

**San Diego Association of Governments (SANDAG)
Memorandum of Understanding (MOU) #5004552**

**Strategic Control of Invasive Weed Species
4th Quarter Report - FY 2022-23: Report #34 for Project**

April 1st, 2023 – June 30th, 2023

Project: County of San Diego, Department of Agriculture, Weights & Measures –
Strategic Removal of Invasive Weed Species

To: Kim Smith
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Project:

Invasive plants are considered one of the biggest threats to endangered species and their habitats. A strategic plan for managing non-native invasive plant species in San Diego County was completed in 2012 through a SANDAG contract to the Conservation Biology Institute (CBI) (<http://sdmmp.com>). The Invasive Plant Strategic Plan (IPSP) is designed to develop a strategic approach towards the eradication and management of invasive plants in the San Diego region. The IPSP is meant to work in conjunction with the Management Strategic Plan for Conserved Lands in Western San Diego County (MSP) ([Management Strategic Plan](#)).

This Scope of Work will require the contractor to focus on the management of invasive plants identified in Levels 1, 2, and 3 of the IPSP. The following tasks have been identified as necessary to implement this effort:

This quarterly report covers work funded through the SANDAG Contract, which allowed work to occur from April 1st through June 30th 2023.

TASK 1 – Invasive Plant Species Coordinator:

Level of Effort: (25%) of overall contract

Right of Entry (ROE) work and coordination with property owners and crews:

Coordination with property owners, land managers and AWM crew occurred throughout the quarter. This supported work this quarter and preparation for the next quarter. To assist the AWM County crew complete its control work the coordinator visited and hand pulled plants from a number of sites for the following species: Spotted Knapweed, Desert Knapweed, Limonium, and Canary Island Saint John's Wort.

The coordinator worked on multiple species at sites across the county:

The coordinator visited multiple sites to assess conditions for the following species: Limonium, Boneseed, Carnation Spurge, Desert Knapweed, Wards's Weed, Barbed Goatgrass, Canary Island Saint John's Wort, and Spotted Knapweed.

Regulatory permits:

No new work.

Report preparation:

The quarterly report was prepared and submitted. The contract final report and work plan was also prepared.

Mapping and occurrence data:

Reviewing iNaturalist Early Detection Rapid Response (EDRR) observations (confirming and correcting IDs), as well as mapping and surveying for new populations occurred. GIS coverage of all sites was updated (points). GIS coverage of all work was updated (polygons). This data is then uploaded into Calflora.

Work plan:

Work crew species and sites to be treated was updated. The two-year contract report includes a work plan as well.

TASK 2 – AWM: Invasive Plant Level 1 Management

Level of Effort: (<10%) of overall contract.

Level 1 Management Species are EDRR targets that were **not known to occur** in the county when the IPSP was written (2012).

The County AWM crew surveyed and removed two invasive weed species (Barbed Goatgrass and Carnation Spurge) at three sites this quarter. Maps for each site show treated areas (red polygons) and surveyed areas as white lines which track pathways used by crews to survey and control plants. AWM IPC carried out optimal plant control, either hand pulling or using pesticide applications, protected the natural environment by preventing off-site movement of pesticides, and utilized Best Management Practices (BMPs) that prevented unintentional discharges to surface waters. For each site, AWM IPC followed the following procedures:

1. Identified the pest species to be treated.
2. Reviewed site conditions, such as soil texture, slope, standing water, irrigation or storm drains.
3. Identified and avoided streamside management areas and surface waters to prevent drift and application of pesticides not labeled for aquatic use onto surface waters.
4. Identified most appropriate method of control based on integrated pest management methods, designed to minimize the scale and number of pesticide applications.
5. Applied the least persistent and least toxic pesticide that effectively mitigates the target pest.

Table 1. Summary of treatments performed by AWM on Level 1 species this quarter.

