Several encampments within the riparian corridor near this location should be removed to reduce risk of damage to sensitive riparian habitat.

Monitoring

- **Invasive non-native plants.** Invasive non-native plant species mapping should be conducted annually, if feasible, to inform treatment areas, assess new invasions or reinvasions, and determine effectiveness of treatments.

- **Public use.** Ongoing monitoring of new encampments and unauthorized public use of the park is recommended, especially along roads with frequent pedestrian activity.

4 Bottle Peak County Preserve

4.1 Preserve Description

Bottle Creek County Preserve is an approximately 381-acre preserve that is adjacent to preserved lands around Lake Wohlford, and forms part of the larger network of natural corridors in northern San Diego County. The preserve spans from the base up toward the summit of Bottle Peak.

4.2 Vegetation Mapping

A total of 8 Holland-Oberbauer vegetation communities and 16 VCM vegetation communities were mapped, along with one land cover type. These communities and land cover types are shown in Table 7 and Figures 6 and 7. Representative photos of the preserve and its vegetation communities are included in the photo log in Attachment A.

Table 7. Vegetation Communities Crosswalk: Bottle Peak County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Scrub			
32000 Coastal Scrub	4.29 Menzie's Goldenbrush Alliance	4.29.1 Menzie's Goldenbrush Provisional Association	0.73
	4.32 Deerweed Alliance	4.32.1 Deerweed Association	0.17
32500 Diegan Coastal Sage Scrub	4.7 California Sagebrush - California Buckwheat Alliance	4.7.1 California Sagebrush - California Buckwheat - Laurel Sumac Association	41.53
	4.8 California Sagebrush-Black Sage Alliance	4.8.1 California Sagebrush-Black Sage Association	7.53
	4.23 California Buckwheat Alliance	4.23.1 California Buckwheat Association	5.23
	4.44 Black Sage Alliance	4.44.2 Black Sage-Laurel Sumac Association	0.70
Chaparral			
37120 Southern Mixed Chaparral	4.2 Chamise-Mission Manzanita Alliance	4.2.3 Chamise-Mission Manzanita-Woolly Leaf Ceanothus Association	30.49
	4.18 Woolly Leaf Ceanothus Alliance	4.18.1 Woolly Leaf Ceanothus Association	250.35
37900 Scrub Oak Chaparral	4.37 Scrub Oak Alliance	4.37.1 Scrub Oak Association	1.63
37G00 Coastal Sage-Chaparral Transition	4.1 Chamise Alliance	4.1.2 Chamise – Buckwheat – California Sagebrush – Black Sage Association	1.13
Herbaceous			
42200 Non-Native Grassland	5.21 Mediterranean California Naturalized Annual	5.21 Mediterranean California Naturalized Annual	0.87

Table 7. Vegetation Communities Crosswalk: Bottle Peak County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
	and Perennial Grassland Semi-Natural Stands	and Perennial Grassland Semi-Natural Stands	
Woodland			
71160 Coast Live Oak Woodland	3.6 Coast Live Oak Alliance	3.6.1 Coast Live Oak - California Sagebrush Association	15.11
		3.6.2 Coast Live Oak/ Scrub Oak Association	11.11
		3.6.4 Coast Live Oak - Poison Oak - Grass Association	1.50
71180 Engelmann Oak Woodland	3.7 Engelmann Oak Alliance	3.7.1 Engelmann Oak/ White Sage Association	2.07
		3.7.2 Engelmann Oak-Coast Live Oak - Poison Oak - Grass Association	6.53
Disturbed/Developed[a]			
11300 Disturbed Habitat	N/A	Disturbed Habitat	3.94
		Total[b]	**380.63**

Notes:

[a] The San Diego Vegetation Classification Manual only classifies vegetated areas. The disturbed land cover types were described and displayed under the association level to provide additional detail in the mapping. This allows for changes in vegetation (e.g., unvegetated to vegetated) to be tracked over time.

[b] Total may not match sum of individual acreages listed due to rounding.

4.3 Invasive Non-Native Plant Observations

A total of 13 invasive/non-native plant species were detected within the Bottle Peak County Preserve. Most are displayed in Figure 8, but several non-native grasses were too widespread to map throughout the preserve. Their names, along with their Cal-IPC ranking and their San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012) are listed in Table 8. Brief notes about occurrences and management recommendations are also provided.

Bottle Peak Preserve Boundary

Soft-Leaved, Drought-Deciduous Shrublands

- 4.23.1 California Buckwheat Association
- 4.29.1 Menzie's Goldenbrush Provisional Association
- 4.32.1 Deerweed Association
- 4.44.2 Black Sage-Laurel Sumac Association
- 4.7.1 California Sagebrush - California Buckwheat - Laurel Sumac Association
- 4.8.1 California Sagebrush-Black Sage Association

Sclerophyllous, Evergreen Shrublands

- 4.1.2 Chamise-Buckwheat-California Sagebrush-Black Sage Association
- 4.18.1 Woolly Leaf Ceanothus Association
- 4.2.3 Chamise-Mission Manzanita-Woolly Leaf Ceanothus Association
- 4.37.1 Scrub Oak Association

Upland Herbaceous Vegetation

- 5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands

Upland Forests and Woodlands

- 3.6.1 Coast Live Oak-California Sagebrush Association
- 3.6.2 Coast Live Oak/ Scrub Oak Association
- 3.6.4 Coast Live Oak-Poison Oak-Grass Association
- 3.7.1 Engelmann Oak/ White Sage Association
- 3.7.2 Engelmann Oak-Coast Live Oak-Poison Oak-Grass Association

Disturbed/Developed

- Disturbed Habitat

SOURCE: ESRI Aerial Imagery 2025

DUDEK

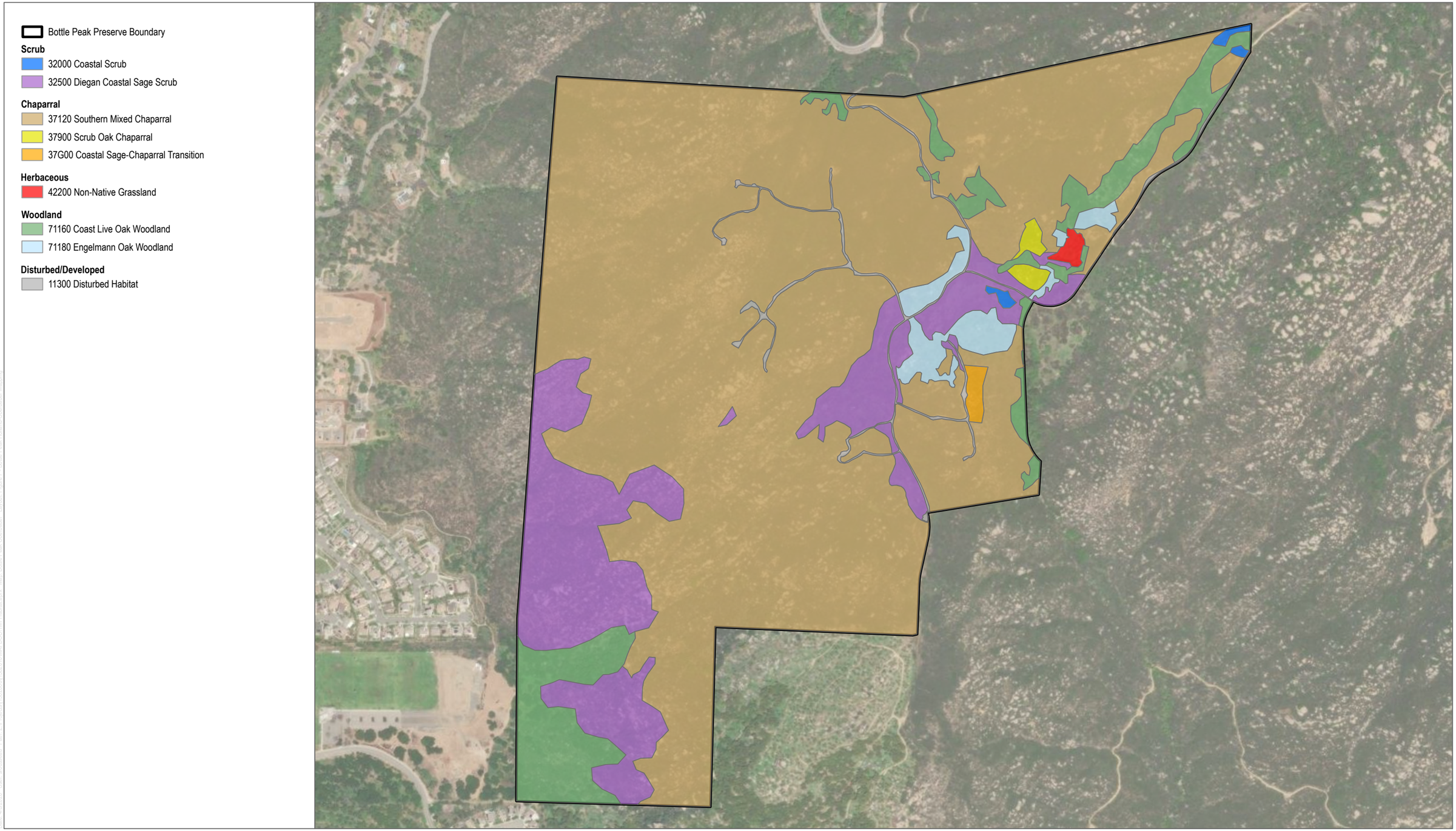
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FIGURE 6

Bottle Peak Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report

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SOURCE: ESRI Aerial Imagery 2025

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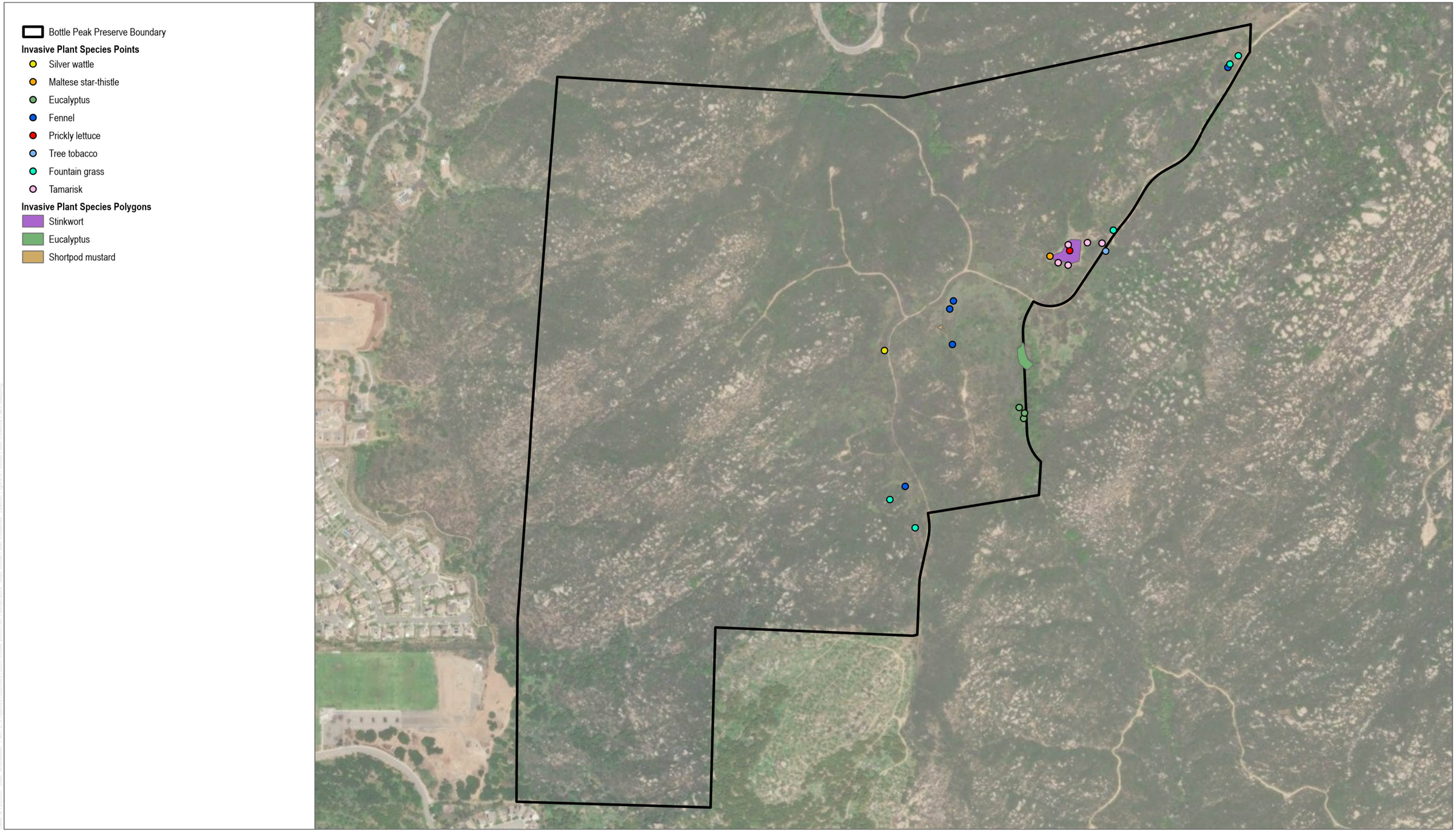
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FIGURE 7

Bottle Peak Holland-Oberbauer Mapping

TMP Habitat Condition Report

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SOURCE: ESRI Aerial Imagery 2025

DUDEK

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FIGURE 8

Bottle Peak Invasive Plant Mapping

TMP Habitat Condition Report

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Table 8. Invasive Non-Native Plant Species: Bottle Peak County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Acacia dealbata	silver wattle	Moderate	—	One observation in the central highlands of the preserve. Risk of spreading.	Treat (drill and kill) and monitor
Avena barbata[a]	Slender wild oat	Moderate	—	Throughout grass-dominated open areas of woodland and scrub.	Monitor
Bromus diandrus[a]	Ripgut brome	Moderate	—	Throughout grass-dominated open areas of woodland and scrub.	Monitor
Bromus rubens[a]	Red brome	High	—	Throughout grass-dominated open areas of woodland and scrub.	Monitor
Centaurea melitensis	Maltese star-thistle	Moderate	—	One noticeable population near a disturbed basin dominated by non-native plants in northeast portion of the preserve.	Treat and/or monitor
Dittrichia graveolens	Stinkwort	Moderate	—	One large population in a disturbed basin dominated by non-native plants in northeast portion of the preserve.	Treat and/or monitor
Eucalyptus sp.	Eucalyptus	Watch to Limited	—	Several trees along eastern preserve boundary.	Monitor
Foeniculum vulgare	Fennel	Moderate	Very High	Several occurrences in grassy woodland area in central preserve. Risk of spreading.	Treat and/or monitor
Hirschfeldia incana	Shortpod mustard	Moderate	—	Small, isolated population in grassy woodland area in central preserve. Risk of spreading.	Treat and/or monitor

Table 8. Invasive Non-Native Plant Species: Bottle Peak County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Lactuca serriola	Prickly lettuce	Not listed	—	Not listed by Cal-IPC but know to become a troublesome weed. Risk of spreading. Located in the disturbed basin dominated by non-native plants in northeast portion of the preserve.	Treat and/or monitor
Nicotiana glauca	Tree tobacco	Moderate	—	One occurrence along eastern preserve boundary. Risk of spreading.	Treat and/or monitor
Pennisetum setaceum	Fountain grass	Moderate	—	Several isolated occurrences in central and northeastern preserve. Risk of spreading.	Remove and monitor
Tamarix ramosissima	Tamarisk	High	—	Several occurrences concentrated in and around the disturbed basin dominated by non-native plants in northeast portion of the preserve.	Treat (drill and kill) and/or monitor

Notes:

[a] These non-native grass species were not mapped due to their widespread nature but were observed throughout open understory of certain woodland and scrub areas of the preserve.

Cal-IPC Ranking

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Alert – An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.

Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.

San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012)

Very High – Level 1 Surveillance. Low effort required to achieve goal of regional surveillance, early detection, rapid response.

High – Level 2 Eradication. Moderate effort required to achieve goal of eradication with regionally coordinated control program.

Medium – Level 3 Containment. Funding typically available for re-treatments or control of small populations. Goal is eradication with coordinated programs by management unit or watershed.

Medium – Level 4 Directed Management. Area may be managed effectively, with slow re-invasion. Goal is to control within reserve or sub-management unit to benefit NCCP resources.

Low – Level 5 Directed Suppression. Control is typically of short-term benefit (rapid re-invasion) without active restoration. Goal is suppression, typically to allow recovery disturbed site, improve re-vegetation success, or benefit NCCP resources.

Management Recommendations

Note that more than one management recommendation may be suggested

Monitor – This recommendation involves monitoring for new or expanding infestations of invasive plant species within the park or preserve, beyond the areas currently documented. If monitoring identifies a new outbreak or rapid spread, more intensive management actions, such as treatment or removal, should be implemented. Monitoring may also be necessary after treatment or removal of certain species to detect and address resprouting.

Treat (including drill and kill) – This recommendation includes the application of herbicide to invasive plant species using spot-spray or broadcast-spray methods, as appropriate, or the *drill-and-kill* method for large woody species. "Drill and kill" is a woody-plant control technique in which holes are drilled into the trunk of a live tree and herbicide is injected directly into the cuts/holes, resulting in the tree's mortality. Dead trees are left as standing snags, offering beneficial ecological structure and perching habitat. This method is often more practical and less impactful than chipping or removing woody biomass from sensitive or difficult-to-access areas.

Remove – This recommendation involves complete removal and off-site disposal of biomass for species known to aggressively resprout from cuttings or those with highly invasive seedheads. In these cases, leaving biomass on site poses a significant risk of reinfestation without intensive monitoring and follow-up treatment, making full removal the preferred approach.

4.4 Incidental Special-Status Plant and Wildlife Observations

One special-status plant and 3 special-status wildlife species were incidentally detected during mapping efforts at Bottle Peak County Preserve. They are listed in Table 9, along with information about their special statuses. Their observation locations within the preserve are displayed in Figures 9 and 10.

Table 9. Incidental Special-Status Plant and Animal Observations: Bottle Peak County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County MSCP Covered Species	California Rare Plant Rank	Notes
Plants						
Quercus engelmannii	Engelmann oak	—/—	List D	Covered	4.2	Throughout the central portion of the preserve.
Animals						
Accipiter cooperii	Cooper's hawk	—/—	Group 1	—	—	Observed along far western preserve boundary.
Phrynosoma blainvillii	Blainville's horned lizard	—/SSC	Group 2	Covered	—	Observed on dirt road in northern central preserve.

Table 9. Incidental Special-Status Plant and Animal Observations: Bottle Peak County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County MSCP Covered Species	California Rare Plant Rank	Notes
Puma concolor	Mountain lion	—/—	Group 2	Covered	—	Tracks observed on dirt road in northern central preserve.

Notes:
Federal/State Status
FE – Federally Endangered
FT – Federally Threatened
CE – California Endangered
CT – California Threatened
SSC – CDFW Species Special Concern
San Diego County Special Status List
LIST A (Plants rare, threatened or endangered in California and elsewhere)
LIST B (Plants rare, threatened or endangered in California but more common elsewhere)
LIST C (Plants which may be quite rare, but need more information to determine their true rarity status)
LIST D (Plants of limited distribution and are uncommon, but not presently rare or endangered)
Group 1 Animals: includes those that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met
Group 2 Animals: includes those species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action
California Rare Plant Rank
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
For each California Rare Plant Rank, threat ranks (e.g., 1B.3) are determined as follows:
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)

4.5 Threats Assessment

During vegetation mapping and habitat surveys, Dudek biologists conducted a threats assessment which noted and analyzed specific threats to native habitat within the preserve and ranked them according to the disturbance categories outlined in the *Management and Monitoring Strategic Plan (MSP Roadmap) 2025 Rare Plant Inspect and Manage (IMG) Monitoring Protocol for Occurrences on Conserved Lands in Western San Diego County* (SDMMP 2025), in addition to previously identified disturbances/stressors in Appendix A, the Habitat Condition Assessment Memorandum for the 2021 TMP Resource-Specific Monitoring Annual Report (ESA 2022). Disturbances/stressors at Bottle Peak County Preserve are noted in Table 10.

Table 10. Threats Overview: Bottle Peak County Preserve

Disturbances / Stressors	Severity (Extent)	Discussion
Invasive plants (Non-native forbs and grasses)	3	Much of the preserve is dense southern mixed chapparal, making it less susceptible to invasion by non-native herbaceous grasses and forbs. However, more open areas of the preserve with lower woody cover host various non-native grasses typical of western San Diego County, along with patches of fennel, fountain grass, tamarisk, mustard, and tree tobacco. Most of these open areas were located in the northeastern part of the preserve, along the main dirt access road that leads into the preserve from Oakvale Road.
Altered fire regime or risk of catastrophic fire	4	Dense southern mixed chapparal contributes to woody fuel load. Portions of the northern preserve may have burned in the Paradise Fire in 2003. Southern portions of the preserve may have burned in the 1993 Guejiuto Fire. Accordingly, there has been approximately 20 years of vegetation growth and fuel accumulation since the last fire, posing a moderate risk of fire. Burns within the past 25 years aligns with typical fire return intervals for the habitat types present.
Unauthorized human use (e.g., off-road vehicles, encampments, unauthorized trails, shooting, poaching, and/or dumping)	3	Rock outcrops within the preserve show evidence of spray-painted graffiti, along with broken glass and trash; however, the timing of this activity is unknown. DPR rangers regularly patrol dirt roads and disturbed areas within the preserve, and no direct evidence of unauthorized use within the preserve was observed during field surveys.
Erosion	3	Some moderate erosional rills observed on steep dirt trails and dirt roads throughout the preserve, but nothing severe.
Small, isolated occurrences vulnerable to loss of genetic diversity and to extirpation due to environmental stochasticity or catastrophic disturbance	1	No small, isolated, or vulnerable species occurrences were observed.
Altered hydrology (e.g., urban runoff, flood control facilities)	1	Drainages within the preserve are not developed, nor subject to urban runoff from surrounding development.
Herbivory (e.g., seed, vegetation)	1	No abnormal signs of herbivory were observed. Evidence of grazing was not observed.

Table 10. Threats Overview: Bottle Peak County Preserve

Disturbances / Stressors	Severity (Extent)	Discussion
Detrimental edge effects from adjacent urban development	2	Residential development, active agricultural operations, and roads immediately adjacent to the preserve may increase chances of unauthorized access and accelerate invasive plant species introduction. Wildlife may be affected by noise and night lighting nearby.

Notes:
Disturbance Categories within Preserve
1 – No sign of disturbance within preserve
2 – Disturbance does not occur within preserve, but is detected adjacent to preserve boundaries
3 – Disturbance occurs in >0% to <10% of preserve
4 – Disturbance occurs in 10 to <25% of preserve
5 – Disturbance occurs in 25 to <50% of preserve
6 – Disturbance occurs in 50 to <75% of preserve
7 – Disturbance occurs in ⩾ 75% of preserve

4.6 Type Conversion

In order to detect potential type conversions within the preserve, previous Holland-Oberbauer vegetation mapping from 2014 was compared to the updated 2025 mapping by general habitat type, as shown in Table 11. Note that 2014 mapping data were clipped to the preserve boundary to align with 2025 mapping protocols, which excluded buffer areas outside the preserve.

Table 11. Type Conversion Assessment Based on Holland-Oberbauer Mapping: Bottle Peak County Preserve

Habitat Type	Acres in 2014	Acres in 2025	Difference in Acreage
Disturbed (incl. Agriculture)	3.85	3.94	+0.09
Herbaceous	0.92	0.87	-0.05
Scrub	62.51	55.89	-6.62
Chaparral	281.45	283.60	+2.15
Woodland	31.90	36.32	+4.42

Changes in vegetation mapping between 2014 and 2025 were minor and do not suggest significant shifts in community dominance or evidence of habitat decline. The minor differences may arise from natural expansion/growth of trees in woodlands, natural transition of scrub habitat to mature chaparral, and differences in vegetation mapping techniques/accuracy.

Adaptive Management Recommendations

Invasive Non-Native Plant Species Management

Several invasive plant species were documented, with the most management-relevant occurring in open/disturbed areas and along roads. Near-term treatment should prioritize the following species due to their potential for spread: fountain grass, tamarisk, fennel, stinkwort, shortpod mustard, and Maltese star-thistle. Tamarisk and silver wattle should be treated using drill-and-kill where feasible; standing snags can be left behind for practicality and cost. Widespread non-native grasses should be monitored, but encroachment of non-native grasses into intact chaparral or scrub is unlikely. Follow-up monitoring is recommended to detect resprouting or new invasions.

Habitat Enhancement / Restoration Opportunities

Opportunities are limited due to high-quality chaparral cover; however, localized restoration in the northeastern disturbed basin (where multiple invasives co-occur) may be beneficial.

Encroachment

- **Unauthorized access from Oakvale Road.** Improved access control measures (e.g., fencing, signage, boulder placement) are recommended at this known entry point.
- **Trash removal**. Trash removal and vandalism removal efforts at rocky lookout points should occur as needed.

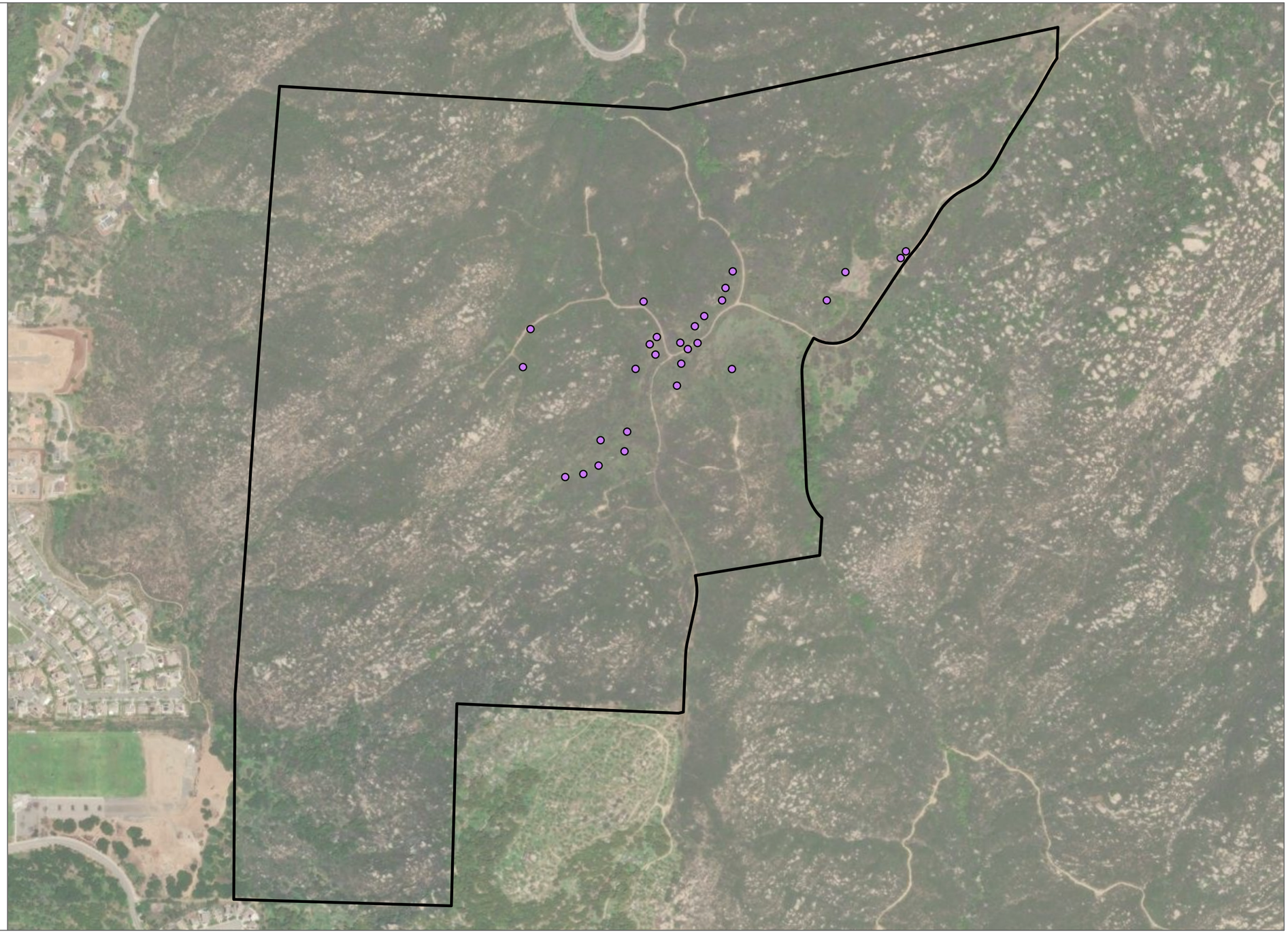
Monitoring

- **Invasive non-native plants.** Annual invasive plant monitoring is recommended, if feasible, with a focus on the disturbed basin.
- **Public use.** Monitoring for unauthorized trail use and disturbance should continue, particularly near the central rocky features.

Bottle Peak Preserve Boundary

Special Status Plant Species Points

Engelmann oak



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 325 650 Feet

FIGURE 9

Bottle Peak Incidental Special-Status Plant Mapping

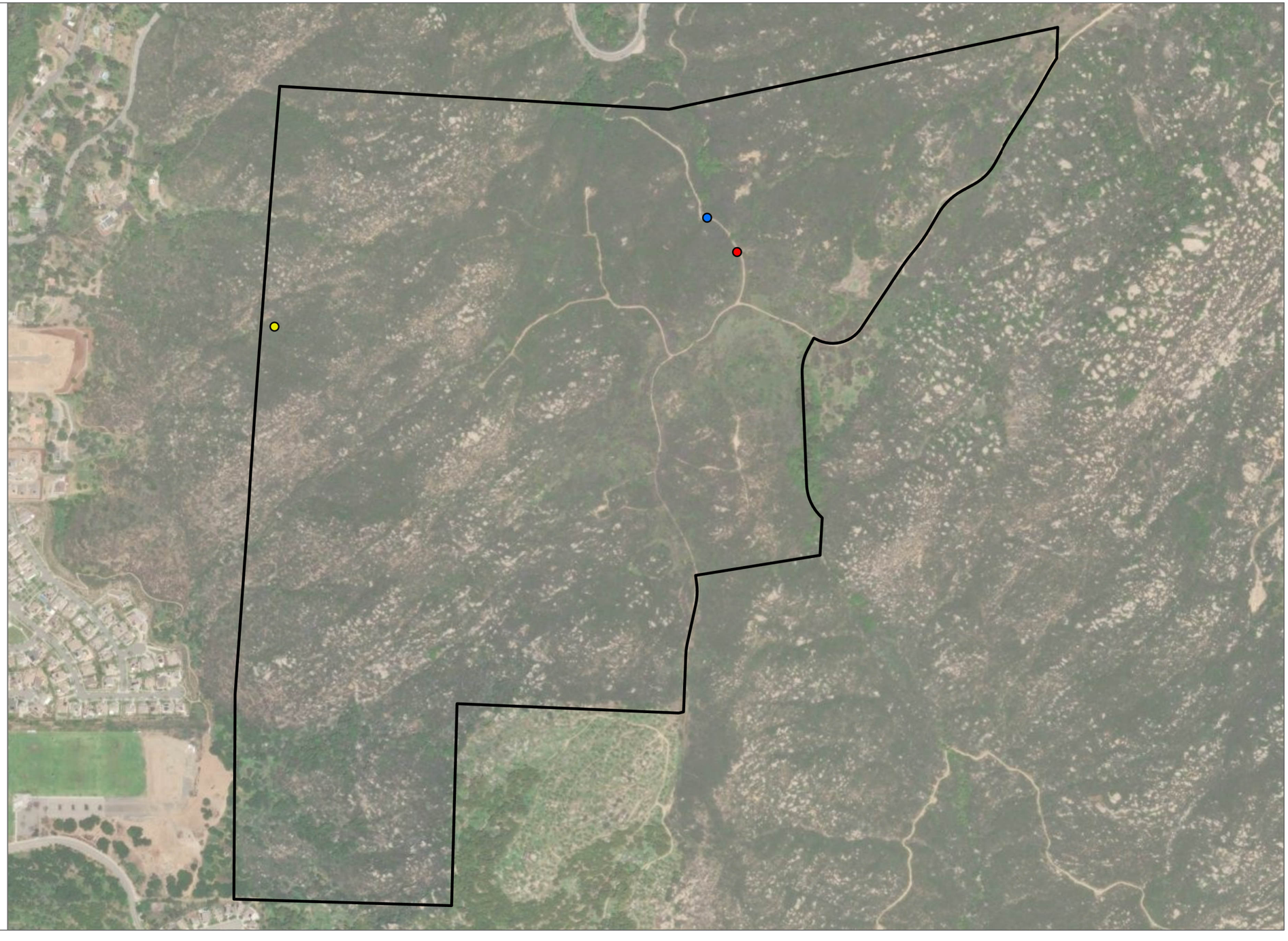
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Bottle Peak Preserve Boundary

Wildlife Species Points

- Blainville's horned lizard
- Cooper's hawk
- Mountain Lion



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 325 650 Feet

FIGURE 10

Bottle Peak Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report

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5 Lusardi Creek County Preserve

5.1 Preserve Description

Lusardi Creek County Preserve is an approximately 226-acre preserve located along the northern boundary of the city of San Diego, slightly southeast of Rancho Santa Fe, an unincorporated community of San Diego County. It is in western San Diego County in the Lusardi Creek Valley, just north of San Dieguito Road, west of Del Sur and South of Artesian Road, within the San Dieguito River Watershed.

5.2 Vegetation Mapping

A total of 11 Holland-Oberbauer vegetation communities and 20 VCM vegetation communities were mapped, along with two land cover types. These communities and land cover types are shown in Table 12 and Figures 11 and 12. Representative photos of the preserve and its vegetation communities are included in the photo log in Attachment A.

Table 12. Vegetation Communities Crosswalk: Lusardi Creek County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Scrub			
32000 Coastal Scrub	4.29 Menzie's Goldenbush Alliance	4.29.1 Menzie's Goldenbush Provisional Association	0.41
	4.32 Deerweed Alliance	4.32.1 Deerweed Association	0.75
	4.35 Laurel Sumac Alliance	4.35.1 Laurel Sumac-Deerweed Association	0.25
32500 Diegan Coastal Sage Scrub	4.7 California Sagebrush-California Buckwheat Alliance	4.7.1 California Sagebrush - California Buckwheat - Laurel Sumac Association	57.21
		4.7.2 California Sagebrush-California Buckwheat – Chaparral Prickly Pear/Fingertips Association	33.47
	4.6 California Sagebrush Alliance	4.6.1 California Sagebrush Association	1.60
		4.6.2 California Sagebrush-Sticky Monkeyflower Association	5.18
	4.8 California Sagebrush-Black Sage Alliance	4.8.1 California Sagebrush-Black Sage Association	44.38
	4.42 Lemonade Berry Alliance	4.42.1 Lemonade Berry Association	16.48
	4.44 Black Sage Alliance	4.44.2 Black Sage-Laurel Sumac Association	0.24

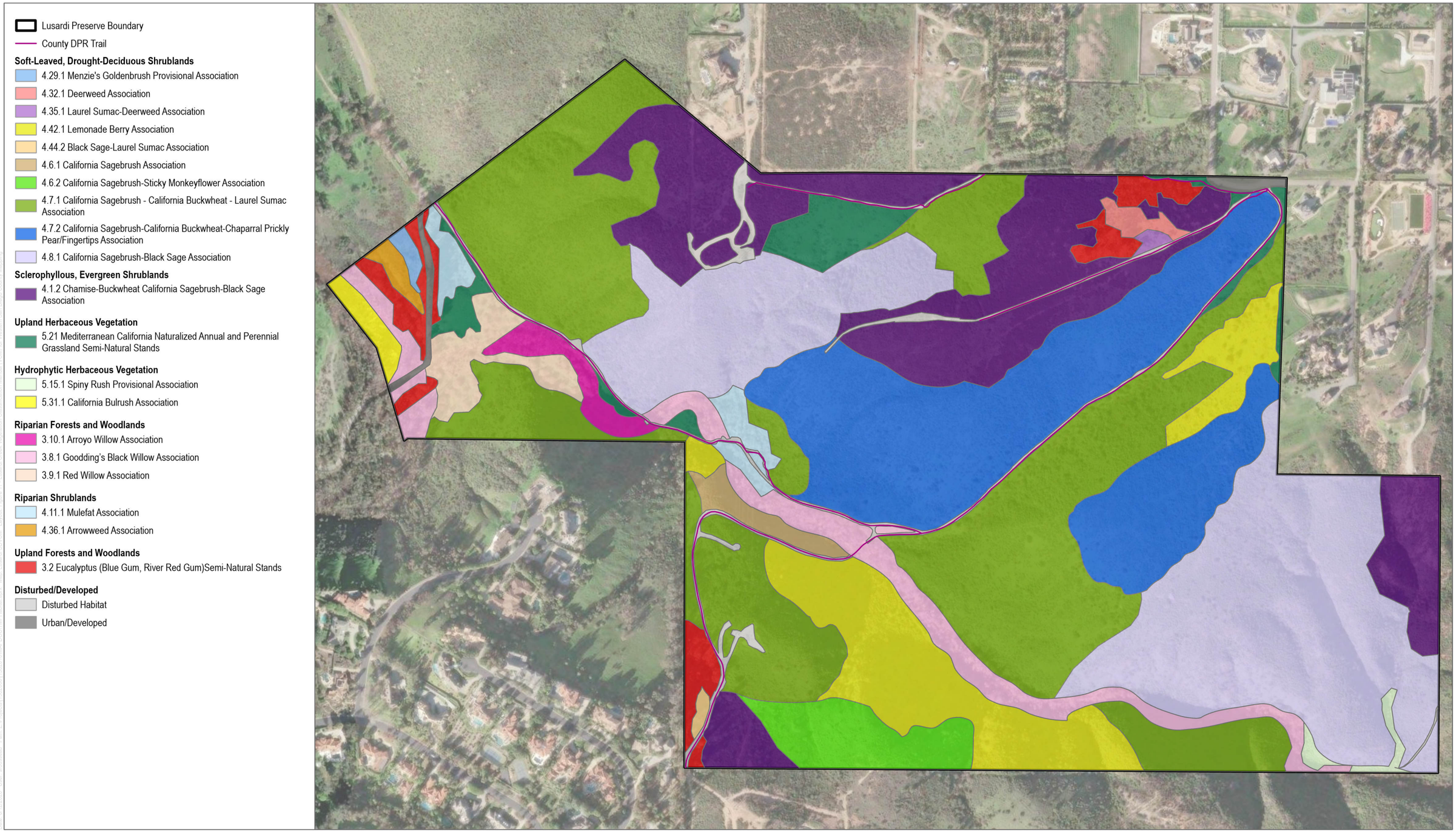
Table 12. Vegetation Communities Crosswalk: Lusardi Creek County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Chaparral			
37G00 Coastal Sage-Chaparral Transition	4.1 Chamise Alliance	4.1.2 Chamise - Buckwheat California Sagebrush - Black Sage Association	30.92
Herbaceous			
42200 Non-Native Grassland	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	5.22
45320 Alkali Seep	5.15 Spiny Rush Provisional Alliance	5.15.1 Spiny Rush Provisional Association	0.77
Marsh			
52410 Coastal and Valley Freshwater Marsh	5.31 California Bulrush Alliance	5.31.1 California Bulrush Association	1.03
Riparian			
61320 Southern Arroyo Willow Riparian Forest	3.10 Arroyo Willow Alliance	3.10.1 Arroyo Willow Association	1.99
62500 Southern Riparian Woodland	3.8 Goodding's Black Willow Alliance	3.8.1 Goodding's Black Willow Association	8.93
	3.9 Red Willow Alliance	3.9.1 Red Willow Association	3.39
63310 Mule Fat Scrub	4.11 Mulefat Alliance	4.11.1 Mulefat Association	2.49
63320 Southern Willow Scrub	4.36 Arrowweed Alliance	4.36.1 Arrowweed Association	0.65
Woodland			
79100 Eucalyptus Woodland	3.2 Eucalyptus (Blue Gum, River Red Gum) Semi-Natural Stands	3.2 Eucalyptus (Blue Gum, River Red Gum) Semi-Natural Stands	4.75
Disturbed/Developed[a]			
11300 Disturbed Habitat	N/A	Disturbed Habitat	4.62
12000 Urban/Developed	N/A	Urban/Developed	0.92
		Total[b]	**225.65**

Notes:

[a] The San Diego Vegetation Classification Manual only classifies vegetated areas. The disturbed land cover types were described and displayed under the association level to provide additional detail in the mapping. This allows for changes in vegetation (e.g., unvegetated to vegetated) to be tracked over time.

[b] Total may not match sum of individual acreages listed due to rounding.



SOURCE: ESRI Aerial Imagery 2025

DUDEK

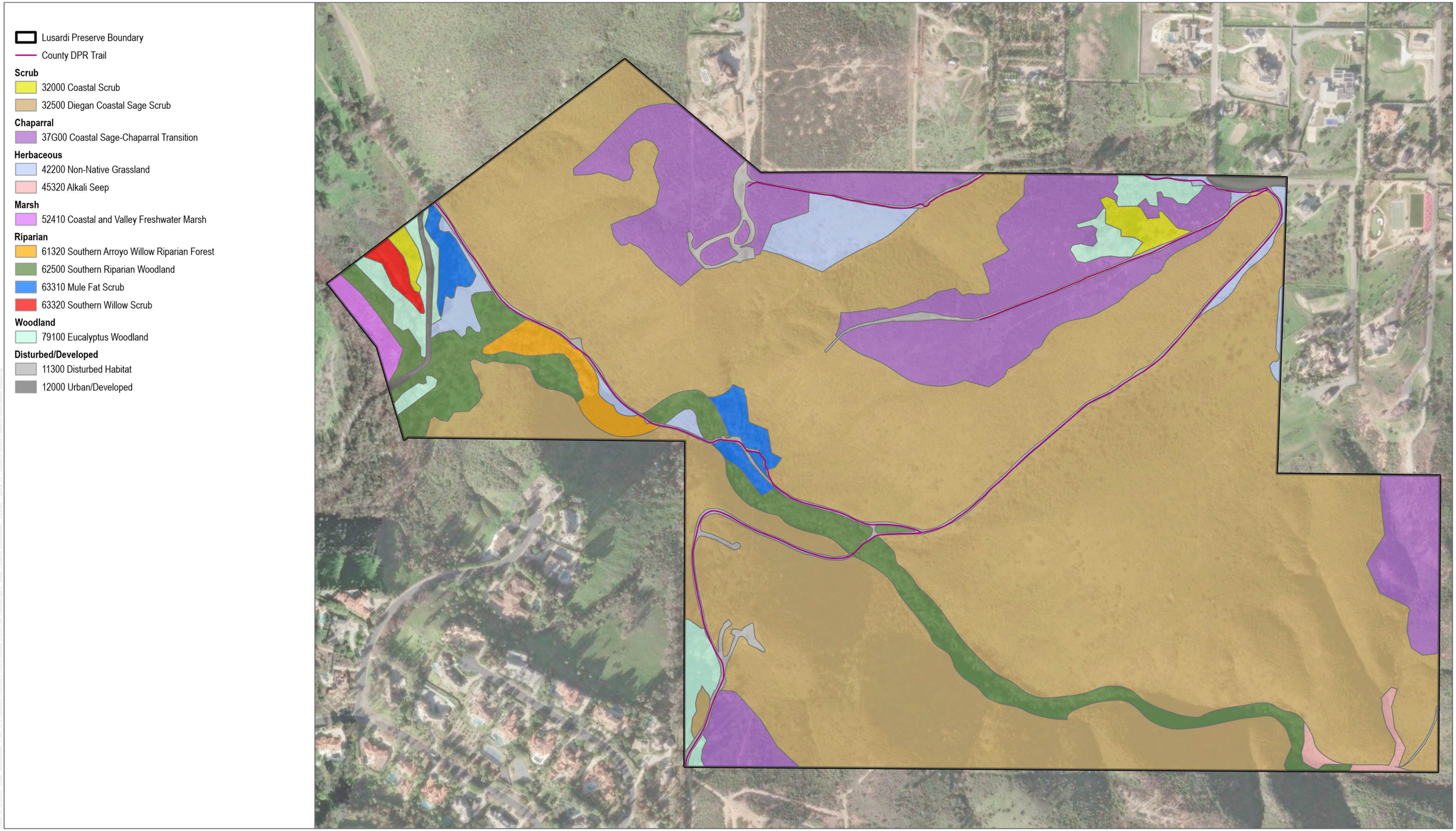
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FIGURE 11

Lusardi Creek Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report

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SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 200 400 Feet

FIGURE 12

Lusardi Creek Holland-Oberbauer Mapping

TMP Habitat Condition Report

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5.3 Invasive Non-Native Plant Observations

A total of 30 invasive/non-native plant species were detected within the Lusardi Creek County Preserve. Most are displayed in Figure 13, but several non-native grasses were too widespread to map throughout the preserve. Their names, along with their Cal-IPC ranking and their San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012) are listed in Table 13. Brief notes about occurrences and management recommendations are also provided.

Table 13. Invasive Non-Native Plant Species: Lusardi Creek County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Acacia cyclops	Coastal wattle	Watch	—	Few in northern portion of preserve.	Monitor
Acacia longifolia	Sydney golden wattle	Watch	—	Few in northern and western portions of the preserve.	Monitor
Acacia pycnantha	Golden wattle	Watch	—	Large stand in northern portion of the preserve.	Treat (drill and kill) and monitor
Arundo donax	Giant reed	High	Very High	Throughout riparian areas in western portion of preserve.	Remove and monitor
Atriplex semibaccata	Australian saltbush	Moderate	—	Few along roads in preserve.	Monitor
Avena barbata[a]	Slender wild oat	Moderate	—	Observed throughout more open, grassy areas of scrub and non-native grassland.	Monitor
Brassica nigra	Black mustard	Moderate	—	Few along roads and trails in western and northern portion of preserve.	Monitor
Bromus diandrus[a]	Ripgut brome	Moderate	—	Observed throughout more open, grassy areas of scrub and non-native grassland	Monitor
Bromus rubens[a]	Red brome	High	—	Observed throughout more open, grassy areas of scrub and non-native grassland	Monitor
Carpobrotus edulis	Hottentot fig	High	—	Few observed in western portion of preserve.	Remove and monitor

Table 13. Invasive Non-Native Plant Species: Lusardi Creek County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Centaurea melitensis[a]	Maltese star-thistle	Moderate	—	Observed throughout more open, grassy areas of scrub and non-native grassland	Monitor
Cortaderia jubaa and *selloana*	Pampas grass	High	High	Several observed in western portion of preserve, often near riparian areas.	Remove and monitor
Cynara cardunculus	Artichoke thistle	Moderate	Very High	Few in the northern portions of the preserve.	Treat and monitor
Cynodon dactylon	Bermuda grass	Moderate	—	Few along trail in western portion of preserve.	Treat and monitor
Dittrichia graveolens	Stinkwort	Moderate	—	Few along trail in northern preserve.	Treat and monitor
Eucalyptus sp.	Eucalyptus	Watch to Limited	—	Few in the western portion of the preserve.	Treat (drill and kill) and/or monitor
Foeniculum vulgare	Fennel	Moderate	Very High	Frequent along trails and roads in northern and western portions of the preserve.	Treat and monitor
Gazania linearis	Treasureflower	Moderate	—	Few in the western portion of the preserve.	Treat and monitor
Helminthotheca echioides	Bristly oxtongue	Limited	—	Few in northern portion of preserve.	Treat and monitor
Hirschfeldia incana[a]	Shortpod mustard	Moderate	—	Throughout non-native grasslands.	Monitor
Hordeum murinum[a]	Hare barely	Moderate	—	Throughout non-native grasslands.	Monitor
Nicotiana glauca	Tree tobacco	Moderate	—	Few in the western and northern portions of the preserve.	Treat and monitor
Pennisetum setaceum	Fountain grass	Moderate	—	Several in northern and western portions of the preserve.	Remove and monitor
Phoenix canariensis	Canary Island date palm	Limited	—	Throughout the riparian corridor of the preserve.	Treat (drill and kill)

Table 13. Invasive Non-Native Plant Species: Lusardi Creek County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Ricinus communis	Castorbean	Limited	—	Few in the western portion of the preserve.	Remove and monitor
Salsola tragus	Prickly Russian thistle	Limited	—	Throughout the preserve along trails and disturbed margins of uplands.	Treat and monitor
Schinus molle	Peruvian peppertree	Limited	—	Few in the western portion of the preserve.	Monitor
Schinus terebinthifolius	Brazilian peppertree	Moderate	—	Several in northern and western portions of the preserve.	Monitor
Tamarix ramosissima	Tamarisk	High	—	Throughout the riparian corridor of the preserve.	Treat (drill and kill) and monitor
Washingtonia robusta	Washington fan palm	Moderate	—	In select areas of the riparian corridor.	Treat (drill and kill)

Notes:

[a] These non-native grass species were not mapped due to their widespread nature but were observed throughout open understory of certain woodland and scrub areas of the preserve.

Cal-IPC Ranking

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Alert – An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.

Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.

San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012)

Very High – Level 1 Surveillance. Low effort required to achieve goal of regional surveillance, early detection, rapid response.

High – Level 2 Eradication. Moderate effort required to achieve goal of eradication with regionally coordinated control program.

Medium – Level 3 Containment. Funding typically available for re-treatments or control of small populations. Goal is eradication with coordinated programs by management unit or watershed.

Medium – Level 4 Directed Management. Area may be managed effectively, with slow re-invasion. Goal is to control within reserve or sub-management unit to benefit NCCP resources.

Low – Level 5 Directed Suppression. Control is typically of short-term benefit (rapid re-invasion) without active restoration. Goal is suppression, typically to allow recovery disturbed site, improve re-vegetation success, or benefit NCCP resources.

Management Recommendations

Note that more than one management recommendation may be suggested

Monitor – This recommendation involves monitoring for new or expanding infestations of invasive plant species within the park or preserve, beyond the areas currently documented. If monitoring identifies a new outbreak or rapid spread, more intensive management actions, such as treatment or removal, should be implemented. Monitoring may also be necessary after treatment or removal of certain species to detect and address resprouting.

Treat (including drill and kill) – This recommendation includes the application of herbicide to invasive plant species using spot-spray or broadcast-spray methods, as appropriate, or the *drill-and-kill* method for large woody species. "Drill and kill" is a woody-plant control technique in which holes are drilled into the trunk of a live tree and herbicide is injected directly into the cuts/holes, resulting in the tree's mortality. Dead trees are left as standing snags, offering beneficial ecological structure and perching habitat. This method is often more practical and less impactful than chipping or removing woody biomass from sensitive or difficult-to-access areas.

Remove – This recommendation involves complete removal and off-site disposal of biomass for species known to aggressively resprout from cuttings or those with highly invasive seedheads. In these cases, leaving biomass on site poses a significant risk of reinfestation without intensive monitoring and follow-up treatment, making full removal the preferred approach.

5.4 Incidental Special-Status Plant and Wildlife Observations

Five special-status plants and one special-status wildlife species were incidentally detected during mapping efforts at Lusardi Creek County Preserve. They are listed in Table 14, along with information about their special statuses. Their observation locations within the preserve are displayed in Figures 14 and 15.