Scientific Name	Common Name	# of Sites Worked	Acres Treated	Acres Surveyed	Plants Controlled
<i>Aegilops triuncialis</i>	Barbed Goatgrass	1	2.4	5.3	26,000
<i>Euphorbia terracina</i>	Carnation Spurge	2	3.7	6.0	1,700

Aegilops triuncialis (Barbed Goatgrass):

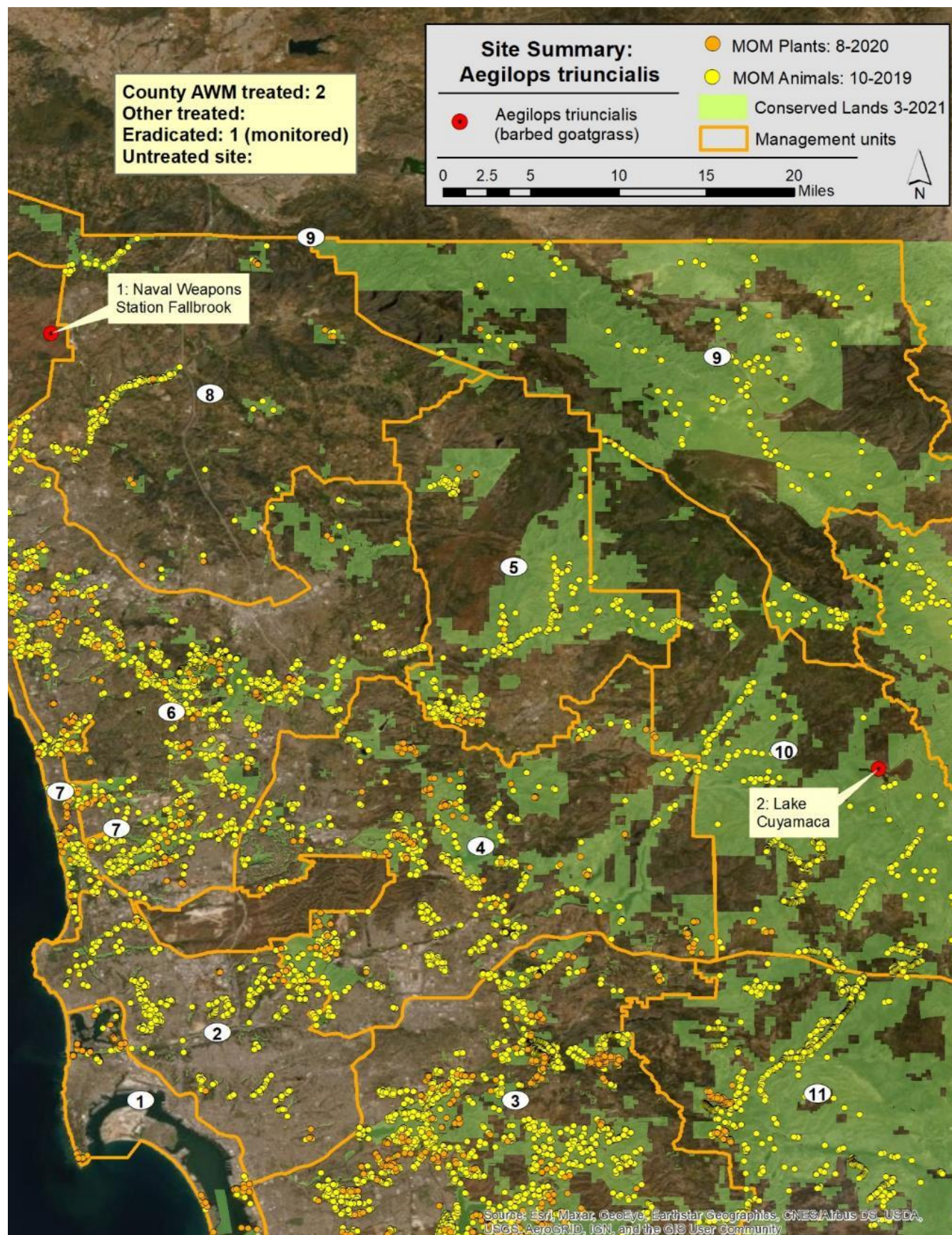
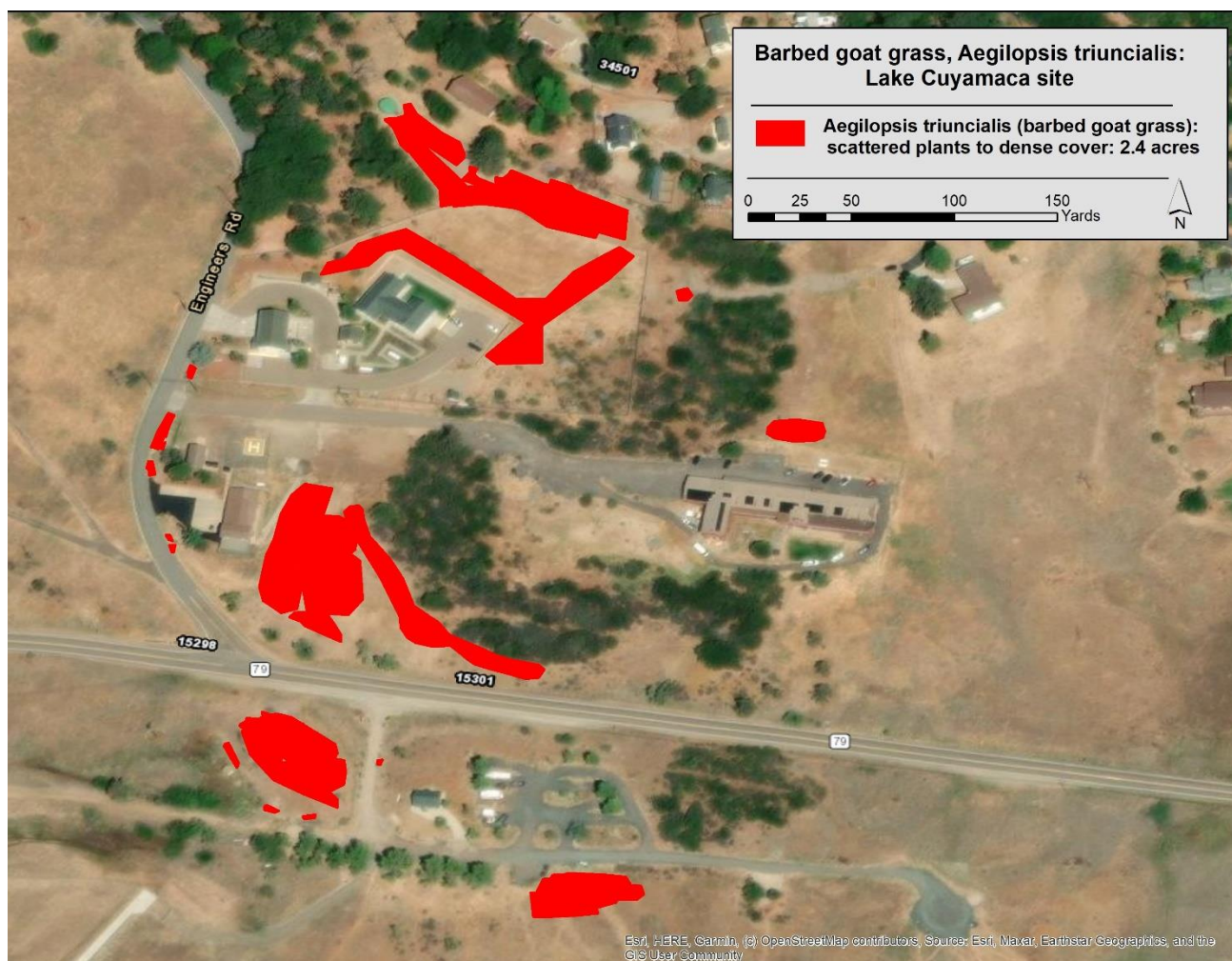


Table 2. Summary of treatments performed by AWM on *Aegilops triuncialis* (Barbed Goatgrass).

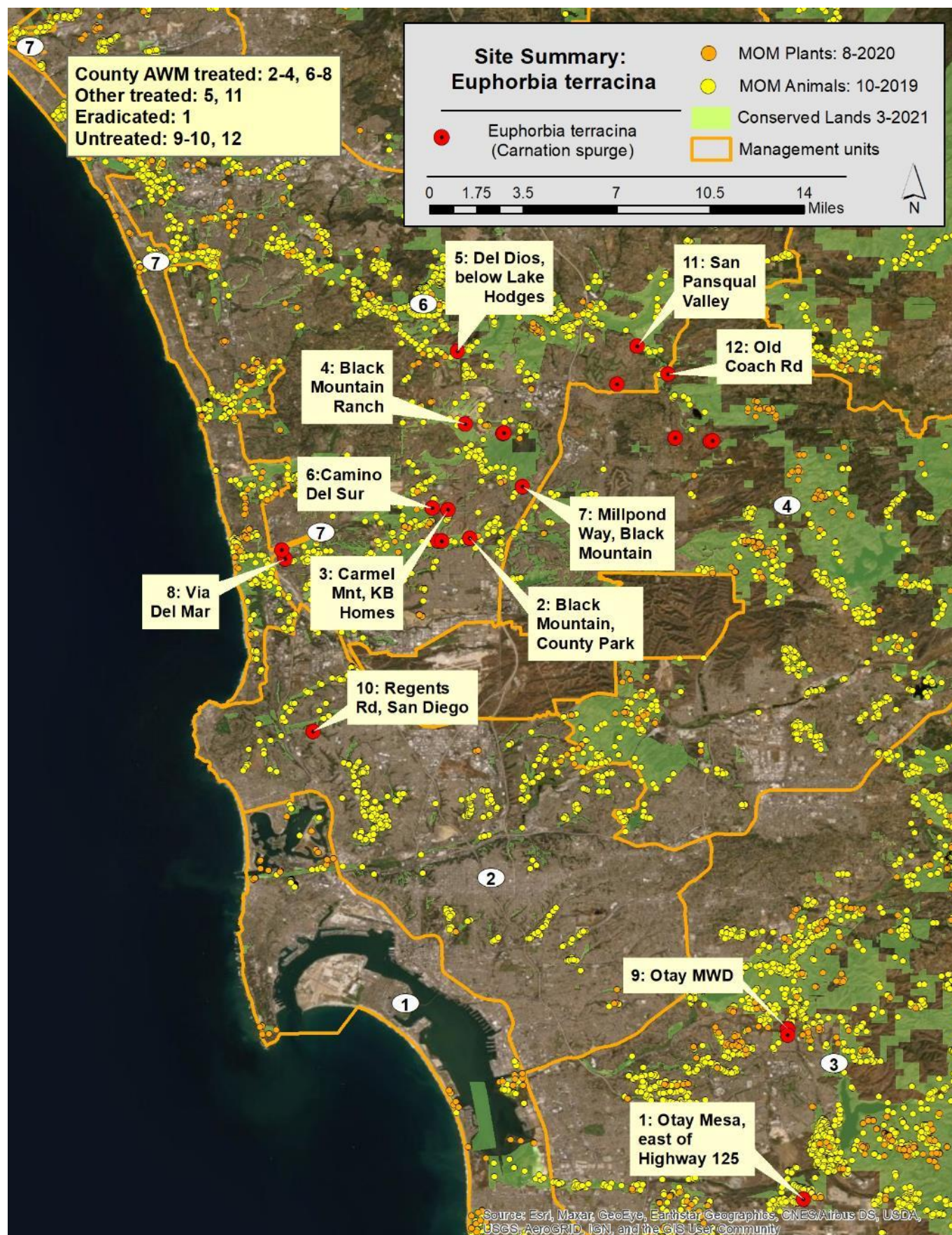
Work Site	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants Controlled
Site #2 Lake Cuyamaca	Barbed Goatgrass	1	2.4	5.3	26,000

***Aegilops triuncialis* (Barbed Goatgrass): Site #2 Lake Cuyamaca**

An AWM crew of one to two individuals controlled Barbed Goatgrass over 13 days between May 23rd and June 15th 2023. The split treatment using Method 240 SL pre-emergent does not seem to have worked well. Heavy winter rains saw an extensive flush of seedlings from the seedbank. The crew treated the entire site with post-emergent, but plants were mature by the end of the work cycle so efficacy may have been low. This remains the only site in the County, but control has been very challenging. A different pre-emergent may be tried in winter 2023/24.