Table 14. Incidental Special-Status Plant and Animal Observations: Lusardi Creek County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	South County MSCP Covered Species	California Rare Plant Rank	Notes
Plants						
Adolphia californica	California adolphia	—/—	List B	—	2B.1	Found extensively throughout coastal sage scrub slopes of the preserve.
Holocarpha virgata ssp. *elongata*	Graceful tarplant	—/—	List D	—	4.2	Observed along grassy margins of a dirt road in the southern portion of the preserve.
Iva hayesiana	San Diego marsh-elder	—/—	List B	—	2B.2	Observed in riparian corridors in the central and western portion of the preserve.
Juncus acutus ssp. *leopoldii*	Southwestern spiny rush	—/—	List D	—	4.2	Observed in main riparian corridor in the central portion of the preserve.
Selaginella cinerascens	Ashy spike-moss	—/—	List D	—	4.1	Observed in undisturbed openings

Table 14. Incidental Special-Status Plant and Animal Observations: Lusardi Creek County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	South County MSCP Covered Species	California Rare Plant Rank	Notes
						of coastal sage scrub in the northern portions of the preserve.
Animals						
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC	Group 1	Covered	—	Heard calling throughout coastal sage scrub in northern portions of the preserve.

Notes:
Federal/State Status
FE – Federally Endangered
FT – Federally Threatened
CE – California Endangered
CT – California Threatened
SSC – CDFW Species Special Concern
San Diego County Special Status List
LIST A (Plants rare, threatened or endangered in California and elsewhere)
LIST B (Plants rare, threatened or endangered in California but more common elsewhere)
LIST C (Plants which may be quite rare, but need more information to determine their true rarity status)
LIST D (Plants of limited distribution and are uncommon, but not presently rare or endangered)
Group 1 Animals: includes those that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met
Group 2 Animals: includes those species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action
California Rare Plant Rank
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
For each California Rare Plant Rank, threat ranks (e.g., 1B.3) are determined as follows:
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)

5.5 Threats Assessment

During vegetation mapping and habitat surveys, Dudek biologists conducted a threats assessment which noted and analyzed specific threats to native habitat within the preserve and ranked them according to the disturbance categories outlined in the *MSP Roadmap 2025 Rare Plant IMG Monitoring Protocol for Occurrences on Conserved Lands in Western San Diego County* (SDMMP 2025), in addition to previously identified disturbances/stressors in

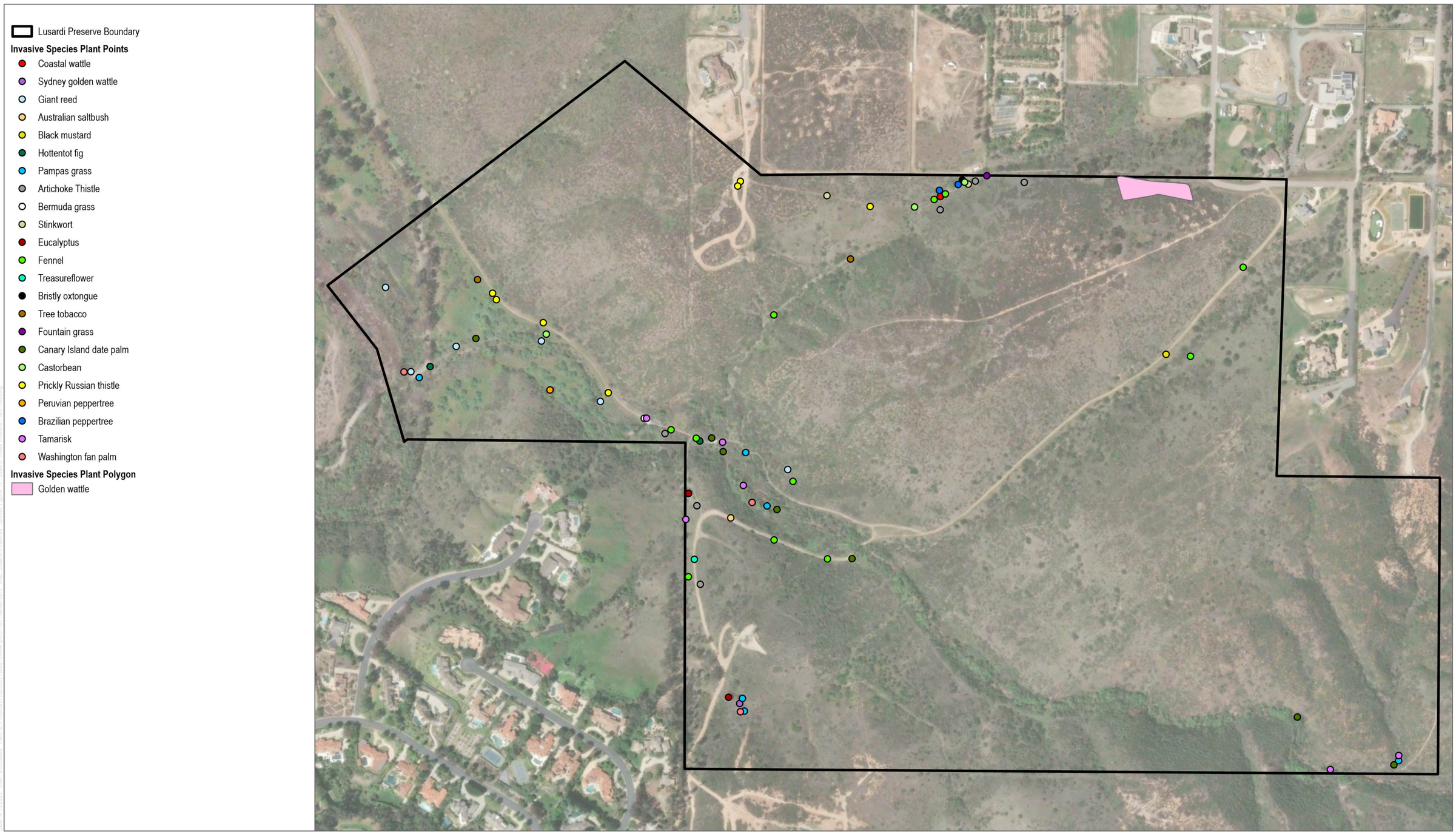
Appendix A, the Habitat Condition Assessment Memorandum for the 2021 TMP Resource-Specific Monitoring Annual Report (ESA 2022). Disturbances/stressors at Lusardi Creek County Preserve are noted in Table 15.

Table 15. Threats Overview: Lusardi Creek County Preserve

Disturbances/Stressors	Severity (Extent)	Discussion
Invasive plants (Non-native forbs and grasses)	5	Much of the preserve is intact coastal sage scrub, but more open areas (with lower shrub cover) host numerous non-native herbaceous grasses and forbs typical of western San Diego County in the understory. Additionally, more open areas of the northwest portion of the preserve adjacent to Lusardi Creek host numerous occurrences of Russian thistle, fennel, castorbean, tree tobacco, tamarisk, and Bermuda grass. Dense stands of giant reed and some non-native palms are also present within drainage in the northwest portion of the preserve.
Altered fire regime or risk of catastrophic fire	4	Coastal sage scrub and non-native grass understory contributes to fuel load. Significant portions of the preserve burned in the Bernardo Fire in 2014 and in the 2007 Witch Fire. Accordingly, there has been only moderate fuel accumulation since the last fire. Overall fire risk is low to moderate, although surrounding development enhances risk of anthropogenic fire sources. Burns within the past 25 years aligns with typical fire return intervals for the habitat types present.
Unauthorized human use (e.g., off-road vehicles, encampments, unauthorized trails, shooting, poaching, and/or dumping)	1	No visible signs of unauthorized human use were observed. Only existing, authorized roads and trails appeared to be utilized.
Erosion	3	Some moderate erosional rills observed on steep trails and dirt roads throughout the preserve, but nothing severe.
Small, isolated occurrences vulnerable to loss of genetic diversity and to extirpation due to environmental stochasticity or catastrophic disturbance	1	No small, isolated, or vulnerable species occurrences were observed.
Altered hydrology (e.g., urban runoff, flood control facilities)	4	Lusardi Creek and other drainages within the preserve are likely subject to urban runoff from surrounding development.
Herbivory (e.g., seed, vegetation)	1	No abnormal signs of herbivory were observed. Evidence of grazing was not observed.
Detrimental edge effects from adjacent urban development	2	Residential development and roads immediately adjacent to the preserve may increase chances of unauthorized access and accelerate invasive plant species introduction. Wildlife may be affected by noise and night lighting nearby.

Notes:
Disturbance Categories within Preserve
1 – No sign of disturbance within preserve
2 – Disturbance does not occur within preserve, but is detected adjacent to preserve boundaries

3 – Disturbance occurs in >0% to <10% of preserve
4 – Disturbance occurs in 10 to <25% of preserve
5 – Disturbance occurs in 25 to <50% of preserve
6 – Disturbance occurs in 50 to <75% of preserve
7 – Disturbance occurs in ⩾ 75% of preserve



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 13

Lusardi Creek Invasive Plant Mapping

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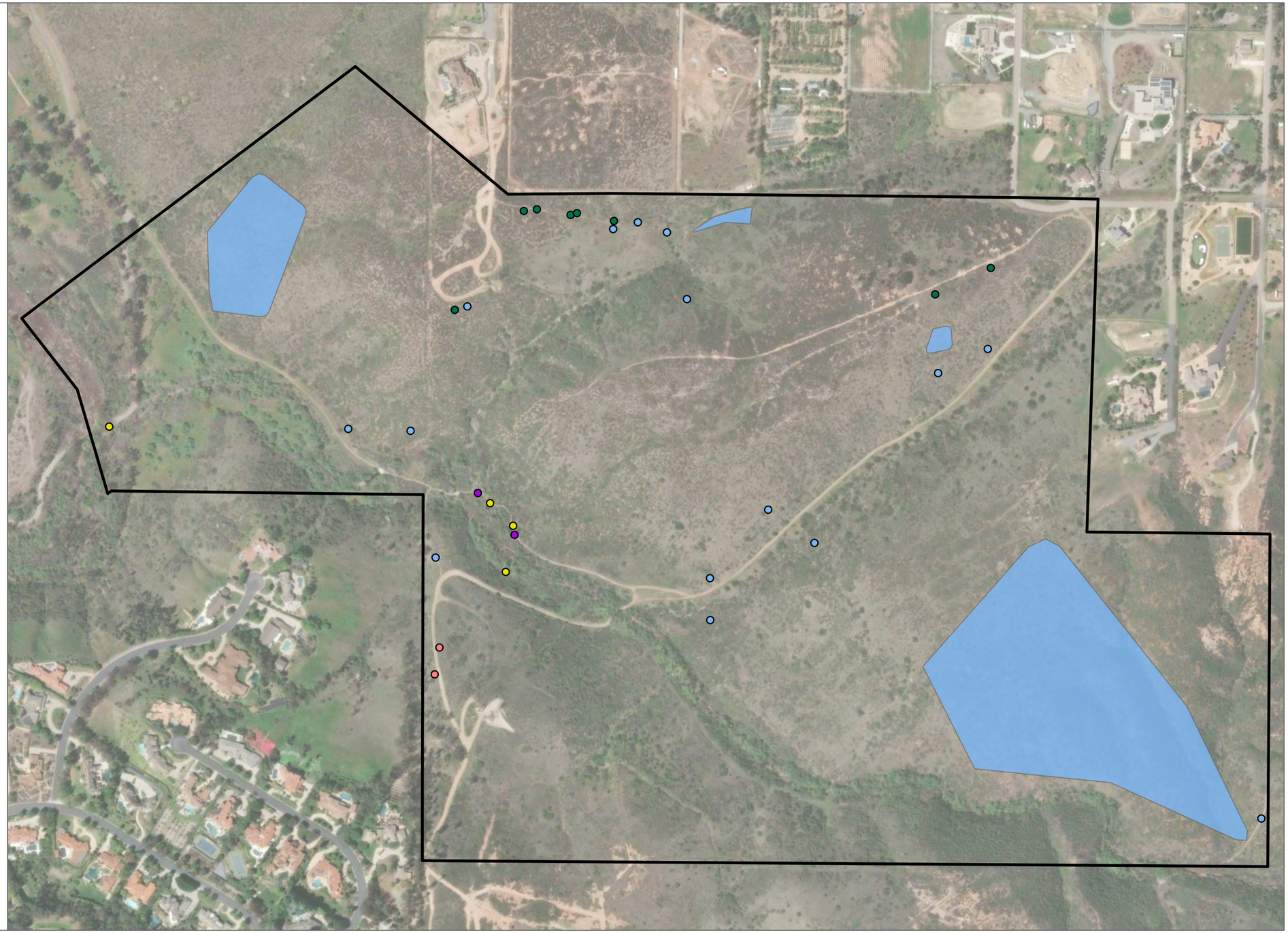
Lusardi Preserve Boundary

Special Status Plant Species Points

- California adolphia
- Graceful tarplant
- San Diego marsh-elder
- Southwestern spiny rush
- Ashy spike-moss

Special Status Plant Species Polygons

- California adolphia



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 14

Lusardi Creek Incidental Special-Status Plant Mapping

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Lusardi Preserve Boundary

Wildlife Species Points

Coastal California gnatcatcher



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 15

Lusardi Creek Incidental Special-Status Wildlife Mapping

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5.6 Type Conversion

In order to detect potential type conversions within the preserve, previous Holland-Oberbauer vegetation mapping from 2015 and 2018 was compared to the updated 2025 mapping by general habitat type, as shown in Table 16. In 2015 vegetation mapping efforts addressed approximately 194 acres of the preserve. In 2013 DPR acquired an additional 31 acres and vegetation mapping of the addition occurred in 2018. Note that 2015 and 2018 mapping data were clipped to the preserve boundary to align with 2025 mapping protocols, which excluded buffer areas outside the preserve.

Table 16. Type Conversion Assessment Based on Holland-Oberbauer Mapping: Lusardi Creek County Preserve

Habitat Type	Acres in 2015 and 2018	Acres in 2025	Difference in Acreage
Developed	0.78	0.92	+0.14
Disturbed (incl. Agriculture)	5.74	4.62	-1.12
Herbaceous	22.72	5.99	-16.73
Scrub	130.12	159.97	+29.85
Chaparral	46.90	30.92	-15.98
Woodland	3.57	4.75	+1.18
Riparian (incl. Marsh)	15.82	18.48	+2.66

Changes in vegetation mapping between 2015/18 and 2025 were most pronounced for herbaceous, scrub, and chaparral habitat types. The significant increase in scrub habitat was driven by a corresponding decrease in herbaceous and chapparal habitat mapping. This is mainly due to an approximately 17-acre area in the southwest portion of the preserve that was previously mapped as a herbaceous, clustered tarweed (*Deinandra fasciculata*)-dominated habitat type in 2015 that was dominated by California sagebrush and other scrub shrubs during 2025 mapping. Additionally, several areas previously mapped as chapparal communities dominated by chamise were more accurately mapped as sage scrub communities dominated by California sagebrush and black sage in the southeastern portion of the preserve. Other minor increases in habitat acreage for woodland and riparian communities may be a result of natural growth/expansion of trees in those habitats.

Adaptive Management Recommendations

Invasive Non-Native Plant Species Management

Near-term management should prioritize removal of the following species: Giant reed, pampas grass, and castorbean. Treatment of other perennial invasives including tree tobacco, artichoke thistle, and fennel is also recommended; the northern central portion of the preserve has a notable concentration of fennel, artichoke thistle, wattle, peppertree, and other invasive non-native plants along an authorized trail. Golden wattle, non-native palms, eucalyptus, and other large invasive trees should be treated using drill-and-kill methods and left as standing snags in the riparian corridor for practicality and cost. Widespread annual non-native grasses and broadleaf weeds should be monitored rather than actively treated.

Habitat Enhancement / Restoration Opportunities

- **Riparian enhancement.** Significant enhancement opportunities exist in the riparian corridor of the preserve, where giant reed, non-native palms, and tamarisk are present in patches.
- **Northwest riparian woodland enhancement.** Riparian woodland in the northwest portion of the preserve has a higher concentration of invasive non-native plants than other portions of the preserve. Much of the understory here is dominated by non-native grasses. Replacement of non-native grasses with native riparian understory and native grassland species would be beneficial.

Encroachment

No major unauthorized public use was observed; existing access controls appear effective and authorized trails are being utilized well. Continued maintenance of authorized roads and trails is recommended to prevent widening and erosion.

Monitoring

- **Riparian invasive non-native plants.** Annual monitoring of riparian invasive non-native plants is recommended due to hydrology-driven reinfestation potential.
- **Urban runoff.** Monitor potential impacts of urban runoff from surrounding development on hydrology and vegetation change.

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6 Del Dios Highlands County Preserve

6.1 Preserve Description

Del Dios Highlands County Preserve is an approximately 782-acre preserve located southwest of the city of Escondido, west of Del Dios Highway, and northwest of Lake Hodges, within an unincorporated area of San Diego County. It is located at 9860 Del Dios Highway, Escondido, adjacent to Lake Hodges, within the coastal foothills of the Peninsular Ranges of Southern California.

6.2 Vegetation Mapping

A total of 12 Holland-Oberbauer vegetation communities and 16 VCM vegetation communities were mapped, along with two land cover types. These communities and land cover types are shown in Table 17 and Figure Set 16 (Figures 16-1 through 16-4) and 17 (Figures 17-1 through 17-4). Representative photographs of the preserve vegetation communities are included in the photo log in Attachment A.

Table 17. Vegetation Communities Crosswalk: Del Dios Highlands County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Scrub			
32500 Diegan Coastal Sage Scrub	4.7 California Sagebrush-California Buckwheat Alliance	4.7.1 California Sagebrush-California Buckwheat-Laurel Sumac Association	0.30
	4.8 California Sagebrush-Black Sage Alliance	4.8.1 California Sagebrush-Black Sage Association	2.58
Chaparral			
37120 Southern Mixed Chaparral	4.2 Chamise-Mission Manzanita Alliance	4.2.3 Chamise-Mission Manzanita-Woolly Leaf Ceanothus Association	15.61
	4.4 Eastwood Manzanita Alliance	4.4.1 Manzanita-Chamise Association	0.92
37C30 Southern Maritime Chaparral	4.2 Chamise-Mission Manzanita Alliance	4.2.4 Chamise-Mission Manzanita-Wart-Stemmed Ceanothus Association	560.89
	4.19 Wart-Stemmed Ceanothus Alliance	4.19.1 Wart-Stemmed Ceanothus Association	167.12
37900 Scrub Oak Chaparral	4.38 Scrub Oak - Chamise Alliance	4.38.1 Scrub Oak-Chamise Association	14.55
37G00 Coastal Sage-Chaparral Transition	4.1 Chamise Alliance	4.1.2 Chamise - California Buckwheat - California Sagebrush - Black Sage Association	1.76

Table 17. Vegetation Communities Crosswalk: Del Dios Highlands County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Herbaceous			
42100 Native Grassland	5.22 Deer Grass Alliance	5.22.1 Deer Grass Association	0.31
42200 Non-Native Grassland	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	0.52
Riparian			
61300 Southern Riparian Forest	3.4 Western Sycamore Alliance	3.4.3 Western Sycamore-Coast Live Oak Association	1.81
61320 Southern Arroyo Willow Riparian Forest	3.10 Arroyo Willow Alliance	3.10.1 Arroyo Willow Association	0.31
62500 Southern Riparian Woodland	3.9 Red Willow Alliance	3.9.1 Red Willow Association	1.00
Woodland			
71160 Coast Live Oak Woodland	3.6 Coast Live Oak Alliance	3.6.2 Coast Live Oak/Scrub Oak Association	0.43
		3.6.4 Coast Live Oak - Poison Oak - Grass Association	1.69
79100 Eucalyptus Woodland	3.2 Eucalyptus Semi-Natural Stands	3.2 Eucalyptus Semi-Natural Stands	4.09
Disturbed/Developed[a]			
11300 Disturbed Habitat	N/A	Disturbed Habitat	6.37
12000 Urban/Developed	N/A	Urban/Developed	1.63
		Total[b]	**781.90**

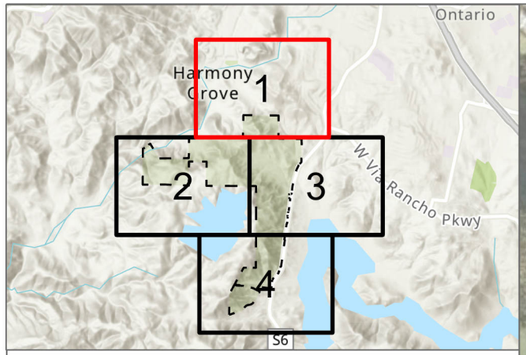
Notes:

[a] The San Diego Vegetation Classification Manual only classifies vegetated areas. The disturbed land cover types were described and displayed under the association level to provide additional detail in the mapping. This allows for changes in vegetation (e.g., unvegetated to vegetated) to be tracked over time.

[b] Total may not match sum of individual acreages listed due to rounding.

6.3 Invasive Non-Native Plant Observations

A total of 12 invasive/non-native plant species were detected within the Del Dios Highlands County Preserve. Most are displayed in Figure Set 18 (Figures 18-1 through 18-4), but several non-native grasses were too widespread to map throughout the preserve. Their names, along with their Cal-IPC ranking and their San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012) are listed in Table 18. Brief notes about occurrences and management recommendations are also provided.



Del Dios Preserve Boundary

Sclerophyllous, Evergreen Shrublands

- 4.19.1 Wart-Stemmed Ceanothus Association
- 4.2.4 Chamise-Mission Manzanita-Wart-Stemmed Ceanothus Association
- 4.38.1 Scrub Oak-Chamise Association

Upland Herbaceous Vegetation

- 5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands

Upland Forests and Woodlands

- 3.6.4 Coast Live Oak-Poison Oak-Grass Association

Disturbed/Developed

- Disturbed Habitat
- Urban/Developed

SOURCE: ESRI Aerial Imagery 2025

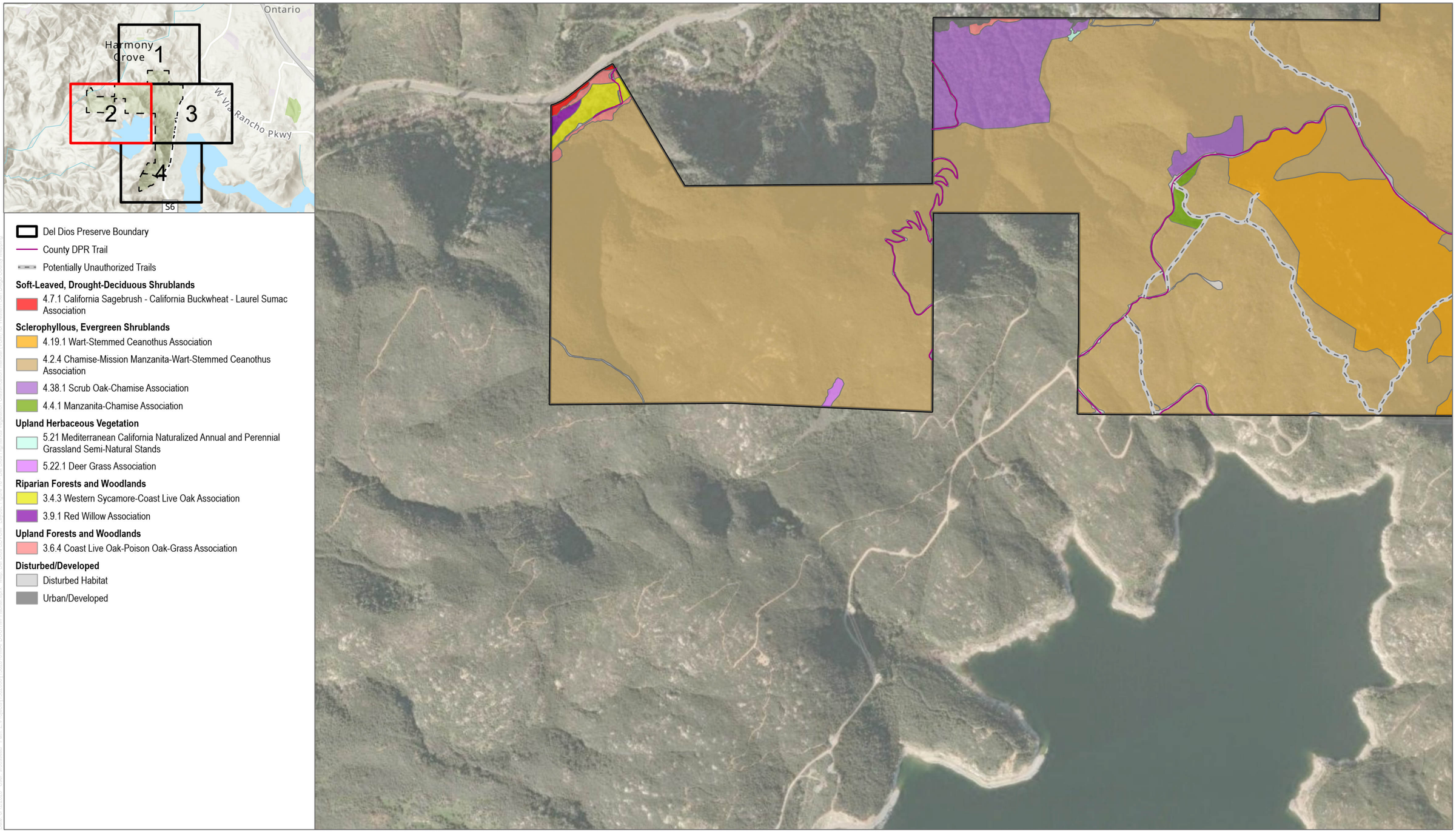
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FIGURE 16 - 1

Del Dios Highlands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

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SOURCE: ESRI Aerial Imagery 2025

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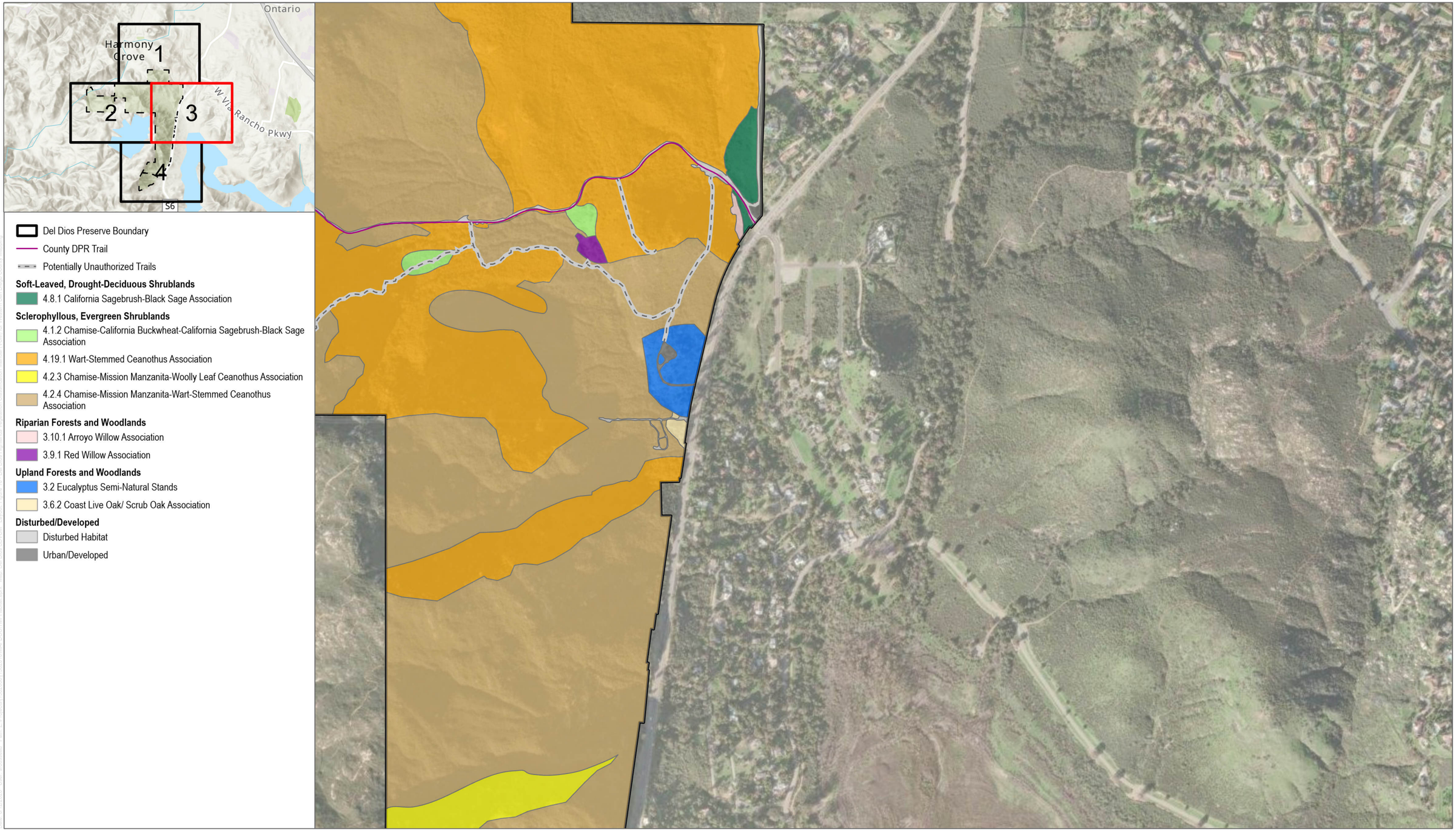
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FIGURE 16 - 2

Del Dios Highlands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

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SOURCE: ESRI Aerial Imagery 2025

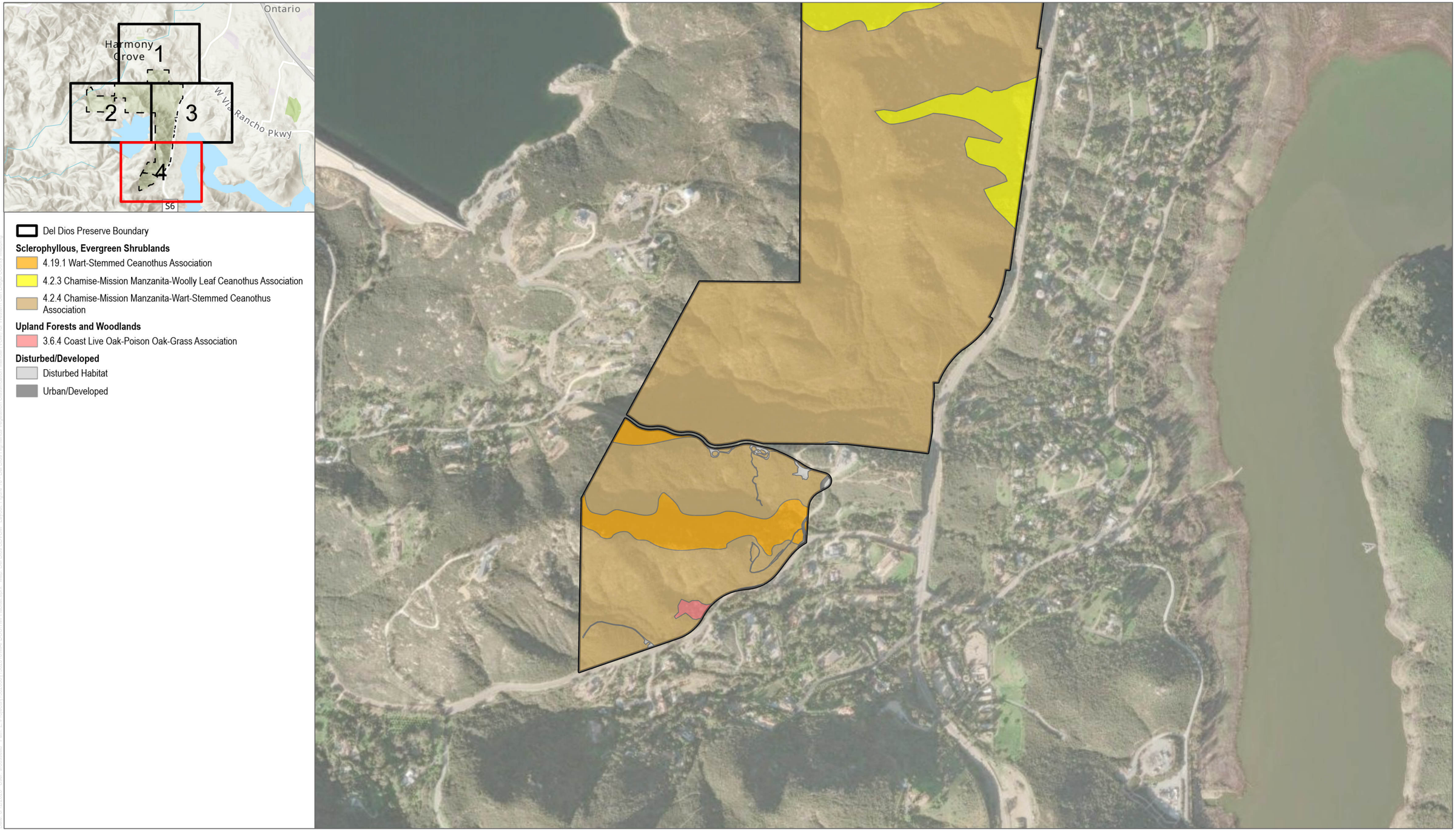
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FIGURE 16 - 3

Del Dios Highlands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

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SOURCE: ESRI Aerial Imagery 2025

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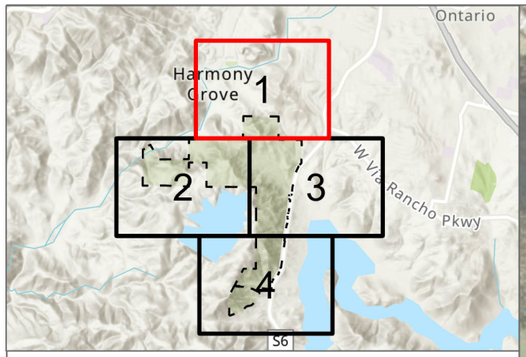
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FIGURE 16 - 4

Del Dios Highlands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

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Del Dios Preserve Boundary

Chaparral

37900 Scrub Oak Chaparral

37C30 Southern Maritime Chaparral

Herbaceous

42200 Non-Native Grassland

Woodland

71160 Coast Live Oak Woodland

Disturbed/Developed

11300 Disturbed Habitat

12000 Urban/Developed

SOURCE: ESRI Aerial Imagery 2025

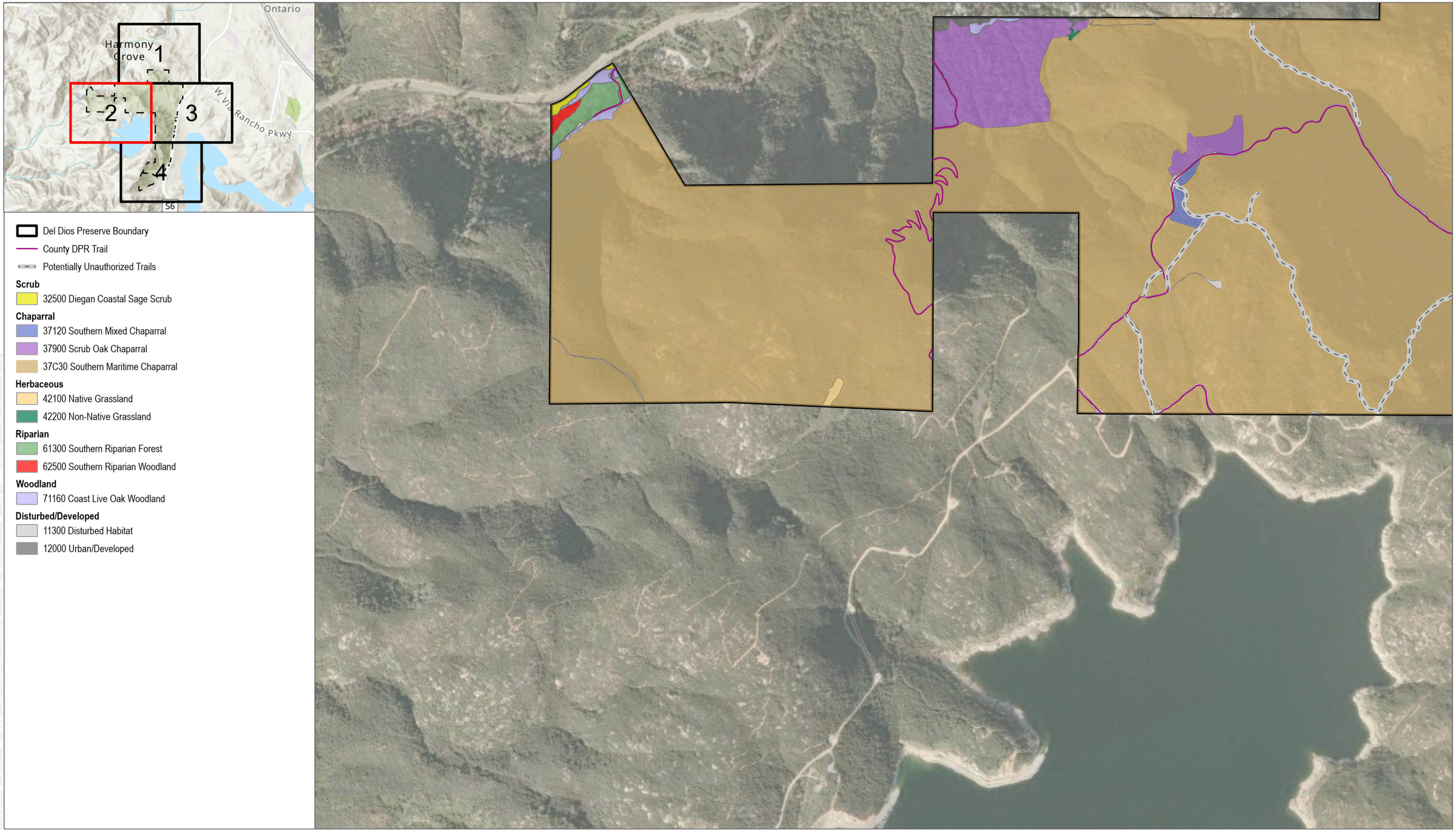
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FIGURE 17 - 1

Del Dios Highlands Holland-Oberbauer Mapping

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SOURCE: ESRI Aerial Imagery 2025

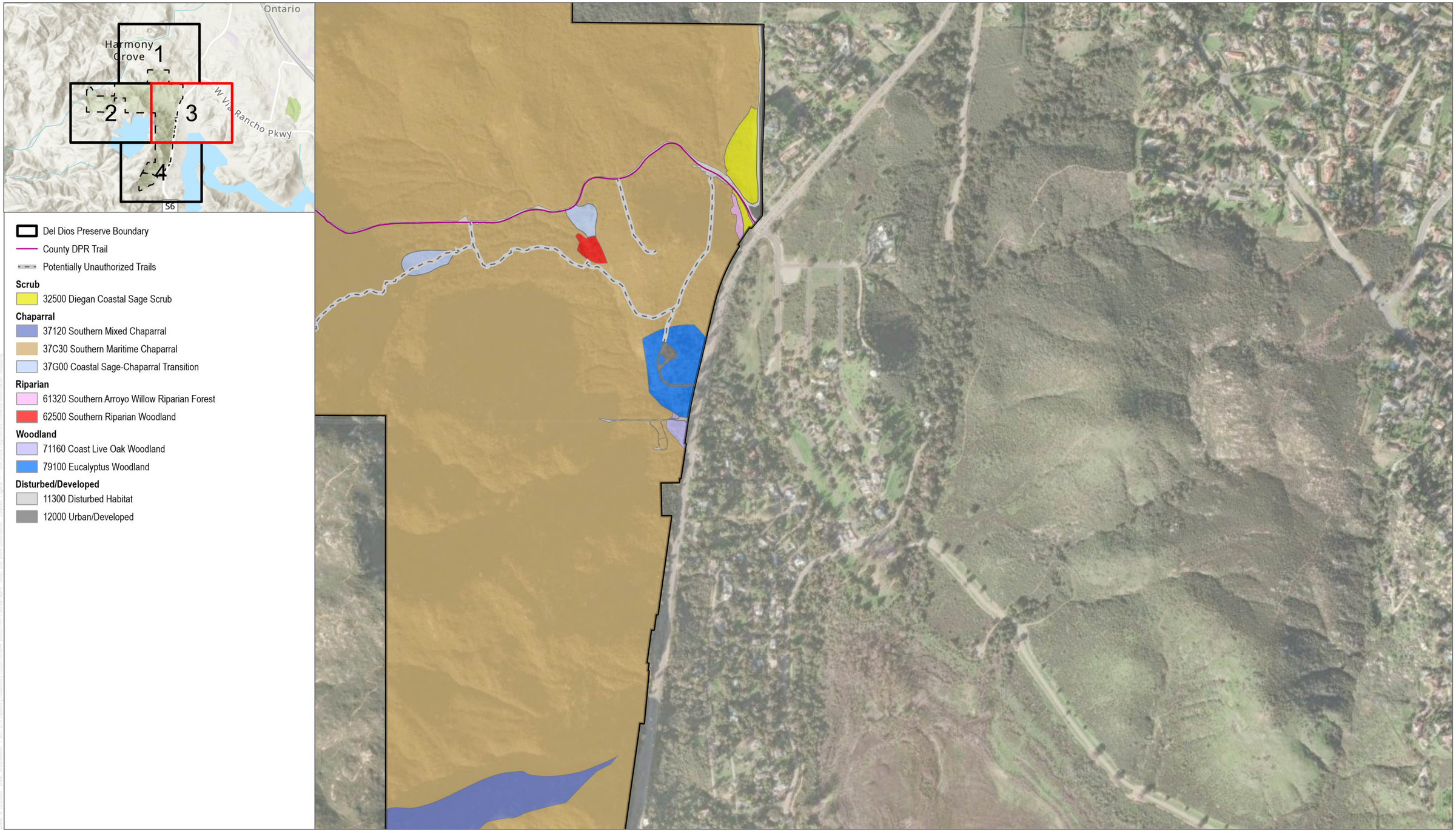
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FIGURE 17 - 2

Del Dios Highlands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

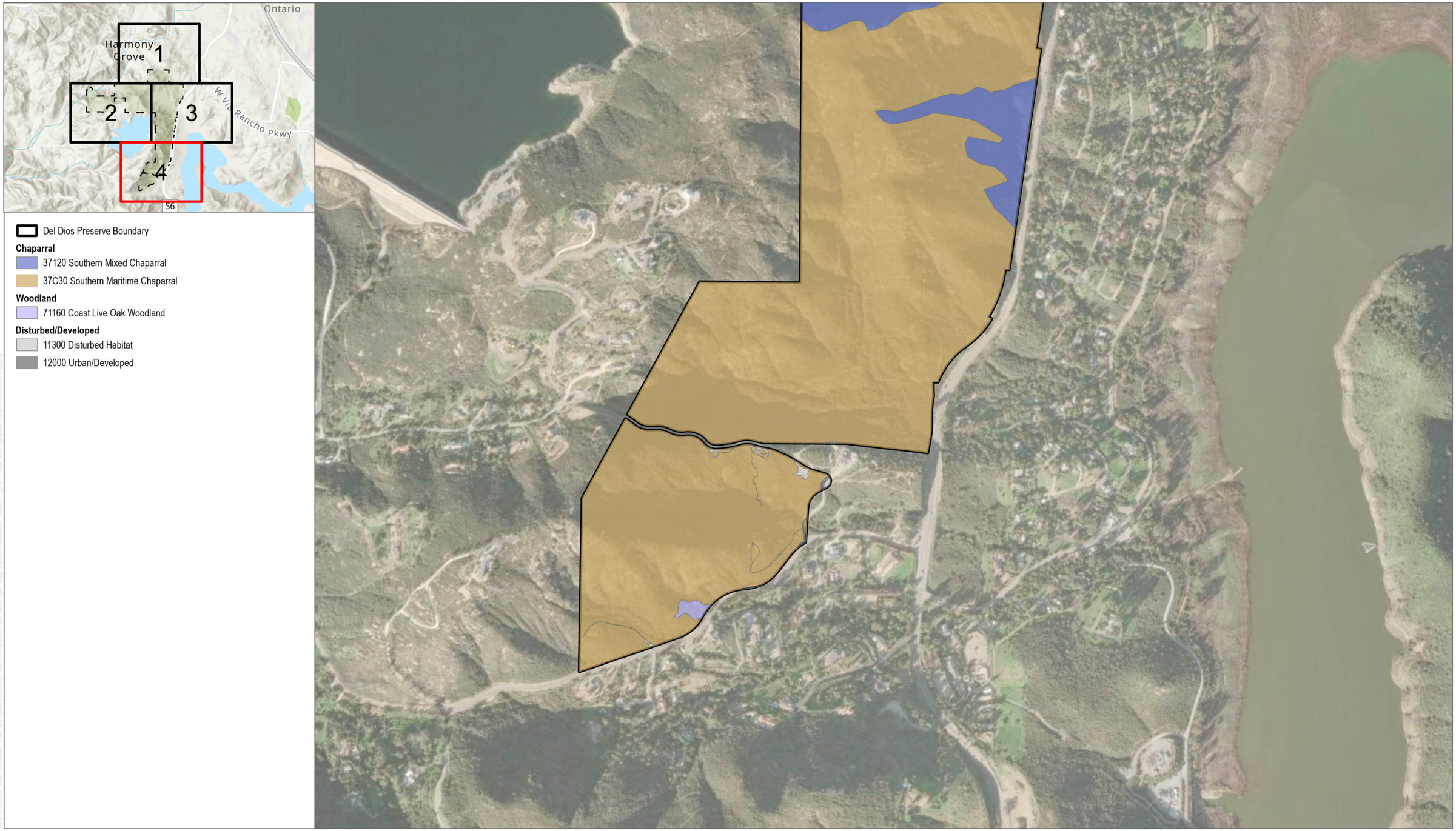
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FIGURE 17 - 3

Del Dios Highlands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 17 - 4

Del Dios Highlands Holland-Oberbauer Mapping

TMP Habitat Condition Report

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SOURCE: ESRI Aerial Imagery 2025

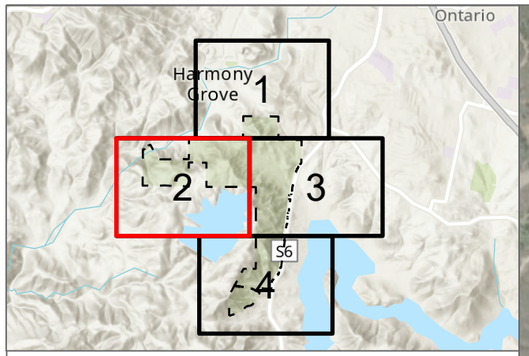
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FIGURE 18 - 1

Del Dios Highlands Invasive Plant Mapping

TMP Habitat Condition Report



Del Dios Preserve Boundary

Invasive Plant Points

- Red brome
- Eucalyptus
- Fennel
- Castorbean

Invasive Plant Polygons

- Giant reed
- Maltese star-thistle
- Stinkwort

SOURCE: ESRI Aerial Imagery 2025

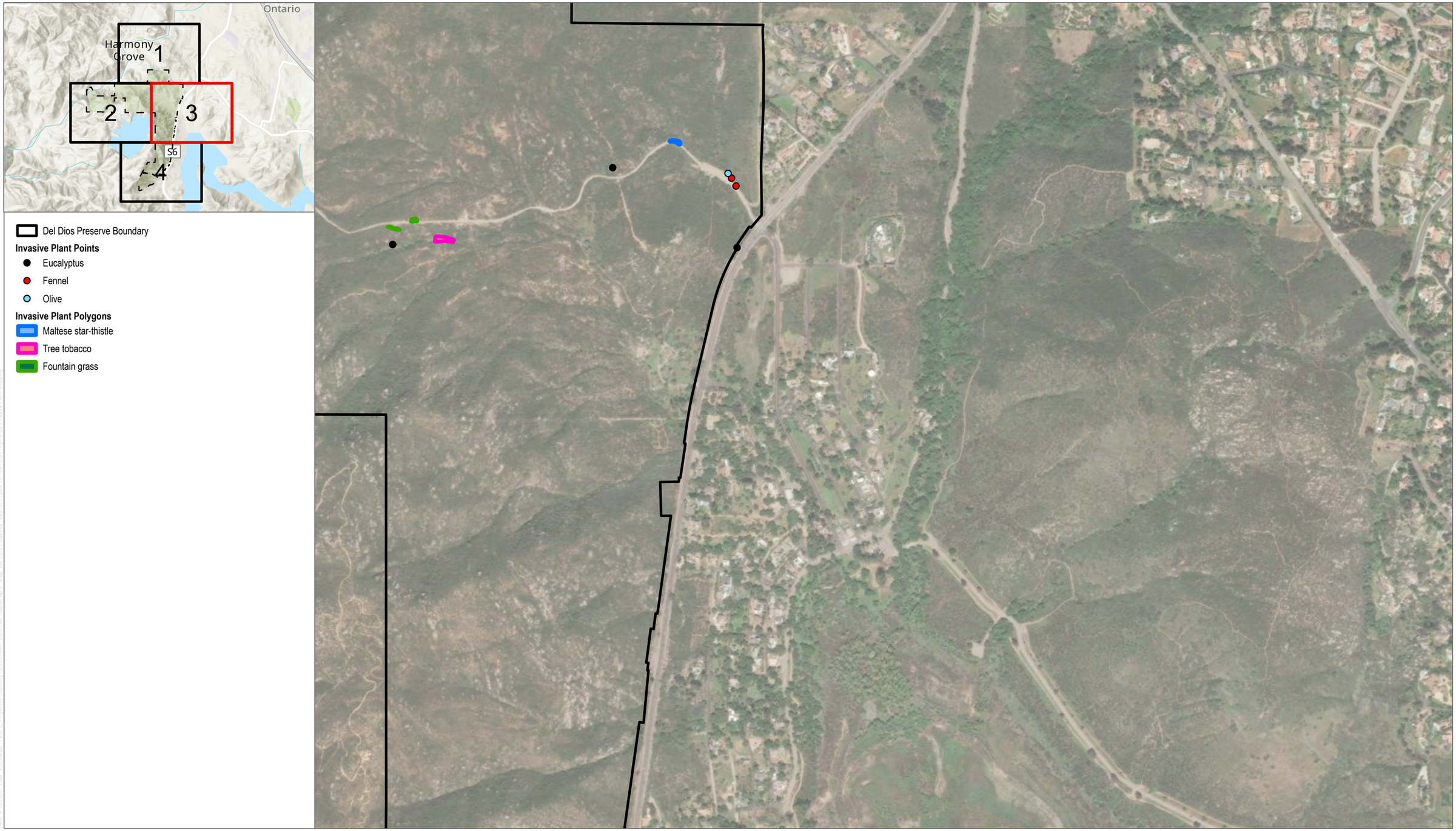
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FIGURE 18 - 2

Del Dios Highlands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

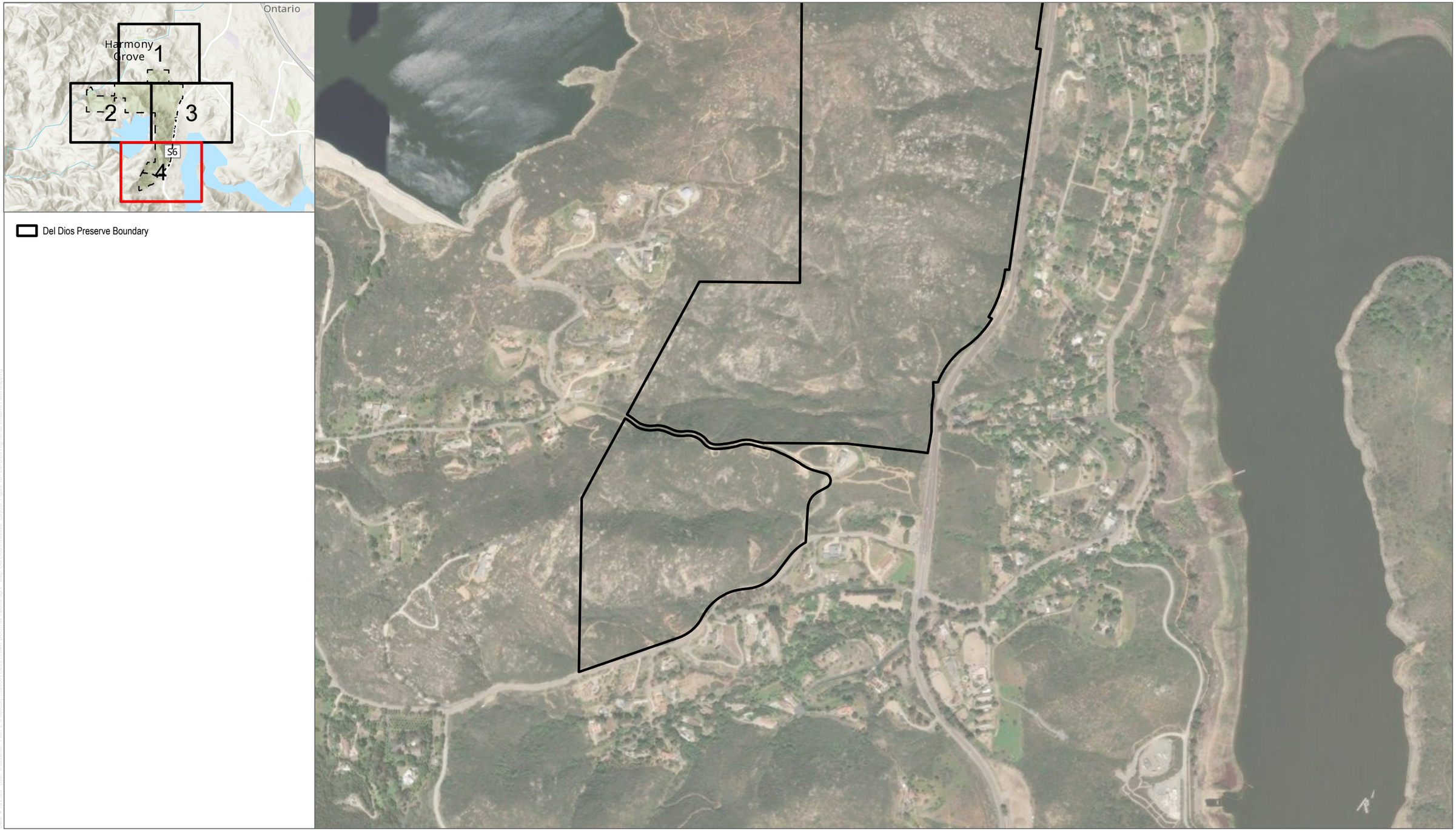
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FIGURE 18 - 3

Del Dios Highlands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 18 - 4

Del Dios Highlands Invasive Plant Mapping

TMP Habitat Condition Report

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Table 18. Invasive Non-Native Plant Species: Del Dios Highlands County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Arundo donax	Giant reed	High	Very High	One small patch along Escondido Creek in the northern portion of the preserve. Risk of spreading.	Remove and monitor
Avena barbata[a]	Slender wild oat	Moderate	—	Present in open, grassy areas of scrub and non-native grassland.	Monitor
Bromus diandrus[a]	Ripgut brome	Moderate	—	Present in open, grassy areas of scrub and non-native grassland.	Monitor
Bromus rubens	Red brome	High	—	Present in open, grassy areas of scrub and non-native grassland. One noticeable patch is present alongside an authorized trail in the westernmost portion of the preserve.	Monitor
Centaurea melitensis	Maltese star-thistle	Moderate	—	Several small populations along roadsides in open, grassy areas of scrub and non-native grassland.	Treat and monitor
Dittrichia graveolens	Stinkwort	Moderate	—	One small population in a drainage in the north central portion of the preserve. Risk of spreading.	Treat and monitor
Eucalyptus sp.	Eucalyptus	Watch to Limited	—	Several trees scattered around dirt roads and within the riparian area of Escondido Creek.	Treat (drill and kill) and/or monitor
Foeniculum vulgare	Fennel	Moderate	Very High	Several observations along the preserve trail. Risk of spreading.	Treat and monitor
Nicotiana glauca	Tree tobacco	Moderate	—	One noticeable stand within an open area	Treat and monitor

Table 18. Invasive Non-Native Plant Species: Del Dios Highlands County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
				of chaparral/scrub in the central portion of the preserve. Risk of spreading.	
Olea europea	Olive	Limited	—	One observation near the main trailhead/ parking area in the eastern area of the preserve.	Monitor
Pennisetum setaceum	Fountain grass	Moderate	—	Isolated patches observed along the main dirt road in the center of the preserve. Risk of spreading in disturbed areas.	Remove and monitor
Ricinus communis	Castorbean	Limited	—	Several observation in the riparian area of Escondido Creek in the northwest area of preserve. Risk of spreading downstream.	Remove and monitor

Notes:

[a] These non-native grass species were not mapped due to their widespread nature but were observed throughout opening of certain chaparral, woodland, and scrub areas of the preserve.