Euphorbia terracina (Carnation Spurge):

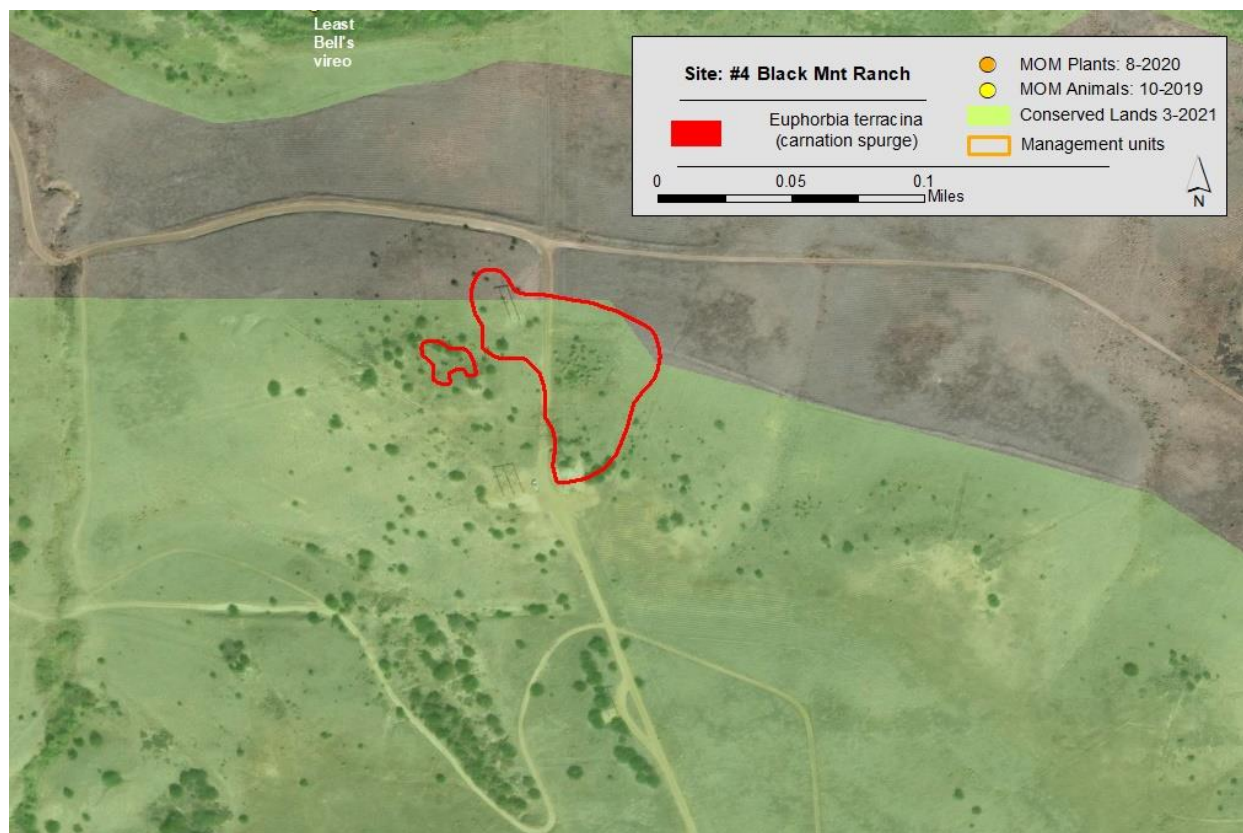


Euphorbia terracina (Carnation Spurge): Site #4 Black Mt. Ranch, along Road

Table 3. Summary of treatments performed by AWM on *Euphorbia terracina* (Carnation Spurge).

Work Site	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants Controlled
Site #4 Black Mt. Ranch	Carnation Spurge	1	3.2	5.5	1,200
Site #4 Black Mt. Rd area	Carnation Spurge	1	0.3	0.3	400

An AWM crew of two treated the site over four days June 22nd - 28th 2023. Plants were hand pulled and granular pre-emergent was spread. There were scattered patches of mostly seedlings and young plants (1,200). The site is quite large, but it has had good suppression of plants (>90%).



A second nearby area along Black Mt. Road was treated by the AWM crew for two days January 26th - 27th 2023. Plants were hand pulled and granular pre-emergent was spread. There were scattered seedlings and young plants (400).