Cal-IPC Ranking

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Alert – An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.

Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.

San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012)

Very High – Level 1 Surveillance. Low effort required to achieve goal of regional surveillance, early detection, rapid response.

High – Level 2 Eradication. Moderate effort required to achieve goal of eradication with regionally coordinated control program.

Medium – Level 3 Containment. Funding typically available for re-treatments or control of small populations. Goal is eradication with coordinated programs by management unit or watershed.

Medium – Level 4 Directed Management. Area may be managed effectively, with slow re-invasion. Goal is to control within reserve or sub-management unit to benefit NCCP resources.

Low – Level 5 Directed Suppression. Control is typically of short-term benefit (rapid re-invasion) without active restoration. Goal is suppression, typically to allow recovery disturbed site, improve re-vegetation success, or benefit NCCP resources.

Management Recommendations

Note that more than one management recommendation may be suggested

Monitor – This recommendation involves monitoring for new or expanding infestations of invasive plant species within the park or preserve, beyond the areas currently documented. If monitoring identifies a new outbreak or rapid spread, more intensive management actions, such as treatment or removal, should be implemented. Monitoring may also be necessary after treatment or removal of certain species to detect and address resprouting.

Treat (including drill and kill) – This recommendation includes the application of herbicide to invasive plant species using spot-spray or broadcast-spray methods, as appropriate, or the *drill-and-kill* method for large woody species. "Drill and kill" is a woody-plant control technique in which holes are drilled into the trunk of a live tree and herbicide is injected directly into the cuts/holes, resulting in the tree's mortality. Dead trees are left as standing snags, offering beneficial ecological structure and perching habitat. This method is often more practical and less impactful than chipping or removing woody biomass from sensitive or difficult-to-access areas.

Remove – This recommendation involves complete removal and off-site disposal of biomass for species known to aggressively resprout from cuttings or those with highly invasive seedheads. In these cases, leaving biomass on site poses a significant risk of reinfestation without intensive monitoring and follow-up treatment, making full removal the preferred approach.

6.4 Incidental Special-Status Plant and Wildlife Observations

Two special-status plants and two special-status wildlife species were incidentally detected during mapping efforts at Del Dios Highlands County Preserve. They are listed in Table 19, along with information about their special statuses. Their observation locations within the preserve are displayed in Figure Set 19 (Figures 19-1 through 19-4) and 20 (Figures 20-1 through 20-4).

Table 19. Incidental Plant and Animal Observations: Del Dios Highlands County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	South County MSCP Covered Species	California Rare Plant Rank	Notes
Plants						
Ceanothus verrucosus	Wart-stemmed ceanothus	—/—	List B	Covered	2B.2	Observed extensively throughout the chaparral-covered hills spanning most of the preserve.
Selaginella cinerascens	Ashy spike-moss	—/—	List D	—	4.1	Observed in an undisturbed opening of chaparral in the northern portion of the preserve. Likely occurs elsewhere.
Animals						
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	—/SSC	Group 2	—	—	One observation on a dirt road in the northwest portion of the preserve.

Table 19. Incidental Plant and Animal Observations: Del Dios Highlands County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	South County MSCP Covered Species	California Rare Plant Rank	Notes
	/coast whiptail					
Phrynosoma blainvillii	Blainville's horned lizard	—/SSC	Group 2	Covered	—	Multiple juvenile individuals observed on closed/secondary trails and openings in the preserve.

Notes:
Federal/State Status
FE – Federally Endangered
FT – Federally Threatened
CE – California Endangered
CT – California Threatened
SSC – CDFW Species Special Concern
San Diego County Special Status List
LIST A (Plants rare, threatened or endangered in California and elsewhere)
LIST B (Plants rare, threatened or endangered in California but more common elsewhere)
LIST C (Plants which may be quite rare, but need more information to determine their true rarity status)
LIST D (Plants of limited distribution and are uncommon, but not presently rare or endangered)
Group 1 Animals: includes those that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met
Group 2 Animals: includes those species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action
California Rare Plant Rank
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
For each California Rare Plant Rank, threat ranks (e.g., 1B.3) are determined as follows:
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)

6.5 Threats Assessment

During vegetation mapping and habitat surveys, Dudek biologists conducted a threats assessment which noted and analyzed specific threats to native habitat within the preserve and ranked them according to the disturbance categories outlined in the *MSP Roadmap 2025 Rare Plant IMG Monitoring Protocol for Occurrences on Conserved Lands in Western San Diego County* (SDMMP 2025), in addition to previously identified disturbances/stressors in Appendix A, the Habitat Condition Assessment Memorandum for the 2021 TMP Resource-Specific Monitoring Annual Report (ESA 2022). Disturbances/stressors at Del Dios Highlands County Preserve are noted in Table 20.

Table 20. Threats Overview: Del Dios Highlands County Preserve

Disturbances/Stressors	Severity (Extent)	Discussion
Invasive plants (Non-native forbs and grasses)	3	Castorbean and giant reed were observed in the northwestern part of the preserve in and near the riparian corridor south of Harmony Grove Road. A few mature eucalyptus trees are present in that area and near the eastern side of the preserve. Invasive annuals such as red brome, Maltese star-thistle, fennel, fountain grass, and stinkwort were observed scattered throughout the preserve along margins of dirt roads and trails, and in openings. While some non-native grasses are present, invasive, non-native plant coverage throughout the preserve is only about 5% overall.
Altered fire regime or risk of catastrophic fire	5	Extensive, dense coverage of southern maritime chapparal contributes to fuel load. Significant portions of the preserve have burned in the 1997 Del Dios Fire and 2007 Witch Fire. Accordingly, there has been moderate to significant fuel accumulation since the last fire. Overall fire risk is moderate, although surrounding development and roads enhance risk of anthropogenic fire sources. Burns within the past 25 years aligns with typical fire return intervals for the habitat types present.
Unauthorized human use (e.g., off-road vehicles, encampments, unauthorized trails, shooting, poaching, and/or dumping)	3	Unauthorized trails were observed throughout the preserve. Linear, narrow areas of disturbed habitat mapped outside the authorized trail network (Figure Sets 16 and 17) generally correspond to features identified in the field as unauthorized trails. These trails are most concentrated in the eastern and central portions of the preserve, particularly along the Del Dios Highland Trail, where several unauthorized spur trails branch from the authorized alignment. Additional narrow unauthorized trails were noted in the far western and southern areas of the preserve. While it was difficult to determine whether these trails are actively used, the absence of native vegetation and limited regrowth indicates at least intermittent foot traffic along most mapped disturbance features.
Erosion	3	Some moderate erosional rills observed on steep trails and dirt roads throughout the preserve, but nothing severe. Steep dirt roads and trails are vulnerable to erosion which may unearth immediately adjacent vegetation when intense rain events occur.
Small, isolated occurrences vulnerable to loss of genetic diversity and to extirpation due to environmental stochasticity or catastrophic disturbance	1	No small, isolated, or vulnerable species occurrences were observed. Wart-stemmed ceanothus is abundant throughout the preserve but the occurrence is by no means isolated, small or particularly vulnerable to environmental stochasticity or catastrophic disturbance. Wart-stemmed ceanothus also occurs outside the preserve boundaries in most chaparral open space areas around Lake Hodges.
Altered hydrology (e.g., urban runoff, flood control facilities)	3	Escondido Creek is subject to urban runoff from surrounding development upstream. Olivenhain Reservoir, immediately adjacent to the preserve is dammed and managed by the San Diego County Water Authority. These

Table 20. Threats Overview: Del Dios Highlands County Preserve

Disturbances/Stressors	Severity (Extent)	Discussion
		hydrology modifications are unlikely to cause detrimental impacts to the preserve's vegetation communities or wildlife, however.
Herbivory (e.g., seed, vegetation)	1	No abnormal signs of herbivory were observed. Evidence of grazing was not observed.
Detrimental edge effects from adjacent urban development	2	Rural homesites/low density residential development and roads immediately adjacent to the preserve may increase chances of unauthorized access and accelerate invasive species introduction. Wildlife may be affected by residential/road noise and night lighting.

Notes:
Disturbance Categories within Preserve
1 – No sign of disturbance within preserve
2 – Disturbance does not occur within preserve, but is detected adjacent to preserve boundaries
3 – Disturbance occurs in >0% to <10% of preserve
4 – Disturbance occurs in 10 to <25% of preserve
5 – Disturbance occurs in 25 to <50% of preserve
6 – Disturbance occurs in 50 to <75% of preserve
7 – Disturbance occurs in ⩾ 75% of preserve

6.6 Type Conversion

In order to detect potential type conversions within the preserve, previous Holland-Oberbauer vegetation mapping from 2015 was compared to the updated 2025 mapping by general habitat type, as shown in Table 21. Note that 2015 mapping data were clipped to the preserve boundary to align with 2025 mapping protocols, which excluded buffer areas outside the preserve.

Table 21. Type Conversion Assessment Based On Holland-Oberbauer Mapping: Del Dios Highlands County Preserve

Habitat Type	Acres in 2015	Acres in 2025	Difference in Acreage
Developed	0.85	1.63	+0.78
Disturbed (incl. Agriculture)	9.82	6.37	-3.45
Herbaceous	1.12	0.83	-0.29
Scrub	2.36	2.88	+0.52
Chaparral	745.61	760.85	+15.24
Woodland	19.56	6.21	-13.35
Riparian (incl. Marsh)	2.59	3.12	+0.53

Changes in vegetation mapping between 2015 and 2025 were most pronounced for woodland and chaparral habitat types. Mapping in 2015 showed a large area of coast live oak woodland in the far northwestern portion of the preserve that was more accurately mapped as southern maritime chaparral due to dominance of chamise and

other maritime chaparral shrubs. The minor decrease in disturbed habitat may also be due to greater accuracy in mapping disturbed trails, parking areas, dirt roads, etc.

Adaptive Management Recommendations

Invasive Non-Native Plant Species Management

Priority species for removal include: Giant reed, castorbean, and fountain grass. Treatment and monitoring of tree tobacco, stinkwort, Maltese star-thistle, and fennel are recommended, especially for populations along trails. The small giant reed patch along Escondido Creek should be targeted for removal to prevent downstream spread. Scattered eucalyptus trees in the eastern portion of the preserve near the public access point and in the northwestern riparian area should be treated and left as dead standing snags for practicality and cost. Annual non-native grasses along trails and within openings of native habitat should be monitored but do not require immediate treatment.

Habitat Enhancement / Restoration Opportunities

Restoration opportunities are generally limited by intact maritime chaparral and low density of invasive plant species.

- **Restoration of unauthorized trails.** Decommissioning of unauthorized trails throughout chaparral habitat and supplemental seeding will aid in restoration of these areas and reduce erosion on steep slopes.

Encroachment

- **Unauthorized trails.** Unauthorized foot trails were observed mainly in the eastern and central portions of the preserve. Most are spur trails that branch off from the authorized Del Dios Highland Trail. Recommended actions to reduce unauthorized trail use include targeted posting of trail closure signage and minor fencing/boulder/cactus placement to prevent continued trail cutting.

Monitoring

Annual monitoring for significant trail erosion, unauthorized trail use/development, and invasive non-native plant species is recommended.



SOURCE: ESRI Aerial Imagery 2025

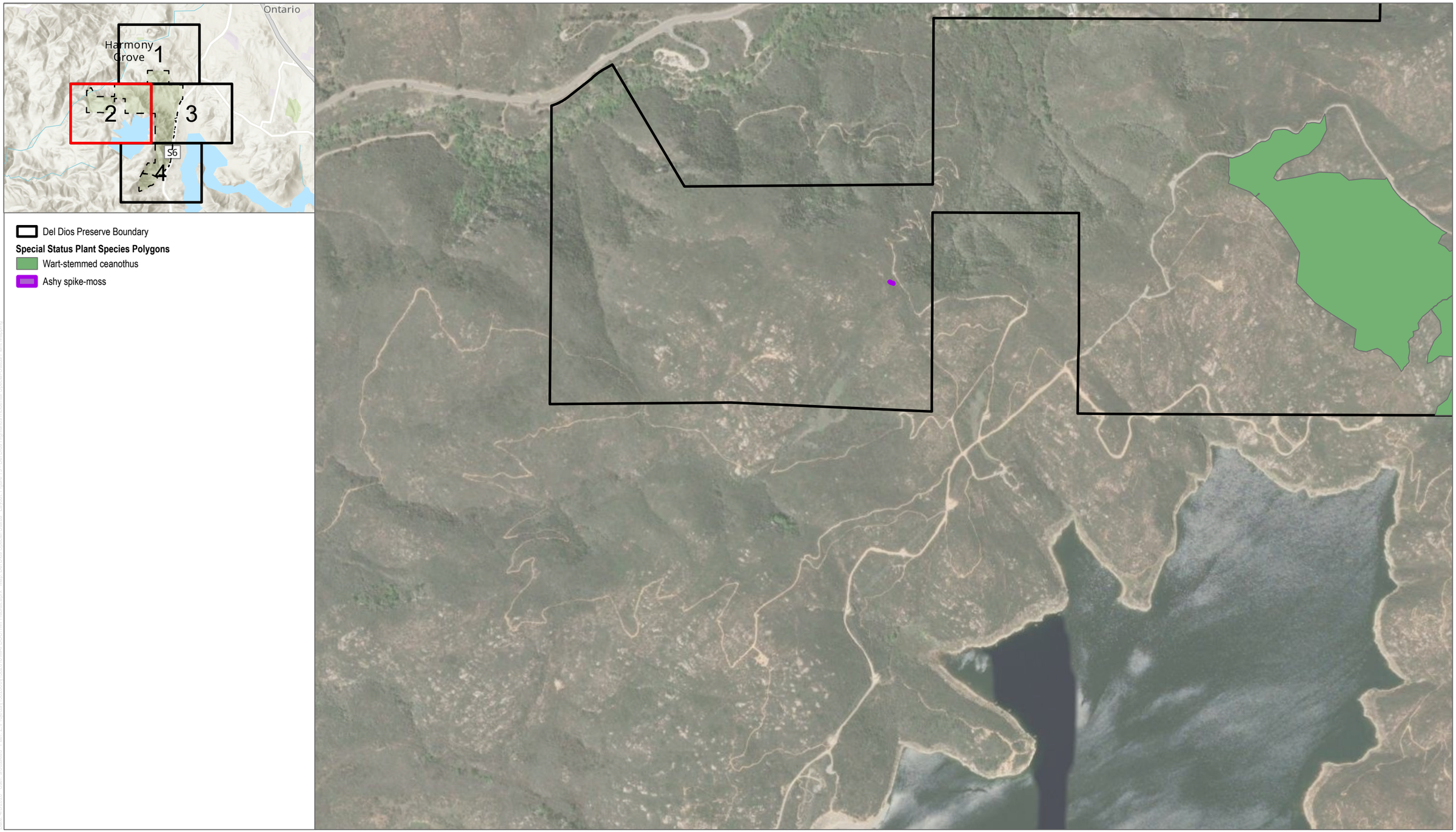
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FIGURE 19 - 1

Del Dios Highlands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

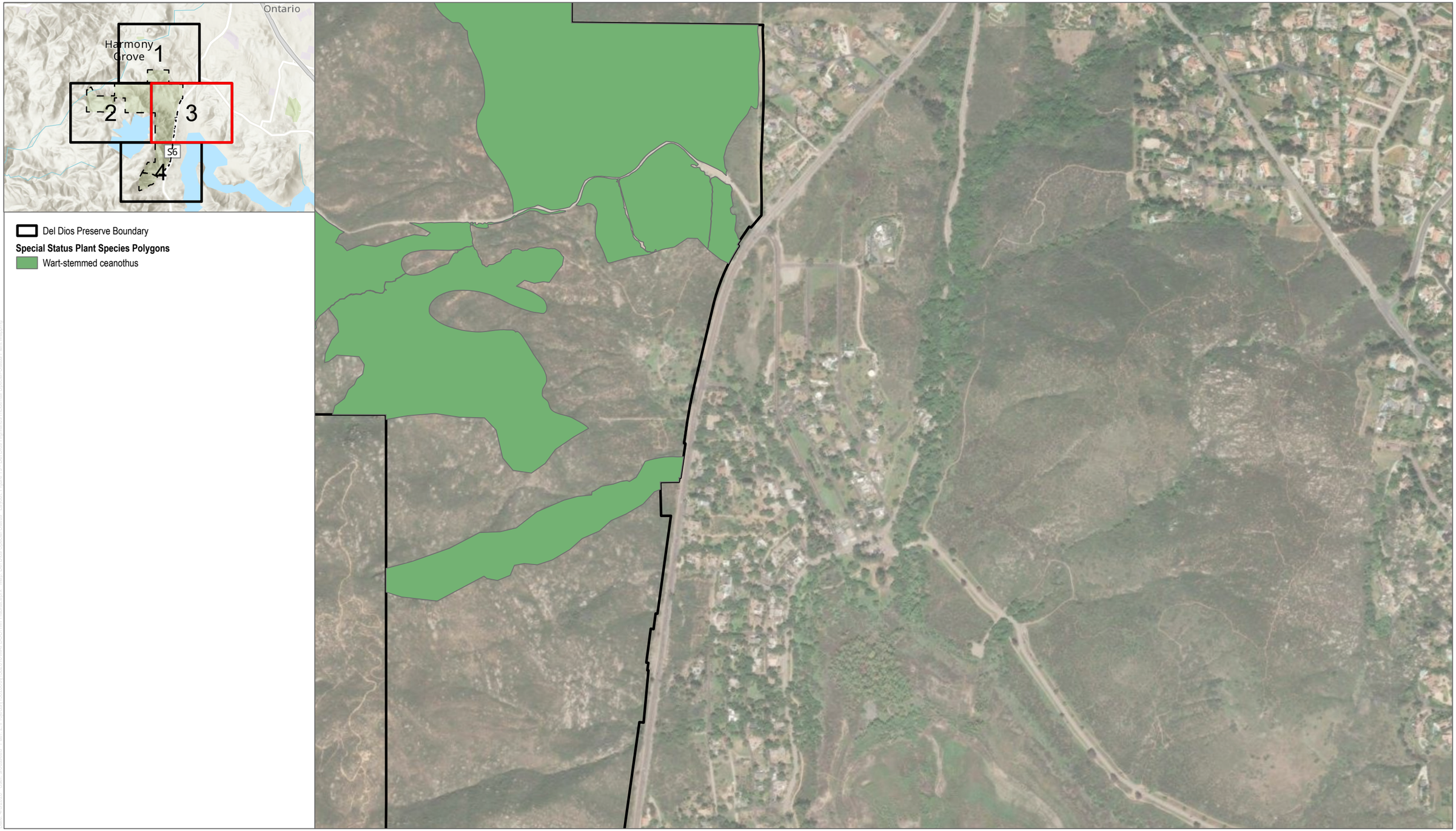
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FIGURE 19 - 2

Del Dios Highlands Incidental Special-Status Plant Mapping

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SOURCE: ESRI Aerial Imagery 2025

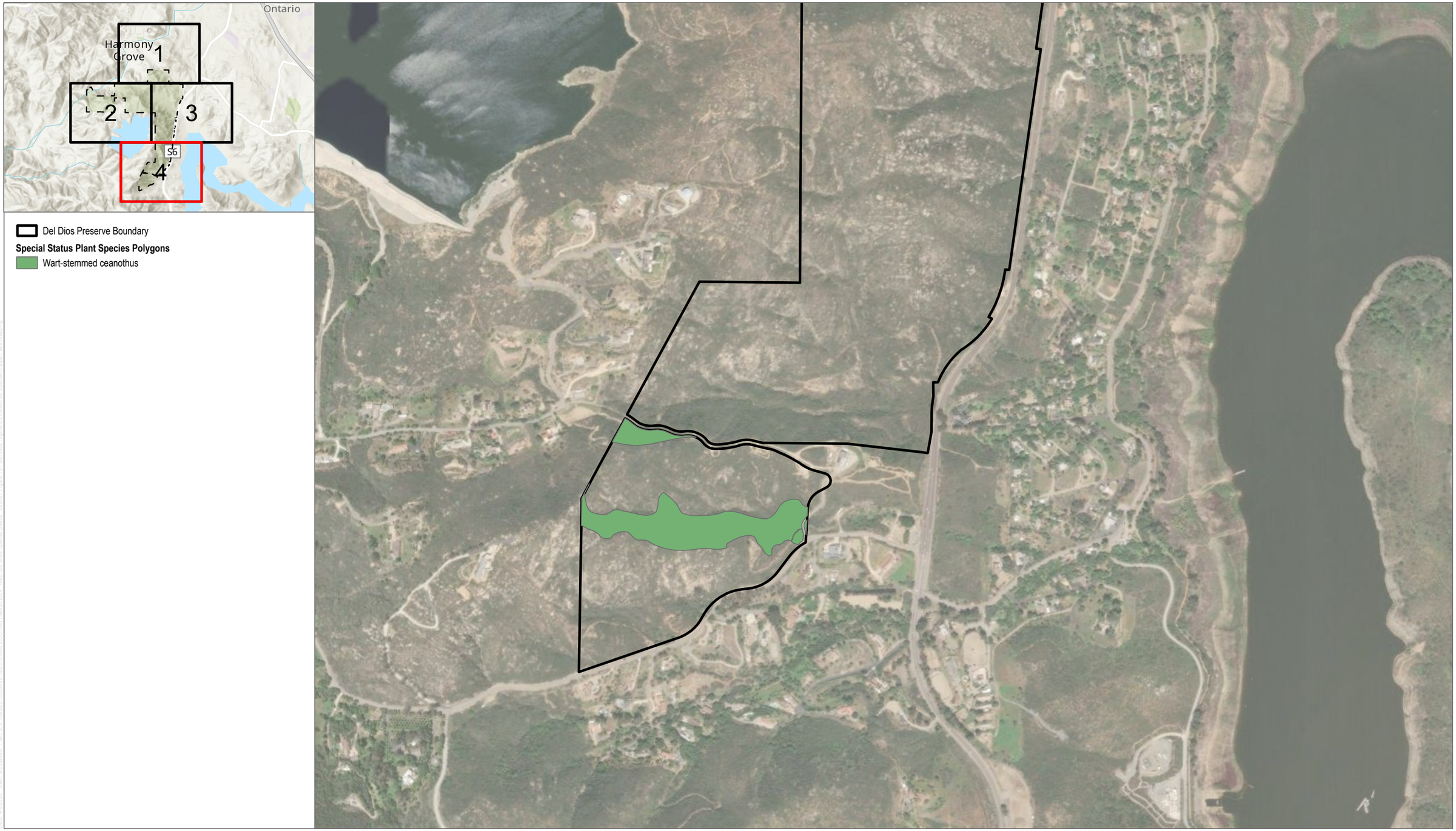
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FIGURE 19 - 3

Del Dios Highlands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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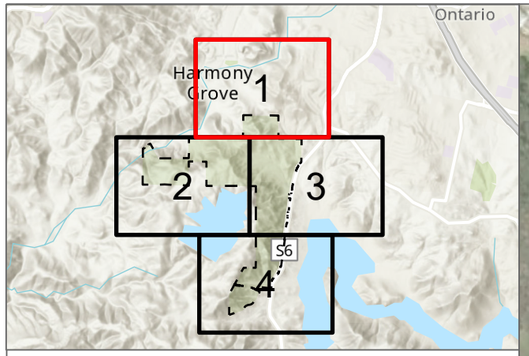
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FIGURE 19 - 4

Del Dios Highlands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report

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Del Dios Preserve Boundary

SOURCE: ESRI Aerial Imagery 2025

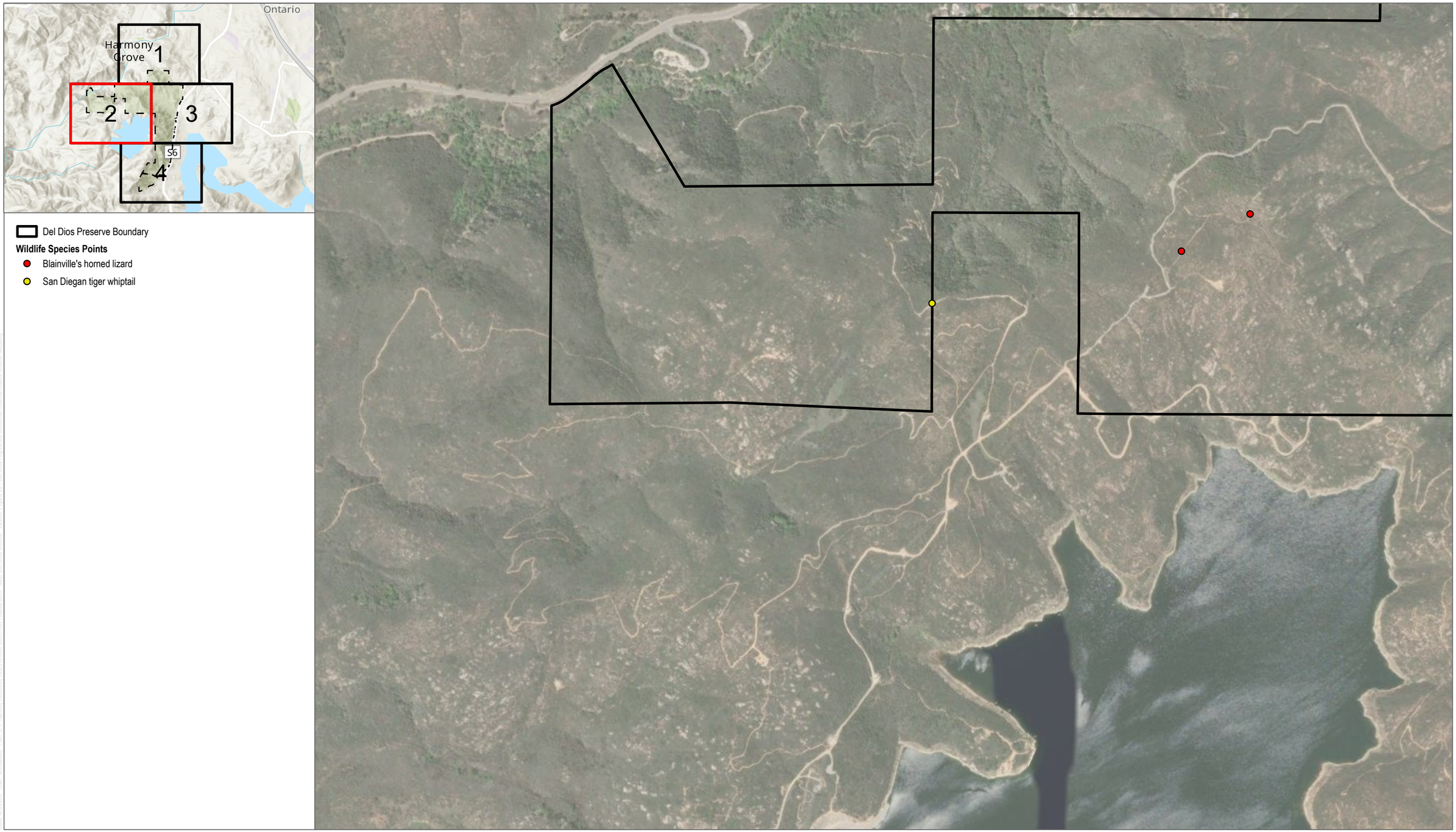
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FIGURE 20 - 1

Del Dios Highlands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report

DUDEK



SOURCE: ESRI Aerial Imagery 2025

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0 310 620 Feet

FIGURE 20 - 2

Del Dios Highlands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

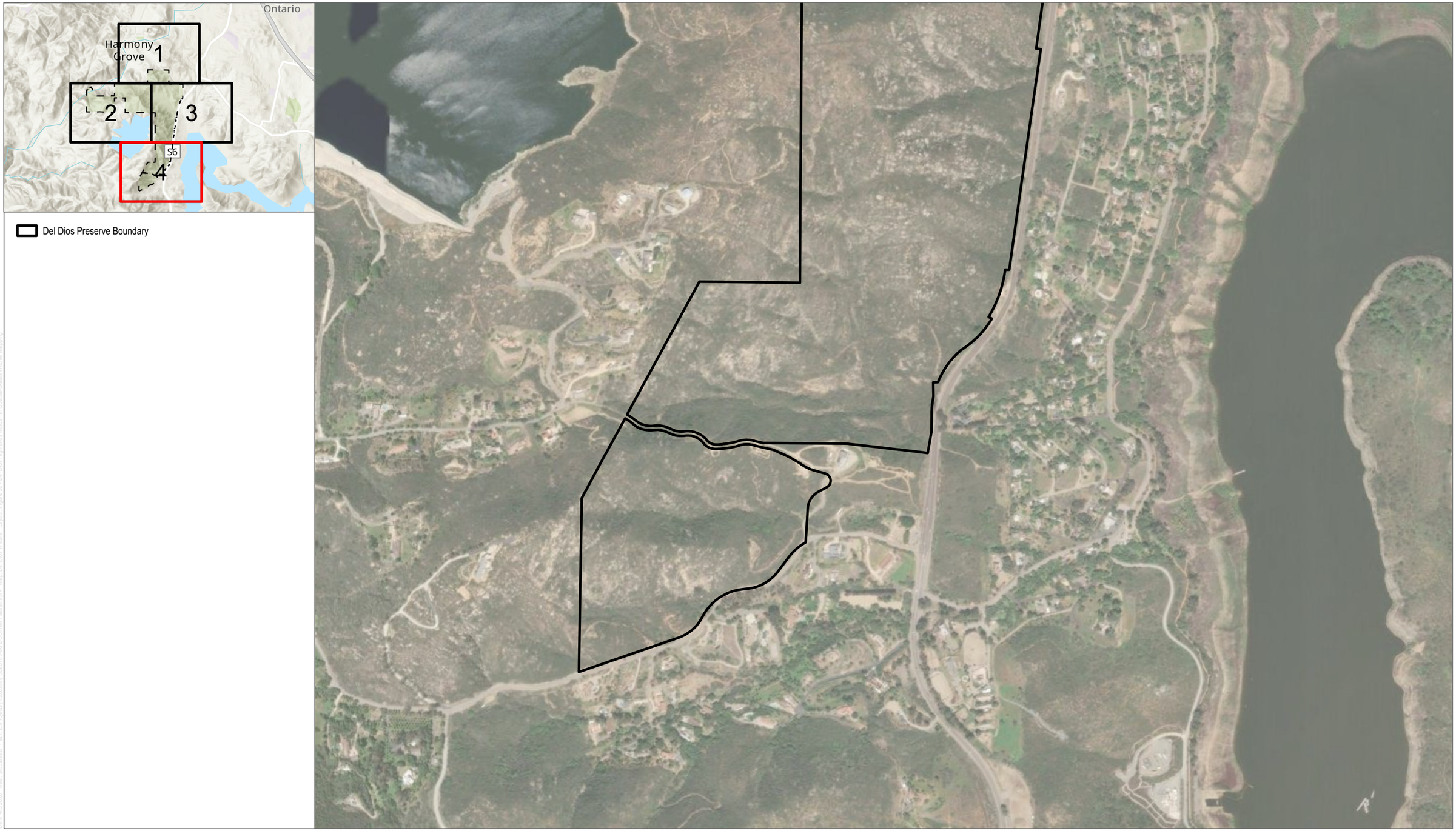
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FIGURE 20 - 3

Del Dios Highlands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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0 310 620 Feet

FIGURE 20 - 4

Del Dios Highlands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report

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7 Boulder Oaks County Preserve

7.1 Preserve Description

Boulder Oaks County Preserve is an approximately 2,015-acre preserve located south of the unincorporated township of Ramona, between State Route (SR) 67 and Mussey Grade Road, in central San Diego County. It is located just north of the Santa Vicente Reservoir, extending east from Iron Mountain and north of Fosters Canyon, and is bisected by Foster Truck Trail.

7.2 Vegetation Mapping

A total of 16 Holland-Oberbauer vegetation communities and 26 VCM vegetation communities were mapped, along with three land cover types. These communities and land cover types are shown in Table 22 and Figure Set 21 (Figures 21-1 through 21-6) and 22 (Figures 22-1 through 22-6). Representative photos of the preserve and its vegetation communities are included in the photo log in Attachment A.

Table 22. Vegetation Communities Crosswalk: Boulder Oaks County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Scrub			
32500 Diegan Coastal Sage Scrub	4.7 California Sagebrush-California Buckwheat Alliance	4.7.1 California Sagebrush-California Buckwheat-Laurel Sumac Association	18.54
	4.23 California Buckwheat Alliance	4.23.1 California Buckwheat Association	12.16
Chaparral			
37120 Southern Mixed Chaparral	4.1 Chamise Alliance	4.1.4 Chamise-Woolly Leaf Ceanothus Association	1228.26
	4.2 Chamise-Mission Manzanita Alliance	4.2.3 Chamise-Mission Manzanita-Woolly Leaf Ceanothus Association	163.16
		4.2.6 Chamise-Mission Manzanita- Scrub Oak Association	2.95
	4.4 Eastwood Manzanita Alliance	4.4.1 Manzanita-Chamise Association	25.20
	4.16 Chaparral Whitethorn Alliance	4.16.1 Chaparral Whitethorn Association	32.83
	4.18 Woolly Leaf Ceanothus Alliance	4.18.1 Woolly Leaf Ceanothus Association	68.52
37130 Northern Mixed Chaparral	4.5 Big Berry Manzanita Alliance	4.5.1 Big Berry Manzanita-Chamise Association	49.68
37820 Hoaryleaf Ceanothus Chaparral	4.1 Chamise Alliance	4.1.3 Chamise-Hoaryleaf Ceanothus Association	12.40

Table 22. Vegetation Communities Crosswalk: Boulder Oaks County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
37900 Scrub Oak Chaparral	4.37 Oak (Scrub Oak, Hybrid Scrub Oak) Alliance	4.37.1 Oak (Scrub Oak, Hybrid Scrub Oak) Association	18.33
	4.38 Oak (Scrub Oak, Hybrid Scrub Oak)-Chamise Alliance	4.38.1 Oak (Scrub Oak, Hybrid Scrub Oak)-Chamise Association	87.04
37G00 Coastal Sage-Chaparral Transition	4.1 Chamise Alliance	4.1.2 Chamise- Buckwheat - California Sagebrush- Black Sage Association	10.15
Herbaceous			
42120 Valley Sacaton Grassland	5.14 Saltgrass Alliance	5.14.1 Saltgrass -Annual Grasses Association	0.77
42200 Non-Native Grassland	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	86.79
42300 Wildflower Field	5.13 Clustered Tarweed Alliance	5.13.1 Clustered Tarweed Association	0.11
Marsh			
52410 Coastal and Valley Freshwater Marsh	5.31 California Bulrush Alliance	5.31.1 California Bulrush Association	5.18
	5.35 Cattail Alliance	5.35.1 Southern Cattail Association	0.10
Riparian			
61300 Southern Riparian Forest	3.4 Western Sycamore Alliance	3.4.3 Western Sycamore-Coast Live Oak Association	16.41
61310 Southern Coast Live Oak Riparian Forest	3.6 Coast Live Oak Alliance	3.6.3 Coast Live Oak- Arroyo Willow Association	0.13
61320 Southern Arroyo Willow Riparian Forest	3.10 Arroyo Willow Alliance	3.10.1 Arroyo Willow Association	1.12
62500 Southern Riparian Woodland	3.8 Goodding's Black Willow Alliance	3.8.1 Goodding's Black Willow Association	0.10
	3.9 Red Willow Alliance	3.9.1 Red Willow Association	0.26
Woodland			
71160 Coast Live Oak Woodland	3.6 Coast Live Oak Alliance	3.6.2 Coast Live Oak/ Scrub Oak Association	28.14
		3.6.4 Coast Live Oak/ Poison Oak/Grass Association	14.95

Table 22. Vegetation Communities Crosswalk: Boulder Oaks County Preserve

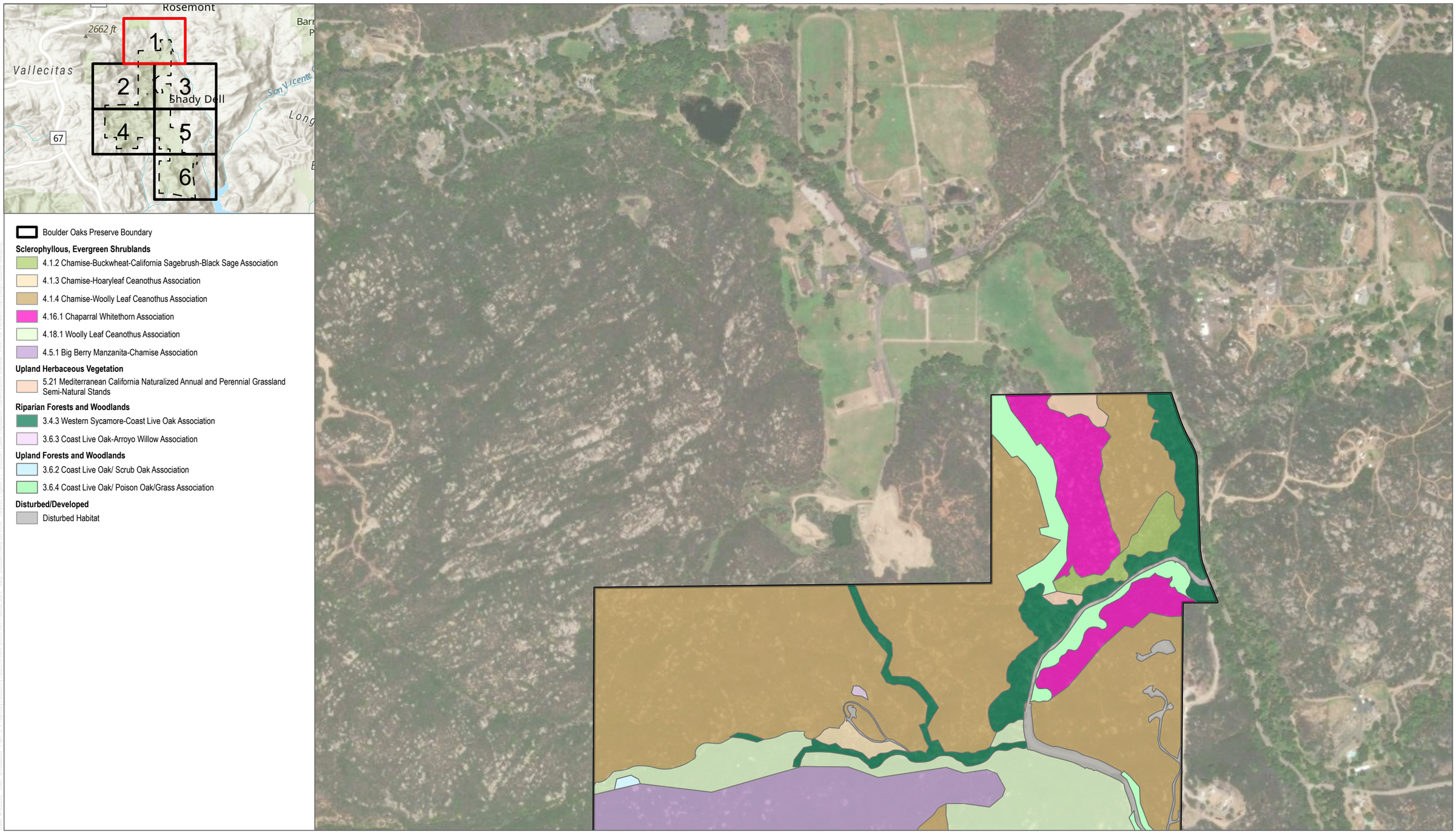
Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
71180 Engelmann Oak Woodland	3.7 Engelmann Oak Alliance	3.7.2 Engelmann Oak-Coast Live Oak - Poison Oak - Grass Association	100.43
Unvegetated (Water)			
64100 Open Water	N/A	Open Water[a]	3.99
Disturbed/Developed[a]			
11300 Disturbed Habitat	N/A	Disturbed Habitat	21.64
12000 Urban/Developed	N/A	Urban/Developed	5.50
		Total[b]	**2014.87**

Notes:

[a] The San Diego Vegetation Classification Manual only classifies vegetated areas. The open water and disturbed land cover types were described and displayed under the association level to provide additional detail in the mapping. This allows for changes in vegetation (e.g., unvegetated to vegetated) to be tracked over time.

[b] Total may not match sum of individual acreages listed due to rounding.