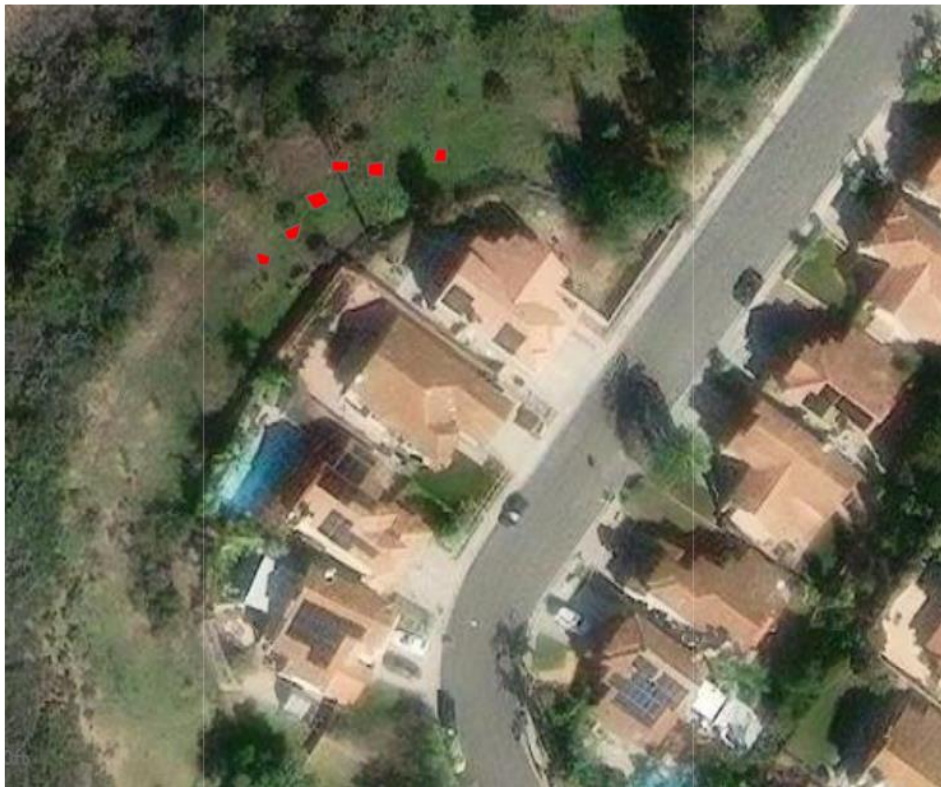


***Euphorbia terracina* (Carnation Spurge): Site #3, Carmel Mt. Road**

Table 4. Summary of treatments performed by AWM on *Euphorbia terracina* (Carnation Spurge).

Work Site	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants Controlled
Site #3, Carmel Mt. Road, Deer Canyon area	Carnation Spurge	1	0.2	1.0	100

An AWM crew of one treated the site on June 23rd 2023. Plants were hand pulled and granular pre-emergent was spread. There were scattered patches of mostly seedlings and young plants (100).



TASK 3 – AWM: Invasive Plant Level 2 Management.

Level of Effort: (>40%) of overall contract

Level 2 Management Species are EDRR targets that were of limited distribution in the county when the IPSP was written (2012).

Crews surveyed and treated three invasive weed species (Yellow Starthistle, Boneseed, and Canary Island St John's Wort) at six sites this quarter. Maps for each site show treated areas (red polygons) and surveyed areas as white lines which track pathways used by crews to survey and control plants. AWM IPC made optimal pesticide applications, protected the natural environment by preventing off-site movement of pesticides, and utilized Best Management Practices (BMPs) that prevented unintentional discharges to surface waters. For each site, AWM crews followed the following procedures:

1. Identified the pest species to be treated.
2. Reviewed site conditions, such as soil texture, slope, standing water, irrigation or storm drains.
3. Identified and avoided streamside management areas and surface waters to prevent drift and application of pesticides not labeled for aquatic use onto surface waters.
4. Identified most appropriate method of control based on integrated pest management methods, designed to minimize the scale and number of pesticide applications.
5. Applied the least persistent and least toxic pesticide that effectively mitigates the target pest.

Table 5. Summary of treatments performed by AWM on Level 2 species this quarter.