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SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 21 - 1

Boulder Oaks Vegetation Classification Manual (VCM) for Western San Diego County Mapping



SOURCE: ESRI Aerial Imagery 2025

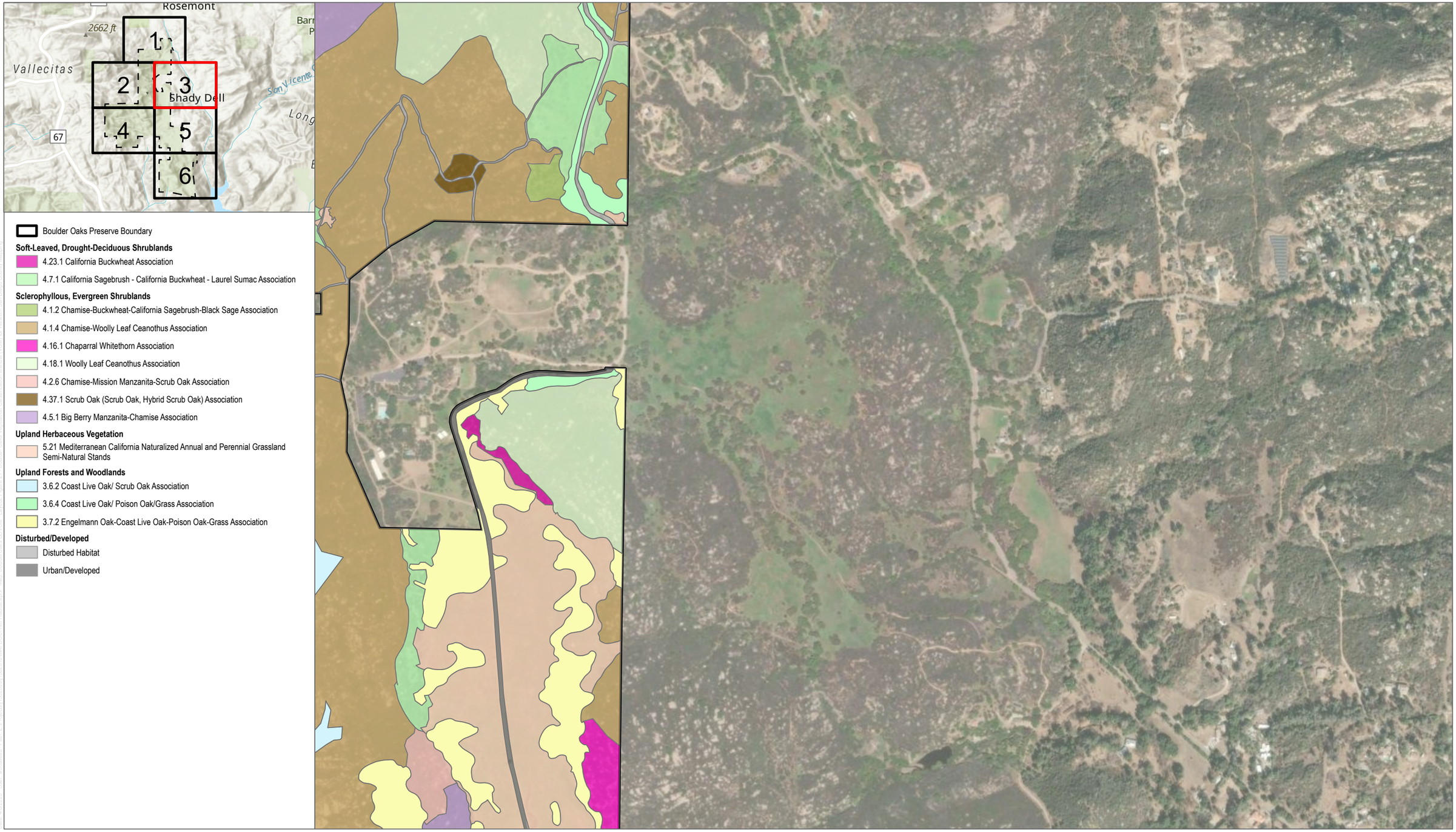
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FIGURE 21 - 2

Boulder Oaks Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

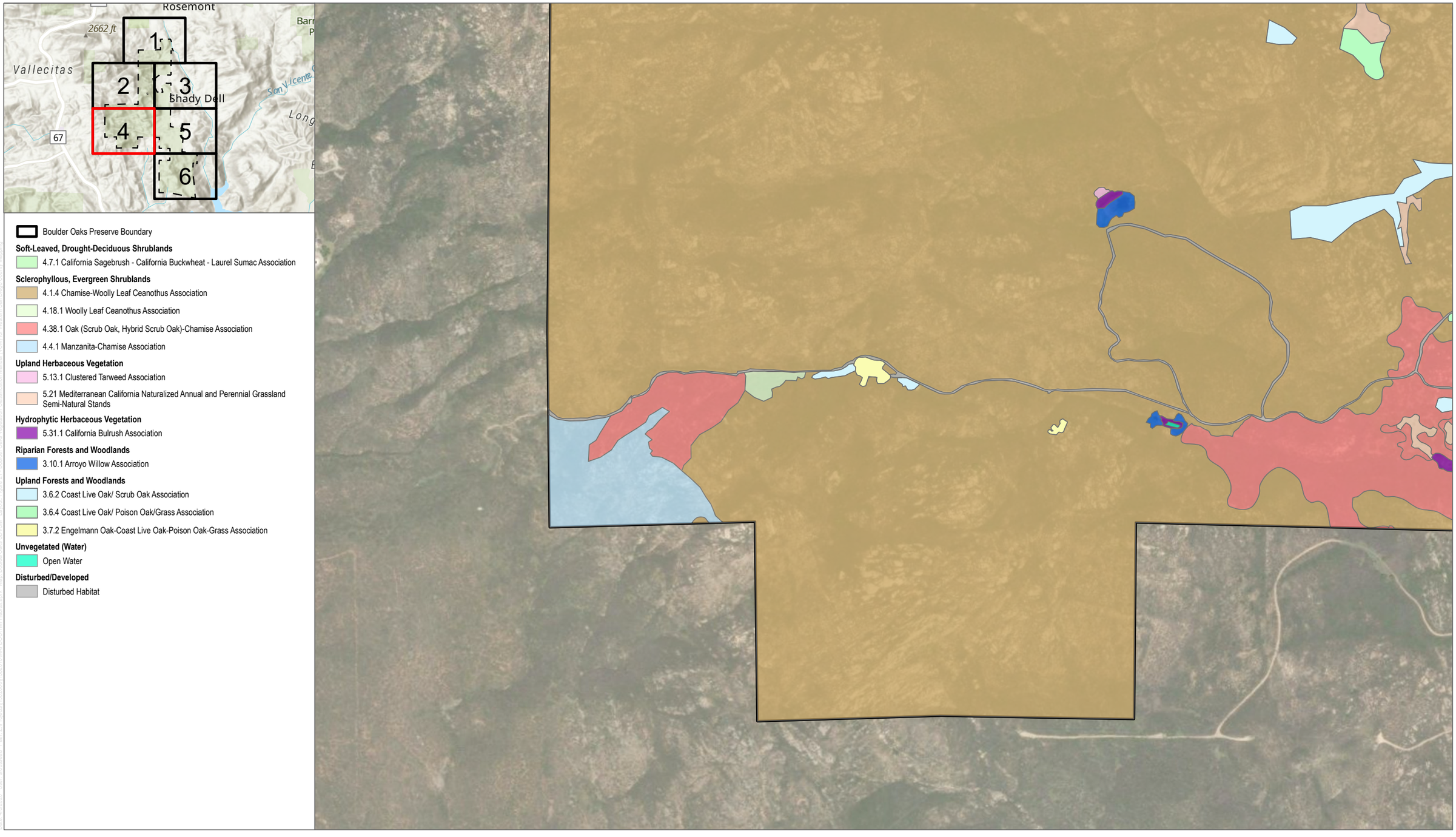
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FIGURE 21 - 3

Boulder Oaks Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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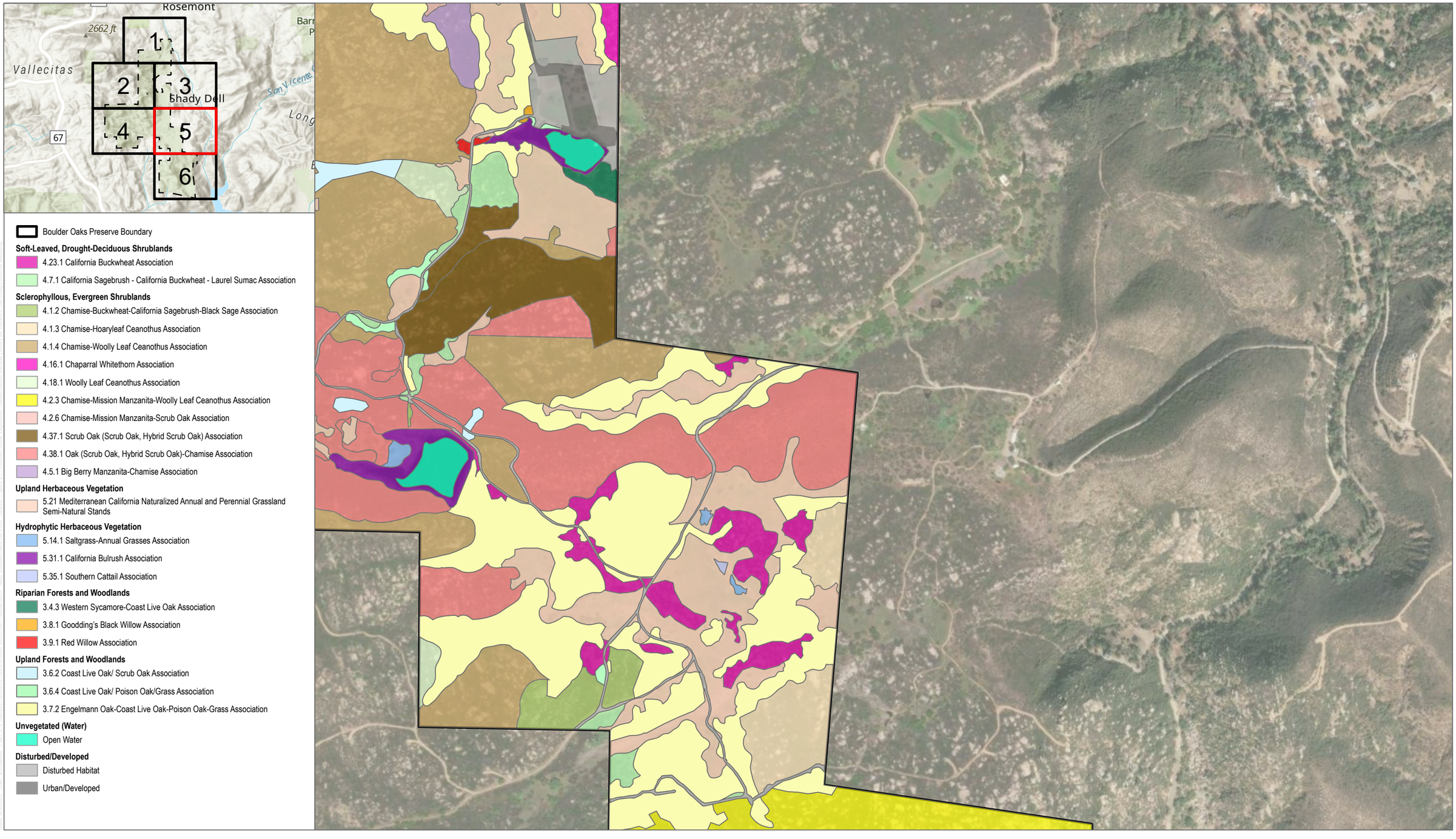
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FIGURE 21 - 4

Boulder Oaks Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

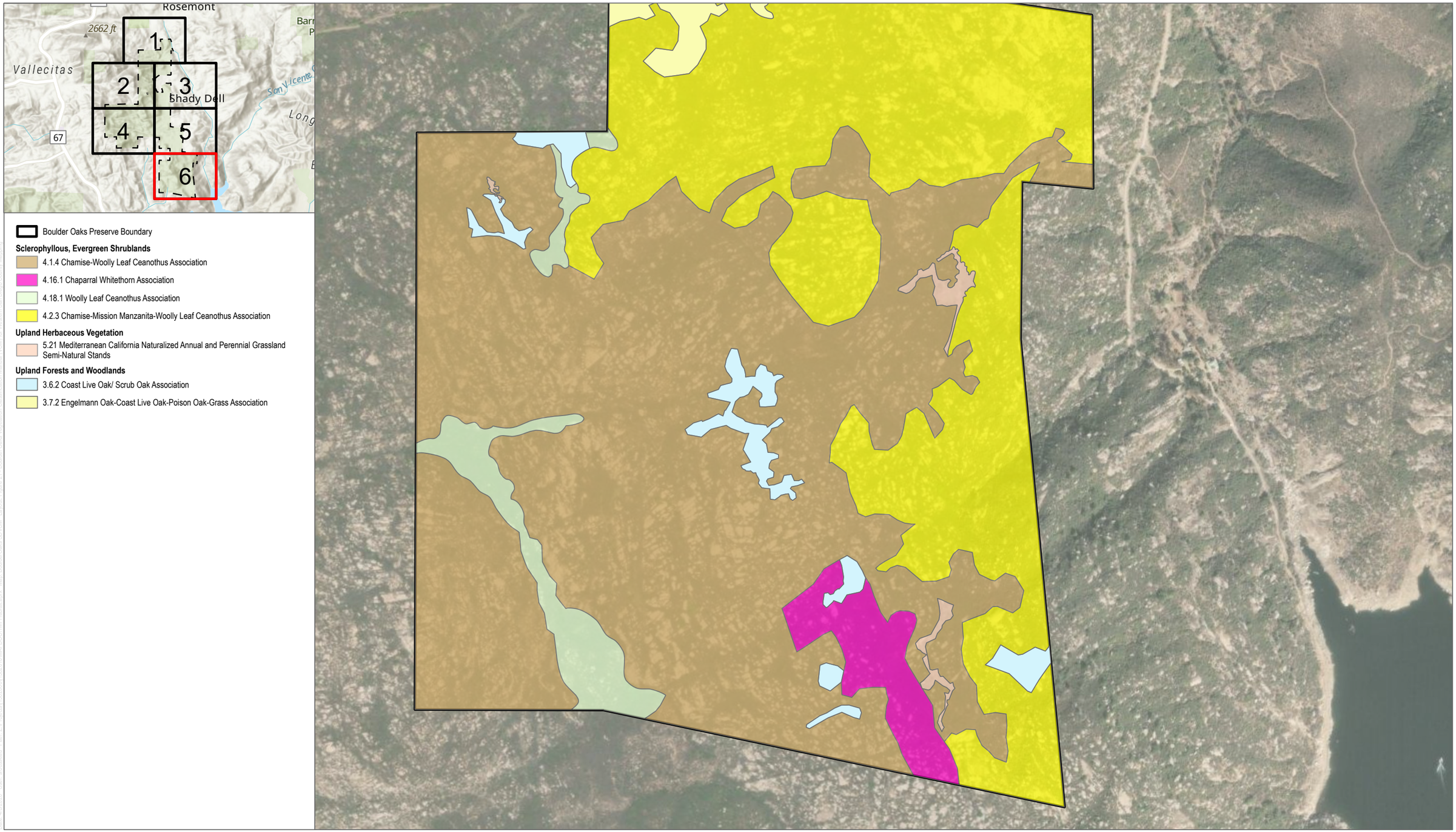
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FIGURE 21 - 5

Boulder Oaks Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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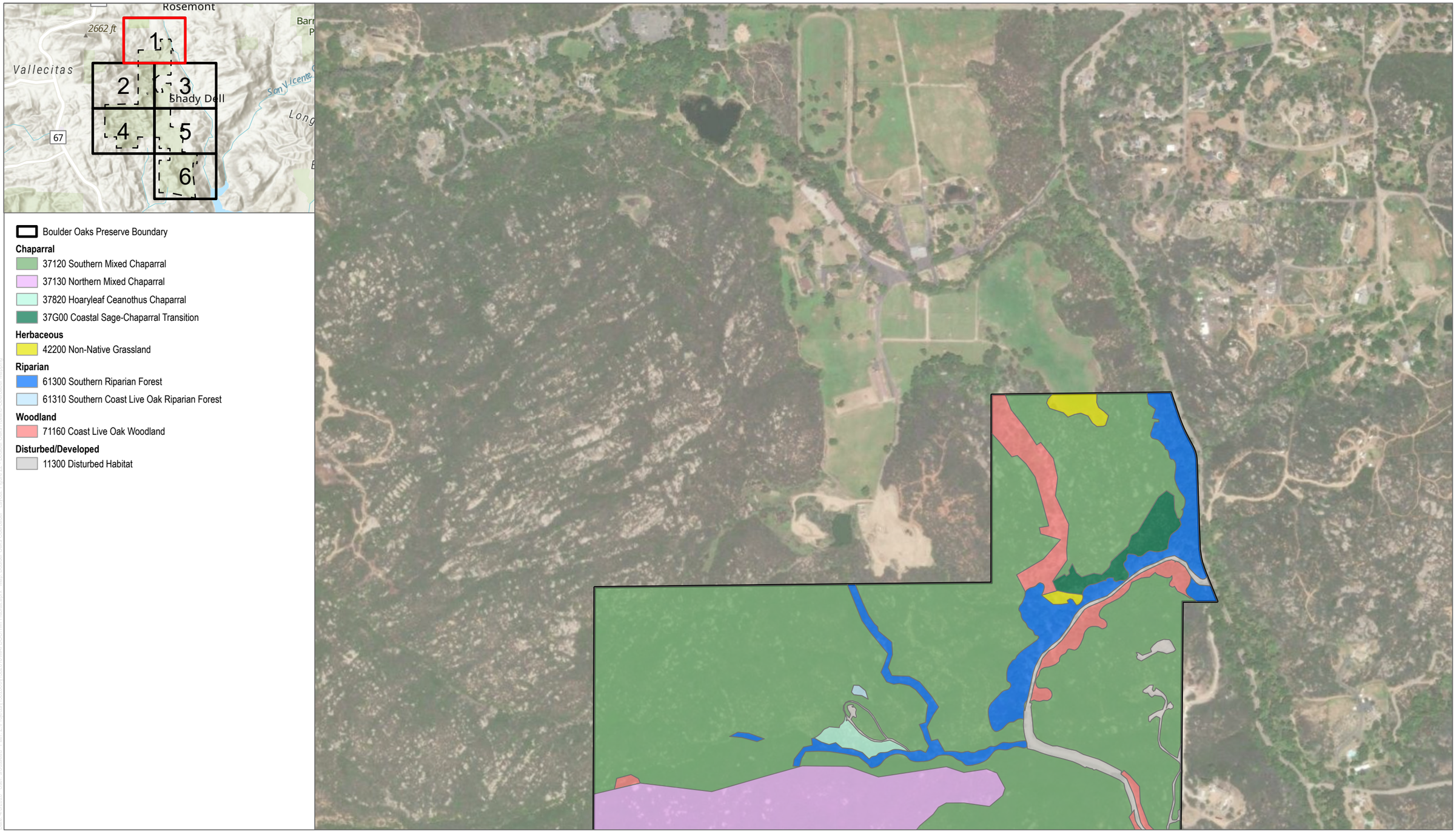
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FIGURE 21 - 6

Boulder Oaks Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report

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SOURCE: ESRI Aerial Imagery 2025

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FIGURE 22 - 1

Boulder Oaks Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

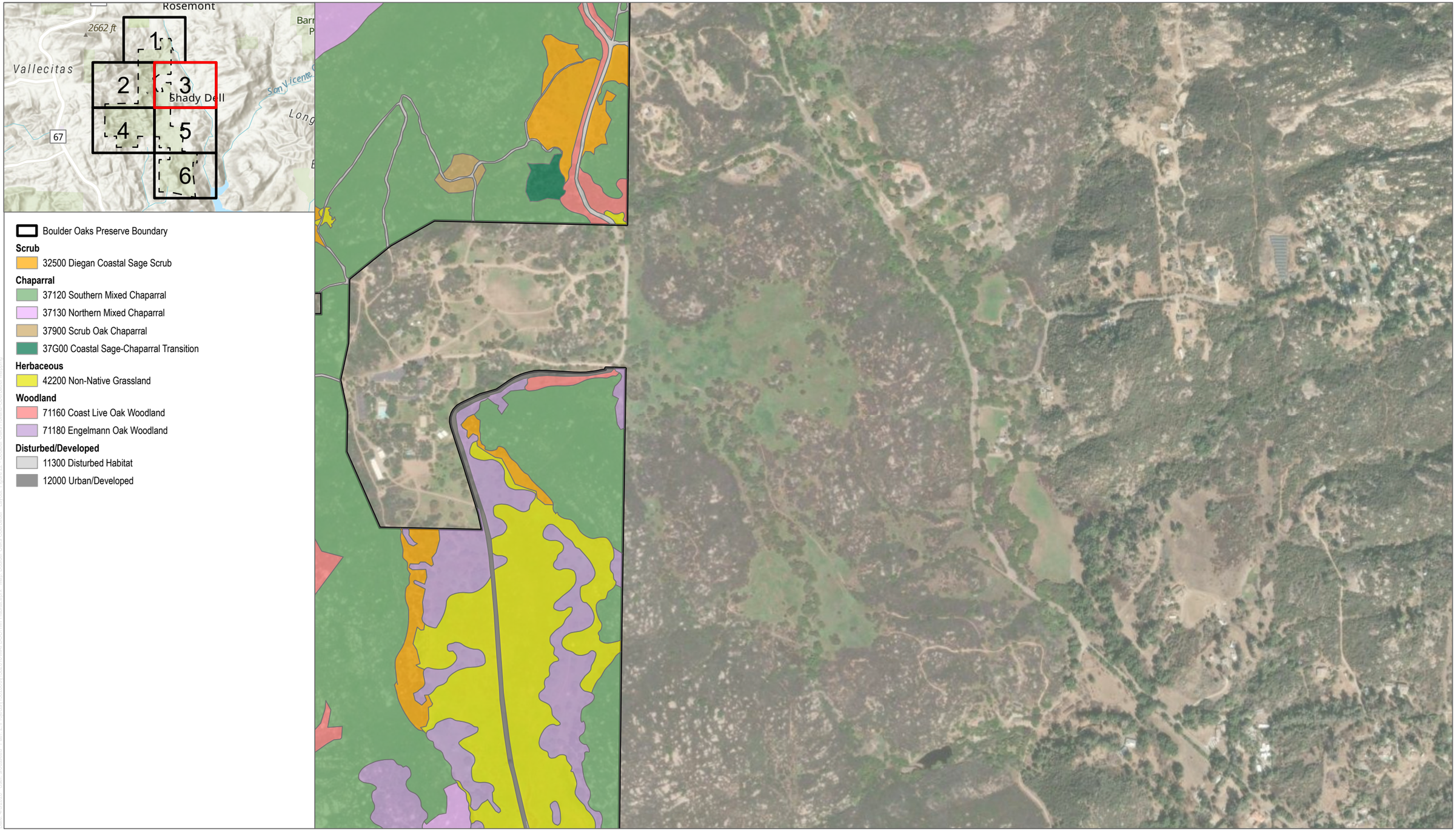
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FIGURE 22 - 2

Boulder Oaks Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

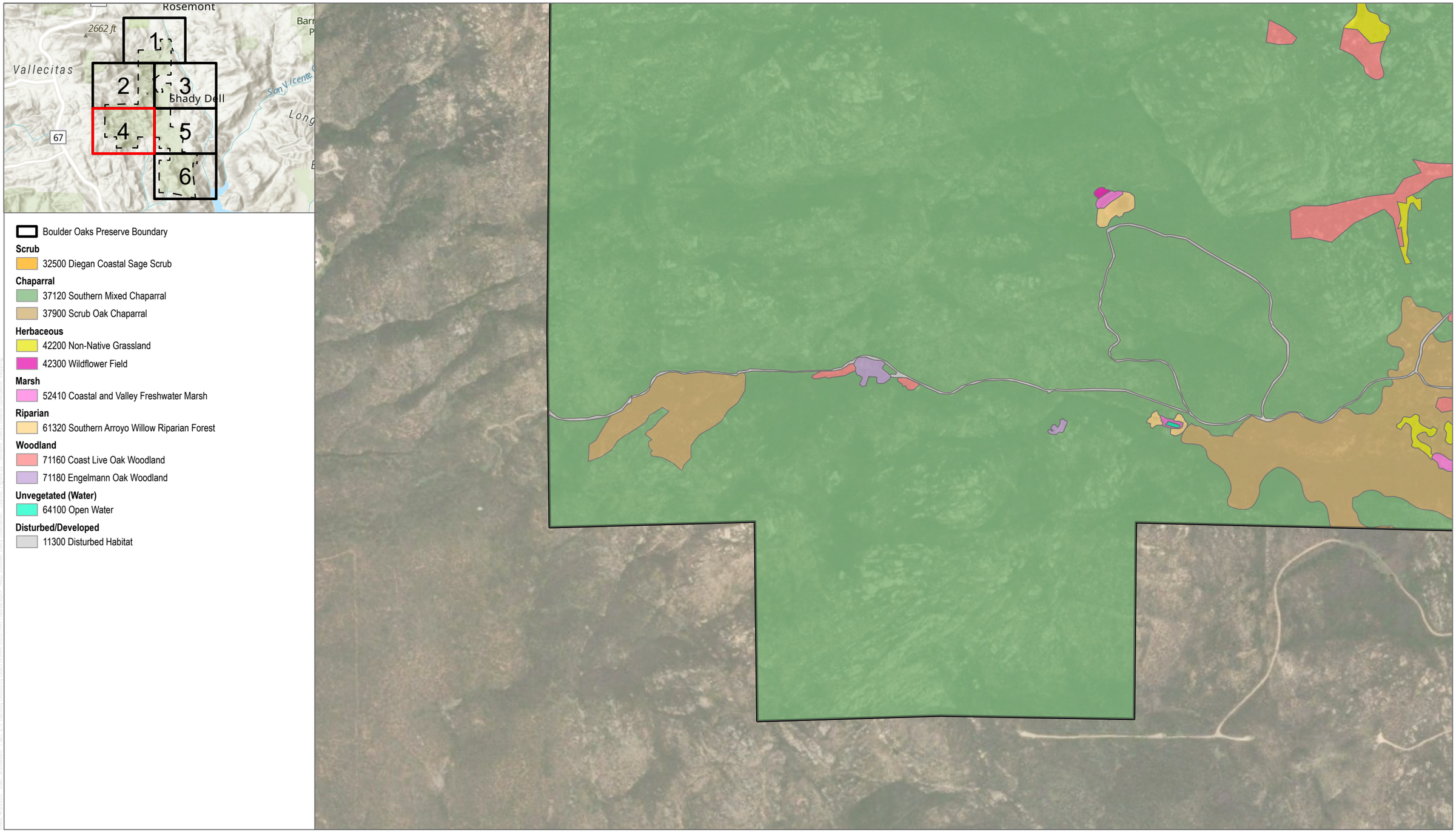
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FIGURE 22 - 3

Boulder Oaks Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

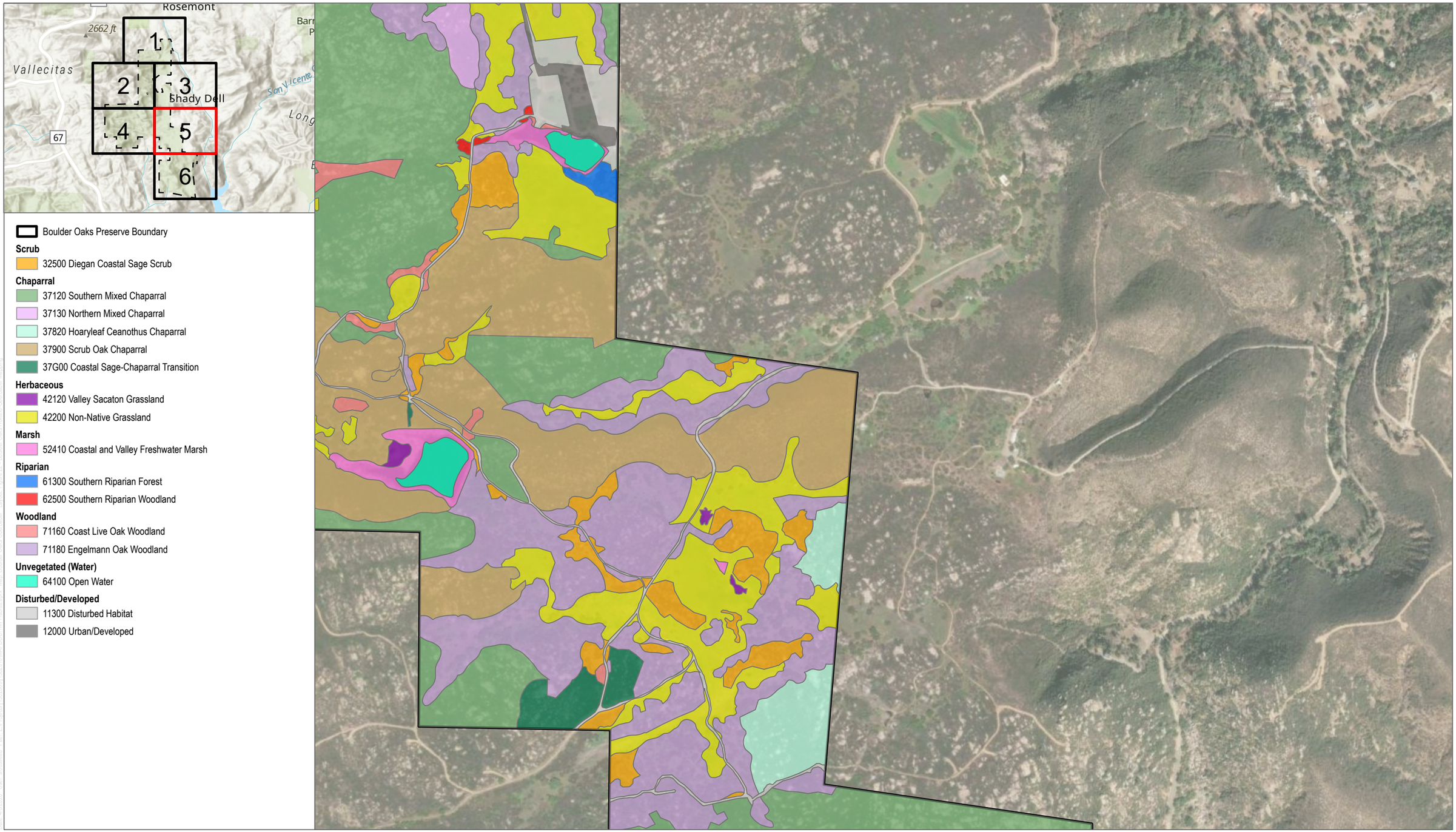
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FIGURE 22 - 4

Boulder Oaks Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

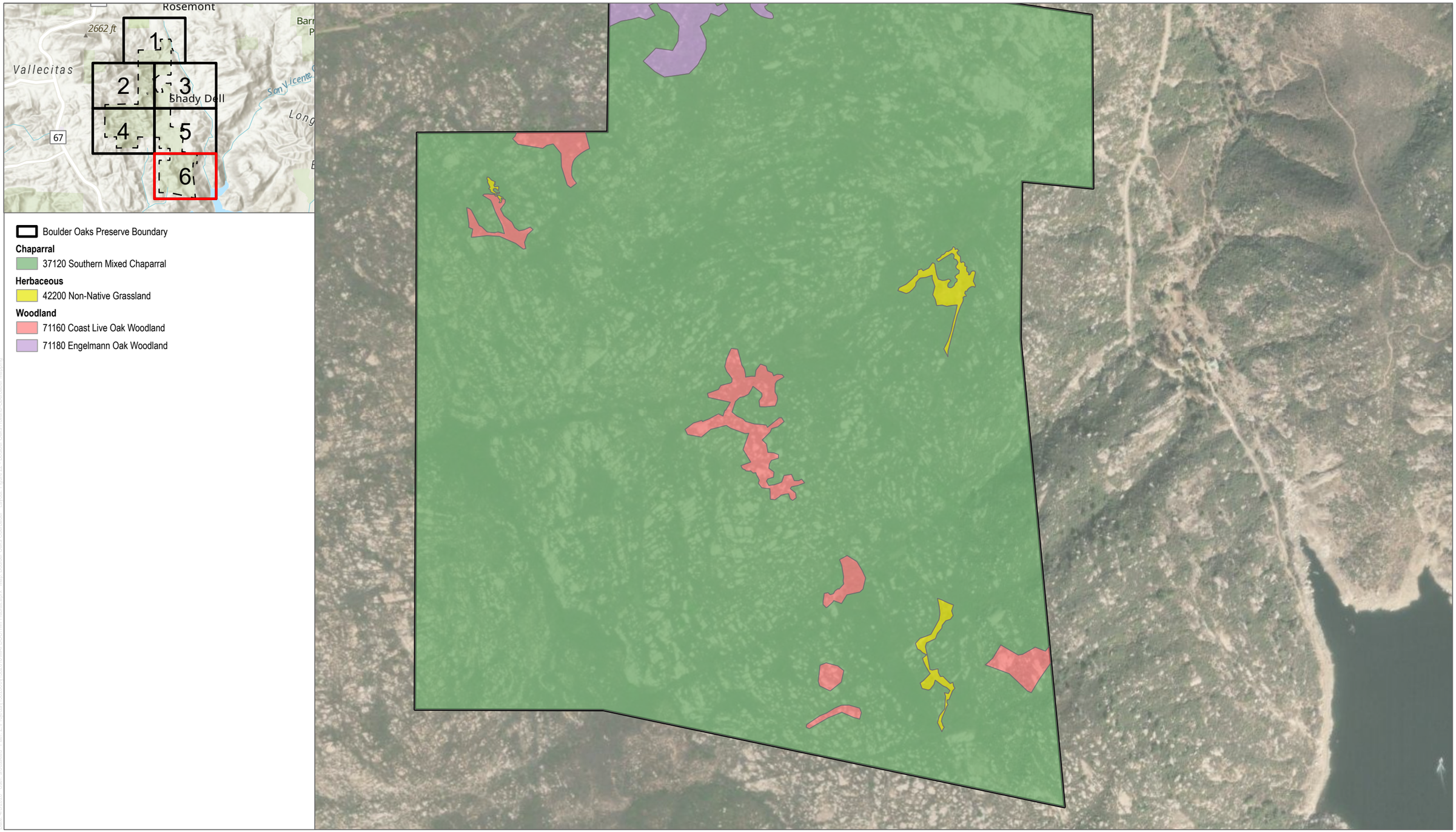
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FIGURE 22 - 5

Boulder Oaks Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 22 - 6

Boulder Oaks Holland-Oberbauer Mapping

TMP Habitat Condition Report

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7.3 Invasive Non-Native Plant Observations

A total of 23 invasive/non-native plant species were detected within the Boulder Oaks County Preserve. Most are displayed in Figure Set 23 (Figures 23-1 through 23-6), but several non-native grasses were too widespread to map throughout the preserve. Their names, along with their Cal-IPC ranking and their San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012) are listed in Table 23. Brief notes about occurrences and management recommendations are also provided.

Table 23. Invasive Non-Native Plant Species: Boulder Oaks County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Ailanthus altissima	Tree of heaven	Moderate	—	One observation in southern central woodland/grassland areas of the preserve.	Monitor
Avena barbata[a]	Slender wild oat	Moderate	—	Spread extensively throughout non-native grassland and woodland understory within the preserve.	Monitor
Bromus diandrus	Ripgut brome	Moderate	—	Spread extensively throughout non-native grassland and woodland understory within the preserve. Particularly significant patches of this grass occur within the southern central woodland/grassland areas of the preserve.	Monitor
Bromus hordeaceous[a]	Soft brome	Limited	—	Spread extensively throughout non-native grassland and woodland understory within the preserve.	Monitor
Bromus rubens[a]	Red brome	High	—	Spread extensively throughout non-native grassland and woodland understory within the preserve.	Monitor
Carduus pycnocephalus	Italian plumeless thistle	Moderate	—	Several observations throughout the southern central woodland/grassland area of the preserve. Risk of spreading.	Treat and/or monitor

Table 23. Invasive Non-Native Plant Species: Boulder Oaks County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Centaurea melitensis	Maltese star-thistle	Moderate	—	Spread extensively throughout non-native grassland and woodland understory within the preserve. Significant populations exist in the central portion of the preserve within the woodland/grassland areas. Risk of spreading.	Treat and/or monitor
Cirsium vulgare	Bull thistle	Moderate	—	Isolated observations in the southern central woodland/grassland area of the preserve. Risk of spreading.	Remove and/or monitor
Dittrichia graveolens	Stinkwort	Moderate	—	Several populations around the pond near the ranger station in the central preserve. Risk of spreading.	Treat and monitor
Ehrharta calycina	Perennial veldtgrass	High	Medium	Extensive populations of this species are present throughout the preserve. While most are concentrated along access roads, trails, in openings, several areas of scrub and chaparral were subject to severe invasion by this perennial invasive grass. Likely that more populations of this invasive exist in areas that were inaccessible. High risk of continued spread.	Remove and monitor
Eucalyptus sp.	Eucalyptus	Watch to Limited	—	Several trees noted in woodland areas of the preserve, especially in the southern central	Treat (drill and kill) and/or monitor

Table 23. Invasive Non-Native Plant Species: Boulder Oaks County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
				woodland/grassland area.	
Hirschfeldia incana	Shortpod mustard	Moderate	—	Several populations observed in open grassy areas in the central and southern woodland/grassland areas of the preserve. Risk of spreading.	Treat and/or monitor
Hordeum murinum[a]	Hare barely	Moderate	—	Throughout non-native grasslands.	Monitor
Olea europea	Olive	Limited	—	Only few trees noted in the southern woodland area of the preserve.	Monitor
Pennisetum setaceum	Fountain grass	Moderate	—	Two notable populations within openings in chaparral on the far western preserve boundary and in the central portion of the preserve on the trail to the cross. Risk of spreading.	Remove and/or monitor
Phalaris aquatica	Harding grass	Moderate	—	Several populations in open, grassy areas in the southern central portion of the preserve, within the woodland/grassland areas. Risk of spreading.	Treat and/or monitor
Phoenix canariensis	Canary Island date palm	Limited	—	One tree in the southern central portion of the preserve in the woodland/ grassland area.	Monitor
Robinia pseudoacacia	Black locust	Limited	—	Several trees in the southern central portion of the preserve in the woodland/ grassland area.	Monitor
Rumex crispus	Curly dock	Limited	—	Several observations in the southern central	Monitor

Table 23. Invasive Non-Native Plant Species: Boulder Oaks County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
				portion of the preserve in the woodland/ grassland area.	
Schinus molle	Peruvian peppertree	Limited	—	Several trees in the southern central portion of the preserve in the woodland/ grassland area.	Monitor
Silybum marianum	Blessed milkthistle	Limited	High	Several dense populations of this invasive plant were present in the northern and southern woodland/ grass areas of the preserve. Risk of spreading.	Treat and/or monitor
Stipa miliacea var. *milacea*	smilograss	Limited	—	Limited observations in the southern central portion of the preserve in the woodland/ grassland area. Risk of spreading.	Treat and/or monitor
Tamarix ramosissima	Tamarisk	High	—	Limited observations adjacent to an isolated pond/riparian area in the western portion of the preserve.	Treat (drill and kill) and/or monitor
Washingtonia robusta	Washington fan palm	Moderate	—	Several trees around the pond near the ranger station and in the southern central portion of the preserve in the woodland/grassland area	Monitor

Notes:

[a] These non-native grass species were not mapped due to their widespread nature but were observed throughout opening of certain chaparral, woodland, and scrub areas of the preserve.

Cal-IPC Ranking

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Alert – An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.

Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.

San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012)

Very High – Level 1 Surveillance. Low effort required to achieve goal of regional surveillance, early detection, rapid response.

High – Level 2 Eradication. Moderate effort required to achieve goal of eradication with regionally coordinated control program.

Medium – Level 3 Containment. Funding typically available for re-treatments or control of small populations. Goal is eradication with coordinated programs by management unit or watershed.

Medium – Level 4 Directed Management. Area may be managed effectively, with slow re-invasion. Goal is to control within reserve or sub-management unit to benefit NCCP resources.

Low – Level 5 Directed Suppression. Control is typically of short-term benefit (rapid re-invasion) without active restoration. Goal is suppression, typically to allow recovery disturbed site, improve re-vegetation success, or benefit NCCP resources.

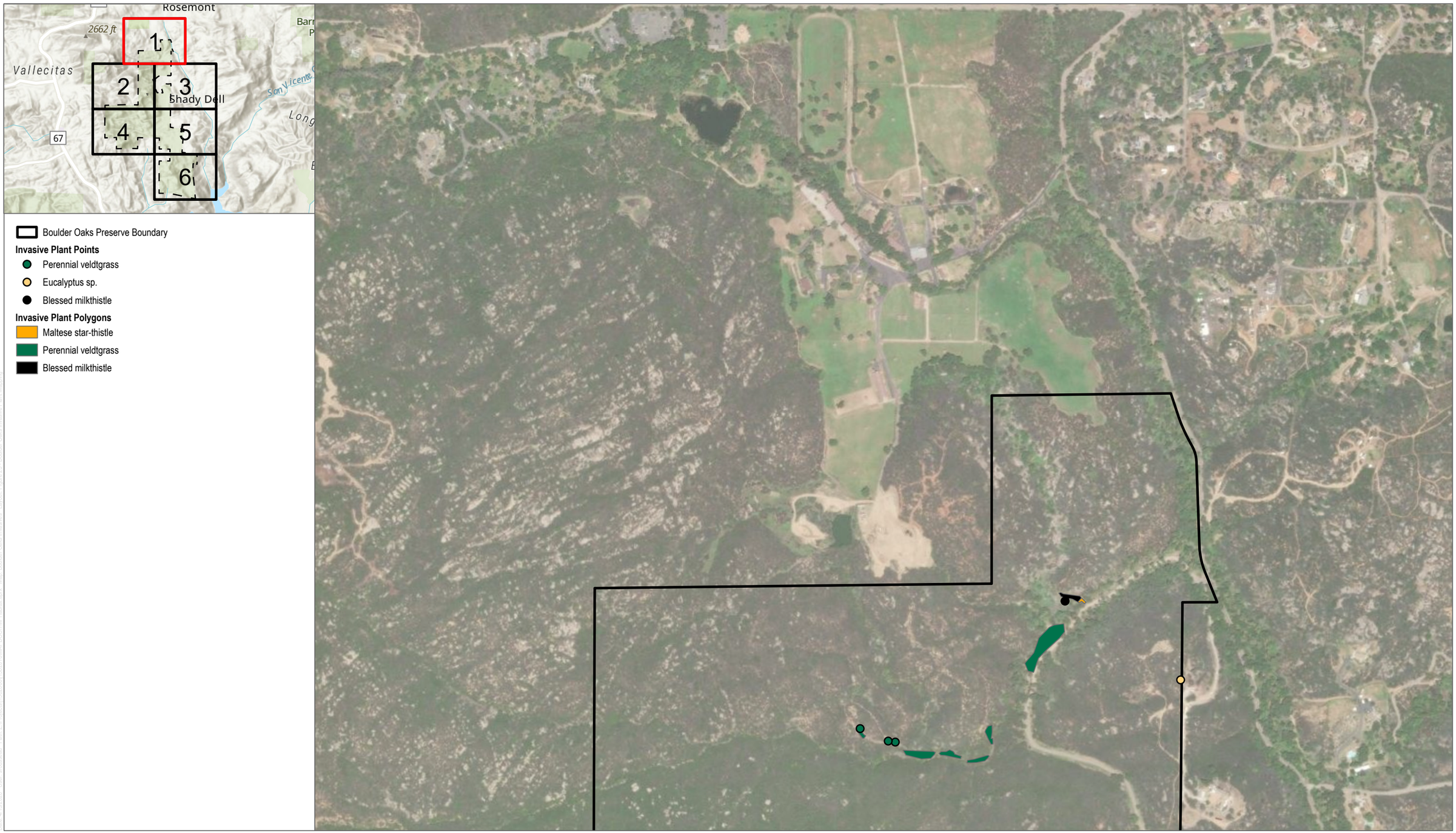
Management Recommendations

Note that more than one management recommendation may be suggested

Monitor – This recommendation involves monitoring for new or expanding infestations of invasive plant species within the park or preserve, beyond the areas currently documented. If monitoring identifies a new outbreak or rapid spread, more intensive management actions, such as treatment or removal, should be implemented. Monitoring may also be necessary after treatment or removal of certain species to detect and address resprouting.

Treat (including drill and kill) – This recommendation includes the application of herbicide to invasive plant species using spot-spray or broadcast-spray methods, as appropriate, or the *drill-and-kill* method for large woody species. “Drill and kill” is a woody-plant control technique in which holes are drilled into the trunk of a live tree and herbicide is injected directly into the cuts/holes, resulting in the tree’s mortality. Dead trees are left as standing snags, offering beneficial ecological structure and perching habitat. This method is often more practical and less impactful than chipping or removing woody biomass from sensitive or difficult-to-access areas.

Remove – This recommendation involves complete removal and off-site disposal of biomass for species known to aggressively resprout from cuttings or those with highly invasive seedheads. In these cases, leaving biomass on site poses a significant risk of reinfestation without intensive monitoring and follow-up treatment, making full removal the preferred approach.



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 23 - 1

Boulder Oaks Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

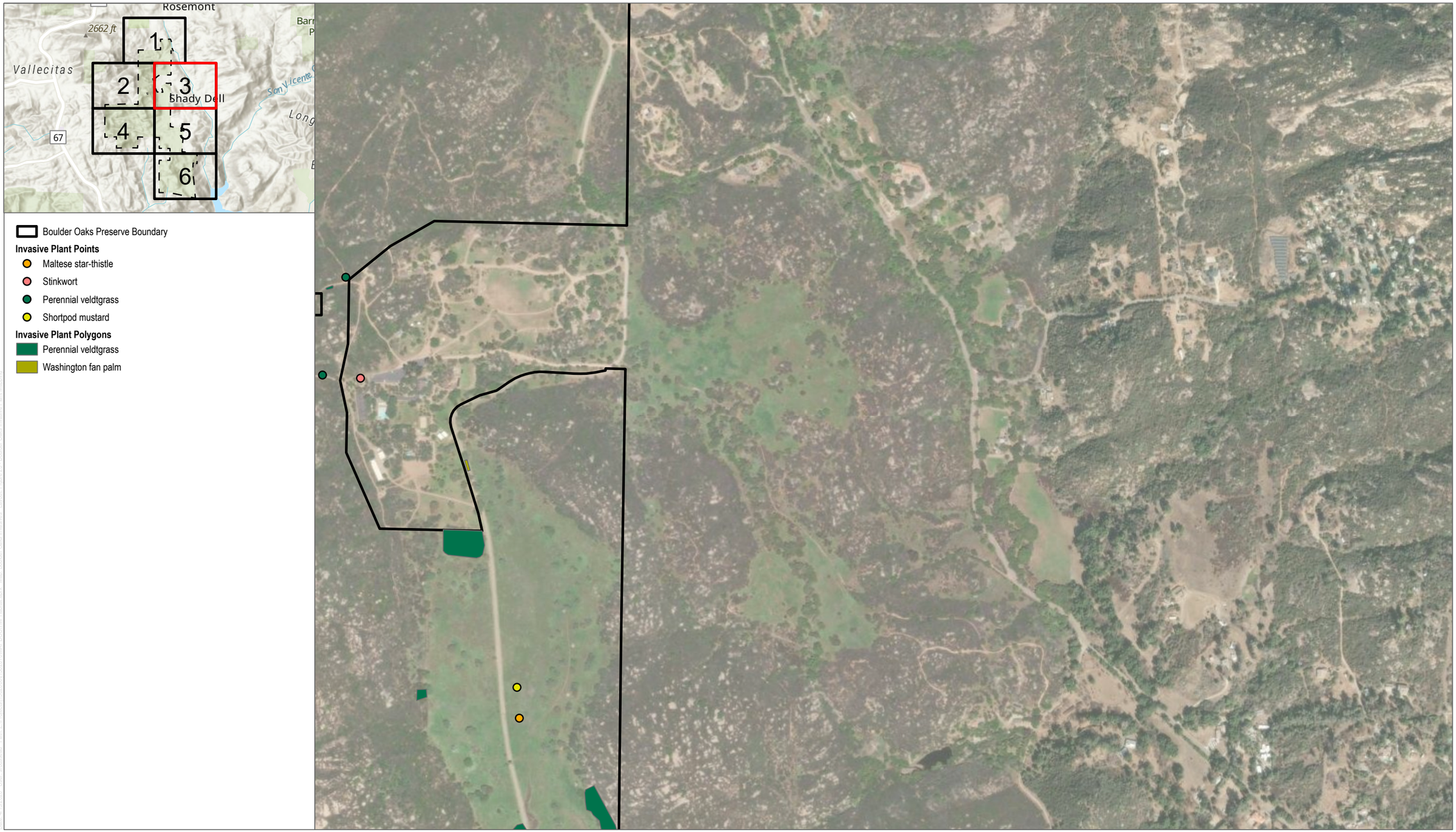
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FIGURE 23 - 2

Boulder Oaks Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

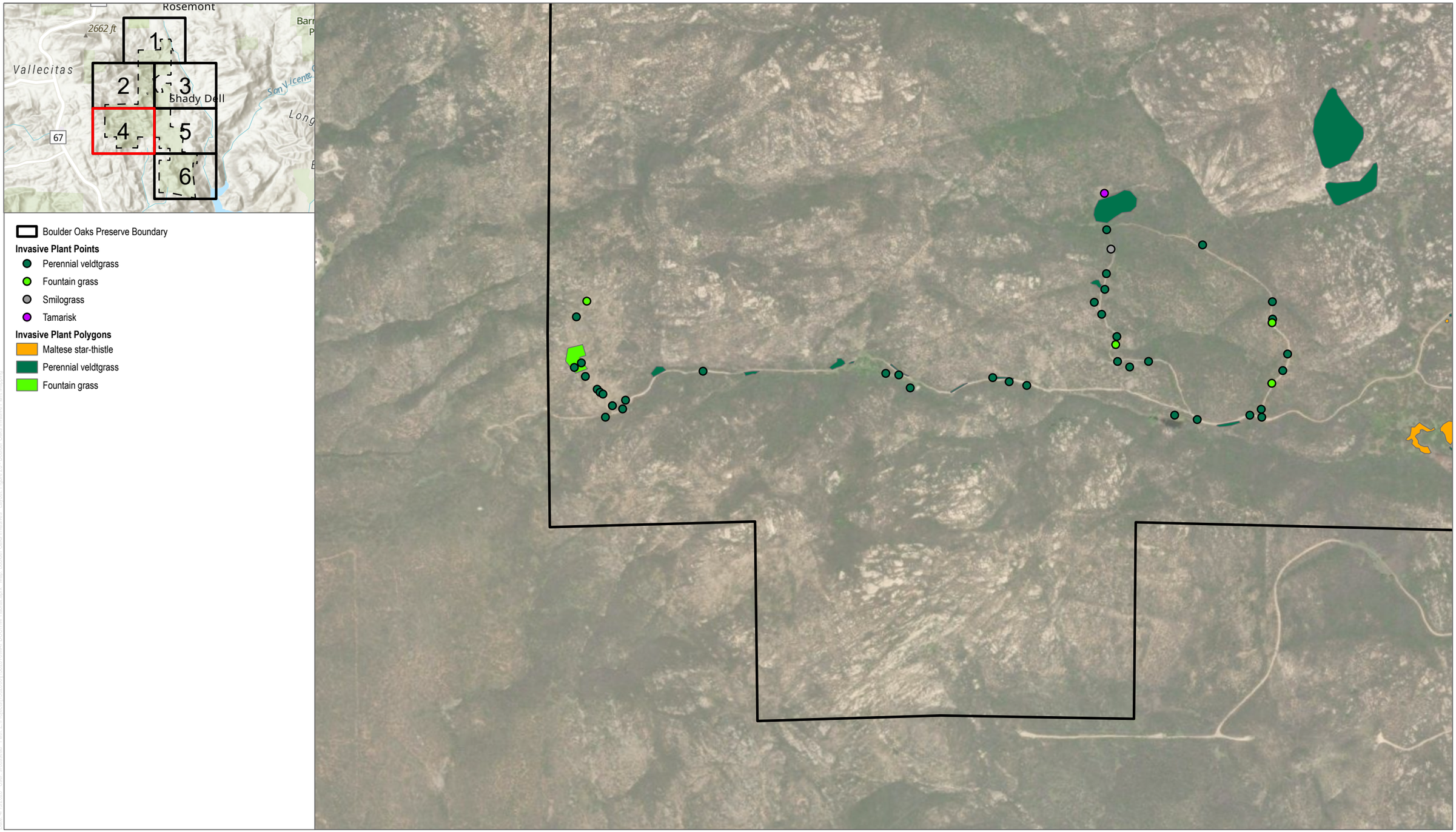
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FIGURE 23 - 3

Boulder Oaks Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

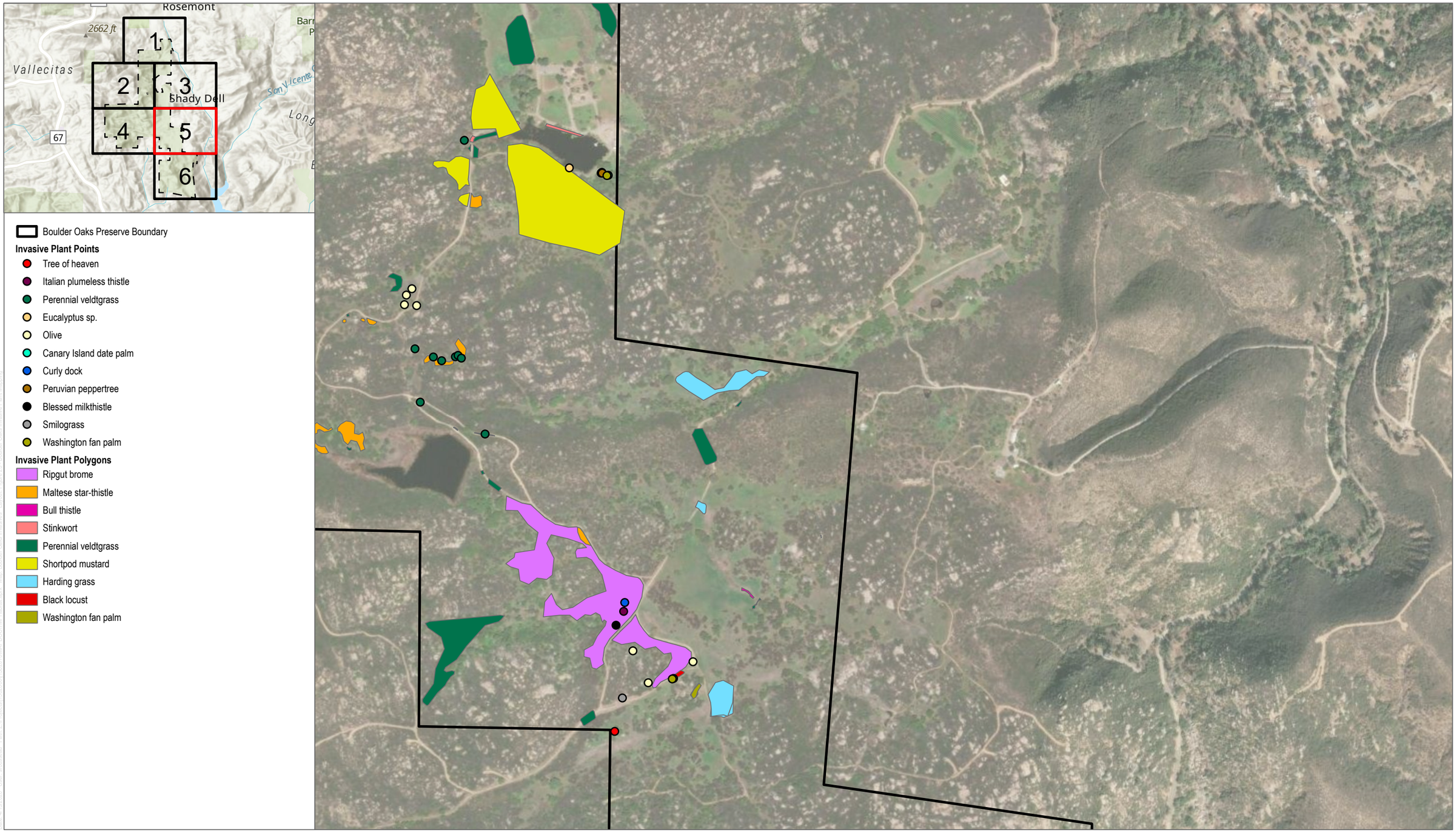
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FIGURE 23 - 4

Boulder Oaks Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 23 - 5

Boulder Oaks Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 23 - 6

Boulder Oaks Invasive Plant Mapping

TMP Habitat Condition Report

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7.4 Incidental Special-Status Plant and Wildlife Observations

Five special-status plants and seven special-status wildlife species were incidentally detected during mapping efforts at Boulder Oaks County Preserve. They are listed in Table 24, along with information about their special statuses. Their observation locations within the preserve are displayed in Figure Set 24 (Figures 24-1 through 24-6) and 25 (Figures 25-1 through 25-6).

Table 24. Incidental Plant and Animal Observations: Boulder Oaks County Preserve

Scientific Name	Common Name	Federal/ State Status	San Diego County Special Status List	South County MSCP Covered Species	California Rare Plant Rank	Notes
Plants						
Ceanothus cyaneus	Lakeside ceanothus	—/—	List A	Covered, Narrow Endemic	1B.2	Several occurrences deep in the southern portion of the preserve.
Hesperocyparis forbesii	Tecate cypress	—/—	List A	Covered	1B.1	Several trees found in an area near an old dwelling and a pond in the northwest portion of the preserve.
Quercus engelmannii	Engelmann oak	—/—	List D	—	4.2	Throughout the woodland areas of the preserve.
Selaginella cinerascens	Ashy spike-moss	—/—	List D	—	4.1	Observed in undisturbed openings of chaparral in the central and southern portions of the preserve.
Animals						
Accipiter cooperii	Cooper's hawk	—/—	Group 1	Covered	—	Observed in the central and southern areas of the preserve.
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	—/WL	Group 1	Covered	—	Observed in the southern backcountry areas of the preserve.
Cathartes aura	Turkey vulture	—/—	Group 1	—	—	Observed flying over the southern backcountry areas of the preserve.
Danaus plexippus	Monach butterfly	PT/—	Group 2	—	—	Observed near old cattle pond in central portion

Table 24. Incidental Plant and Animal Observations: Boulder Oaks County Preserve

Scientific Name	Common Name	Federal/ State Status	San Diego County Special Status List	South County MSCP Covered Species	California Rare Plant Rank	Notes
						of preserve, about ½ mile southwest of the ranger station.
Neotoma lepida intermedia	San Diego desert woodrat	—/SSC	Group 2	—	—	Middens observed throughout chaparral in the southern portion of the preserve.
Odocoileus hemionus	Mule deer	—/—	Group 2	Covered	—	Observed frequently throughout the grassland and woodland areas of the preserve.
Puma concolor	Mountain lion	—/—	Group 2	Covered	—	Tracks observed on dirt roads in southern portion of the preserve.

Notes:
Federal/State Status
FE – Federally Endangered
FT – Federally Threatened
PT – Proposed Federally Threatened
CE – California Endangered
CT – California Threatened
SSC – CDFW Species Special Concern
WL – CDFW Watch List
San Diego County Special Status List
LIST A (Plants rare, threatened or endangered in California and elsewhere)
LIST B (Plants rare, threatened or endangered in California but more common elsewhere)
LIST C (Plants which may be quite rare, but need more information to determine their true rarity status)
LIST D (Plants of limited distribution and are uncommon, but not presently rare or endangered)
Group 1 Animals: includes those that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met
Group 2 Animals: includes those species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action
California Rare Plant Rank
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
For each California Rare Plant Rank, threat ranks (e.g., 1B.3) are determined as follows:
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)



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 24 - 1

Boulder Oaks Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

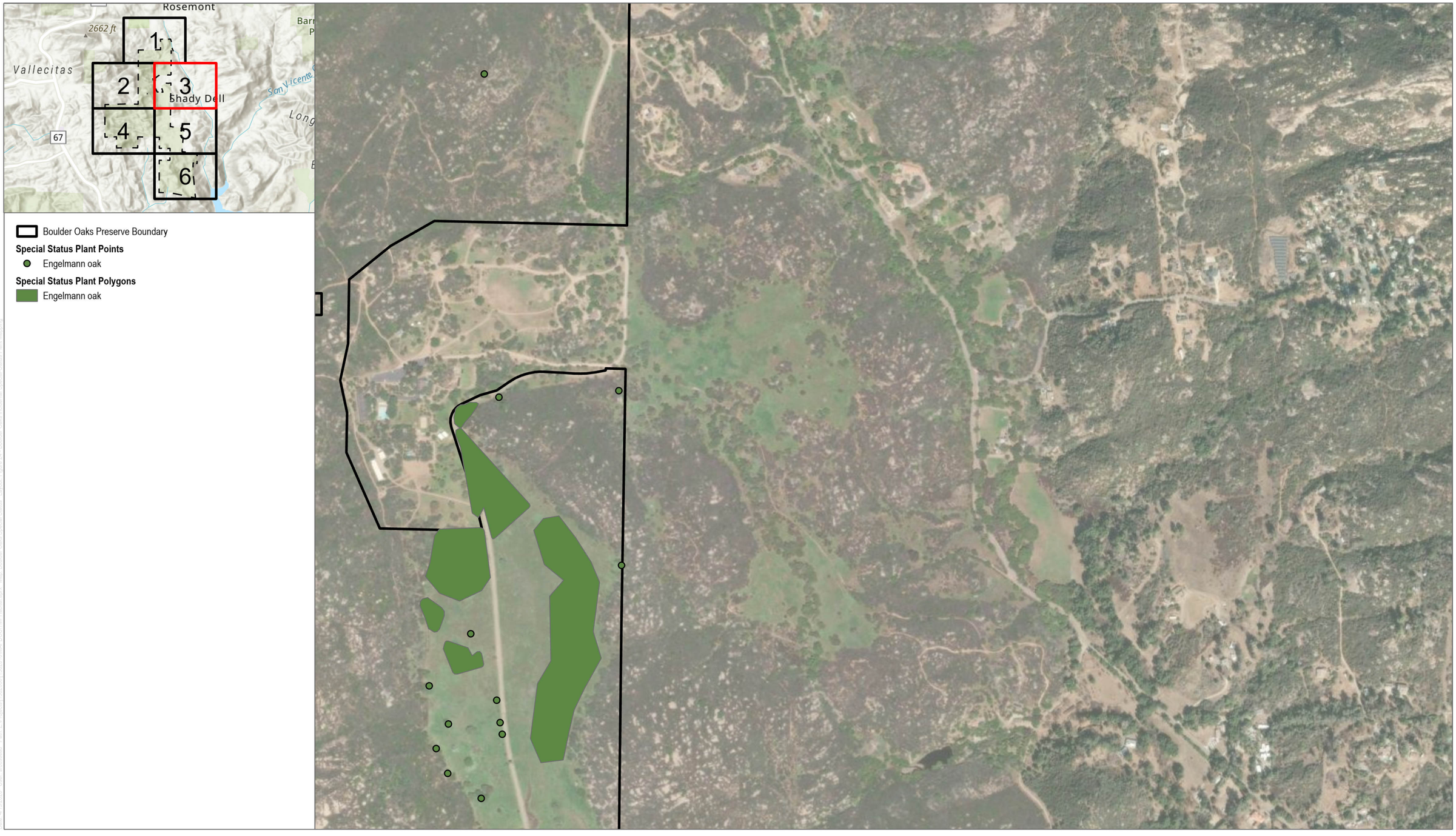
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FIGURE 24 - 2

Boulder Oaks Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

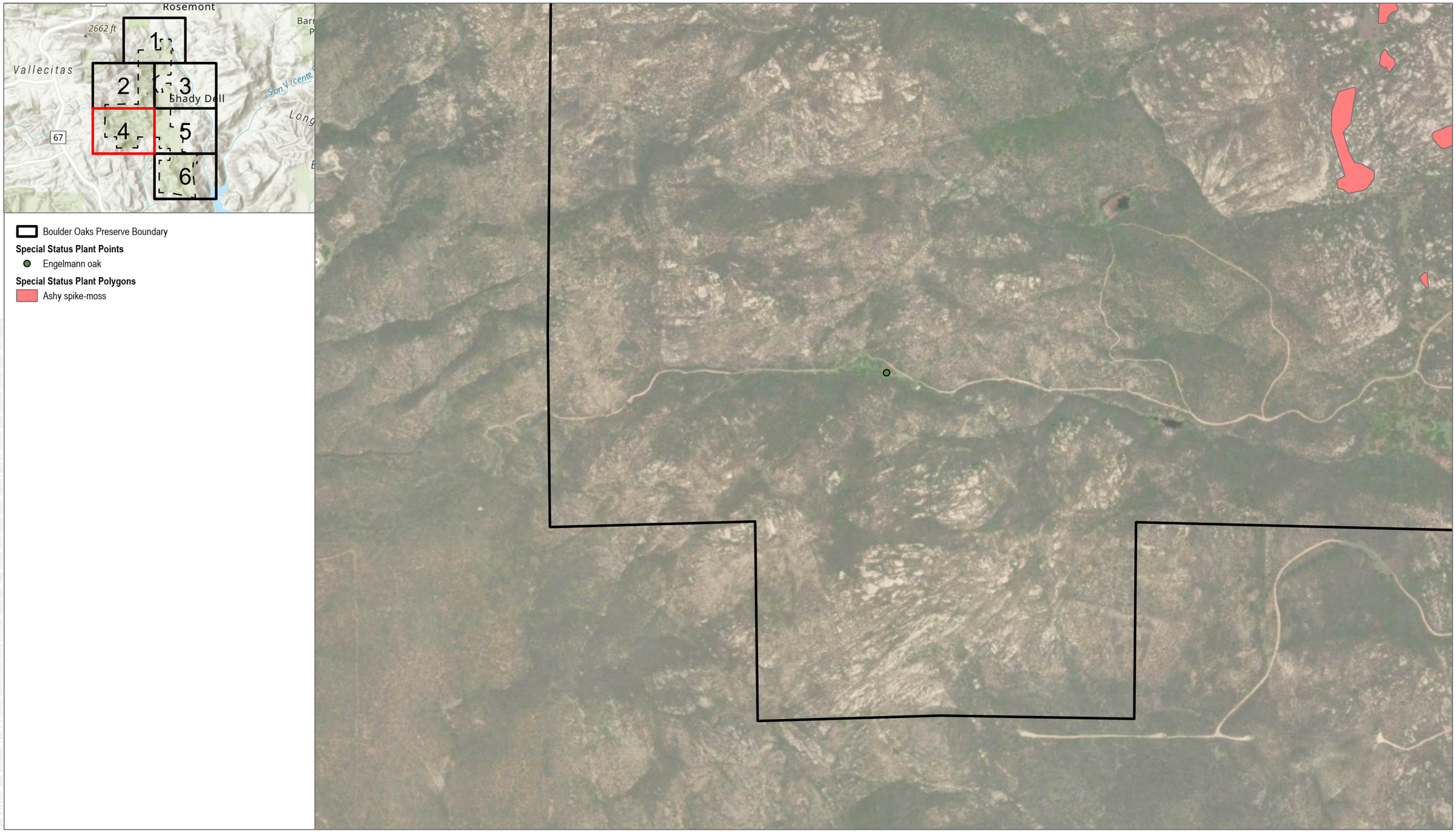
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FIGURE 24 - 3

Boulder Oaks Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

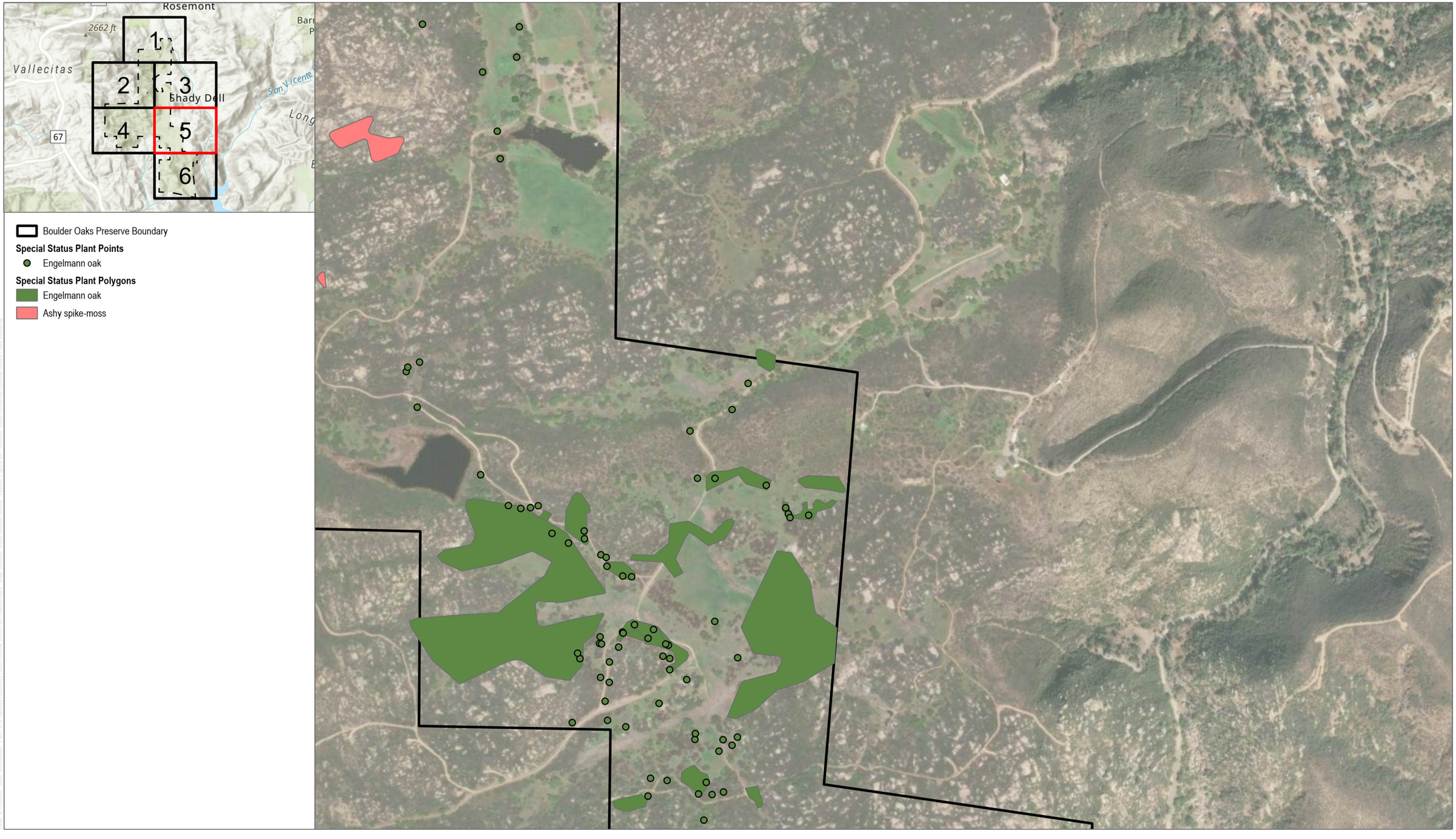
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FIGURE 24 - 4

Boulder Oaks Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

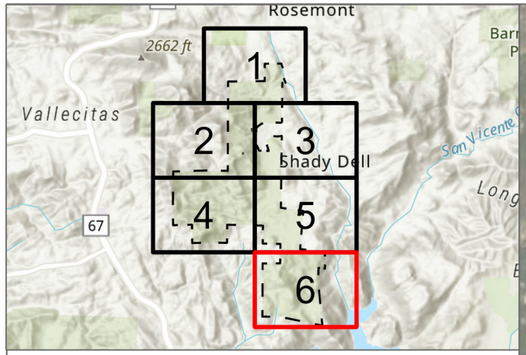
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FIGURE 24 - 5

Boulder Oaks Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



Boulder Oaks Preserve Boundary

Special Status Plant Points

- Lakeside ceanothus
- Engelmann oak
- Ashy spike-moss

SOURCE: ESRI Aerial Imagery 2025

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FIGURE 24 - 6

Boulder Oaks Incidental Special-Status Plant Mapping

TMP Habitat Condition Report

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SOURCE: ESRI Aerial Imagery 2025

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FIGURE 25 - 1

Boulder Oaks Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

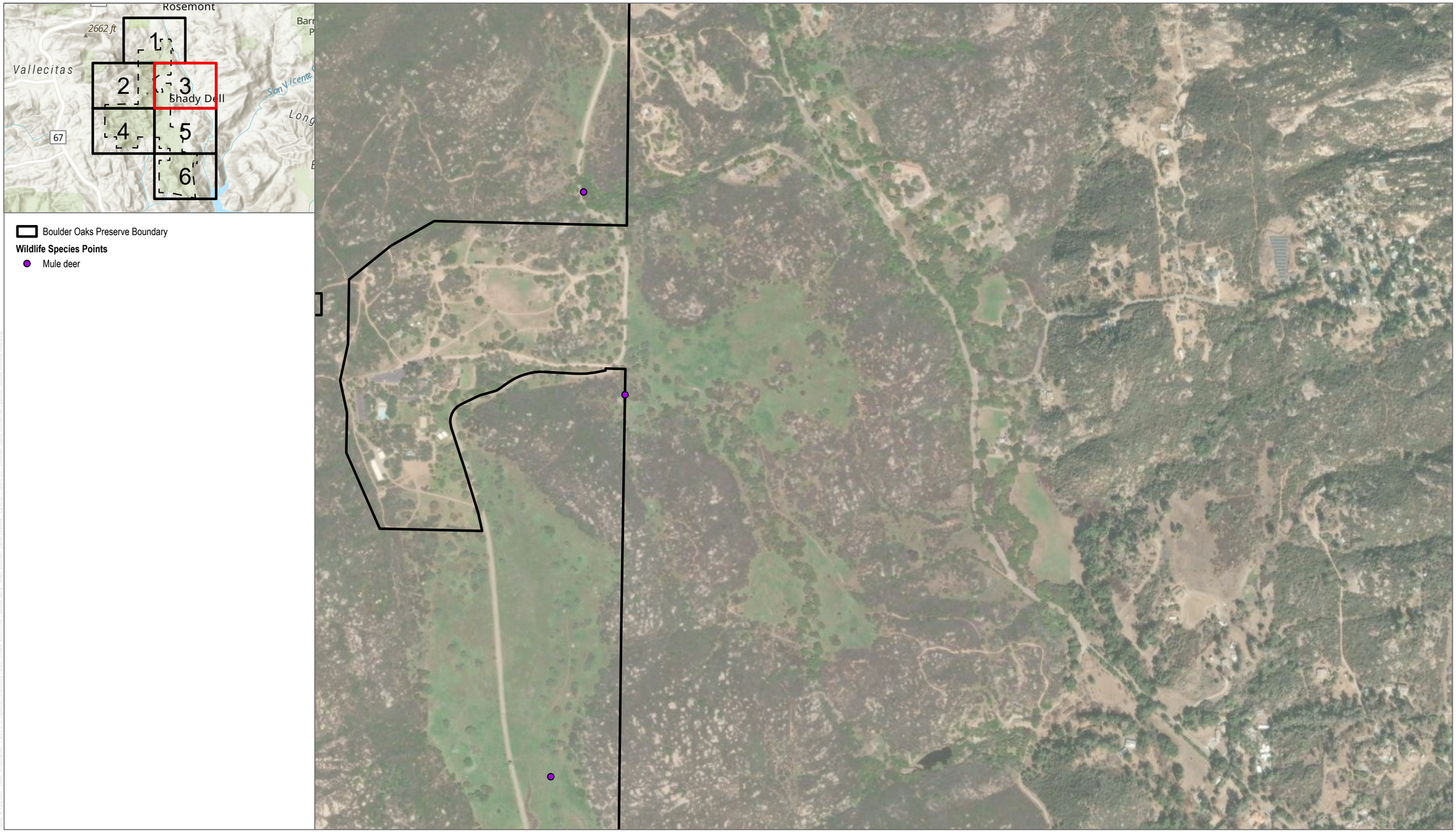
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FIGURE 25 - 2

Boulder Oaks Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

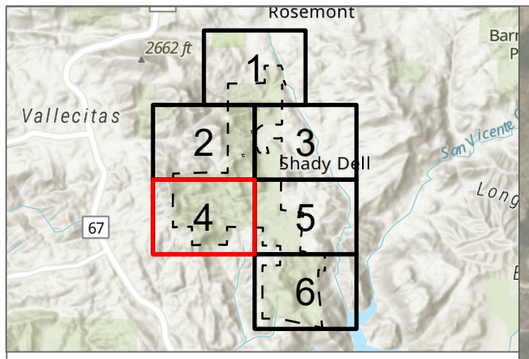
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FIGURE 25 - 3

Boulder Oaks Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



Boulder Oaks Preserve Boundary

SOURCE: ESRI Aerial Imagery 2025

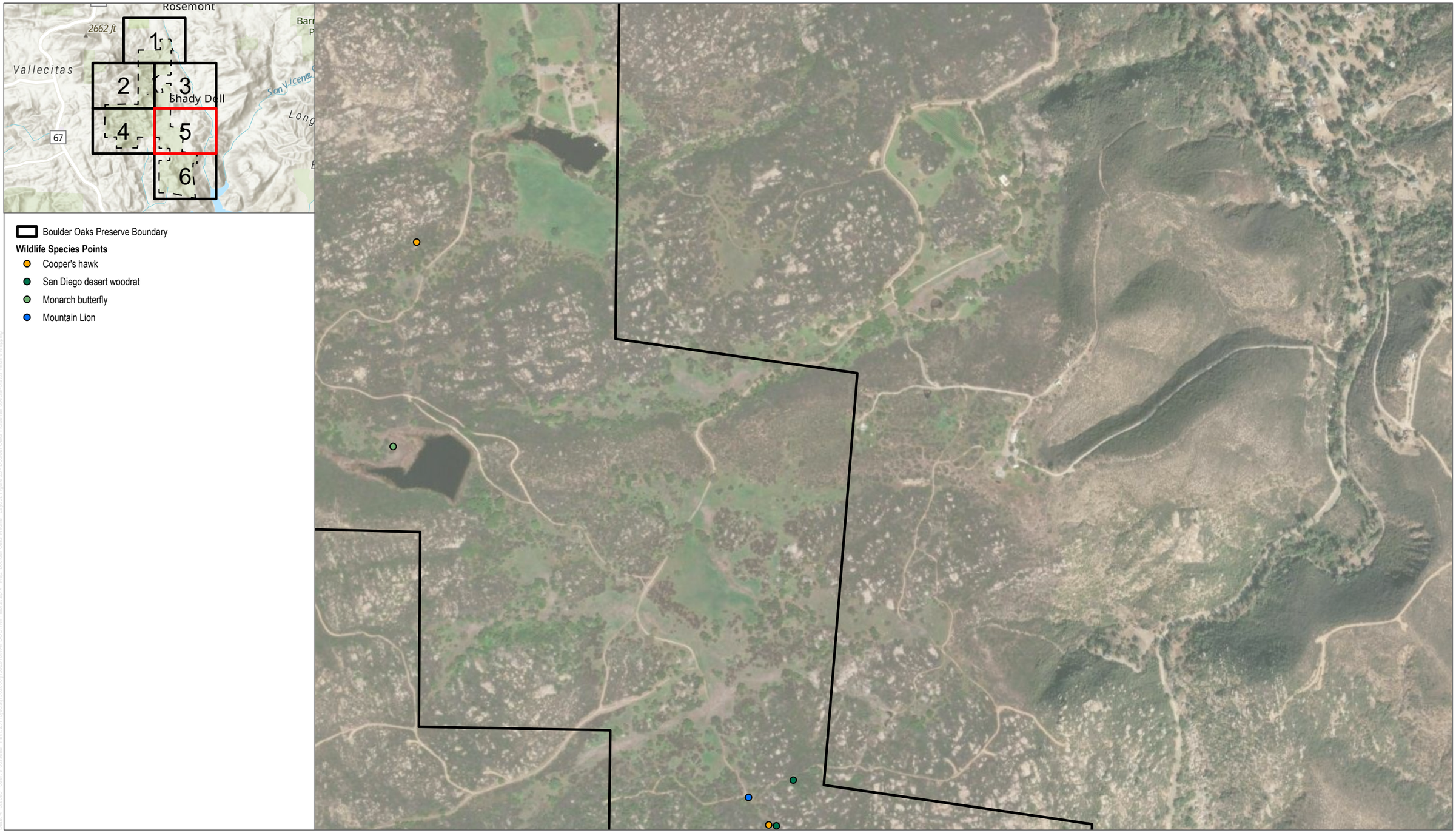
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FIGURE 25 - 4

Boulder Oaks Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

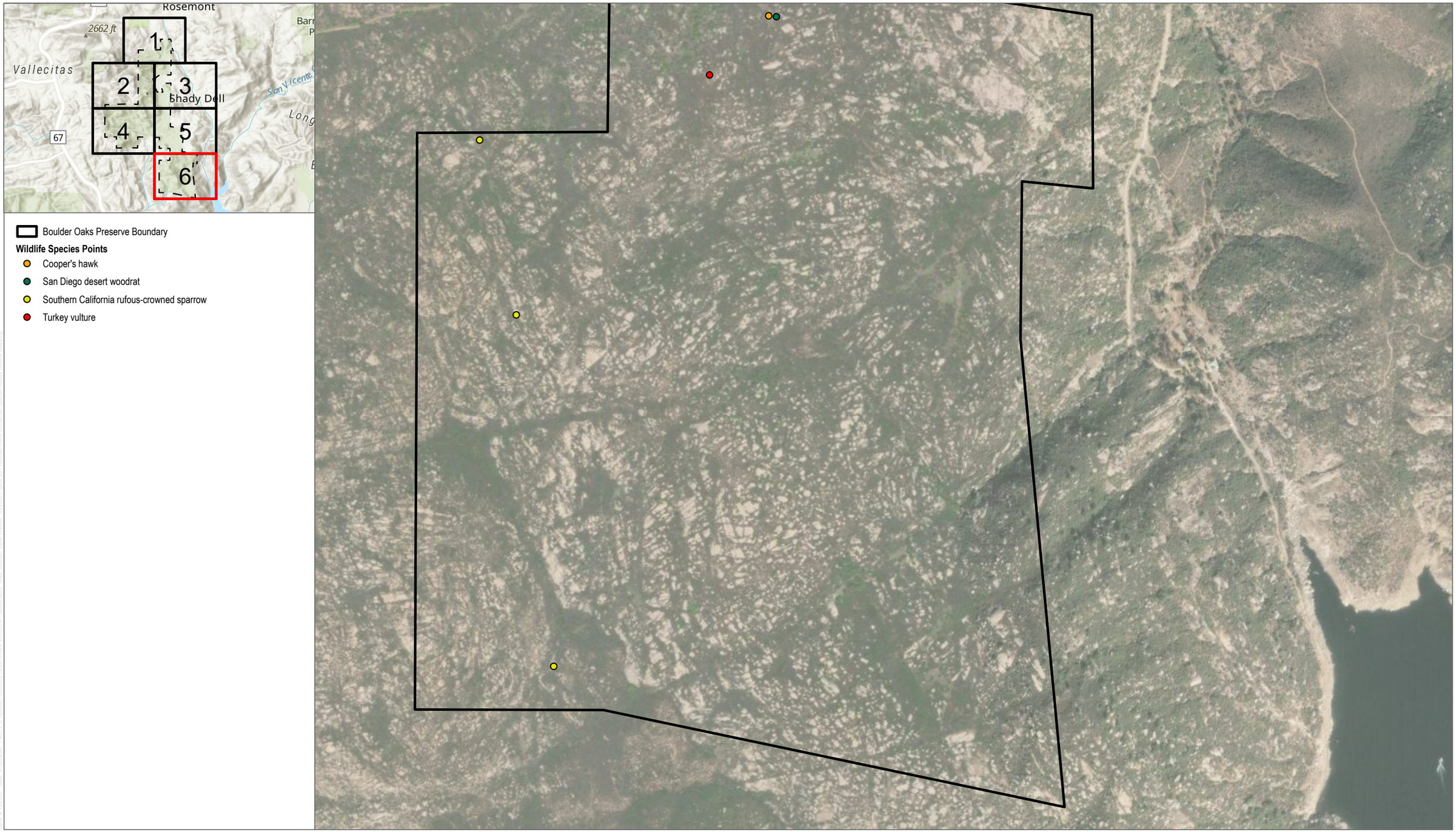
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FIGURE 25 - 5

Boulder Oaks Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 25 - 6

Boulder Oaks Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report

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7.5 Threats Assessment

During vegetation mapping and habitat surveys, Dudek biologists conducted a threats assessment which noted and analyzed specific threats to native habitat within the preserve and ranked them according to the disturbance categories outlined in the *MSP Roadmap 2025 Rare Plant IMG Monitoring Protocol for Occurrences on Conserved Lands in Western San Diego County* (SDMMP 2025), in addition to previously identified disturbances/stressors in Appendix A, the Habitat Condition Assessment Memorandum for the 2021 TMP Resource-Specific Monitoring Annual Report (ESA 2022). Disturbances/stressors at Boulder Oaks County Preserve are noted in Table 25.

Table 25. Threats Overview: Boulder Oaks County Preserve

Disturbances/ Stressors	Severity (Extent)	Discussion
Invasive plants (Non-native forbs and grasses)	5	Extensive areas of the preserve – particularly near the ranger station and in openings associated with topographically flatter non-native grassland and woodland –were found to be heavily colonized by non-native plant species, including non-native grasses, various invasive thistles, *Ehrhrarta calycina*, stinkwort, invasive/non-native woody trees, and shortpod mustard, among others. *Ehrhrarta calycina* was particularly prevalent along the margins of dirt access roads and trails and appeared even in backcountry areas far away from trails or roads. Vehicles traveling along access roads may be spreading invasive plant seeds on their tires.
Altered fire regime or risk of catastrophic fire	6	Boulder Oaks Preserve experienced nearly 100% burn coverage during the 2003 Cedar Fire. Since then, the area has undergone significant community succession and ecological recovery with chaparral, coastal sage scrub, and oak woodlands now well re-established. The preserve is a mix of gently rolling terrain and steep slopes, some with slopes greater than 60%. The mountainous area of the preserve (75%) has a dense cover of chaparral, scrub and woodlands and therefore contains high quantities of fuel that could result in a catastrophic fire similar to that of the Cedar Fire. The lower elevation grassland areas of the preserve do not contain fuel loads as dense as the mountainous areas, but the high densities of annual invasive grass and forb species become very dry in late summer, which contributes to increased fire risk. Overall, fire risk is moderate to severe, but with a large burn within the past 25 years aligns with typical fire return intervals for the habitat types present.
Unauthorized human use (e.g., off-road vehicles, encampments, unauthorized trails, shooting, poaching, and/or dumping)	1	The preserve is remote and not publicly accessible. No visible signs of unauthorized human use were observed.
Erosion	3	Some moderate erosional rills observed on steep trails and dirt roads throughout the preserve, but nothing severe.
Small, isolated occurrences vulnerable to loss of genetic diversity and to	3	A well-known population of San Miguel savory (*Clinopodium chandleri*) occurs in the western portion of the preserve but was not easily observed or documented during this field mapping effort, as surveys were conducted outside the species' bloom period. Similarly, a known population of Orcutt's brodiaea (*Brodiaea*

Table 25. Threats Overview: Boulder Oaks County Preserve

Disturbances/ Stressors	Severity (Extent)	Discussion
extirpation due to environmental stochasticity or catastrophic disturbance		*orcuttii*) occurs in the eastern portion of the preserve but was not observed during surveys. These small populations may be vulnerable to extirpation from a catastrophic fire or severe invasion by non-native plant species. Continued annual monitoring through separate County-led efforts is recommended to ensure that no significant threats to the population develop.
Altered hydrology (e.g., urban runoff, flood control facilities)	1	No visible signs of altered hydrology were observed.
Herbivory (e.g., seed, vegetation)	1	No abnormal signs of herbivory were observed. Evidence of grazing was not observed.
Detrimental edge effects from adjacent urban development	1	The preserve is surrounded by conserved lands and rural properties. No visible detrimental edge effects were observed.

Notes:
Disturbance Categories within Preserve
1 – No sign of disturbance within preserve
2 – Disturbance does not occur within preserve, but is detected adjacent to preserve boundaries
3 – Disturbance occurs in >0% to <10% of preserve
4 – Disturbance occurs in 10 to <25% of preserve
5 – Disturbance occurs in 25 to <50% of preserve
6 – Disturbance occurs in 50 to <75% of preserve
7 – Disturbance occurs in ⩾ 75% of preserve

7.6 Type Conversion

In order to detect potential type conversions within the preserve, previous Holland-Oberbauer vegetation mapping from 2015 was compared to the updated 2025 mapping by general habitat type, as shown in Table 26. Note that 2015 mapping data were clipped to the preserve boundary to align with 2025 mapping protocols, which excluded buffer areas outside the preserve.

Table 26. Type Conversion Assessment Based On Holland-Oberbauer Mapping: Boulder Oaks County Preserve

Habitat Type	Acres in 2015	Acres in 2025	Difference in Acreage
Developed	4.70	5.50	+0.8
Disturbed (incl. Agriculture)	17.17	21.64	+4.47
Herbaceous	127.41	87.67	-39.74
Scrub	2.26	30.71	+28.45
Chaparral	1744.64	1698.52	-46.12
Woodland	96.67	143.53	+46.86
Riparian (incl. Marsh)	18.60	23.31	+4.71

Table 26. Type Conversion Assessment Based On Holland-Oberbauer Mapping: Boulder Oaks County Preserve

Habitat Type	Acres in 2015	Acres in 2025	Difference in Acreage
Unvegetated (water)	3.49	3.99	+0.5

Changes in vegetation mapping between 2015 and 2025 were most pronounced within the woodland, chaparral, herbaceous, and scrub habitat types. The increase in woodland, along with the corresponding decrease in mapped chaparral, is likely the result of more precise delineation of small oak woodland patches embedded within large expanses of chaparral, many of which were not mapped in 2015 but were captured during the 2025 effort. Similarly, the reduction in herbaceous habitat and increase in scrub habitat may reflect continued natural expansion of scrub vegetation into former grassland areas. Expanding scrub and woodland cover is also consistent with ongoing post-fire recovery following the Cedar Fire, which burned the entire preserve.

The minor increase in disturbed habitat is likely due to refined mapping of dirt roads and improved delineation of ornamental or maintained landscaping around the ranger station in the central portion of the preserve. The slight increase in riparian habitat acreage likely results from refined mapping of a pond and associated riparian area in the western portion of the preserve that was not previously mapped in 2015, as well as improved delineation of riparian vegetation surrounding the pond adjacent to the ranger station.

Adaptive Management Recommendations

Invasive Non-Native Plant Species Management

The following species require near-term removal or treatment: Perennial veldtgrass (highest priority due to severe spread into scrub and chaparral), bull thistle, stinkwort, Harding grass, Italian plumeless thistle, blessed milkthistle, smilograss, and fountain grass. Tamarisk near isolated pond areas should be treated via drill-and-kill and left as standing snags for practicality and cost. Widespread annual grasses should be monitored. Follow-up monitoring is crucial; veldtgrass in particular is likely under-mapped in inaccessible terrain.

Habitat Enhancement / Restoration Opportunities

- **Perennial veldtgrass control program.** Initiation of a program to treat and remove veldtgrass. Treatment/removal of veldtgrass should be focused on roadsides and accessible openings in chaparral adjacent to roads and trails. Reseeding with native grasses and chaparral shrub species may help restore these areas and reduce future non-native grass cover through shading and competition.

- **Pond and woodland enhancement.** Potential restoration via enhancement/invasive non-native plant removal around ponds and woodlands where invasive trees (olive, eucalyptus, palms) are present.

Encroachment

- **Access roads and invasive non-native plants.** While general public encroachment was not observed, vehicles may spread invasive non-native plant species along roads and corridors. Increased vehicle hygiene protocols or targeted roadside invasive non-native plant control is recommended.

Monitoring

- **Invasive non-native plants.** Annual invasive plant monitoring is recommended, if feasible, with a focus on roadsides.

- **Fire risk.** Continue to monitor fire risk and fuel conditions given extensive vegetation recovery since the 2003 Cedar Fire.

8 Ramona Grasslands County Preserve

8.1 Preserve Description

Ramona Grasslands County Preserve is an approximately 3,491-acre open space preserve comprising of 56 near contiguous parcels. The preserve is located west of Ramona, an unincorporated community of San Diego County. It is in west-central San Diego County in the western portion of Santa Maria Valley within the San Dieguito Watershed.

8.2 Vegetation Mapping

A total of 21 Holland-Oberbauer vegetation communities and 41 VCM vegetation communities were mapped, along with four land cover types. These communities and land cover types are shown in Table 27 and Figure Set 26 (Figures 26-1 through 26-10) and 27 (Figures 27-1 through 27-10). Representative photos of the preserve and its vegetation communities are included in the photo log in Attachment A.

Table 27. Vegetation Communities Crosswalk: Ramona Grasslands County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Scrub			
32000 Coastal Scrub	4.29 Menzie's Goldenbush Alliance	4.29.1 Menzie's Goldenbush Provisional Association	0.53
	4.29 Menzie's Goldenbush Alliance	4.29.2 Menzie's Goldenbush/ Saltgrass Provisional Association	6.79
32500 Diegan Coastal Sage Scrub	4.6 California Sagebrush Alliance	4.6.1 California Sagebrush Association	1.34
	4.7 California Sagebrush-California Buckwheat Alliance	4.7.1 California Sagebrush-California Buckwheat-Laurel Sumac Association	652.97
	4.8 California Sagebrush-Black Sage Alliance	4.8.1 California Sagebrush-Black Sage Association	1.68
	4.23 California Buckwheat Alliance	4.23.1 California Buckwheat Association	40.49
	4.24 California Buckwheat-White Sage Alliance	4.24.1 California Buckwheat-White Sage Association	8.09
	4.43 White Sage Alliance	4.43.2 White Sage-California Sagebrush Association	2.03
Chaparral			
37120 Southern Mixed Chaparral	4.2 Chamise-Mission Manzanita Alliance	4.2. Chamise-Mission Manzanita Association	29.61

Table 27. Vegetation Communities Crosswalk: Ramona Grasslands County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
		4.2.3 Chamise-Mission Manzanita-Woolly Leaf Ceanothus Association	6.16
		4.2.6 Chamise-Mission Manzanita- Scrub Oak Association	113.32
	4.16 Chaparral Whitethorn Alliance	4.16.1 Chaparral Whitethorn Alliance	0.87
37200 Chamise Chaparral	4.1 Chamise Alliance	4.1.5 Chamise-Deerweed Association	2.69
37820 Hoaryleaf Ceanothus Chaparral	4.1 Chamise Alliance	4.1.3 Chamise-Hoaryleaf Ceanothus Association	111.90
37900 Scrub Oak Chaparral	4.38 Scrub Oak -Chamise Alliance	4.38.1 Scrub Oak-Chamise Association	401.03
	4.37 Scrub Oak Alliance	4.37.3 Scrub Oak - Chaparral Whitethorn Association	4.16
37G00 Coastal Sage-Chaparral Transition	4.1 Chamise Alliance	4.1.2 Chamise-California Buckwheat - California Sagebrush - Black Sage Association	533.11
Herbaceous			
42100 Native Grassland	5.19 Creeping Wild rye Alliance	5.19.1 Creeping Wild rye Association	0.84
	5.22 Deer Grass Alliance	5.22.1 Deer Grass Association	0.12
	5.24 Purple Needlegrass Alliance	5.24.1 Purple Needlegrass Association	3.58
42120 Valley Sacaton Grassland	5.14 Saltgrass Alliance	5.14.1 Saltgrass -Annual Grasses Association	132.22
42200 Non-Native Grassland	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	5.21 Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	1156.63
42300 Wildflower Field	5.11 California Sand-Aster Provisional Alliance	5.11.1 California Sand-Aster Provisional Association	38.75
	5.13 Clustered Tarweed Alliance	5.13.1 Clustered Tarweed Association	0.52

Table 27. Vegetation Communities Crosswalk: Ramona Grasslands County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
Marsh			
52310 Cismontane Alkali Marsh	5.2 Yerba Mansa Alliance	5.2.1 Yerba Mansa-Arctic Rush Association	11.96
	5.12 Alkali Weed-Saltgrass Alliance	5.12.1 Alkali Weed Provisional Association	0.31
52410 Coastal and Valley Freshwater Marsh	5.31 California Bulrush Alliance	5.31.1 California Bulrush Association	0.78
	5.35 Cattail Alliance	5.35.1 Southern Cattail Association	0.08
	5.35 Cattail Alliance	5.35.2 Broad leaved Cattail Association	0.35
Riparian			
61300 Southern Riparian Forest	3.4 Western Sycamore Alliance	3.4.3 Western Sycamore-Coast Live Oak Association	2.72
61320 Southern Arroyo Willow Riparian Forest	3.10 Arroyo Willow Alliance	3.10.1 Arroyo Willow Association	6.79
61330 Southern Cottonwood-Willow Riparian Forest	3.5 Fremont's Cottonwood Alliance	3.5.2 Fremont's Cottonwood-Goodding's Black Willow/Mulefat Association	6.22
62500 Southern Riparian Woodland	3.4 Western Sycamore Alliance	3.4.2 Western Sycamore-Fremont Cottonwood - Arroyo Willow Association	11.80
	3.8 Goodding's Black Willow Alliance	3.8.1 Goodding's Black Willow Association	16.44
	3.9 Red Willow Alliance	3.9.1 Red Willow Association	2.52
63310 Mule Fat Scrub	4.11 Mulefat Alliance	4.11.1 Mulefat Association	3.62
Woodland			
71160 Coast Live Oak Woodland	3.6 Coast Live Oak Alliance	3.6.1 Coast Live Oak - California Sagebrush Association	10.87
		3.6.2 Coast Live Oak/ Scrub Oak Association	8.62
		3.6.4 Coast Live Oak - Poison Oak - Grass Association	98.05
71180 Engelmann Oak Woodland	3.7 Engelmann Oak Alliance	3.7.2 Engelmann Oak-Coast Live Oak - Poison Oak - Grass Association	7.05

Table 27. Vegetation Communities Crosswalk: Ramona Grasslands County Preserve

Oberbauer-Modified Holland Code	San Diego Vegetation Classification Manual		Acreage
	Alliance Level	Association Level	
79100 Eucalyptus Woodland	3.2 Eucalyptus (Blue Gum, River Red Gum) Semi-Natural Stands	3.2 Eucalyptus (Blue Gum, River Red Gum) Semi-Natural Stands	22.48
Unvegetated (Water)			
64100 Open Water	N/A	Open Water[a]	0.79
Disturbed/Developed[a]			
11300 Disturbed Habitat	N/A	Disturbed Habitat	26.28
12000 Urban/Developed	N/A	Urban/Developed	2.14
18000 General Agriculture	N/A	General Agriculture	1.56
		Total[b]	**3490.84**

Notes:

[a] The San Diego Vegetation Classification Manual only classifies vegetated areas. The open water and disturbed land cover types were described and displayed under the association level to provide additional detail in the mapping. This allows for changes in vegetation (e.g., unvegetated to vegetated) to be tracked over time.

[b] Total may not match sum of individual acreages listed due to rounding.



SOURCE: ESRI Aerial Imagery 2025

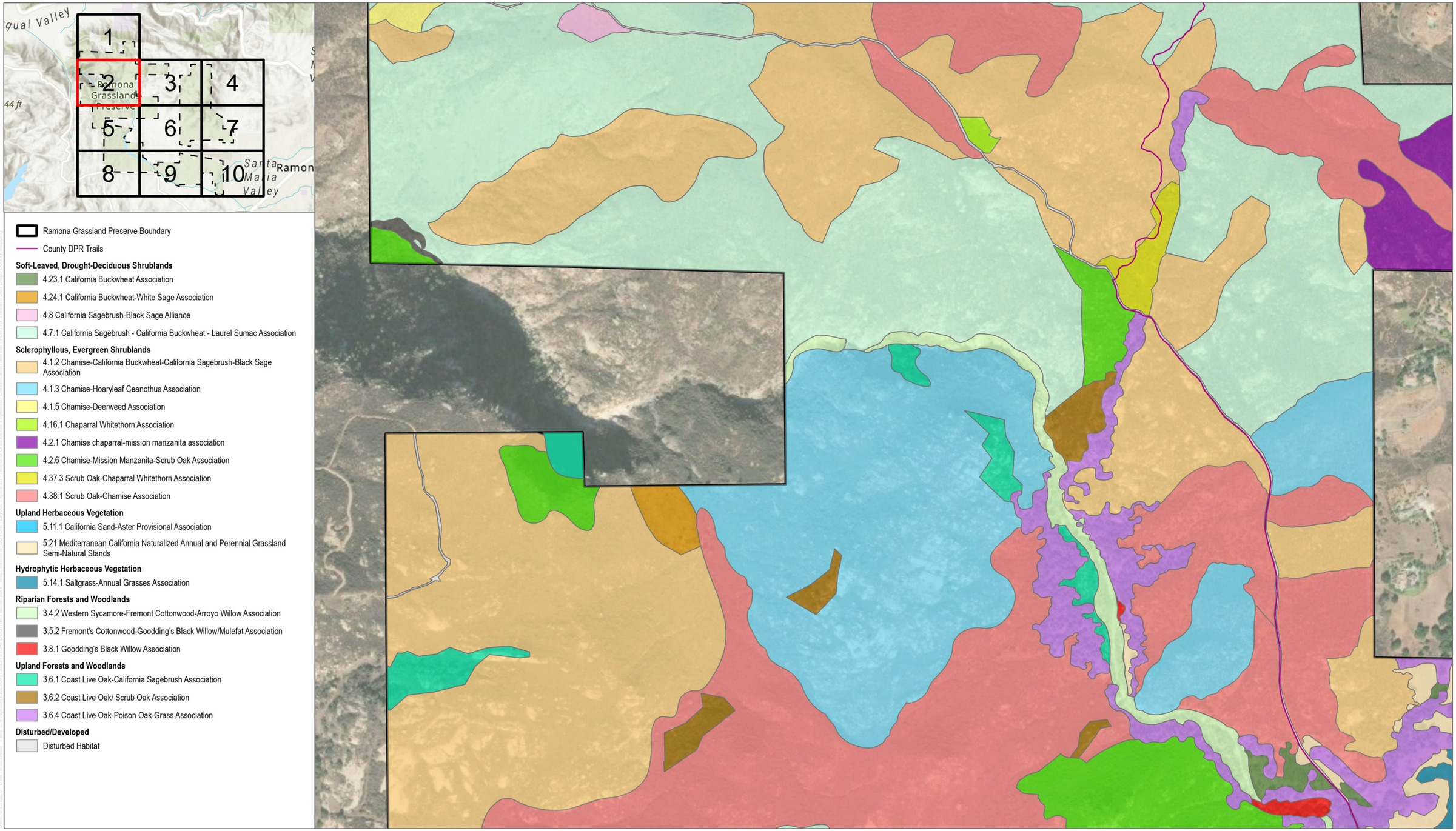
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FIGURE 26 - 1

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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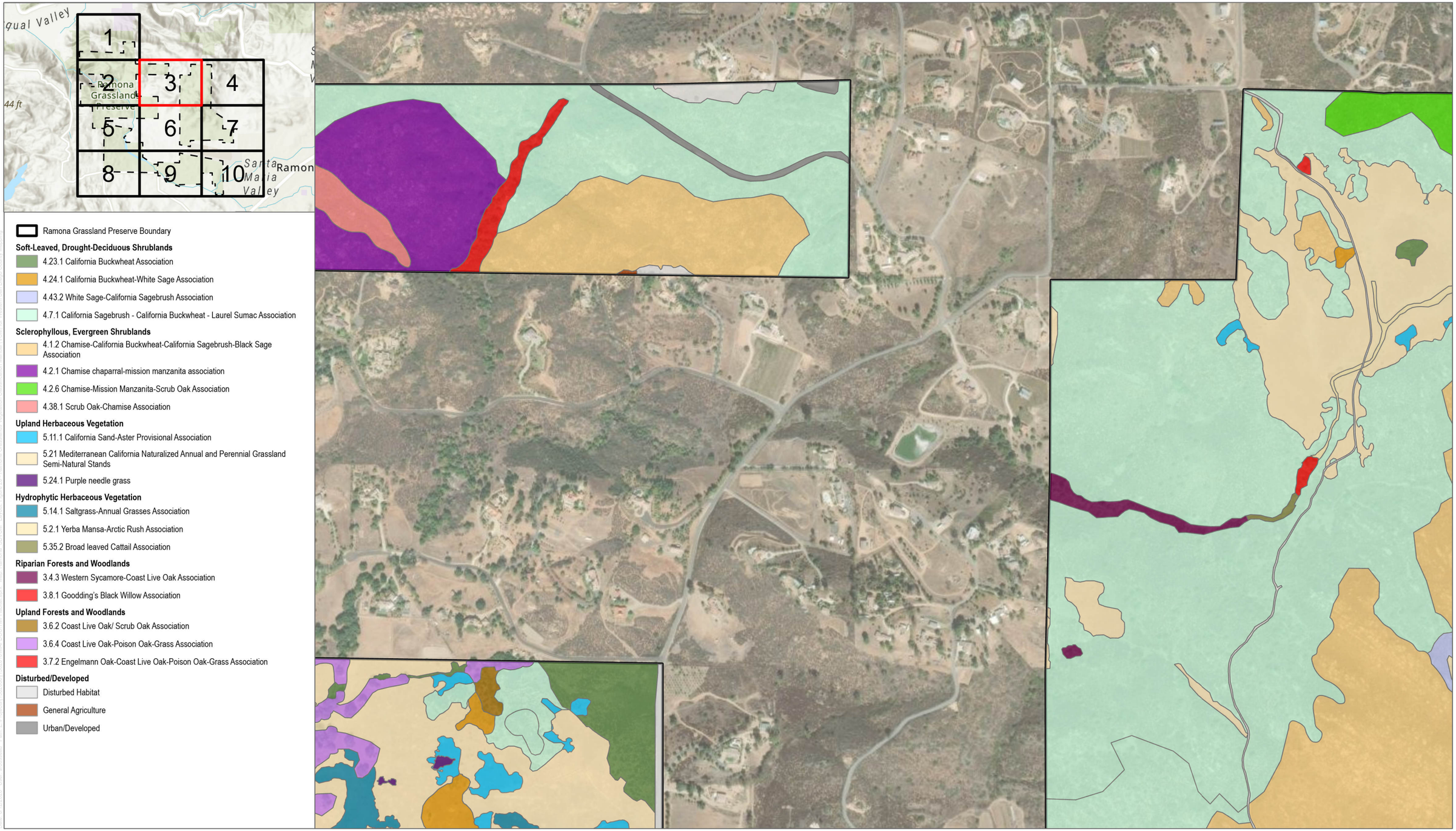
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FIGURE 26 - 2

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

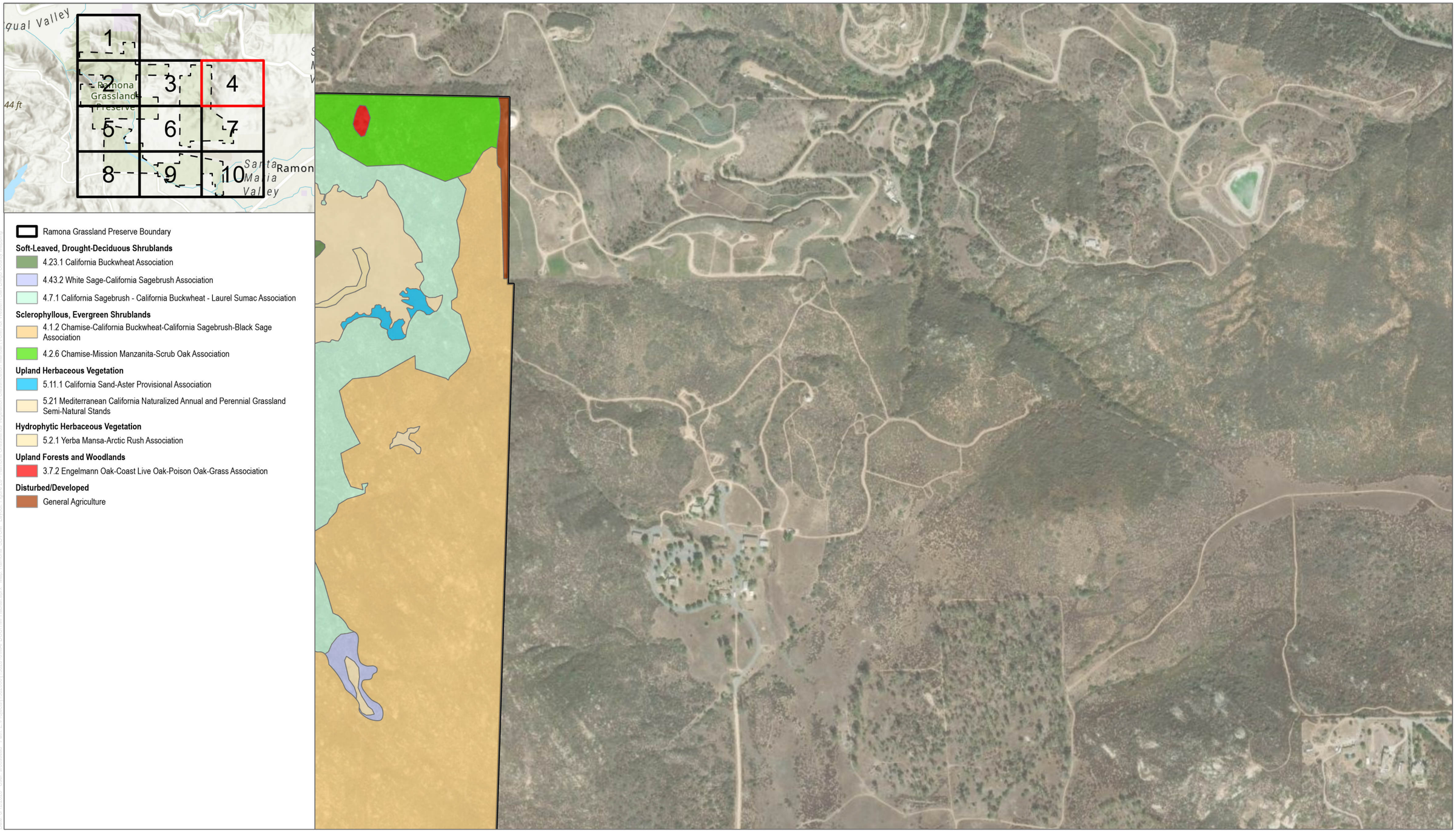
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FIGURE 26 - 3

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



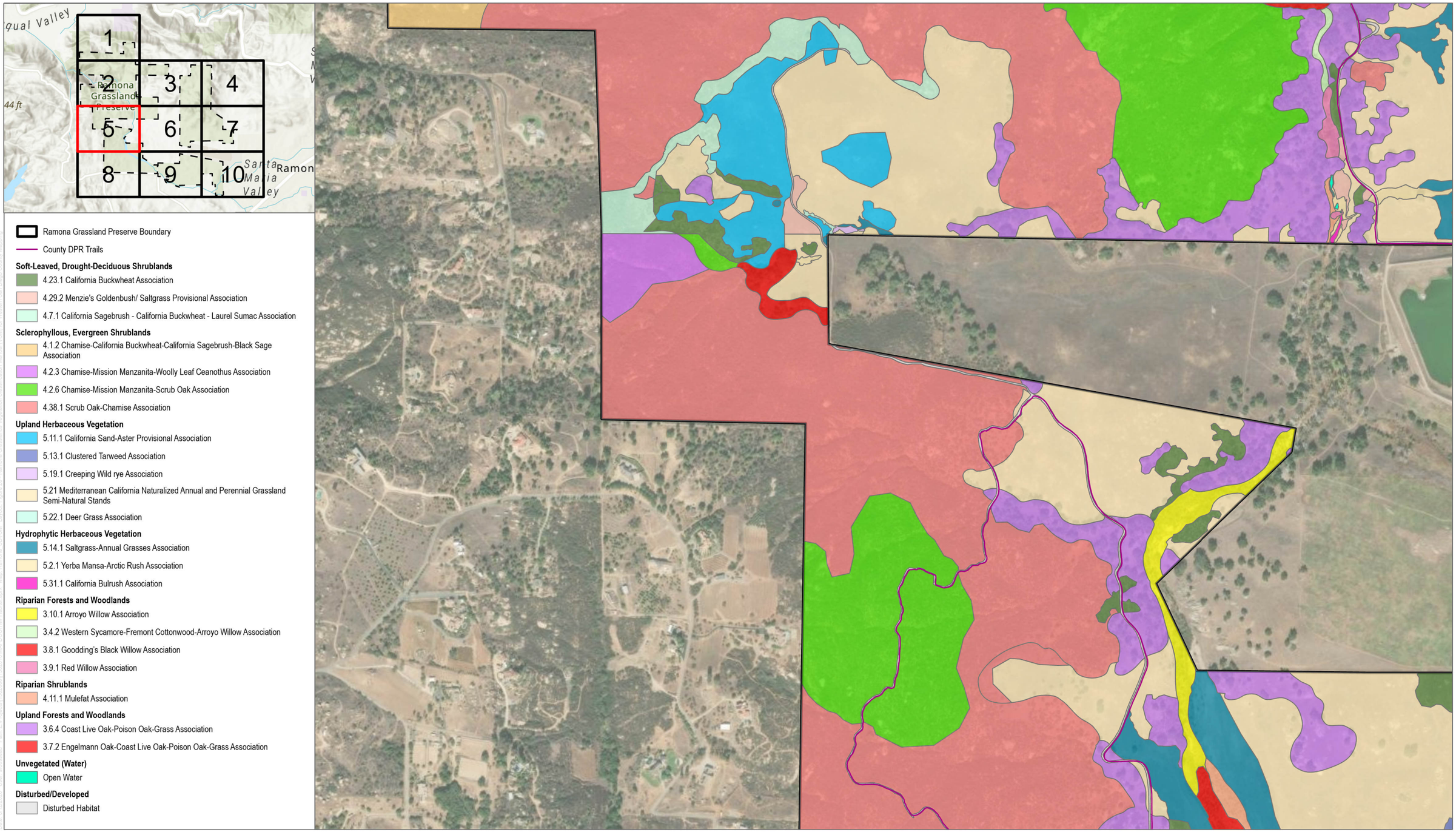
SOURCE: ESRI Aerial Imagery 2025

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FIGURE 26 - 4

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping



SOURCE: ESRI Aerial Imagery 2025

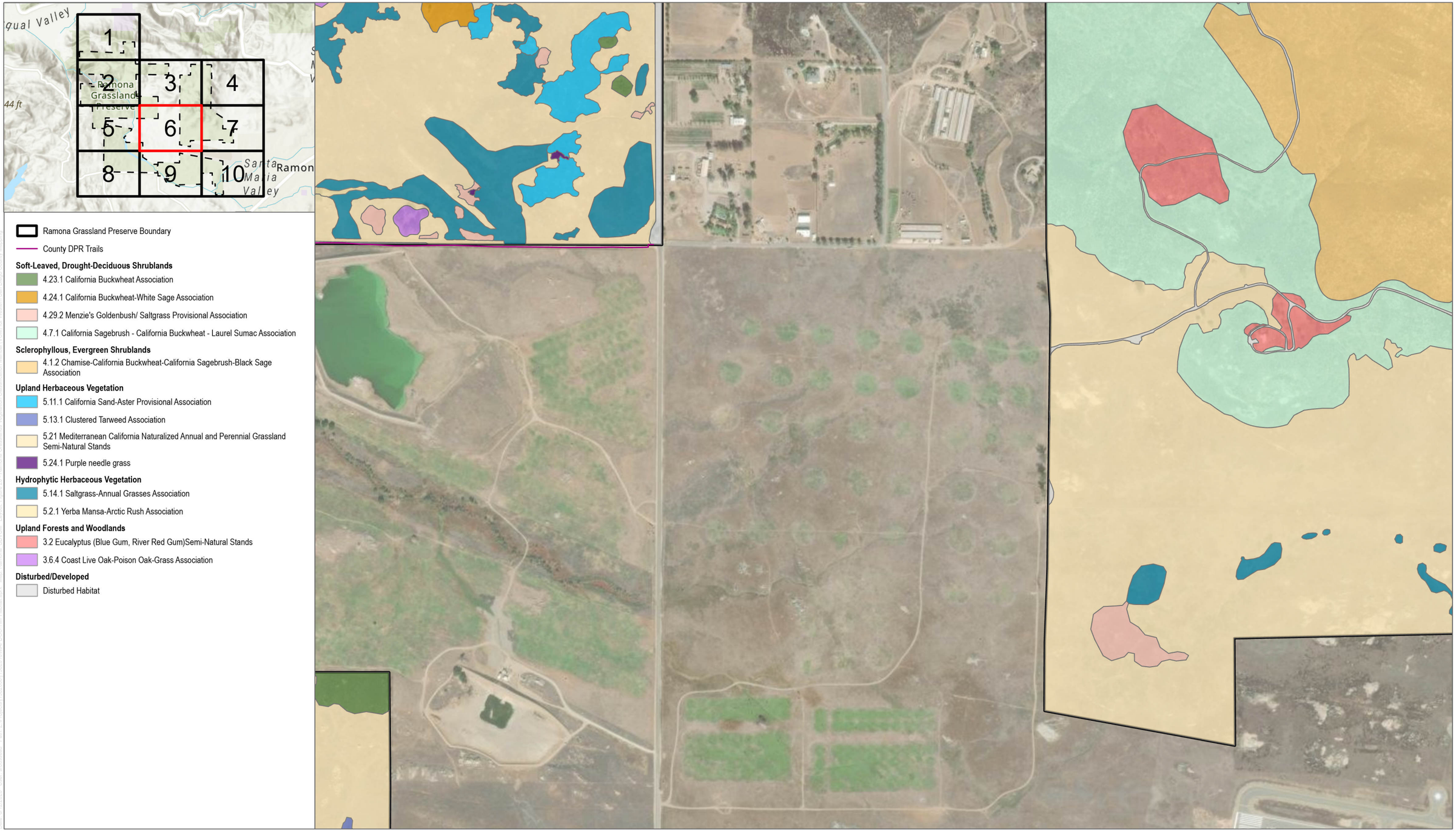
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FIGURE 26 - 5

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

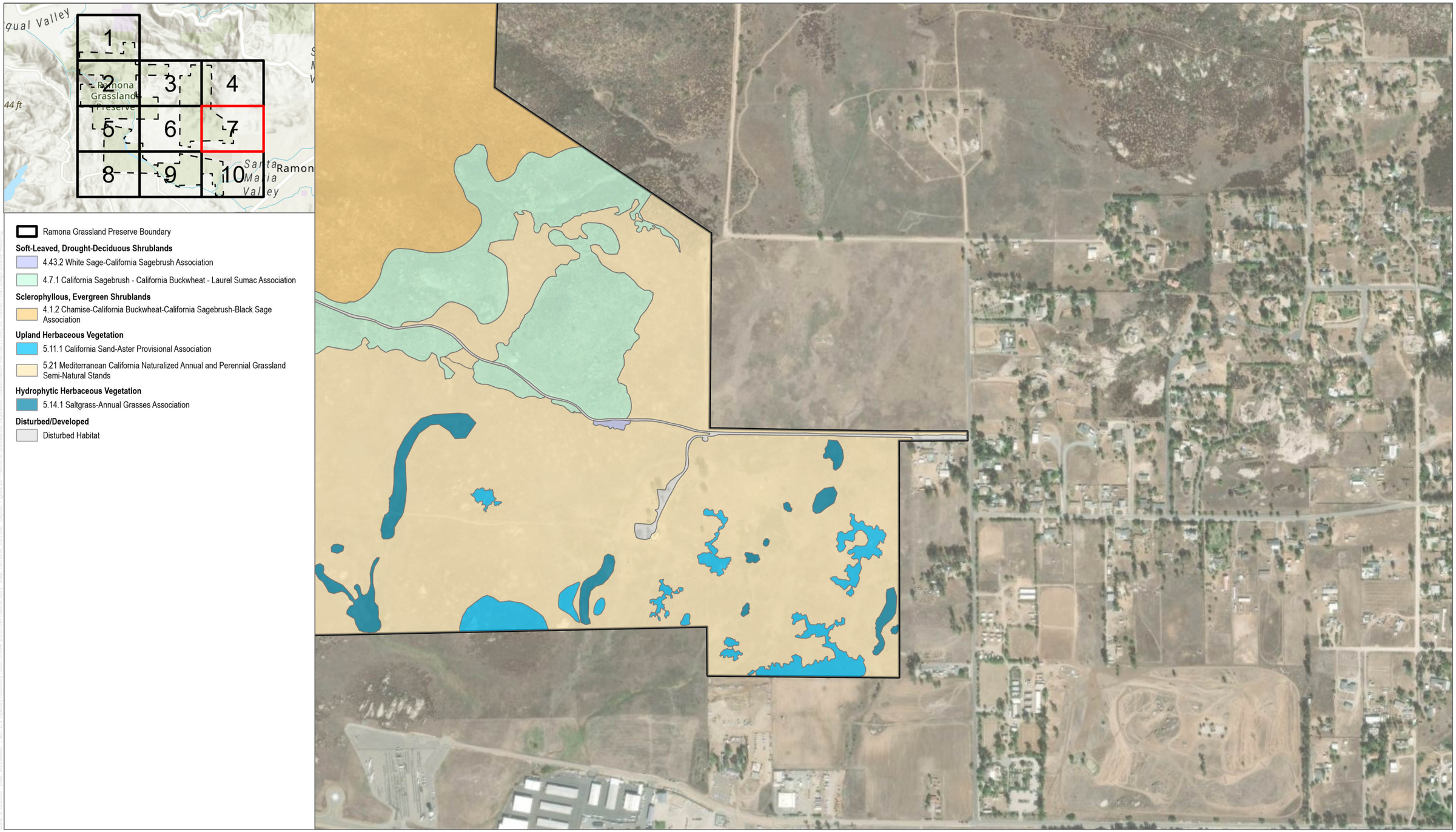
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FIGURE 26 - 6

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

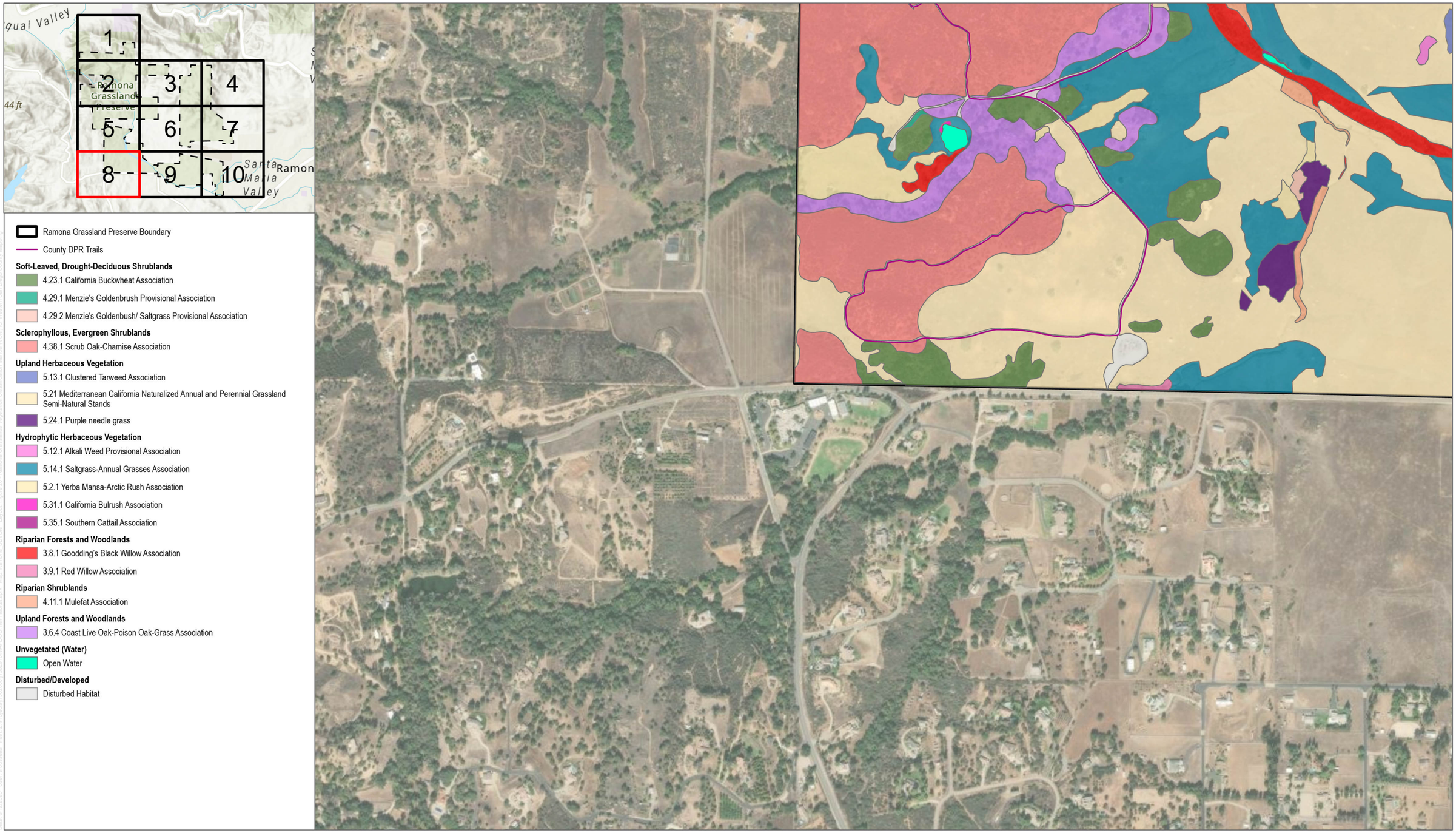
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FIGURE 26 - 7

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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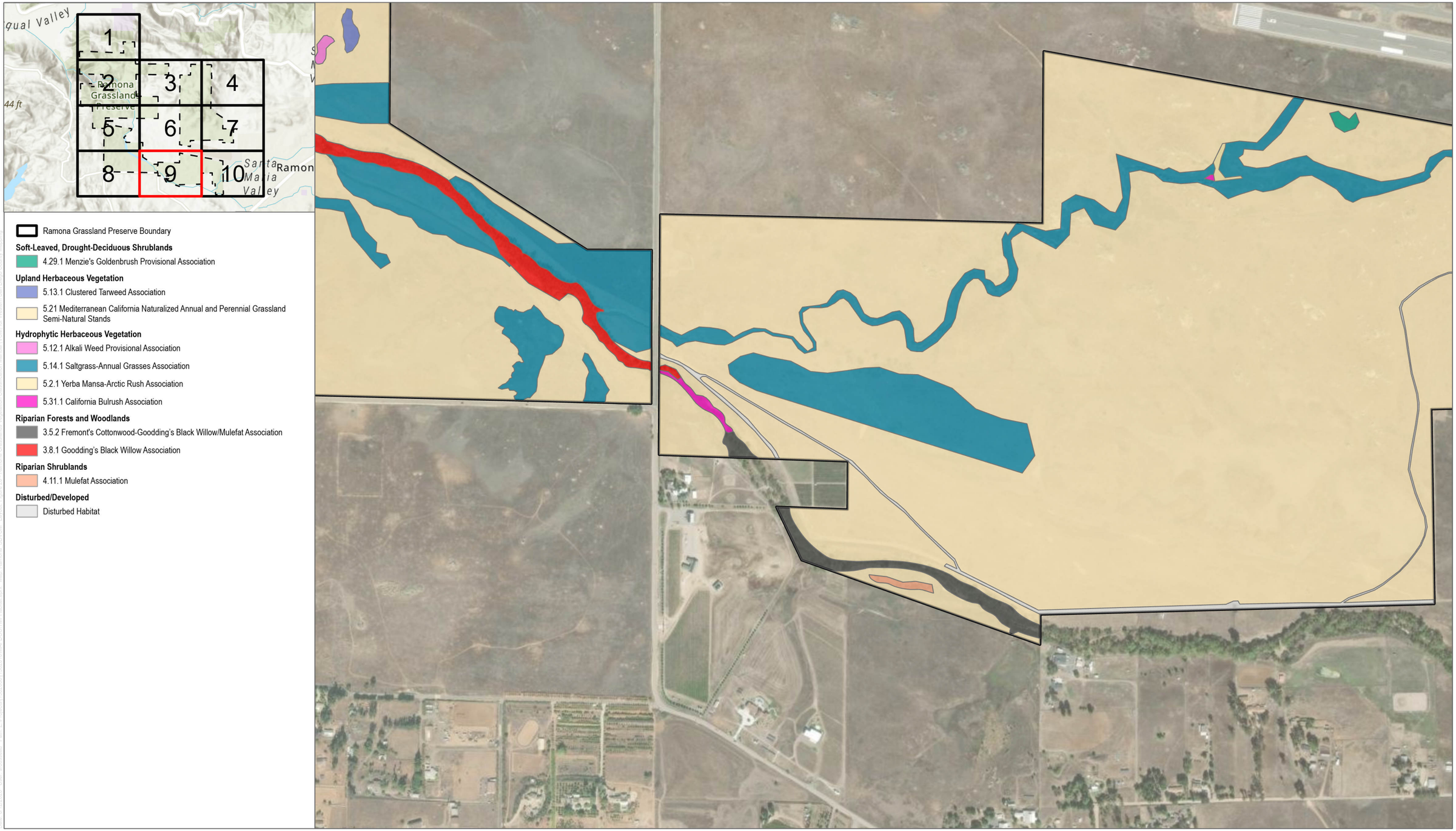
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FIGURE 26 - 8

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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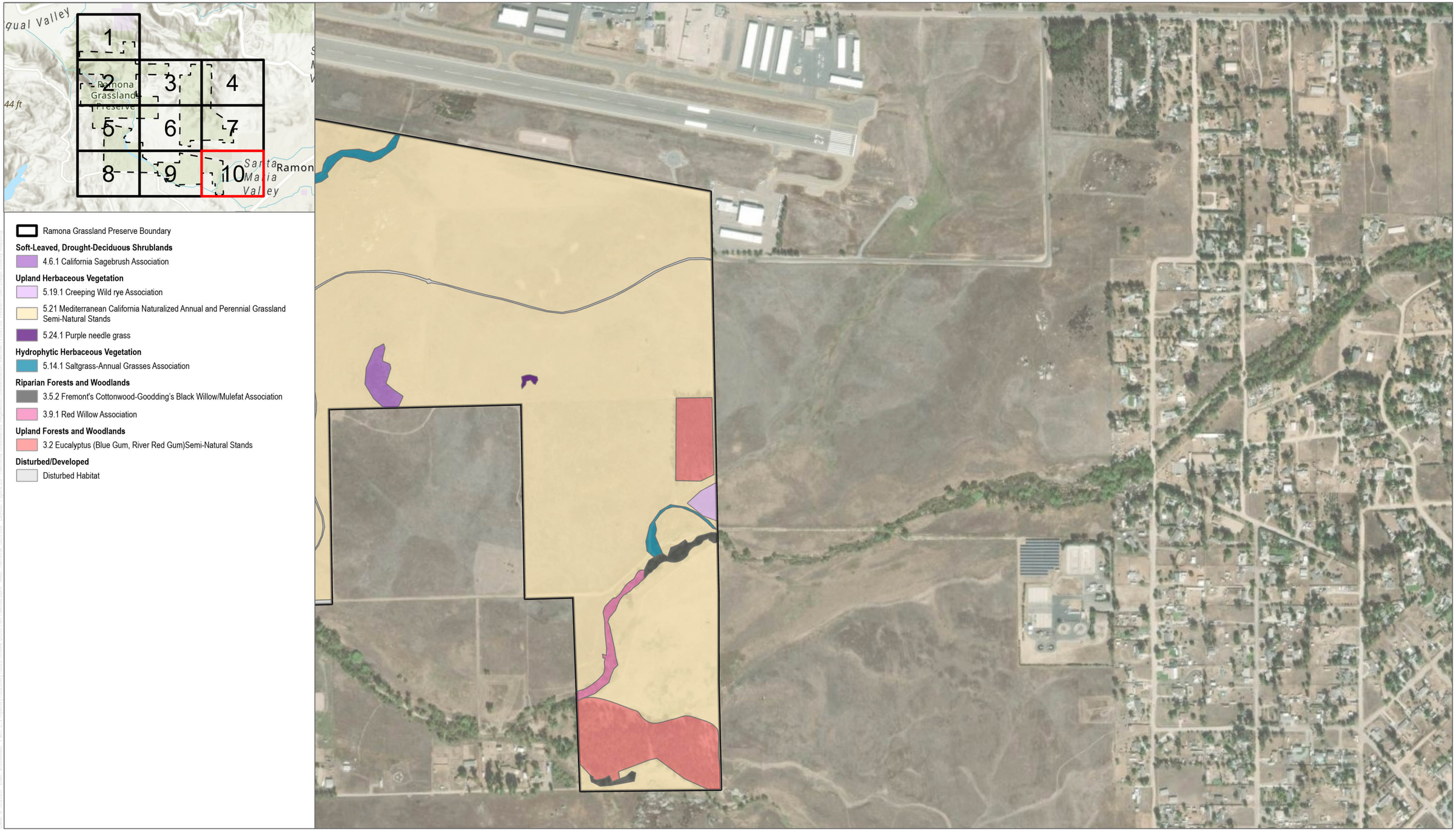
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FIGURE 26 - 9

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 26 - 10

Ramona Grasslands Vegetation Classification Manual (VCM) for Western San Diego County Mapping

TMP Habitat Condition Report

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SOURCE: ESRI Aerial Imagery 2025

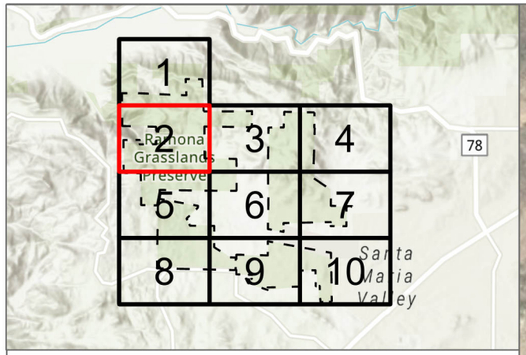
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FIGURE 27 - 1

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



Ramona Grassland Preserve Boundary

County DPR Trails

Scrub

32500 Diegan Coastal Sage Scrub

Chaparral

37120 Southern Mixed Chaparral

37200 Chamise Chaparral

37820 Hoaryleaf Ceanothus Chaparral

37900 Scrub Oak Chaparral

37G00 Coastal Sage-Chaparral Transition

Herbaceous

42120 Valley Sacaton Grassland

42200 Non-Native Grassland

42300 Wildflower Field

Riparian

61330 Southern Cottonwood-Willow Riparian Forest

62500 Southern Riparian Woodland

Woodland

71160 Coast Live Oak Woodland

Disturbed/Developed

11300 Disturbed Habitat

SOURCE: ESRI Aerial Imagery 2025

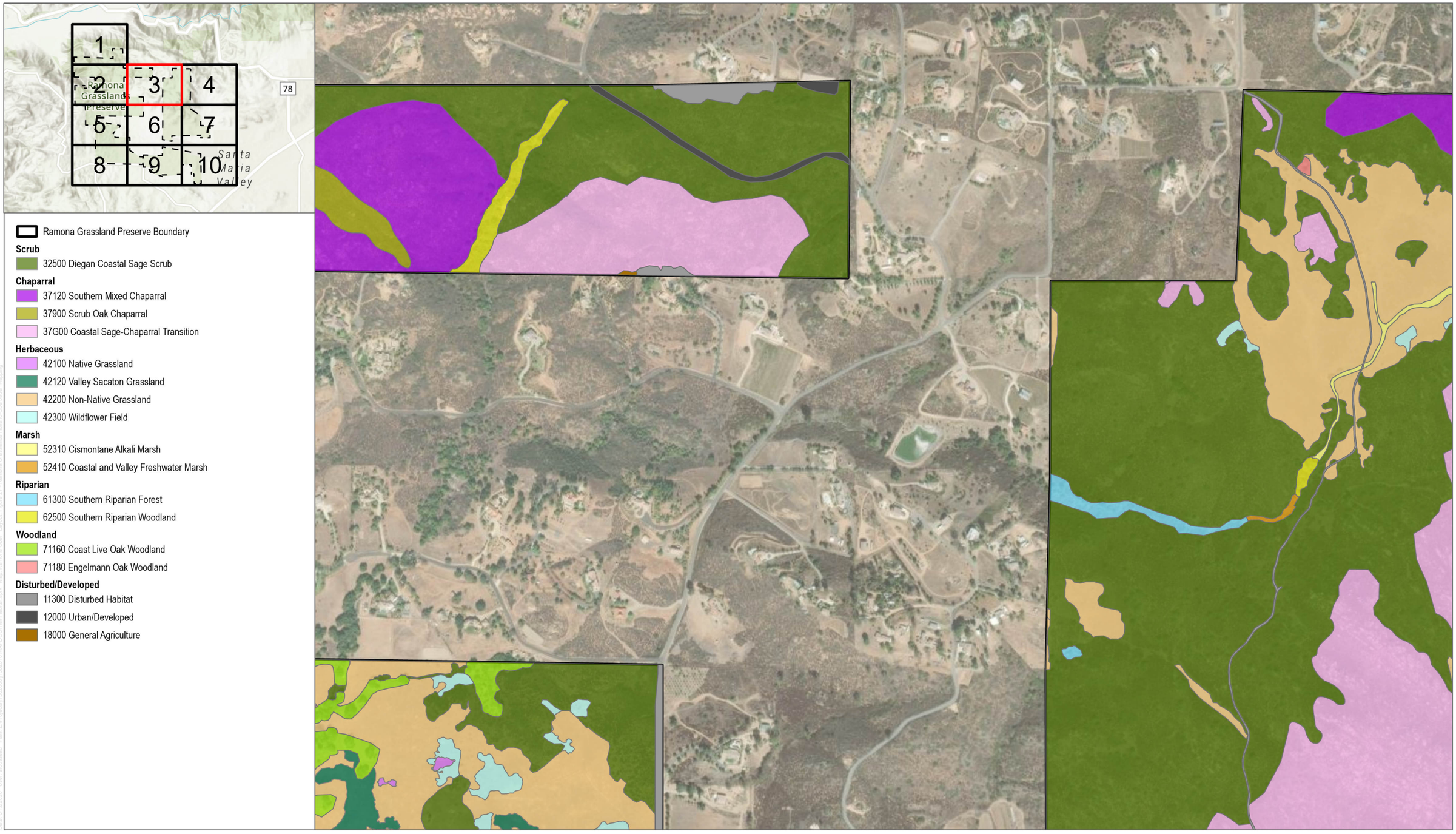
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FIGURE 27 - 2

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

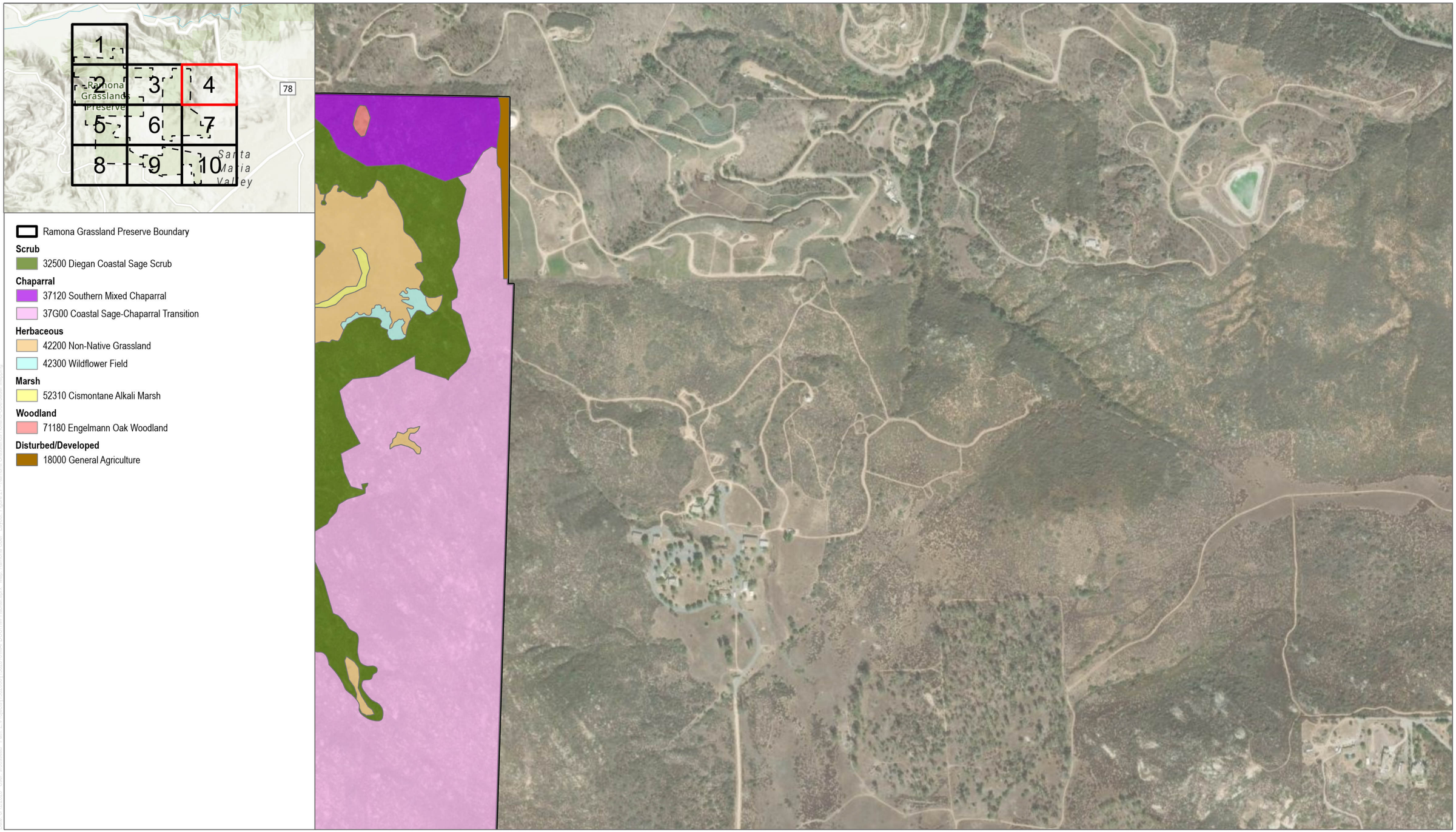
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FIGURE 27 - 3

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

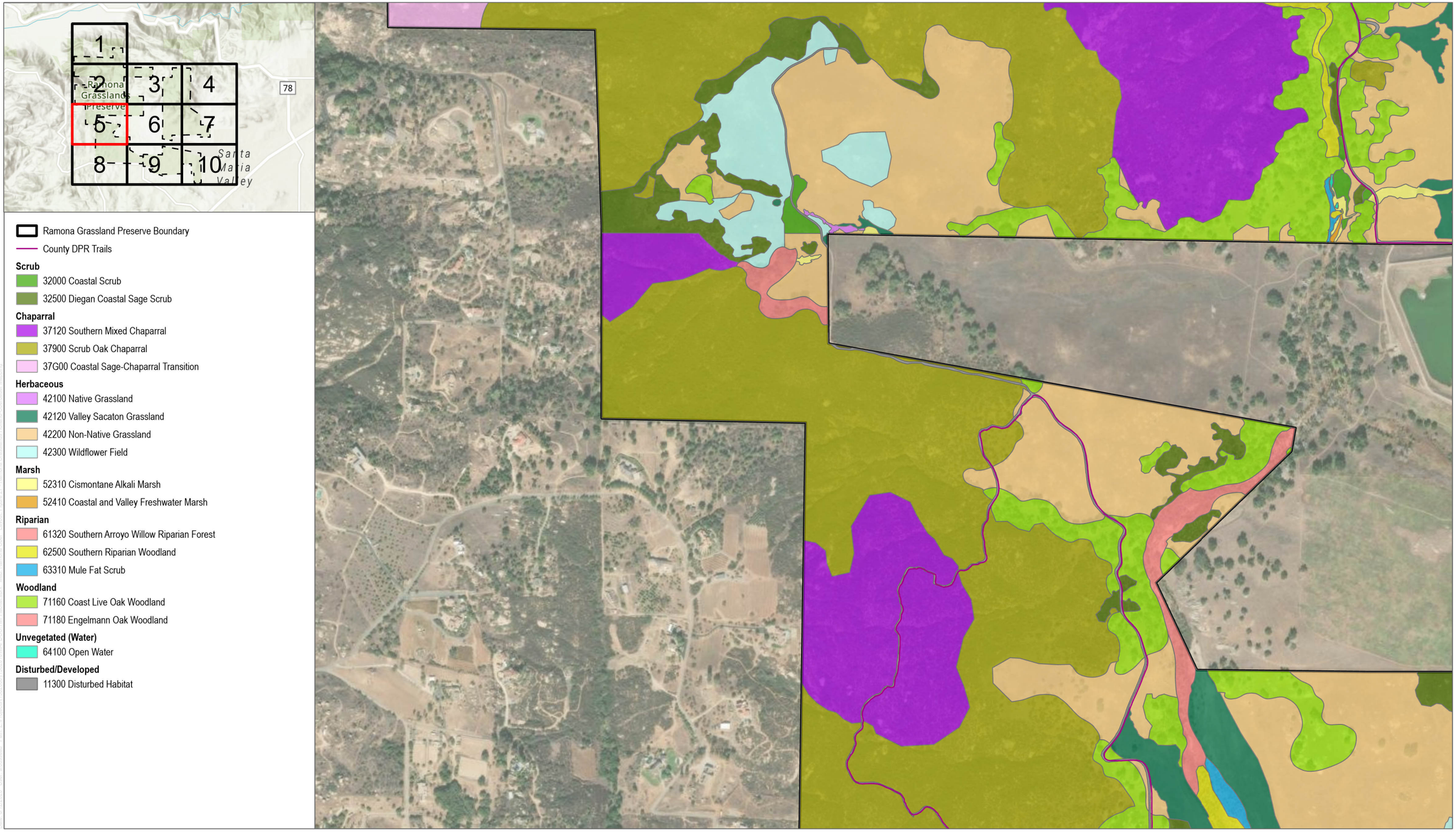
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FIGURE 27 - 4

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

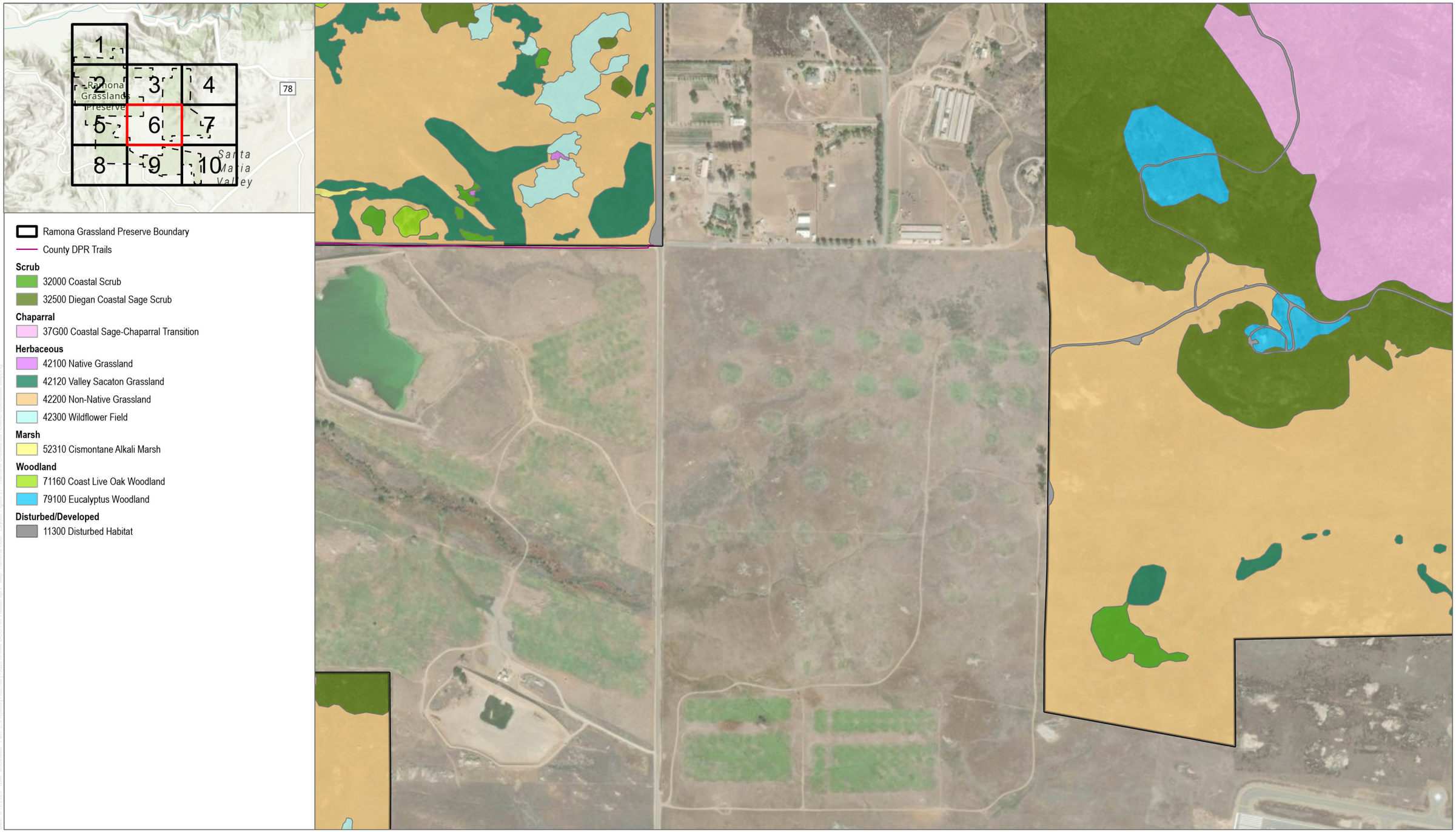
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FIGURE 27 - 5

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

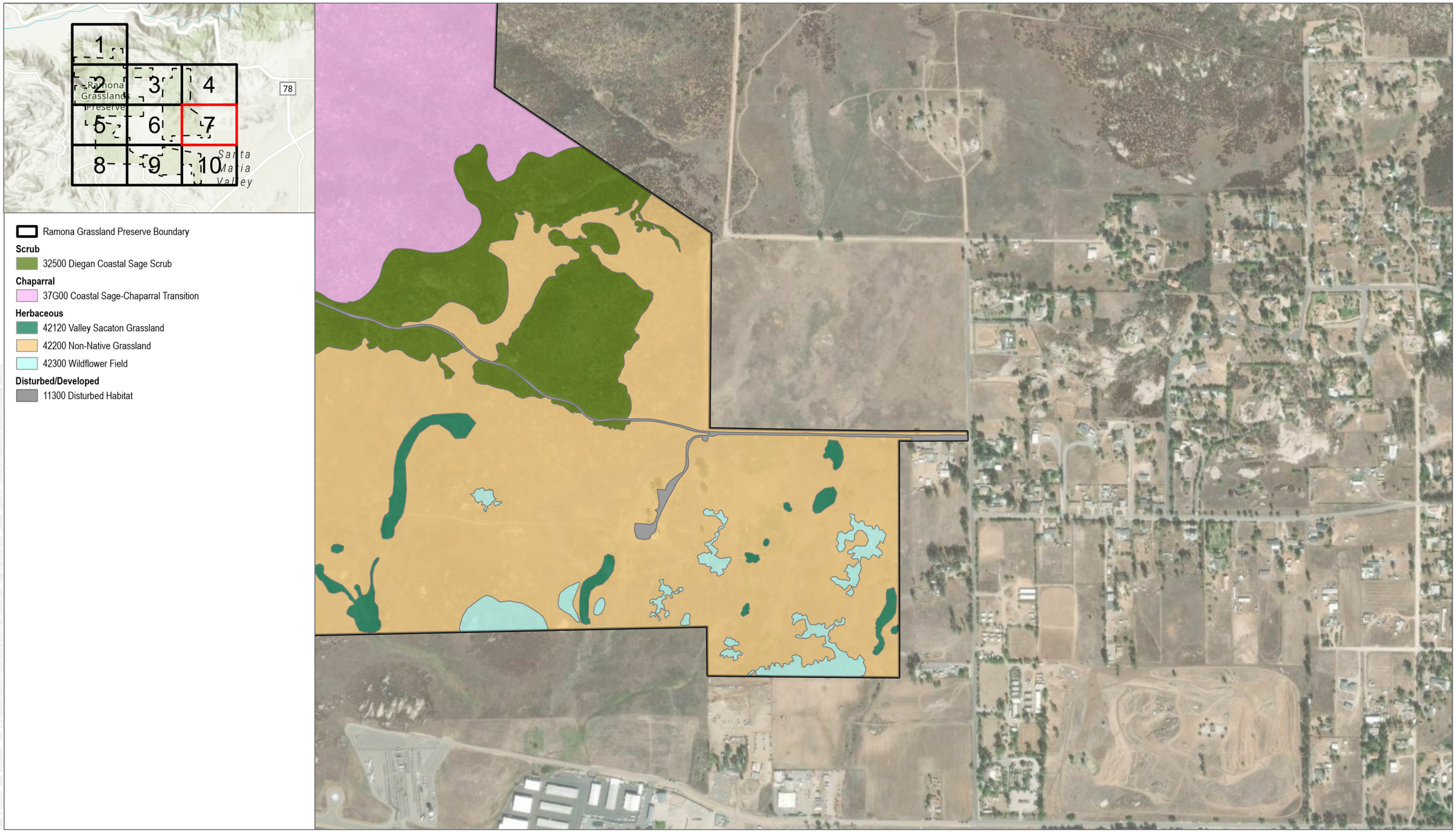
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FIGURE 27 - 6

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

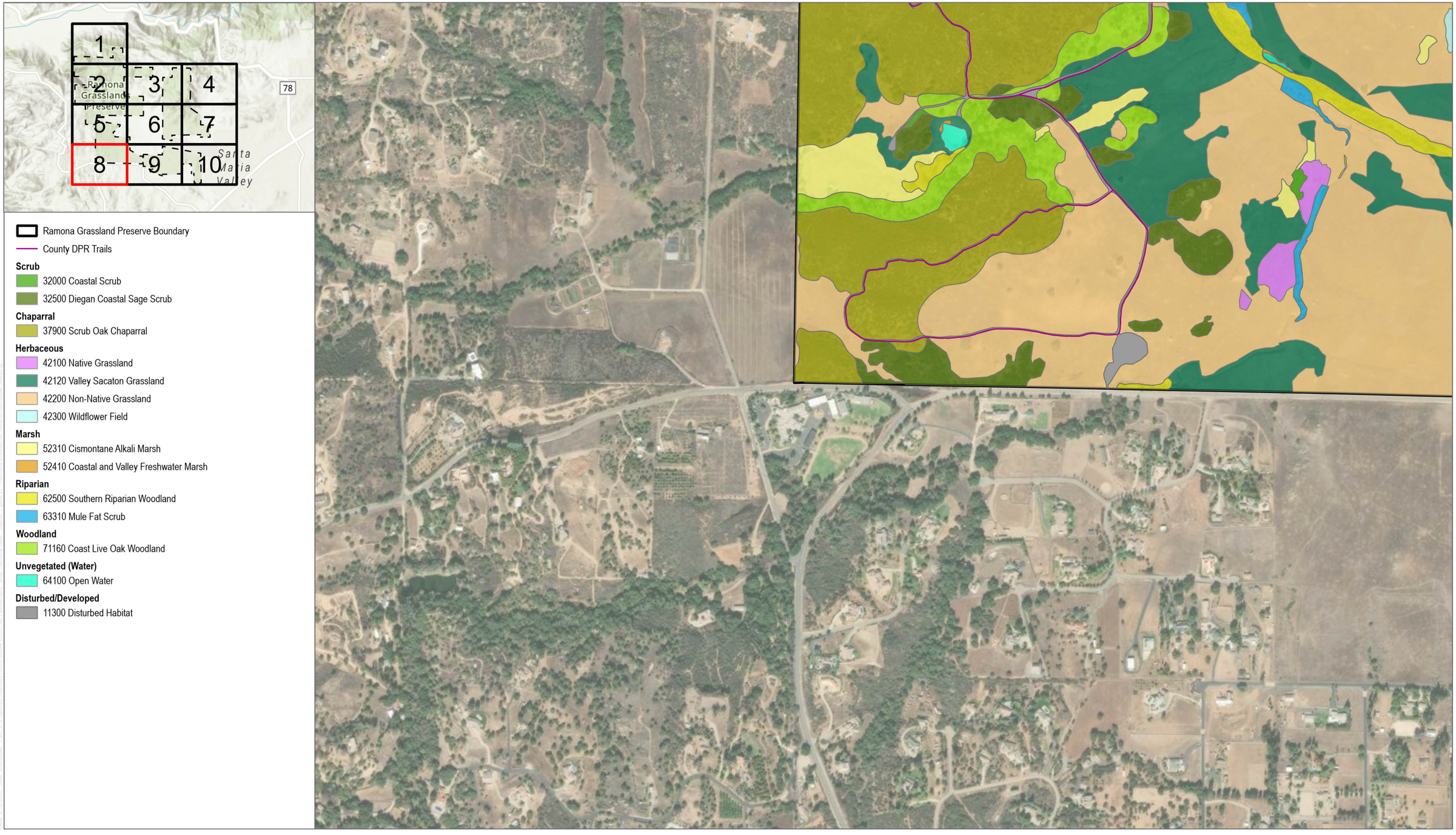
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FIGURE 27 - 7

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

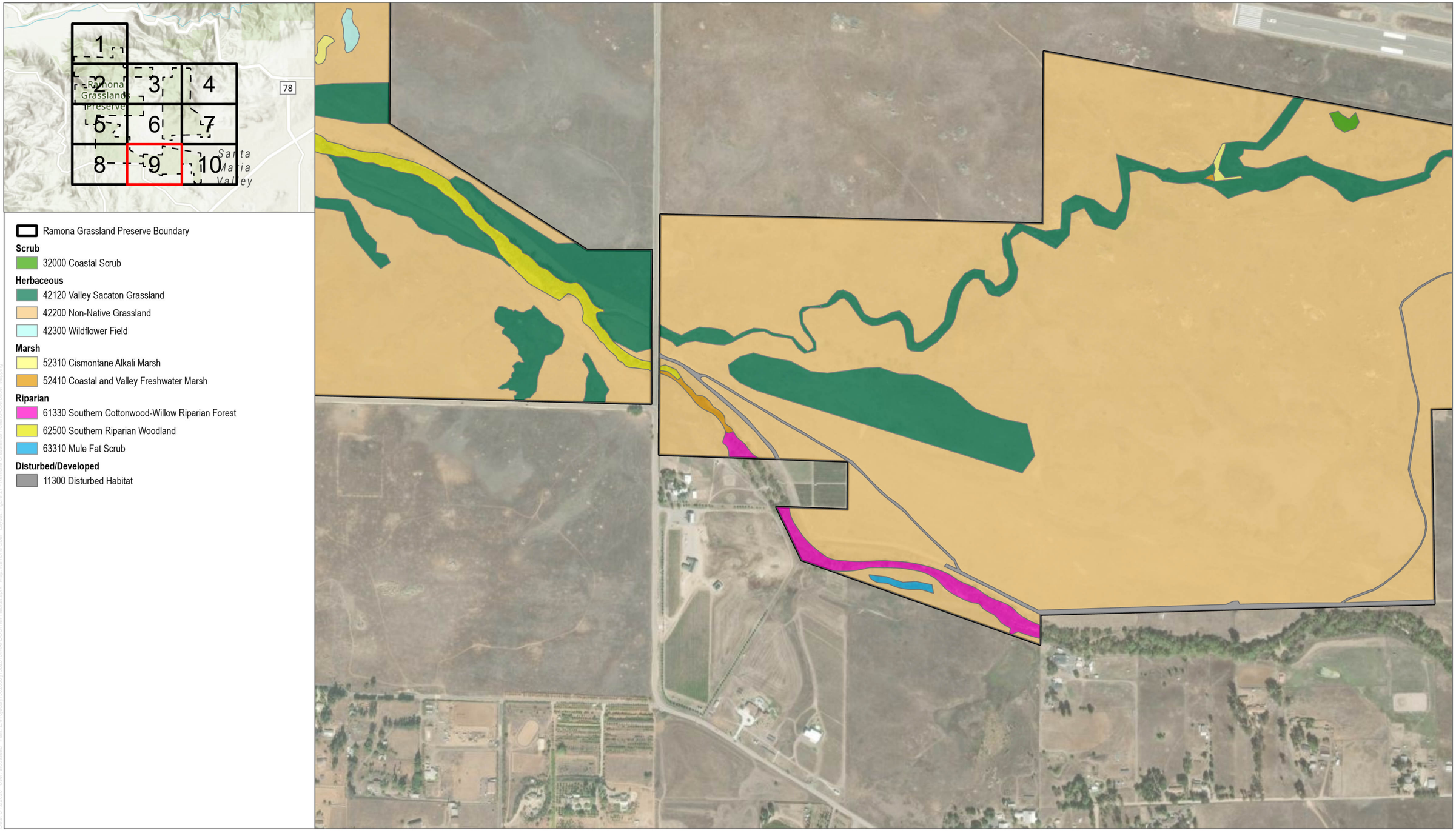
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FIGURE 27 - 8

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

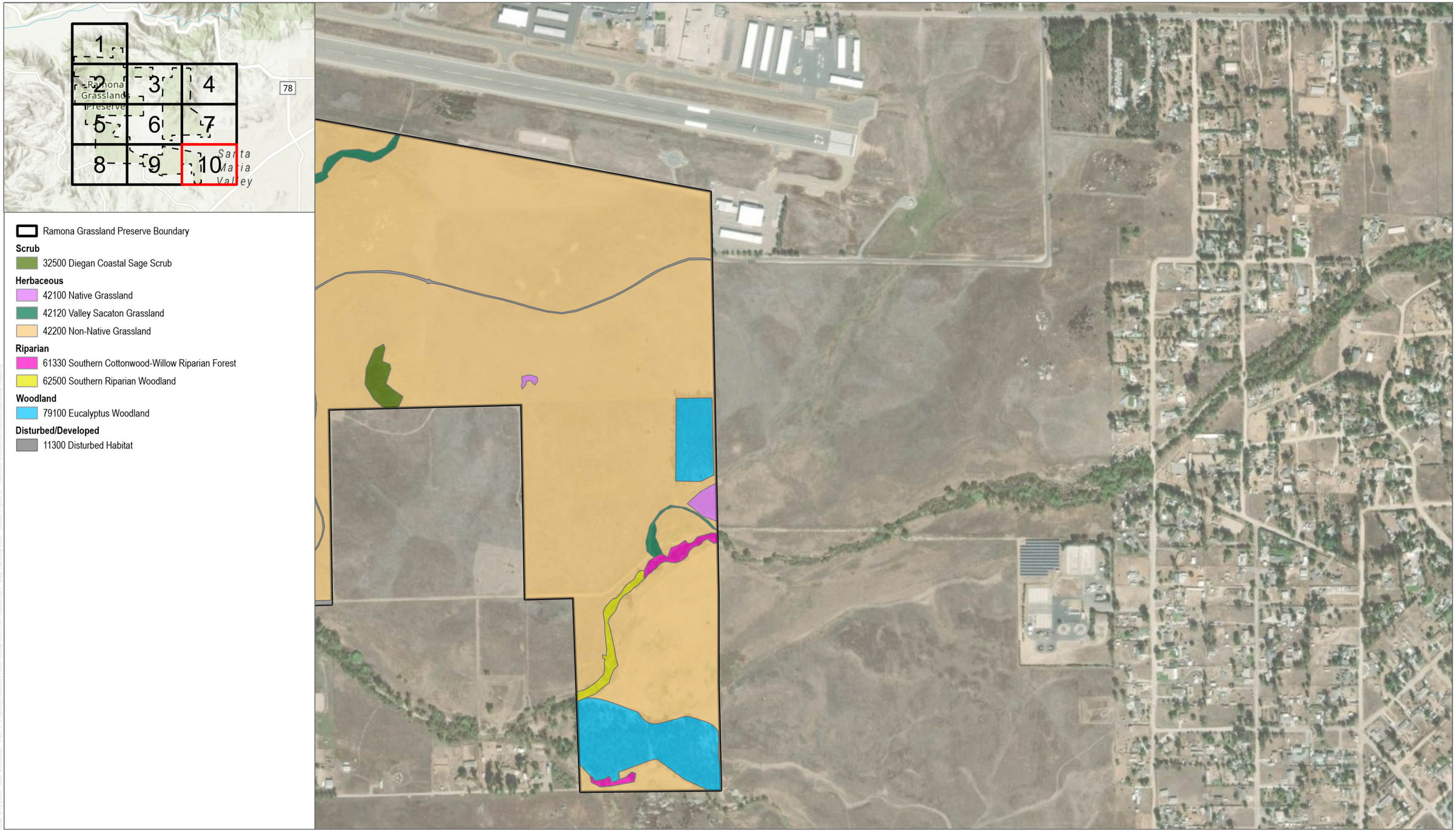
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FIGURE 27 - 9

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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0 310 620 Feet

FIGURE 27 - 10

Ramona Grasslands Holland-Oberbauer Mapping

TMP Habitat Condition Report

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8.3 Invasive Non-Native Plant Observations

A total of 25 invasive/non-native plant species were detected within the Ramona Grasslands County Preserve. Most are displayed in Figure Set 28 (Figures 28-1 through 28-10), but several non-native grasses were too widespread to map throughout the preserve. Their names, along with their Cal-IPC ranking and their San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012) are listed in Table 28. Brief notes about occurrences and management recommendations are also provided.

Table 28. Invasive Non-Native Plant Species: Ramona Grasslands County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
Avena barbata[a]	Slender wild oat	Moderate	—	Throughout non-native grasslands.	Monitor
Bromus diandrus[a]	Ripgut brome	Moderate	—	Throughout non-native grasslands.	Monitor
Bromus rubens[a]	Red brome	High	—	Throughout non-native grasslands.	Monitor
Carduus pycnocephalus	Italian plumeless thistle	Moderate	—	An extensive population exists on both sides of Santa Maria Creek in the northwest portion of the preserve in grassy understory of riparian woodland. Some risk of spreading, but intact scrub surrounding populations restricts invasive potential.	Treat and/or monitor
Catalpa bignonioides	southern catalpa	Not listed	—	An ornamental landscaping tree that has naturalized. Occurs in northeast portion of preserve which is adjacent to residential development.	Monitor
Centaurea melitensis	Maltese star-thistle	Moderate	—	Observed in openings in scrub and other open, grassy areas in northern central area of the northwest portion of preserve. Some risk of spreading, but	Monitor

Table 28. Invasive Non-Native Plant Species: Ramona Grasslands County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
				intact scrub surrounding populations restricts invasive potential.	
Chitalpa tashkentensis	Chitalpa	Not listed	—	An ornamental landscaping tree that has naturalized. Occurs in northeast portion of preserve which is adjacent to residential development.	Monitor
Cortaderia selloana	Pampas grass	High	High	One observation in riparian canyon of Santa Maria Creek, in northwest portion of preserve. Rugged terrain restricts management options.	Monitor
Cirsium vulgare	Bull thistle	Moderate	—	Isolated observations in the southeast portion of the preserve in grassy/woodland area. Risk of spreading.	Treat and/or monitor
Cynara cardunculus ssp. *cardunculus*	Artichoke thistle	Moderate	Very High	Several observations in grasslands in far eastern area of northeast portion of preserve. Isolated for now, but risk of spreading.	Treat and/or monitor
Eucalyptus sp.	Eucalyptus	Watch to Limited	—	Several well-established stands in the southeast and northwest portions of preserve.	Monitor
Erodium botrys	Longbeak stork's bill	Not listed (*E. cicutarium* is Limited)	—	A noticeable population is present in the northwest portion of the preserve in non-native grasslands.	Monitor

Table 28. Invasive Non-Native Plant Species: Ramona Grasslands County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
				Likely elsewhere in the preserve, along with other species of Erodium.	
Festuca perennis[a]	Italian rye grass	Moderate	—	Throughout non-native grasslands.	Monitor
Hirschfeldia incana	Shortpod mustard	Moderate	—	Several noticeable populations observed throughout non-native grassland in preserve.	Monitor
Hordeum murinum[a]	Hare barely	Moderate	—	Throughout non-native grasslands.	Monitor
Lactuca serriola	Prickly lettuce	Not listed	—	Not listed by Cal-IPC but known to become a troublesome weed. Risk of spreading. One large population observed in grasslands in the southeast portion of preserve.	Treat and monitor
Lepidium latifolium	Perennial pepper weed	High	Very High	Several well-established populations located in southeast portion of preserve. Risk of spreading.	Treat and monitor
Melilotus albus	Yellow sweetclover	Not listed	—	Not listed on Cal IPC but known to be regionally invasive. Occurrences noted near the annual rabbitsfoot grass on Santa Maria Creek.	Monitor
Nicotiana glauca	Tree tobacco	Moderate	—	Several individuals observed in northwest portion of preserve. Isolated for now, but risk of spreading.	Treat and monitor
Pennisetum setaceum	Fountain grass	Moderate	—	Several individuals observed in north central area of the	Remove and monitor

Table 28. Invasive Non-Native Plant Species: Ramona Grasslands County Preserve

Scientific Name	Common Name	Cal-IPC Ranking	San Diego County Regional Priority Ranking	Notes	Management Recommendation
				northeast portion of preserve. Isolated for now, but risk of spreading.	
Polypogon monspeliensis	Annual rabbitsfoot grass	Limited	—	One noticeable population in southwest portion of preserve along Santa Maria Creek, west of Rangeland Road. Likely limited to wet areas along the creek.	Monitor
Salsola tragus	Prickly Russian thistle	Limited	—	One small population located in southeast portion of preserve. Risk of spreading.	Treat and/or monitor
Silybum marianum	Blessed milkthistle	Limited	High	Several small populations located in southeast portion of preserve. Risk of spreading.	Treat and/or monitor
Tamarix ramosissima	Tamarisk	High	—	Many trees scattered throughout the riparian corridor of Santa Maria Creek, in northwest portion of preserve. Risk of spreading throughout riparian corridor.	Treat (drill and kill) and monitor
Washingtonia robusta	Washington fan palm	Moderate	—	One tree observed in riparian canyon of Santa Maria Creek, in northwest portion of preserve. Rugged terrain restricts management options.	Monitor

Notes:

[a] These non-native grass species were not mapped due to their widespread nature but were observed throughout opening of certain chaparral, woodland, and scrub areas of the preserve.

Cal-IPC Ranking

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Alert – An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.

Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.

San Diego County Regional Priority Ranking (CBI, DENDRA, Inc., and Cal-IPC 2012)

Very High – Level 1 Surveillance. Low effort required to achieve goal of regional surveillance, early detection, rapid response.

High – Level 2 Eradication. Moderate effort required to achieve goal of eradication with regionally coordinated control program.

Medium – Level 3 Containment. Funding typically available for re-treatments or control of small populations. Goal is eradication with coordinated programs by management unit or watershed.

Medium – Level 4 Directed Management. Area may be managed effectively, with slow re-invasion. Goal is to control within reserve or sub-management unit to benefit NCCP resources.

Low – Level 5 Directed Suppression. Control is typically of short-term benefit (rapid re-invasion) without active restoration. Goal is suppression, typically to allow recovery disturbed site, improve re-vegetation success, or benefit NCCP resources.

Management Recommendations

Note that more than one management recommendation may be suggested

Monitor – This recommendation involves monitoring for new or expanding infestations of invasive plant species within the park or preserve, beyond the areas currently documented. If monitoring identifies a new outbreak or rapid spread, more intensive management actions, such as treatment or removal, should be implemented. Monitoring may also be necessary after treatment or removal of certain species to detect and address resprouting.

Treat (including drill and kill) – This recommendation includes the application of herbicide to invasive plant species using spot-spray or broadcast-spray methods, as appropriate, or the *drill-and-kill* method for large woody species. “Drill and kill” is a woody-plant control technique in which holes are drilled into the trunk of a live tree and herbicide is injected directly into the cuts/holes, resulting in the tree’s mortality. Dead trees are left as standing snags, offering beneficial ecological structure and perching habitat. This method is often more practical and less impactful than chipping or removing woody biomass from sensitive or difficult-to-access areas.

Remove – This recommendation involves complete removal and off-site disposal of biomass for species known to aggressively resprout from cuttings or those with highly invasive seedheads. In these cases, leaving biomass on site poses a significant risk of reinfestation without intensive monitoring and follow-up treatment, making full removal the preferred approach.

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SOURCE: ESRI Aerial Imagery 2025

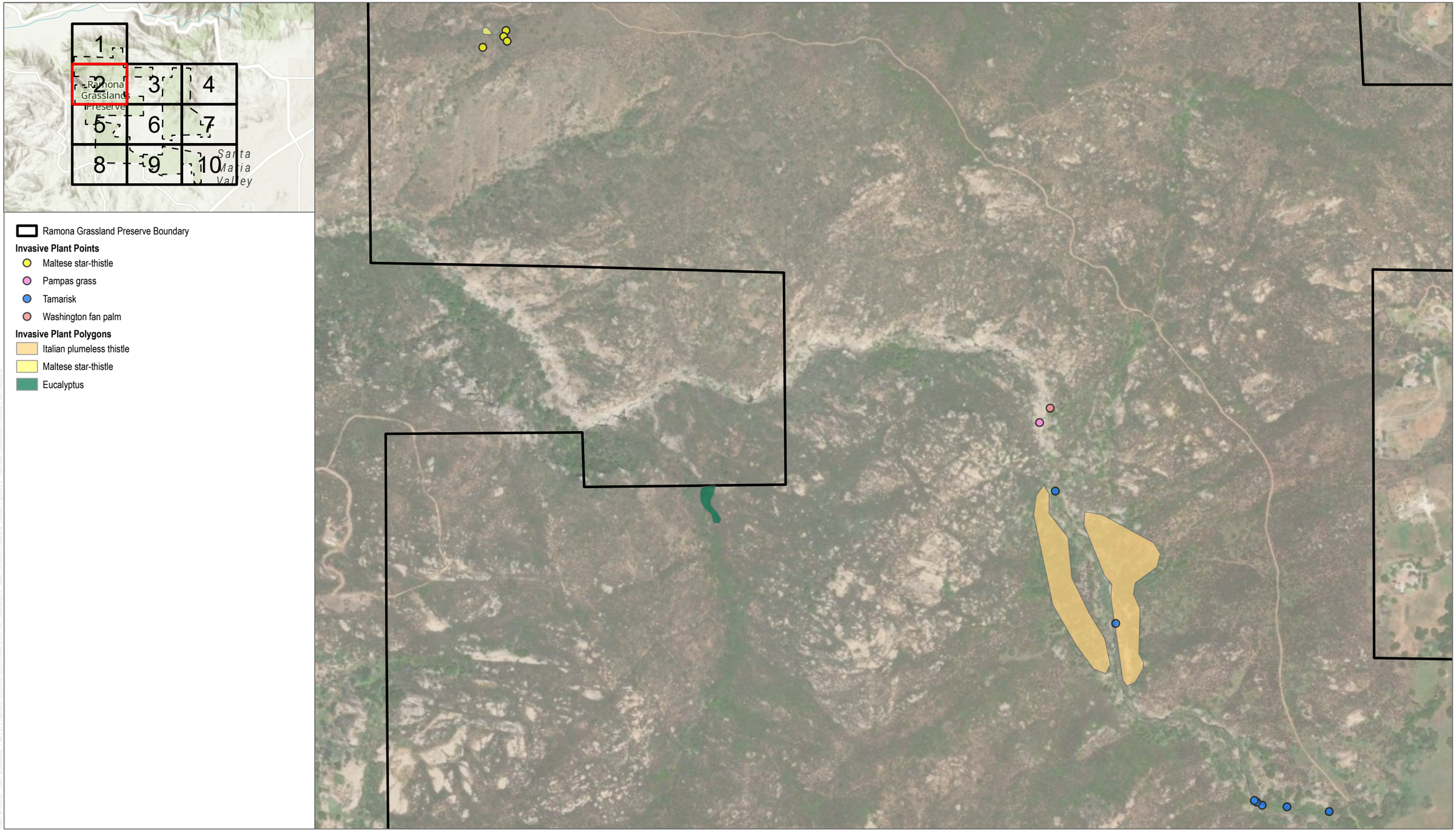
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FIGURE 28 - 1

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

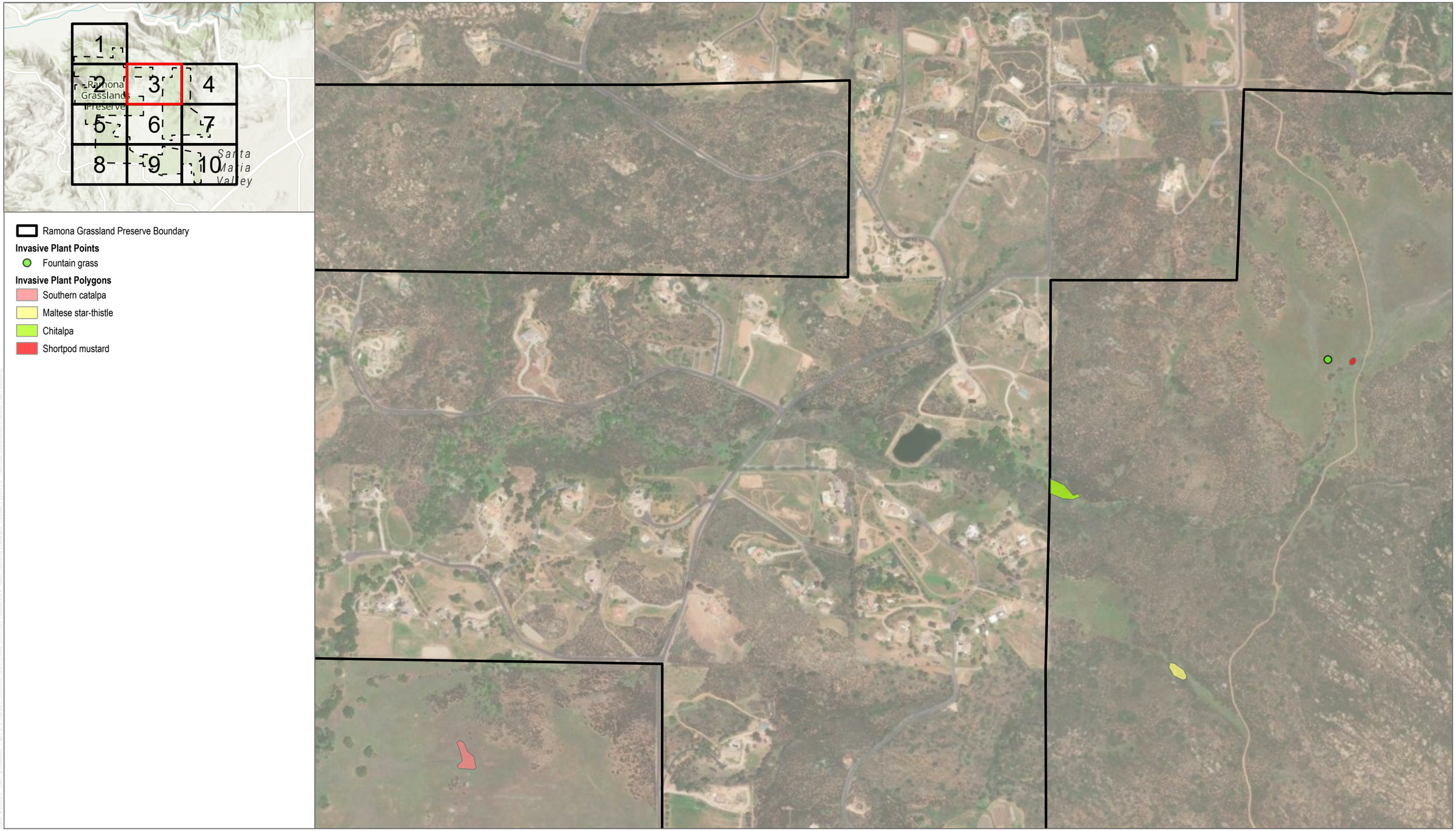
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FIGURE 28 - 2

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 28 - 3

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

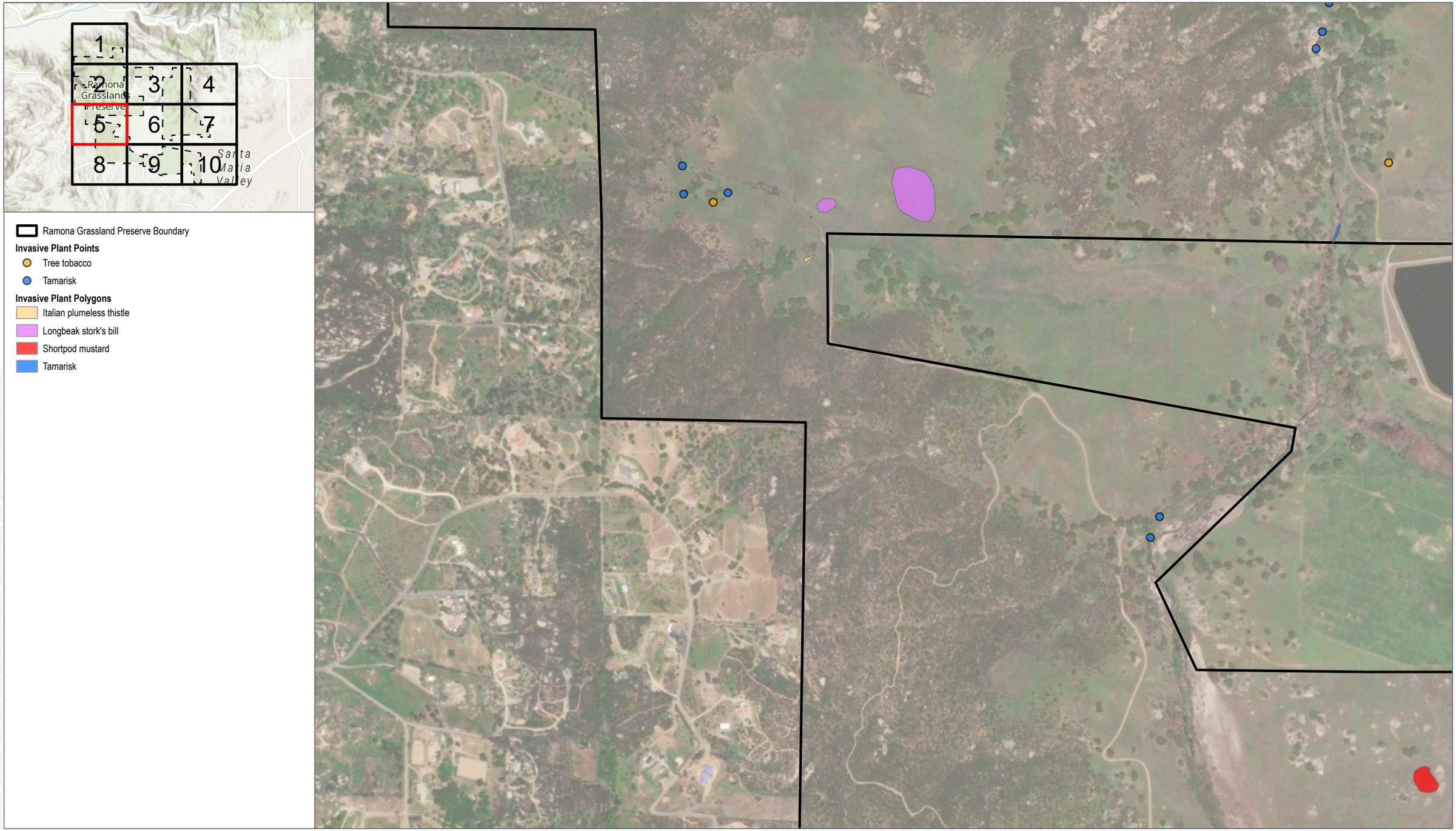
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FIGURE 28 - 4

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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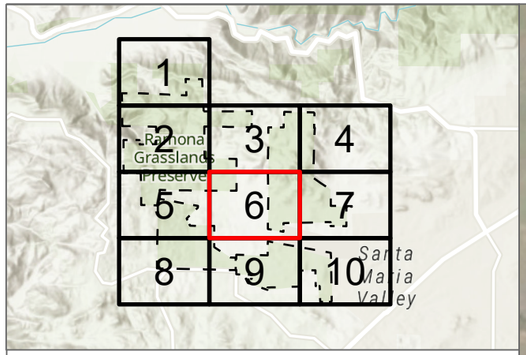
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FIGURE 28 - 5

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



Ramona Grassland Preserve Boundary

Invasive Plant Polygons

Shortpod mustard

SOURCE: ESRI Aerial Imagery 2025

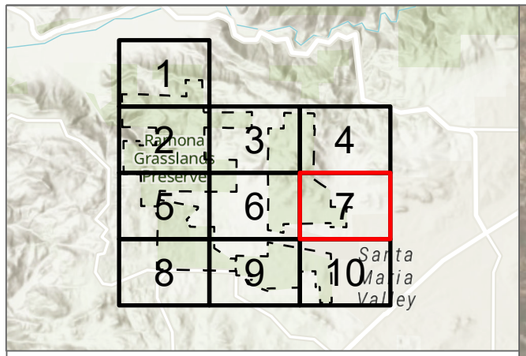
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FIGURE 28 - 6

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



Ramona Grassland Preserve Boundary

Invasive Plant Points

Artichoke Thistle

Invasive Plant Polygons

Shortpod mustard

SOURCE: ESRI Aerial Imagery 2025

0 310 620 Feet

FIGURE 28 - 7

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

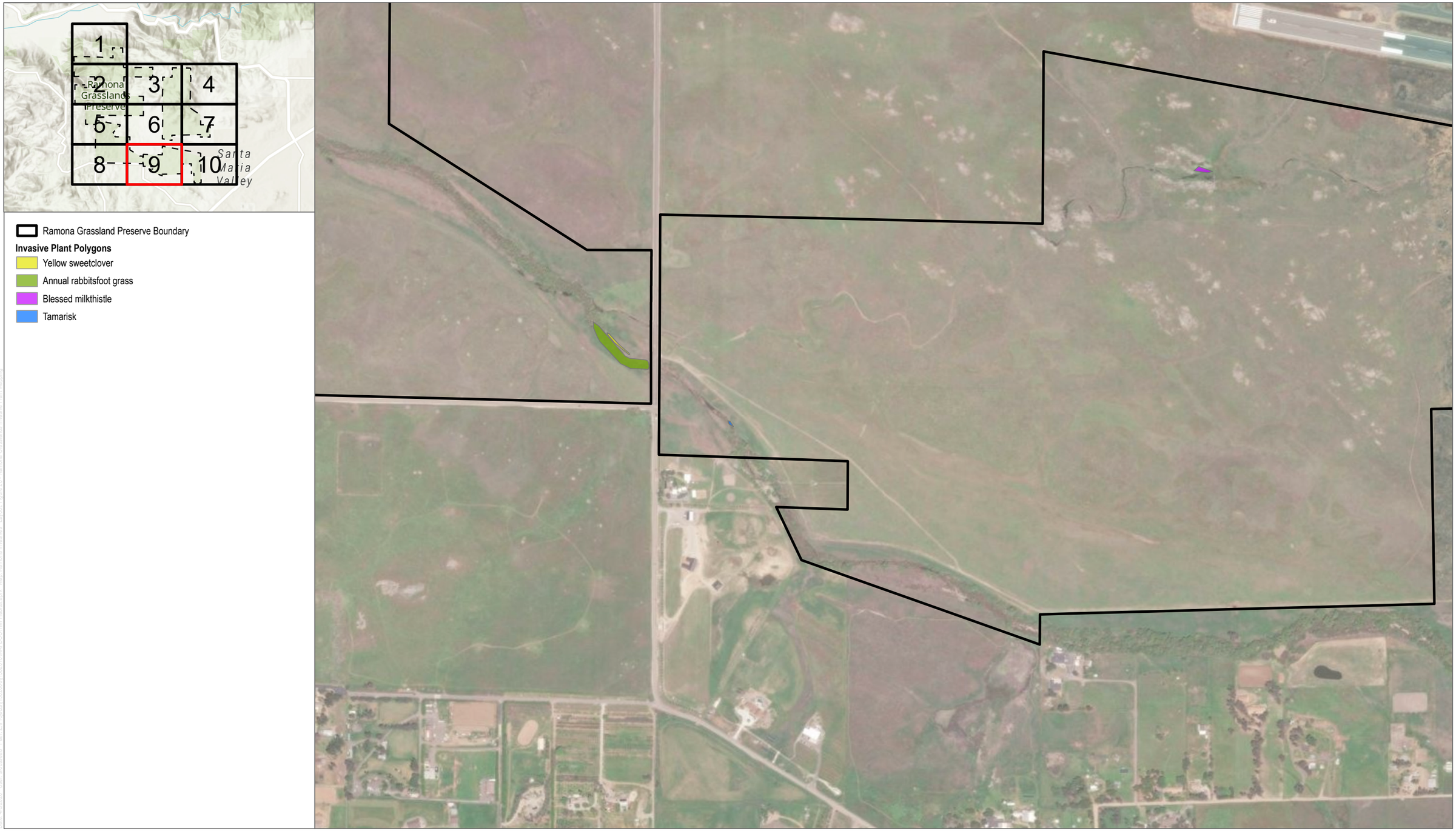
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FIGURE 28 - 8

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

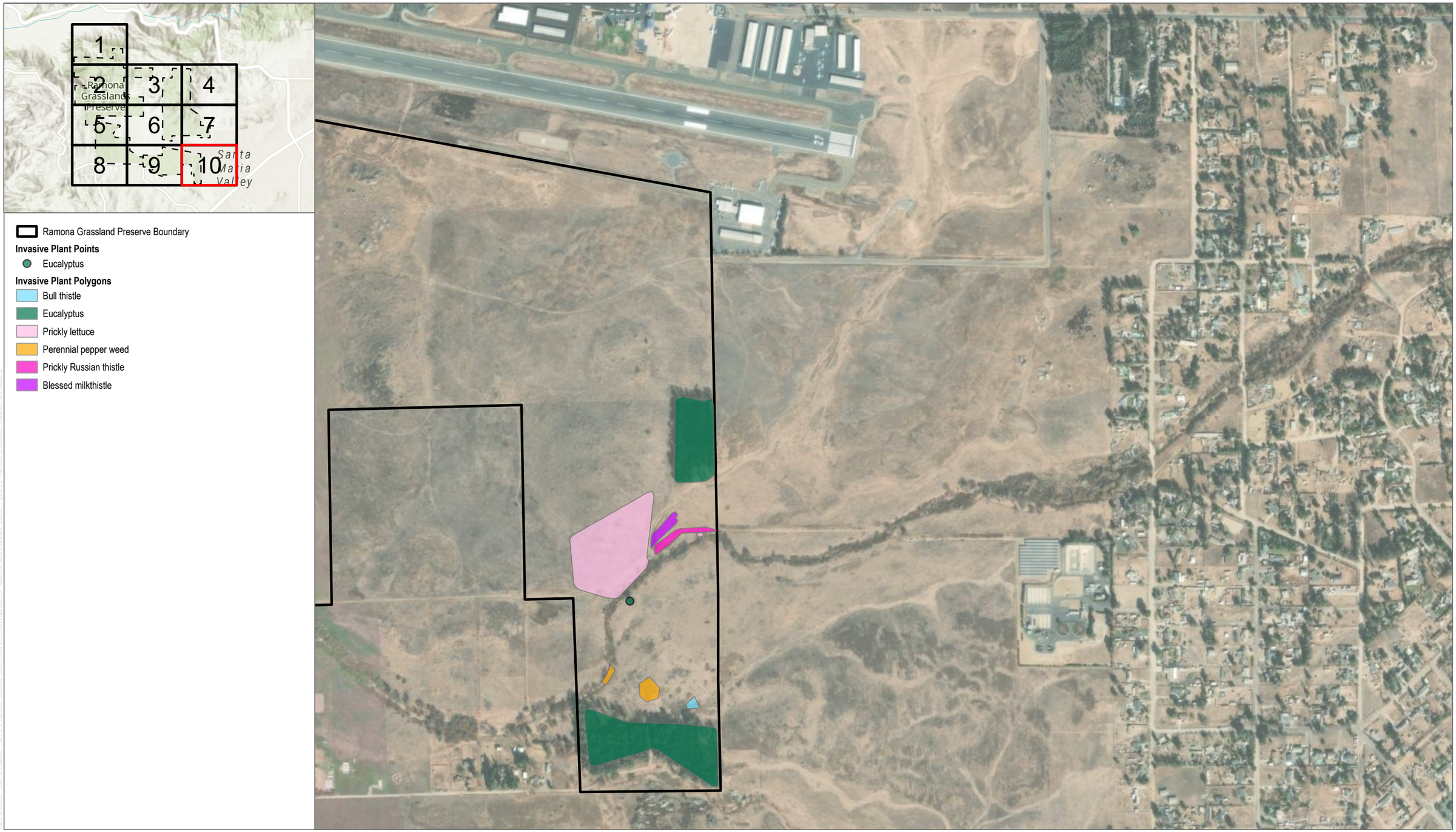
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FIGURE 28 - 9

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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FIGURE 28 - 10

Ramona Grasslands Invasive Plant Mapping

TMP Habitat Condition Report

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8.4 Incidental Special-Status Plant and Wildlife Observations

Three special-status plants and 19 special-status wildlife species were incidentally detected during mapping efforts at Boulder Oaks County Preserve. They are listed in Table 29, along with information about their special statuses. Their observation locations within the preserve are displayed in Figure Set 29 (Figures 29-1 through 29-10) and 30 (Figures 30-1 through 30-10).

Table 29. Incidental Plant and Animal Observations: Ramona Grasslands County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County/ South County MSCP Covered Species	California Rare Plant Rank	Notes
Plants						
Centromadia parryi ssp. *australis*	Southern tarplant	—/—	List A	-/—	1B.1	Observed throughout the non-native grassland and vernal pool complexes in the northeast, southwest, and southeast portions of the preserve. Especially common in drainages and low-lying areas.
Holocarpha virgata ssp. *elongata*	Graceful tarplant	—/—	List D	—/—	4.2	Observed in the southwest and southeast portions of preserve across non-native grasslands.
Quercus engelmannii	Engelmann oak	—/—	List D	Covered/—	4.2	Scattered throughout the woodland areas adjacent to scrub/chapparal in the northwest and southwest portions of preserve, most concentrated in the southwest portion of preserve.
Animals						
Accipiter striatus	Sharp-shinned hawk	—/WL	Group 1	—/—	—	Observed near riparian canyon in

Table 29. Incidental Plant and Animal Observations: Ramona Grasslands County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County/ South County MSCP Covered Species	California Rare Plant Rank	Notes
						northwest portion of preserve.
Aspidoscelis hyperythra beldingi	Belding's orange-throated whiptail	—/WL	Group 2	-/Covered	—	Observed along dirt road in the northwest and northeast portions of preserve adjacent to scrub and grassland.
Aspidoscelis tigris stejnegeri	Coastal western whiptail	—/SSC	Group 2	—/—	—	Observed along dirt roads adjacent to scrub in the southwest portion of preserve.
Aquila chrysaetos	Golden eagle	BCC/CFP, WL	Group 1	Covered/ Covered	N/A	Observed soaring over the southwest portion of preserve.
Cathartes aura	Turkey vulture	—/—	Group 1	—/—	—	Observed soaring over the southwest portion of preserve.
Dipodomys stephensi	Stephens' kangaroo rat	FT/CT	Group 1	Covered/—	—	Observed in far northeast portion of preserve in open grasslands.
Elanus leucurus	White-tailed kite	—/CFP	Group 1	Covered/—	—	Observed along a riparian corridor in the southeast portion of preserve. Also observed soaring over scrub in the northeast portion of preserve.
Falco mexicanus	Prairie falcon	—/WL	Group 1	—/—	—	Observed in the northeast portion of preserve.
Falco peregrinus anatum	American peregrine falcon	DT/ DC	Group 1	—/Covered	—	Observed soaring in northeast portion of preserve over grasslands.

Table 29. Incidental Plant and Animal Observations: Ramona Grasslands County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County/ South County MSCP Covered Species	California Rare Plant Rank	Notes
Haliaeetus leucocephalus	Bald eagle	DT/CE, FP	Group 1	Covered/Covered	—	Observed perching in a tall eucalyptus tree in the northeast portion of preserve.
Lanius ludovicianus	Loggerhead shrike	—/SSC	Group 1	Covered/—	—	Observed in the northwest portion of preserve, west of Rangeland Road.
Lepus californicus bennettii	San Diego black-tailed jackrabbit	—/—	Group 2	Covered/—	—	Observed in the northeast portion of preserve.
Neotoma lepida intermedia	San Diego desert woodrat	—/SSC	Group 2	—/—	—	Middens observed in chaparral in the northwest portion of preserve.
Odocoileus hemionus	Mule deer	—/—	Group 2	Covered/Covered	—	Observed in open grassland in the southwest portion of preserve, and in scrub in the central area of the northeast portion of preserve.
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC	Group 1	Covered/ Covered	—	Observed in coastal sage scrub in the northwest and southwest portions of preserve.
Phrynosoma blainvillii	Blainville's horned lizard	—/SSC	Group 2	Covered/ Covered	—	Multiple individuals observed on the dirt road in the northwest portion of preserve.
Puma concolor	Mountain lion	—/—	Group 2	Covered/ Covered	—	The back end of a mountain lion was briefly observed after it stirred from its resting place and climbed up into a large coast live oak tree. The observation

Table 29. Incidental Plant and Animal Observations: Ramona Grasslands County Preserve

Scientific Name	Common Name	Federal/State Status	San Diego County Special Status List	Draft North County/ South County MSCP Covered Species	California Rare Plant Rank	Notes
						occurred away from the trail in the northwest portion of preserve. The preserve contains high quality habitat to support mountain lions.
Sialia mexicana	Western bluebird	—/—	Group 2	—/Covered	—	Observed in scrub and open grasslands in the southwest portion of preserve.
Setophaga petechia	Yellow warbler	—/SSC	Group 1	—/—	—	Heard in eucalyptus woodland in the southeast portion of preserve.

Notes:
Federal/State Status
FE – Federally Endangered
FT – Federally Threatened
BCC – USFWS Bird of Conservation Concern
CE – California Endangered
CT – California Threatened
CFP – California (CDFW) Fully Protected
SSC – CDFW Species Special Concern
WL – CDFW Watch List
DC – Species previously listed as threatened or endangered at the state (California) level
DT – Species previously listed as threatened or endangered at the federal level
San Diego County Special Status List
LIST A (Plants rare, threatened or endangered in California and elsewhere)
LIST B (Plants rare, threatened or endangered in California but more common elsewhere)
LIST C (Plants which may be quite rare, but need more information to determine their true rarity status)
LIST D (Plants of limited distribution and are uncommon, but not presently rare or endangered)
Group 1 Animals: includes those that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met
Group 2 Animals: includes those species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action
California Rare Plant Rank
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

For each California Rare Plant Rank, threat ranks (e.g., 1B.3) are determined as follows:
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)

8.5 Threats Assessment

During vegetation mapping and habitat surveys, Dudek biologists conducted a threats assessment which noted and analyzed specific threats to native habitat within the preserve and ranked them according to the disturbance categories outlined in the *MSP Roadmap 2025 Rare Plant IMG Monitoring Protocol for Occurrences on Conserved Lands in Western San Diego County* (SDMMP 2025), in addition to previously identified disturbances/stressors in Appendix A, the Habitat Condition Assessment Memorandum for the 2021 TMP Resource-Specific Monitoring Annual Report (ESA 2022). Disturbances/stressors at Ramona Grasslands County Preserve are noted in Table 30.

Table 30. Threats Overview: Ramona Grasslands County Preserve

Disturbances/ Stressors	Severity (Extent)	Discussion
Invasive plants (Non-native forbs and grasses)	6	Non-native grasses (of the genera *Avena*, *Bromus, Festuca, Hordeum,* etc.) are abundant throughout vast areas of the southern portions of the preserve, within the open, flat rangelands and grasslands. Within the more hilly and mountainous areas of the preserve, sage scrub and chaparral generally inhibit invasion of non-native grasses and forbs. However, invasive plants like Italian thistle, tamarisk, annual rabbitsfoot grass, pampas grass, perennial pepper weed, and Washington fan palm are present in certain riparian areas. Other invasive plants, including bull thistle, Maltese star-thistle, blessed milkthistle, artichoke thistle, shortpod mustard, prickly lettuce, and others are scattered throughout grassland areas of the preserve, often intermixed with non-native grasses.
Altered fire regime or risk of catastrophic fire	6	Over 2,000 acres of the northern portion of the preserve was burned in the 2007 Witch Fire, but the southernmost portion of the preserve, within the heart of the grasslands, have not burned since 1967. The southern portions of the preserve provide ample fuel during the dry season in the form of non-native grasses and forbs. The coastal sage scrub and chaparral communities in the northern portions of the preserve also provide significant woody fuel load. Surrounding development and roads enhance risk of anthropogenic fire sources. Overall, fire risk is moderate to severe. The Witch Fire was the last fire to burn the preserve, occurring nearly 20 years ago. Another significant fire event in the near future would be consistent with the typical fire return intervals for the habitat types present.
Unauthorized human use (e.g., off-road vehicles, encampments, unauthorized trails, shooting,	1	No visible signs of unauthorized human use within the preserve or immediately adjacent to preserve boundaries.

Table 30. Threats Overview: Ramona Grasslands County Preserve

Disturbances/ Stressors	Severity (Extent)	Discussion
poaching, and/or dumping)		
Erosion	3	Some moderate erosional rills observed on steep trails and dirt roads throughout the preserve, but nothing severe.
Small, isolated occurrences vulnerable to loss of genetic diversity and to extirpation due to environmental stochasticity or catastrophic disturbance	3	Golden eagle nest sites in cliff faces off-site of the northwest portion of the preserve would be vulnerable to catastrophic disturbance if unauthorized public access or harassment occurred within a 1-mile radius of the nest sites.
Altered hydrology (e.g., urban runoff, flood control facilities)	4	Most of the drainages within the preserve, especially Santa Maria Creek, are likely subject to urban runoff from surrounding development and roads upstream near downtown Ramona.
Herbivory (e.g., seed, vegetation)	3	Cattle grazing is a feature of the southern portions of the preserve. An approved grazing program is in place at the preserve for management of habitats and sensitive species, including vernal pool habitat. No other signs of herbivory or damage to vegetation/seed resources were observed throughout the preserve.
Detrimental edge effects from adjacent urban development	2	Residential development, Ramona airport, and roads immediately adjacent to the preserve may cause disturbances to wildlife, increase chances of unauthorized access, and accelerate invasive plant and animal species introduction. Wildlife may be affected by noise and night lighting nearby.

Notes:
Disturbance Categories within Preserve
1 – No sign of disturbance within preserve
2 – Disturbance does not occur within preserve, but is detected adjacent to preserve boundaries
3 – Disturbance occurs in >0% to <10% of preserve
4 – Disturbance occurs in 10 to <25% of preserve
5 – Disturbance occurs in 25 to <50% of preserve
6 – Disturbance occurs in 50 to <75% of preserve
7 – Disturbance occurs in ⩾ 75% of preserve

8.6 Type Conversion

In order to detect potential type conversions within the preserve, previous Holland-Oberbauer vegetation mapping from 2015 was compared to the updated 2025 mapping by general habitat type, as shown in Table 31. Note that 2015 mapping data were clipped to the preserve boundary to align with 2025 mapping protocols, which excluded buffer areas outside the preserve.

Table 31. Type Conversion Assessment Based On Holland-Oberbauer Mapping: Ramona Grasslands County Preserve

Habitat Type	Acres in 2015	Acres in 2025	Difference in Acreage
Developed	4.69	2.14	-2.55
Disturbed (incl. Agriculture)	20.07	27.84	+7.77
Herbaceous	1409.65	1332.66	-76.99
Scrub	722.87	713.92	-8.95
Chaparral	1143.50	1202.84	+59.34
Woodland	81.99	147.06	+65.07
Riparian (incl. Marsh)	102.91	63.59	-39.32
Unvegetated (water)	5.22	0.79	-4.43

Changes in vegetation mapping between 2015 and 2025 were most pronounced within the herbaceous, woodland, chaparral, and riparian habitat types. The substantial decrease in herbaceous habitat is primarily the result of refined mapping along grassland edges, where scrub, chaparral, and woodland were delineated more accurately and found to extend beyond the boundaries previously mapped in 2015; some of this shift may also reflect natural expansion of these habitats into grasslands. Increases in mapped chaparral acreage likely stem from more detailed differentiation of areas previously labeled as scrub but that, upon closer examination, contain significant patches of chamise-dominated chaparral.

Similarly, the increase in woodland habitat appears to be driven by more precise delineation of small oak woodland patches embedded within large expanses of scrub or chaparral—many of which were not captured in the 2015 mapping effort but were resolved in 2025. The decrease in riparian habitat mapping is directly related to methodological differences between the 2015 and 2025 efforts: the 2015 dataset classified most coast live oak woodland within the preserve as riparian habitat, whereas Dudek determined in 2025 that these oak woodlands function primarily as upland communities, as they rarely form closed-canopy riparian habitat immediately adjacent to streams or wetlands. Minor increases in disturbed habitat likely reflect improved mapping resolution of authorized dirt access roads and trails throughout the preserve.

Adaptive Management Recommendations

Invasive Non-Native Plant Species Management

Near-term priorities for treatment and/or removal should include the following plants: Italian plumeless thistle, perennial pepperweed, artichoke and bull thistle, prickly lettuce, tamarisk, fountain grass, and tree tobacco. Still, invasive non-native plant densities are generally low throughout the preserve. Tamarisk in the Santa Maria Creek corridor should be treated using drill-and-kill and left as standing snags for practicality and cost; follow-up monitoring will be required. Widespread non-native grasses should be monitored (potentially as part of the ongoing grazing program within the preserve).

Habitat Enhancement / Restoration Opportunities

- **Santa Maria Creek Riparian Enhancement.** Several noticeable patches of tamarisk in this riparian corridor could be treated (and ideally removed) and replaced with native riparian woodland species. Italian plumeless thistle is very invasive in the understory of woodland habitat adjacent to Santa Maria Creek in the northwest portion of the preserve; this presents another restoration opportunity.

- **Native grassland restoration.** Localized grassland restoration may be feasible where non-native forb pressure is high. Vernal pool complexes supporting special-status plants should also remain a restoration and enhancement focus.

Encroachment

No unauthorized public use was observed, but areas adjacent to residential development may facilitate continued ornamental tree escape (chitalpa, catalpa). Targeted removal of these ornamental naturalized trees is recommended.

Monitoring

- **Invasive non-native plants.** Annual invasive plant monitoring is recommended, if feasible, with a focus on riparian areas and perennial invasive plant species including thistles (Italian plumeless thistle, bull thistle, artichoke thistle, blessed milkthistle), perennial pepper weed, prickly lettuce, tree tobacco, fountain grass, and tamarisk.

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SOURCE: ESRI Aerial Imagery 2025

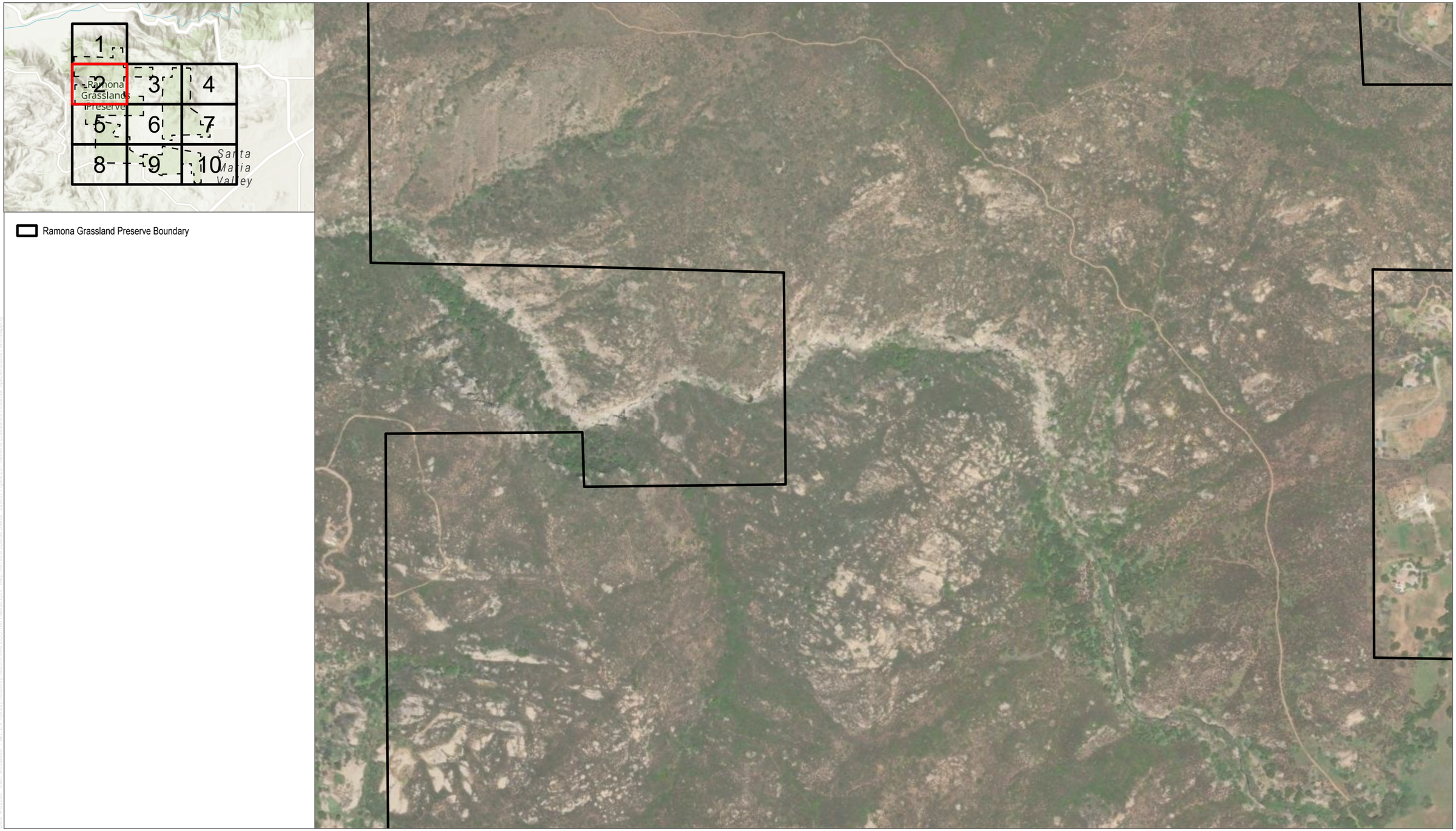
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FIGURE 29 - 1

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

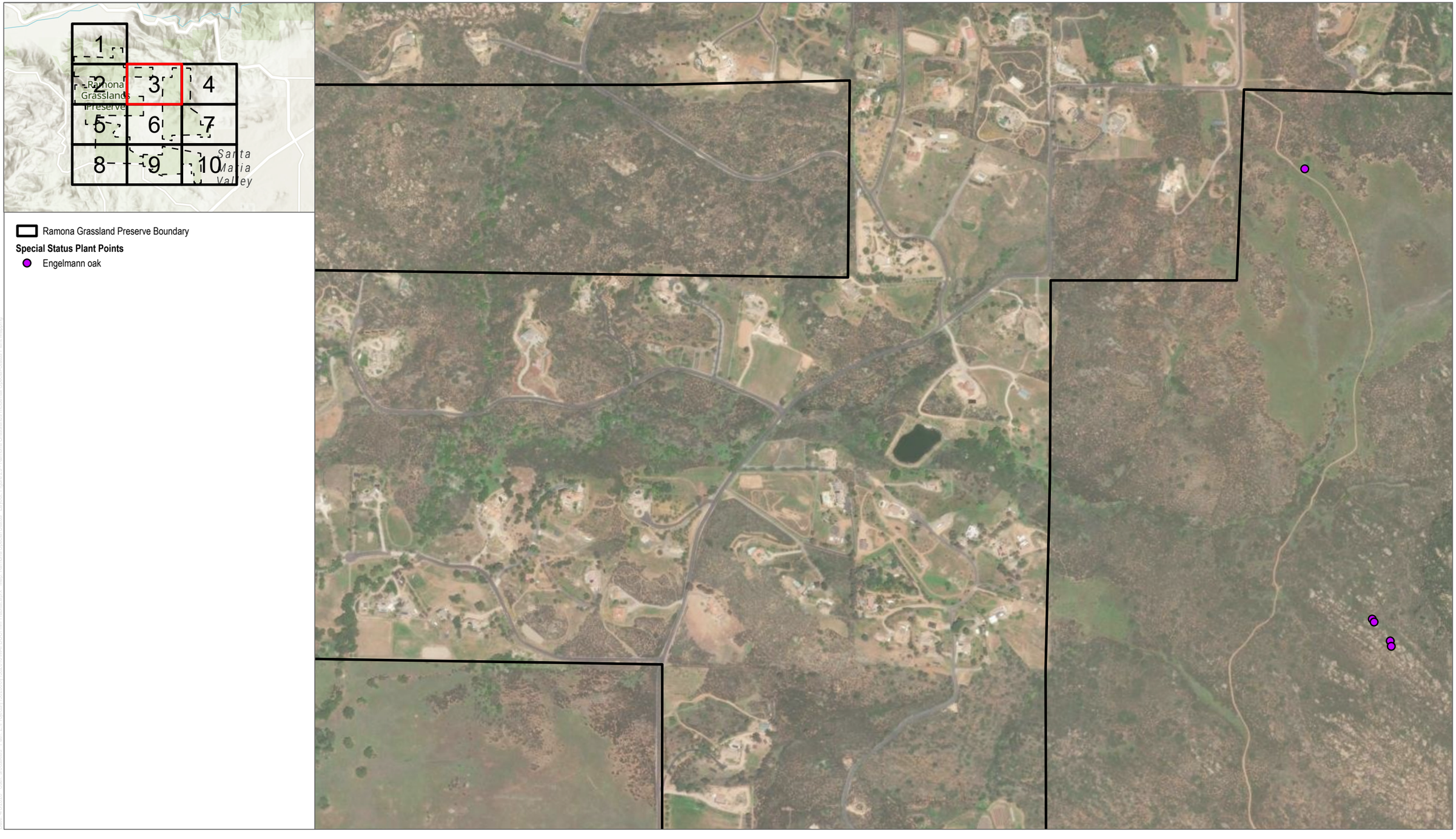
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FIGURE 29 - 2

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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0 310 620 Feet

FIGURE 29 - 3

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

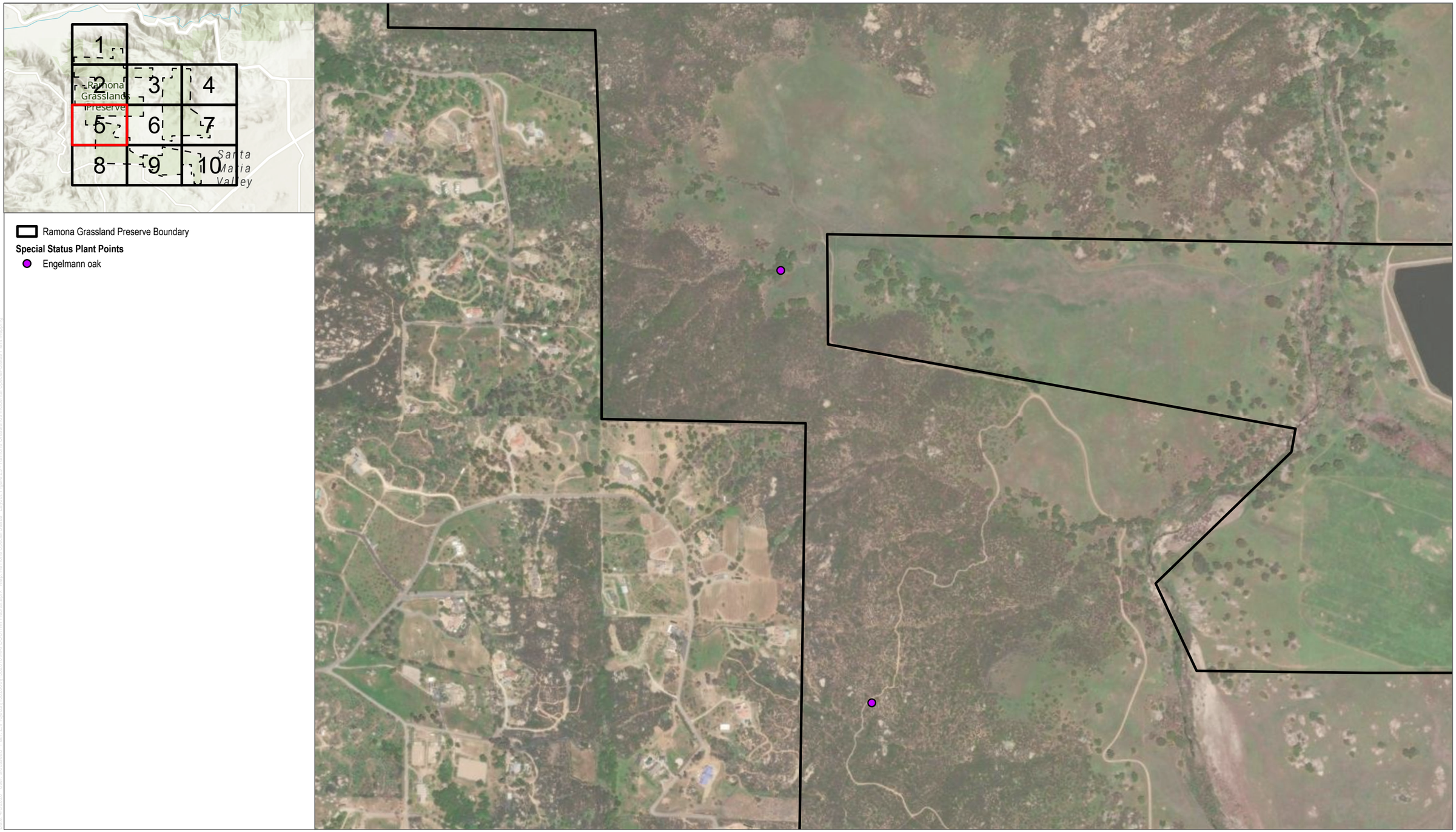
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FIGURE 29 - 4

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

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0 310 620 Feet

FIGURE 29 - 5

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

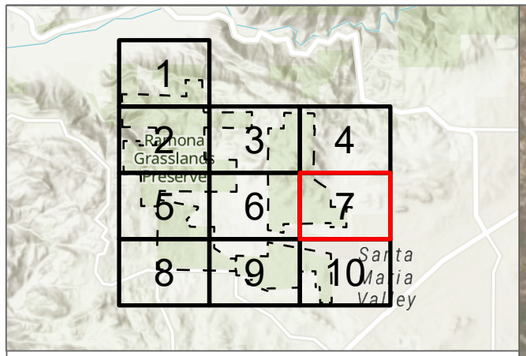
DUDEK

0 310 620 Feet

FIGURE 29 - 6

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



Ramona Grassland Preserve Boundary

Special Status Plant Points

Southern tarplant

Special Status Plant Polygons

Southern tarplant

SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 29 - 7

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

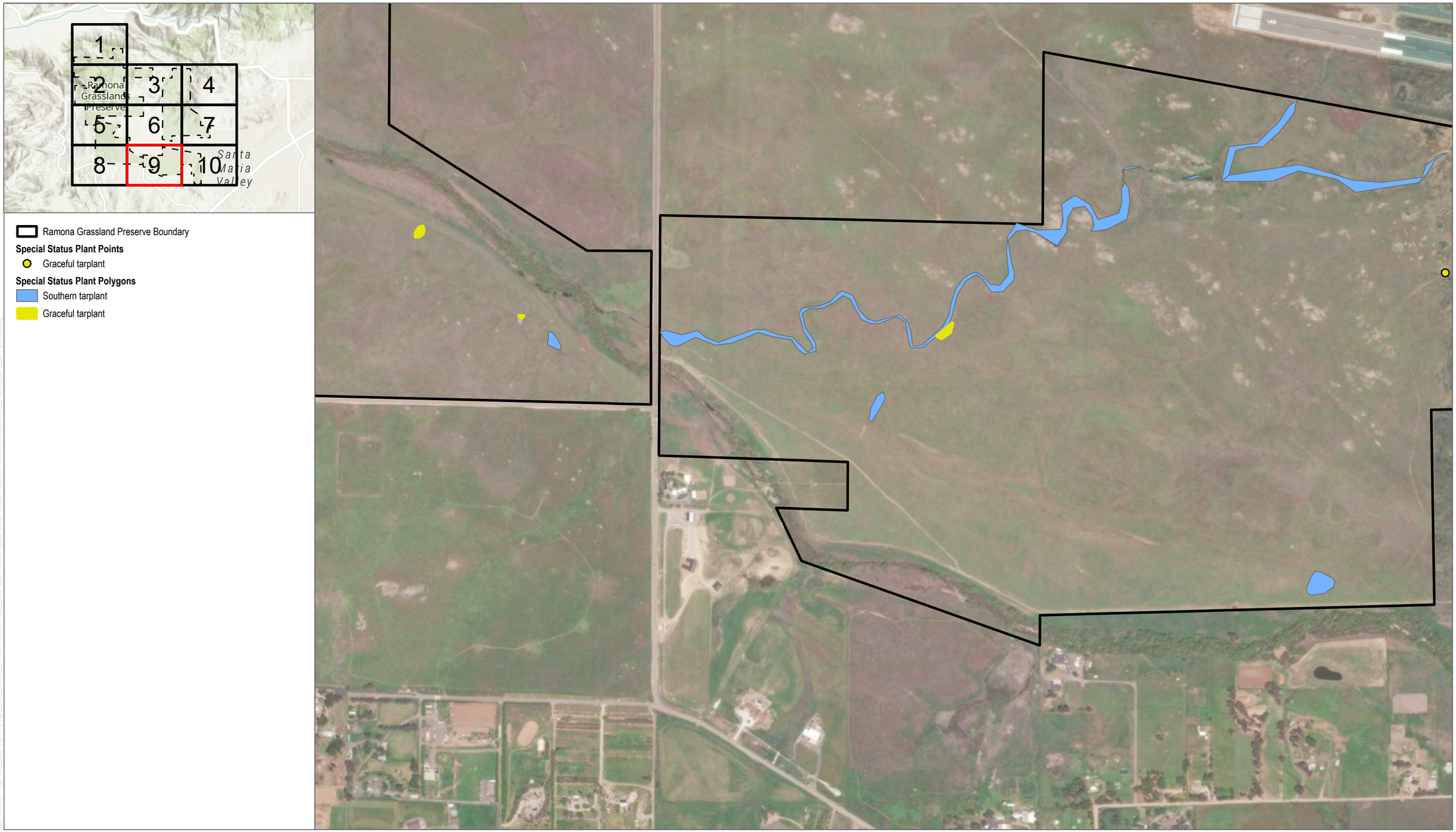
DUDEK

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FIGURE 29 - 8

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 29 - 9

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

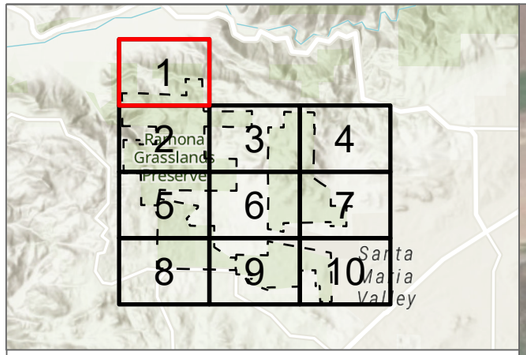
0 310 620 Feet

FIGURE 29 - 10

Ramona Grasslands Incidental Special-Status Plant Mapping

TMP Habitat Condition Report

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Ramona Grassland Preserve Boundary

SOURCE: ESRI Aerial Imagery 2025

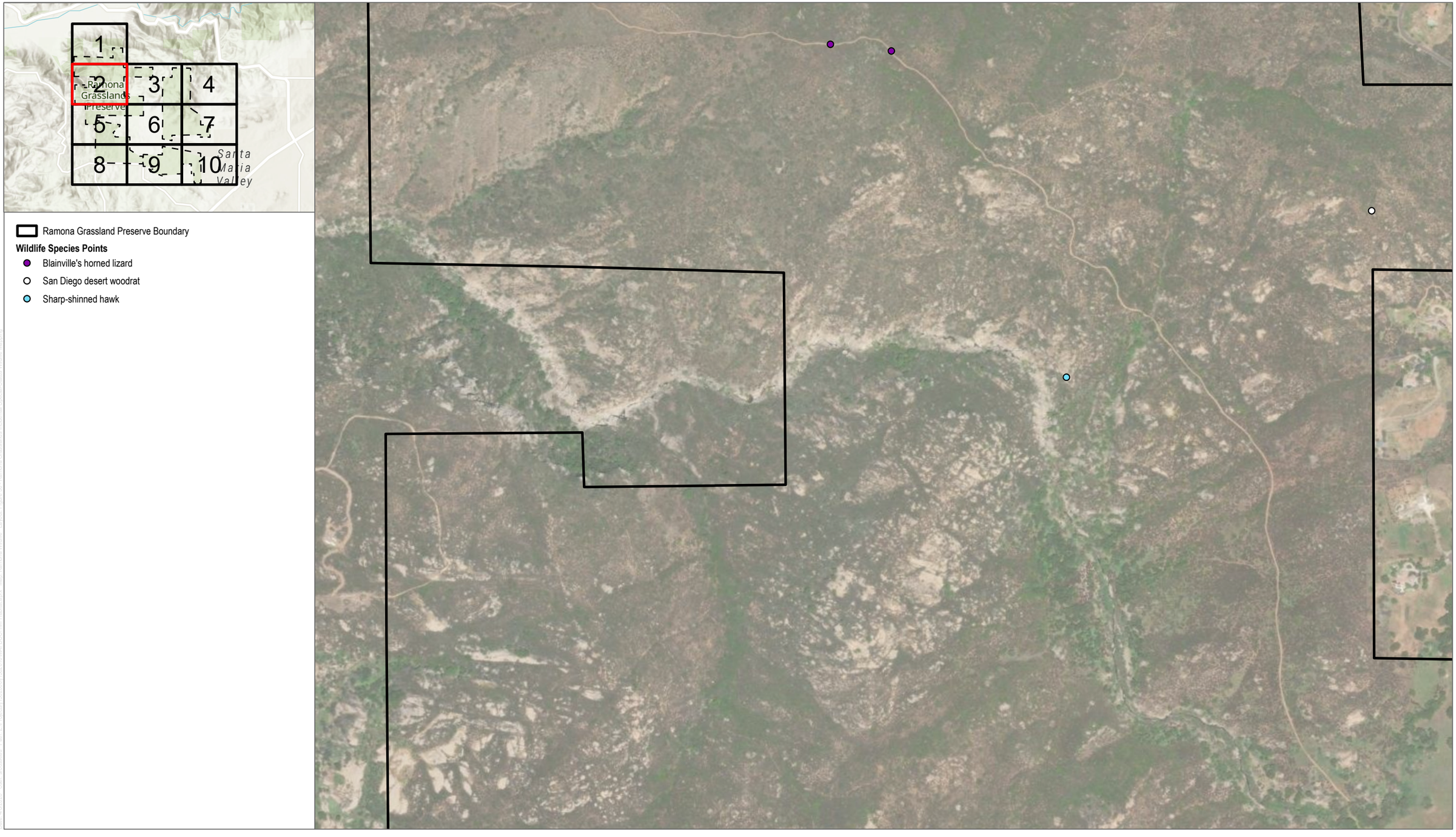
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FIGURE 30 - 1

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

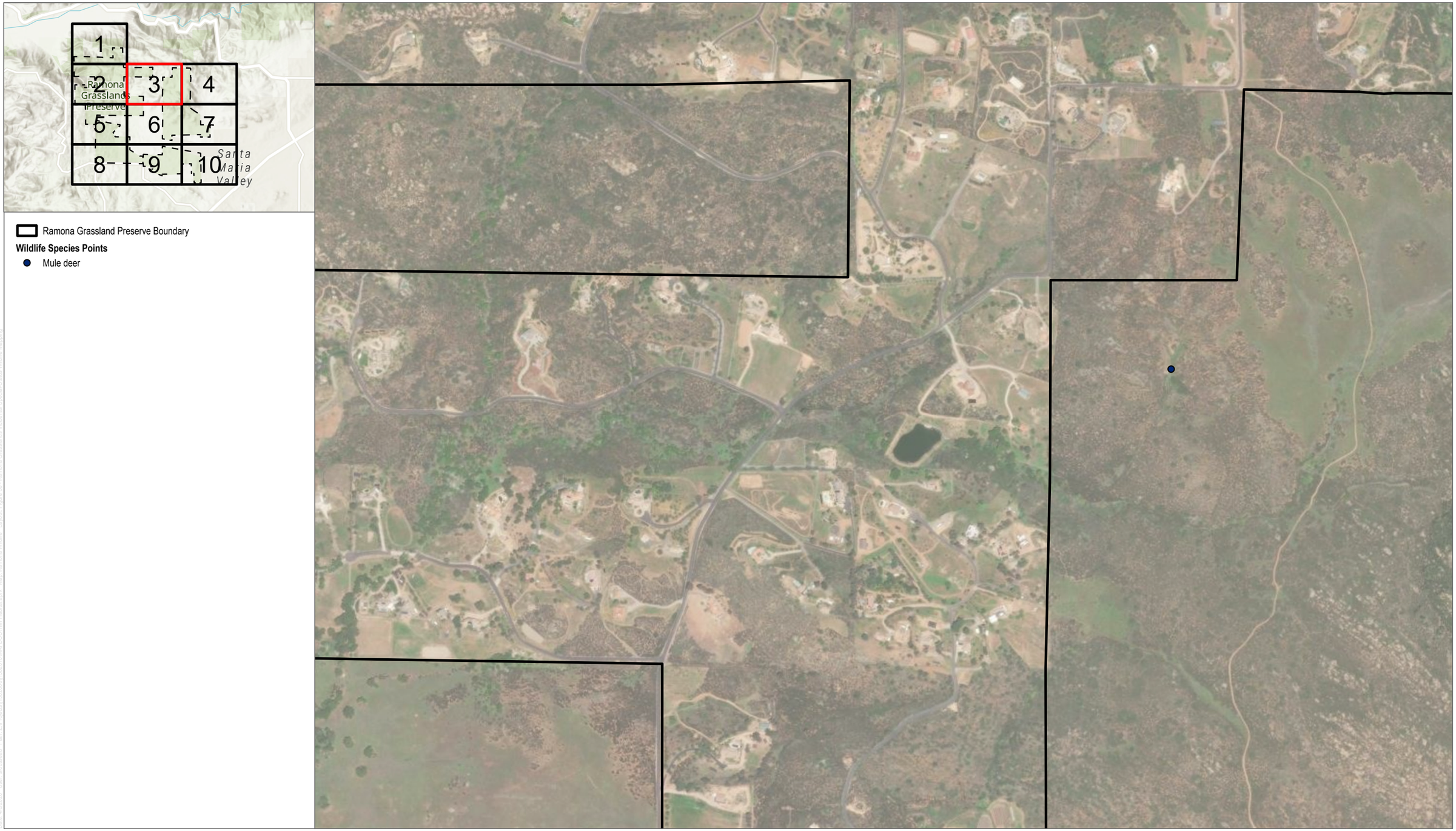
DUDEK

0 310 620 Feet

FIGURE 30 - 2

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 30 - 3

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

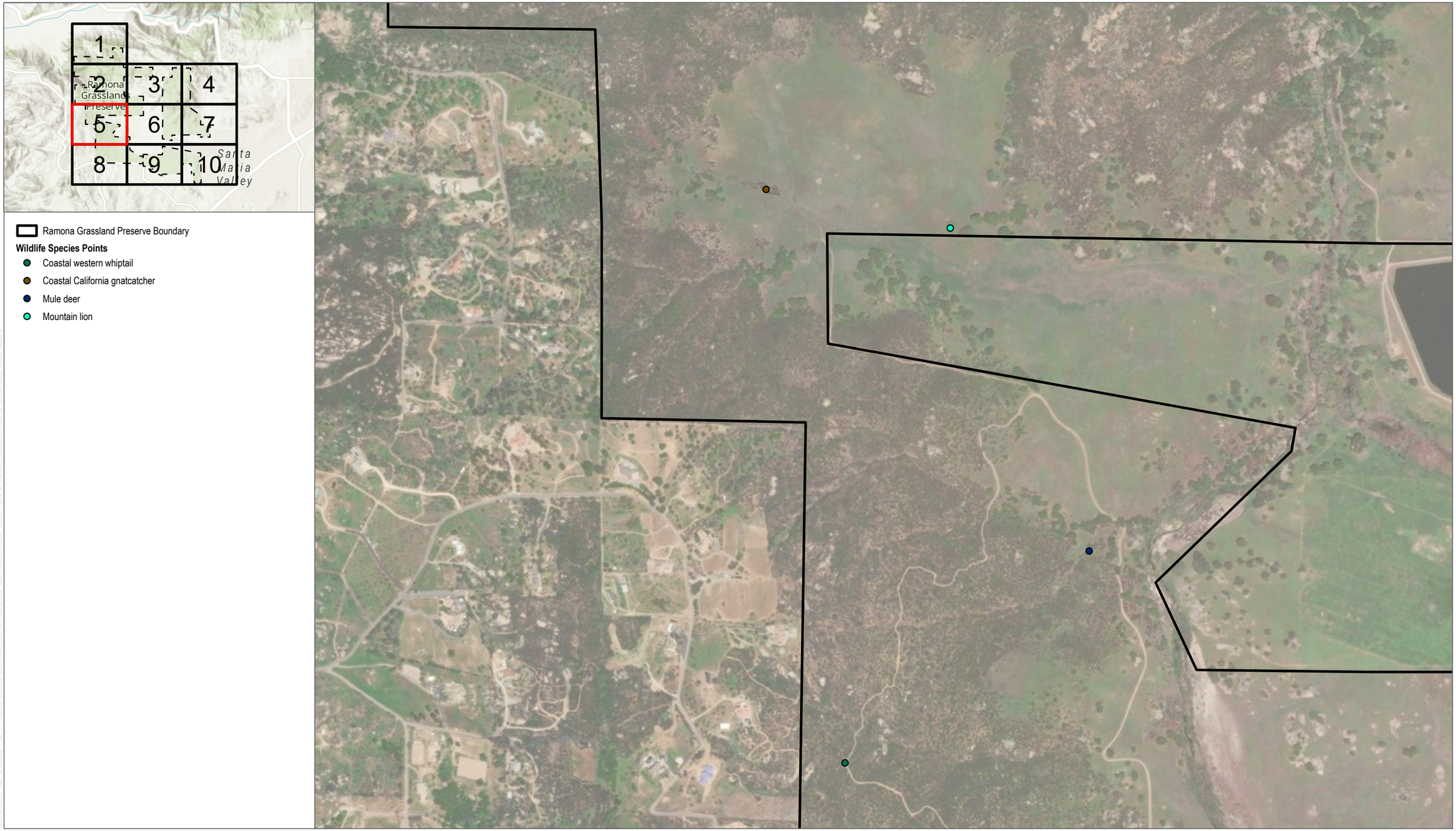
DUDEK

0 310 620 Feet

FIGURE 30 - 4

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 30 - 5

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

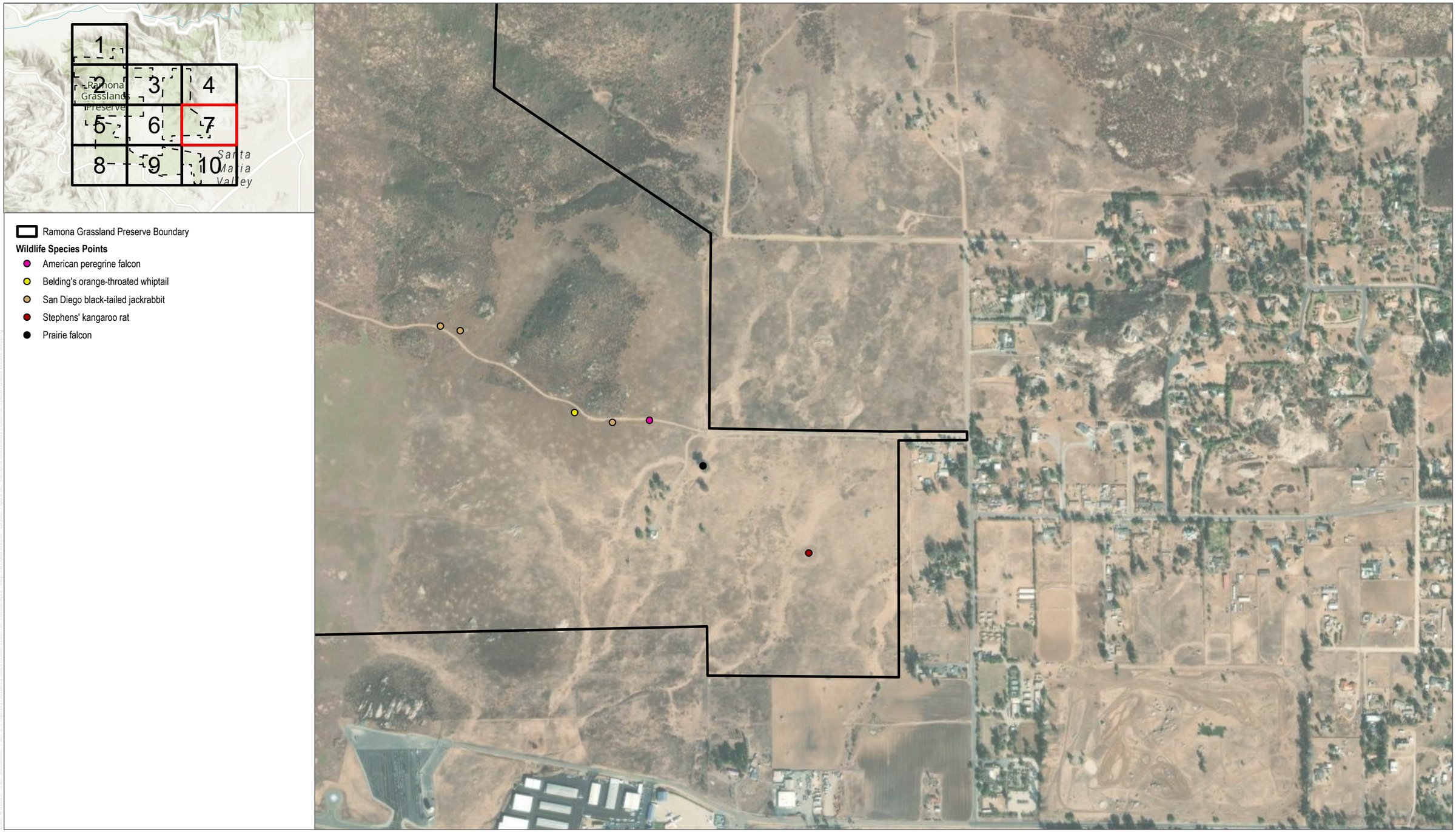
DUDEK

0 310 620 Feet

FIGURE 30 - 6

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 30 - 7

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

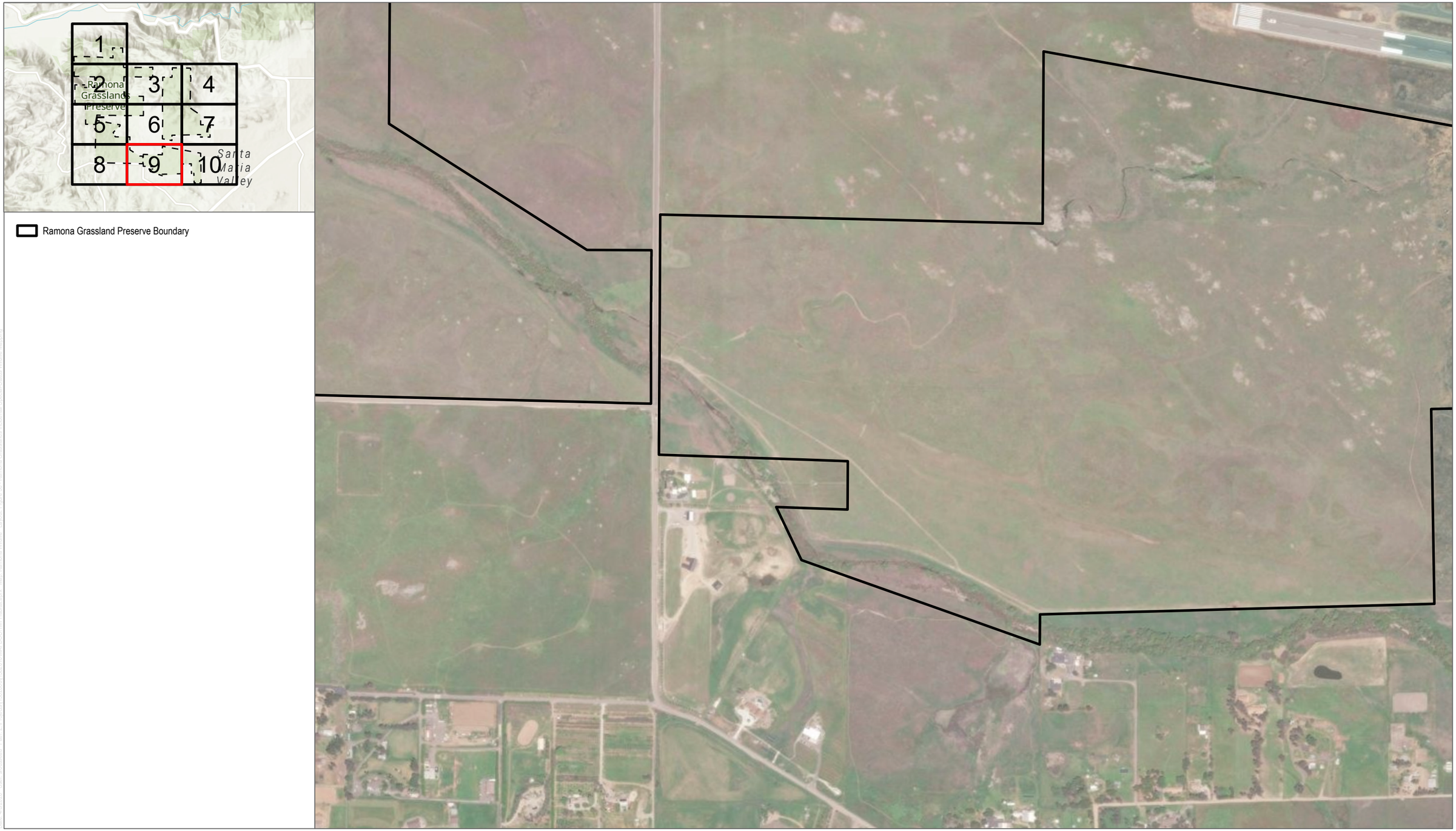
DUDEK

0 310 620 Feet

FIGURE 30 - 8

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 30 - 9

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report



SOURCE: ESRI Aerial Imagery 2025

DUDEK

0 310 620 Feet

FIGURE 30 - 10

Ramona Grasslands Incidental Special-Status Wildlife Mapping

TMP Habitat Condition Report

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Attachment A

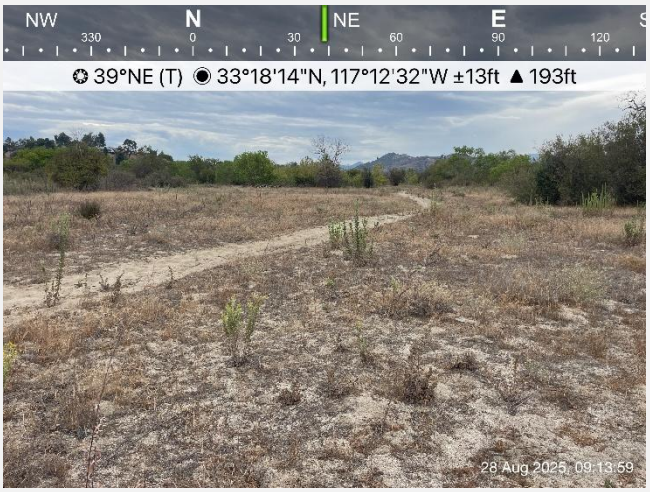
Photo Log



San Luis Rey Photo 1. View of an open area within dense southern cottonwood-willow riparian forest at San Luis Rey River Park. A small side channel of the San Luis Rey River is present (9.9.2025)



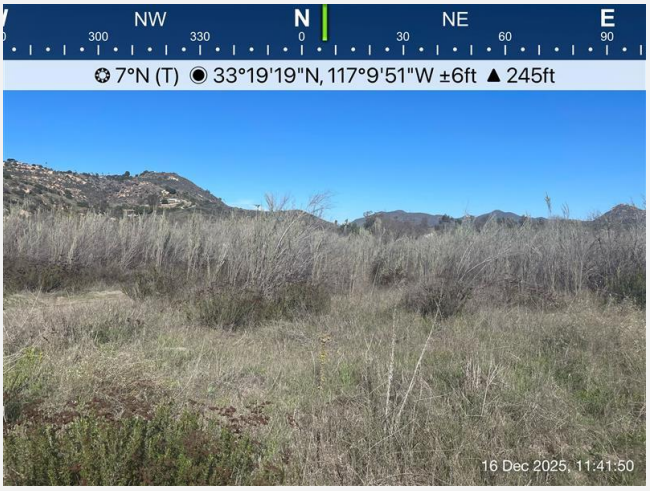
San Luis Rey Photo 2. View of a sandy side channel within San Luis Rey River Park. Dense southern cottonwood-willow riparian forest is seen in the background lining the river corridor (9.9.2025)



San Luis Rey Photo 3. View of a disturbed area within San Luis Rey River Park featuring a dirt path running through the center. The surrounding vegetation consists of southern cottonwood-willow riparian forest (8.28.2025)



San Luis Rey Photo 4. View of non-native grassland within San Luis Rey River Park, bordered by southern cottonwood-willow riparian forest (8.28.2025)



San Luis Rey Photo 5. View of arrowweed (*Pluchea sericea*) scrub within San Luis Rey River Park, occurring adjacent to Diegan coastal sage scrub (12.16.2025)



San Luis Rey Photo 6. View of non-native woodland within San Luis Rey River Park. The non-native woodland is composed mainly of ornamental pines and was often associated with the old golf course (12.15.2025)



Bottle Peak Photo 1. View of open area along an old trail in granitic southern mixed chaparral at Bottle Peak Preserve (7.18.2025)



Bottle Peak Photo 2. View of granitic southern mixed chaparral, representative of the dominant vegetation community at Bottle Peak Preserve (7.18.2025)



Bottle Peak Photo 3. View of Diegan coastal sage scrub in the foreground with southern mixed chaparral in the background at Bottle Peak Preserve (7.18.2025)



Bottle Peak Photo 4. An opening in Diegan coastal sage scrub at Bottle Peak Preserve, dominated by early successional non-native grassland and subshrub plant species (7.18.2025)



Bottle Peak Photo 5. View of a slope within Bottle Peak Preserve dominated by herbaceous vegetation, including non-native grasses and forbs, with sparse shrub cover along the upper edge (7.18.2025)



Bottle Peak Photo 6. View of southern mixed chaparral and Diegan coastal sage scrub within Bottle Peak Preserve, showing dense native shrub cover with minimal visible disturbance. Vegetation includes mature chaparral species and scattered herbaceous growth on exposed soil in the foreground (7.18.2025)



Lusardi Creek Photo 1. View of riparian habitat bordering a flooded road in Lusardi Creek Preserve. Vegetation includes willows and characteristic freshwater marsh species (12.12.2025)



Lusardi Creek Photo 2. View of riparian habitat within Lusardi Creek Preserve, dominated by willows and mulefat (*Baccharis salicifolia*), with invasive Arundo (*Arundo donax*) encroaching into the area (12.12.2025)



Lusardi Creek Photo 3. View of Eucalyptus trees lining Artesian Road through Lusardi Creek Preserve (12.12.2025)



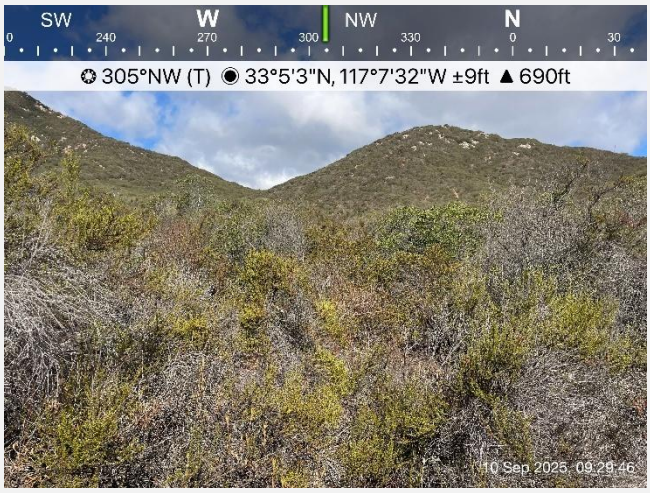
Lusardi Creek Photo 4. View of Diegan coastal sage scrub in Lusardi Creek Preserve, representative of the dominant vegetation community occurring along the slopes within the preserve (12.12.2025)



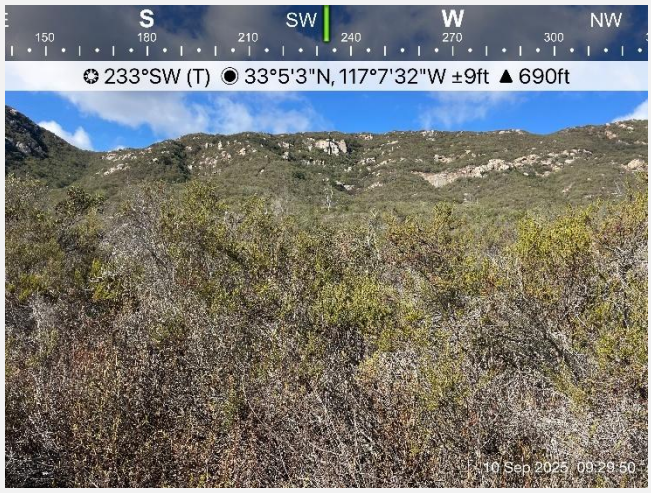
Lusardi Creek Photo 5. View of mixed habitat within Lusardi Creek Preserve consisting of eucalyptus woodlands in the background, interspersed with Diegan coastal sage scrub and non-native grass cover (12.12.2025)



Lusardi Creek Photo 6. View of a dirt trail in Lusardi Creek Preserve leading toward a riparian habitat zone. Diegan coastal sage scrub is visible along the slopes in the background (12.12.2025)



Del Dios Photo 1. View of southern maritime chaparral in Del Dios Highlands Preserve, representative of the dominant vegetation community. Vegetation appears dense with minimal visible disturbance, and is comprised of mature native shrubs including chamise (*Adenostoma fasiculatum*), mission manzanita (*Xylococcus bicolor*) and wart-stemmed ceanothus (*Ceanothus verrucosus*) (9.10.2025)



Del Dios Photo 2. View of dense southern maritime chaparral habitat on granitic slopes in Del Dios Highlands Preserve (9.10.2025)



Del Dios Photo 3. View of southern maritime chaparral within Del Dios Highlands Preserve along the Del Dios Highland Trail, characterized by dense native shrub cover with localized areas of exposed soil. Bare ground adjacent to the trail indicates human disturbance, likely from trampling or an unauthorized trail connecting to a utility access road and the Olivenhain Reservoir below (9.11.2025)



Del Dios Photo 4. Overview of southern maritime chaparral within Del Dios Highlands Preserve (9.110.2025)



Del Dios Photo 5. View of barrier within Del Dios Highlands Preserve with a prohibited access sign. Evidence of human disturbance is visible beyond the restricted area, where vegetation appears trampled and a narrow path extends into the habitat, indicating trespassing and potential impacts to sensitive vegetation (9.11.2025)



Del Dios Photo 6. View of bat houses installed within Del Dios Highlands Preserve near the Elfin Forest Recreational Reserve parking lot. Cut stumps and cleared vegetation are visible in the foreground, indicating past restoration/invasive removal efforts. Dense southern maritime chaparral occupies the background (9.11.2025)



Boulder Oaks Photo 1. View of granitic southern mixed chaparral, representative of the dominant vegetation community in Boulder Oaks Preserve (7.30.2025)



Boulder Oaks Photo 2. View of granitic southern mixed chaparral in Boulder Oaks Preserve near an authorized hiking trail leading to a high point in the central portion of the preserve. The high point is technically not within the preserve boundaries and is associated with an adjacent landowner (7.30.2025)



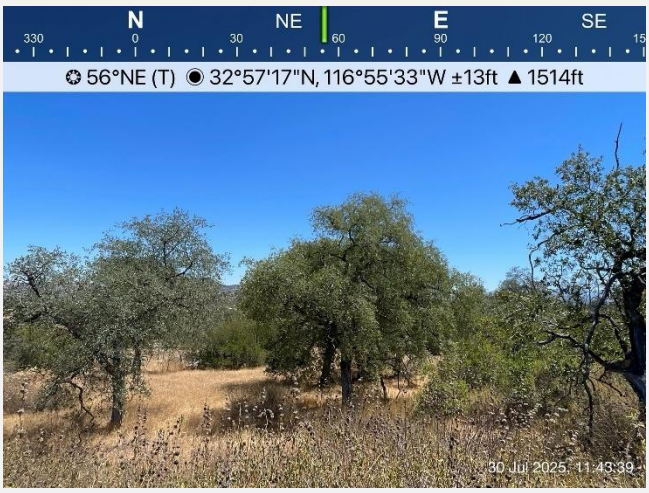
Boulder Oaks Photo 3. View of non-native grassland interspersed with coast live oak (*Quercus agrifolia*) woodland along a dirt access road within Boulder Oaks Preserve (7.30.2025)



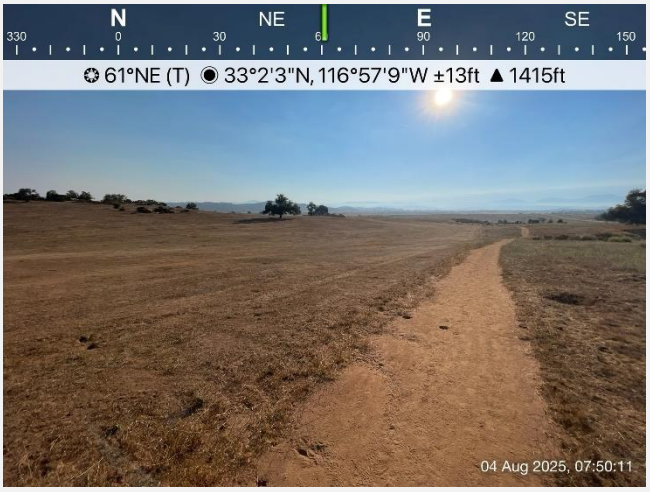
Boulder Oaks Photo 4. View of southern mixed chaparral and rugged mountainous terrain in the southern portion of Boulder Oaks Preserve, looking towards San Vicente Reservoir (7.30.2025)



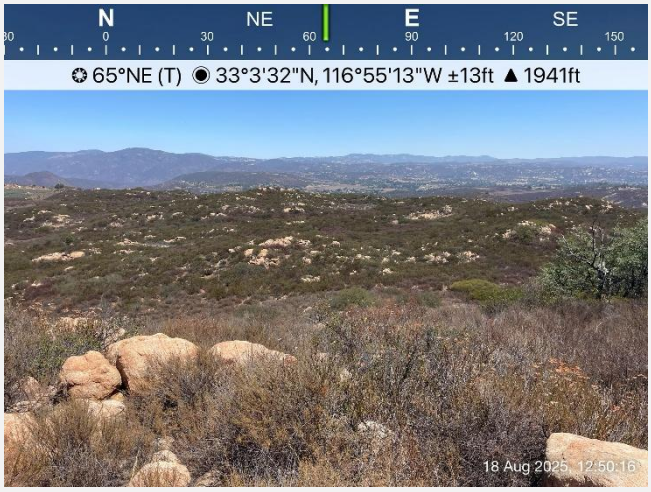
Boulder Oaks Photo 5. View of non-native grassland characteristic of flatter lowland areas in Boulder Oaks Preserve (7.29.2025)



Boulder Oaks Photo 6. View of Engelmann oak (*Quercus engelmanni*) woodland in Boulder Oaks Preserve (7.30.2025)



Ramona Grasslands Photo 1. View of dirt trail traversing a non-native grassland within Ramona Grasslands Preserve, an area previously subject to mowing. Several coast live oaks are visible dispersed in the background (8.4.2025)



Ramona Grasslands Photo 2. Overview of northeastern portion of Ramona Grasslands Preserve dominated by Diegan coastal sage scrub and coastal sage-chaparral transition vegetation (8.4.2025)



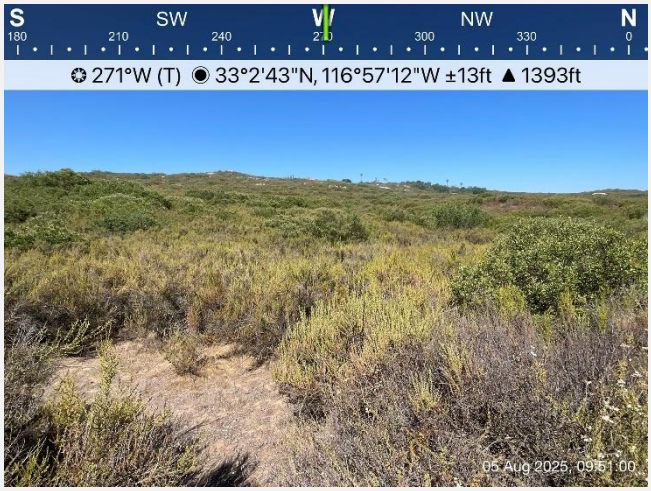
Ramona Grasslands Photo 3. View of non-native grassland within Ramona Grasslands Preserve, showing evidence of cattle grazing and cattle trails through a potential vernal pool in a rocky meadow (8.4.2025)



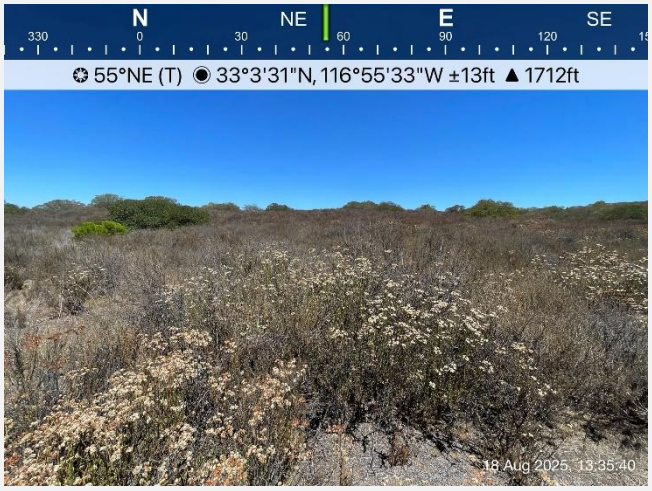
Ramona Grasslands Photo 4. View of herbaceous wetland plants (*Juncus* sp.) bordering a dried pond in Ramona Grasslands Preserve, with coast live oak woodlands visible in the background (8.4.2025)



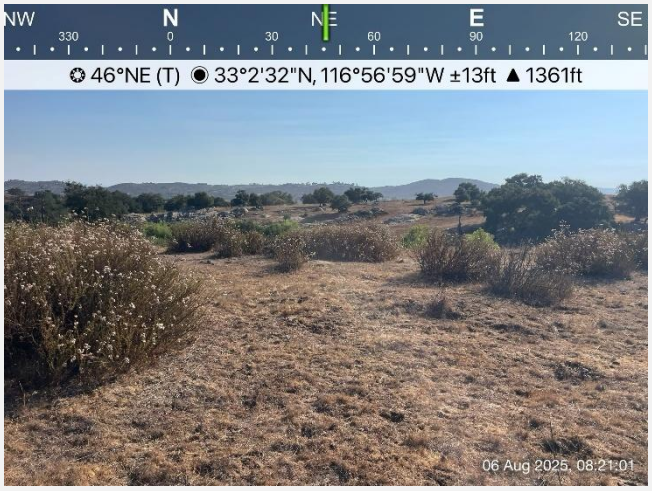
Ramona Grasslands Photo 5. View of a rocky riparian canyon associated with Santa Maria Creek in Ramona Grasslands Preserve. Scattered willows and sycamore (*Platanus racemosa*) trees are present along the drainage bottom. Upper hill slopes in the background consist of Diegan coastal sage scrub (8.4.2025)



Ramona Grasslands Photo 6. View of scrub oak chaparral in Ramona Grasslands Preserve, characterized by dense native shrub cover. Dominant species are chamise and scrub oak (*Quercus berberidifolia [x acutidens]*) (8.5.2025)



Ramona Grasslands Photo 7. View of Diegan coastal sage scrub within Ramona Grasslands Preserve, dominated by California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), and black sage (*Salvia mellifera*) (8.5.2025)



Ramona Grasslands Photo 8. View of grassy Diegan coastal sage scrub within Ramona Grasslands Preserve, with coast live oak woodlands in the background. Evidence of recent grazing of grasses is present (8.6.2025)

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