Scientific Name	Common Name	# of Sites Worked	Acres Treated	Acres Surveyed	Plants Controlled
<i>Centaurea solstitialis</i>	Yellow Starthistle	1	0.1	0.6	300
<i>Chrysanthemoides monilifera</i> ssp. <i>monilifera</i>	Boneseed	2	0.3	5.2	55
<i>Hypericum canariense</i>	Canary Island St. John's Wort	3	2.8	17.7	3,115

Centaurea solstitialis, Yellow Starthistle:

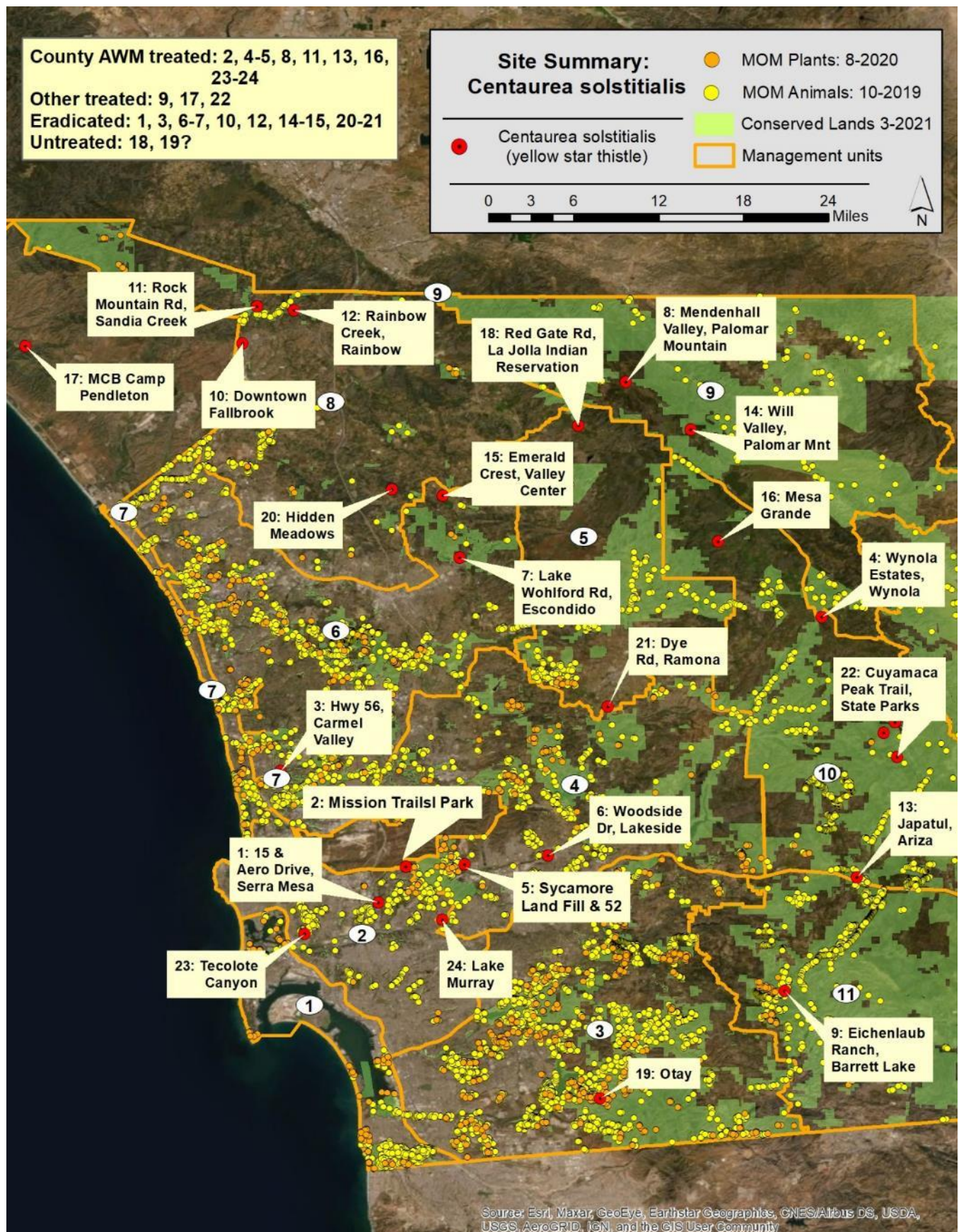
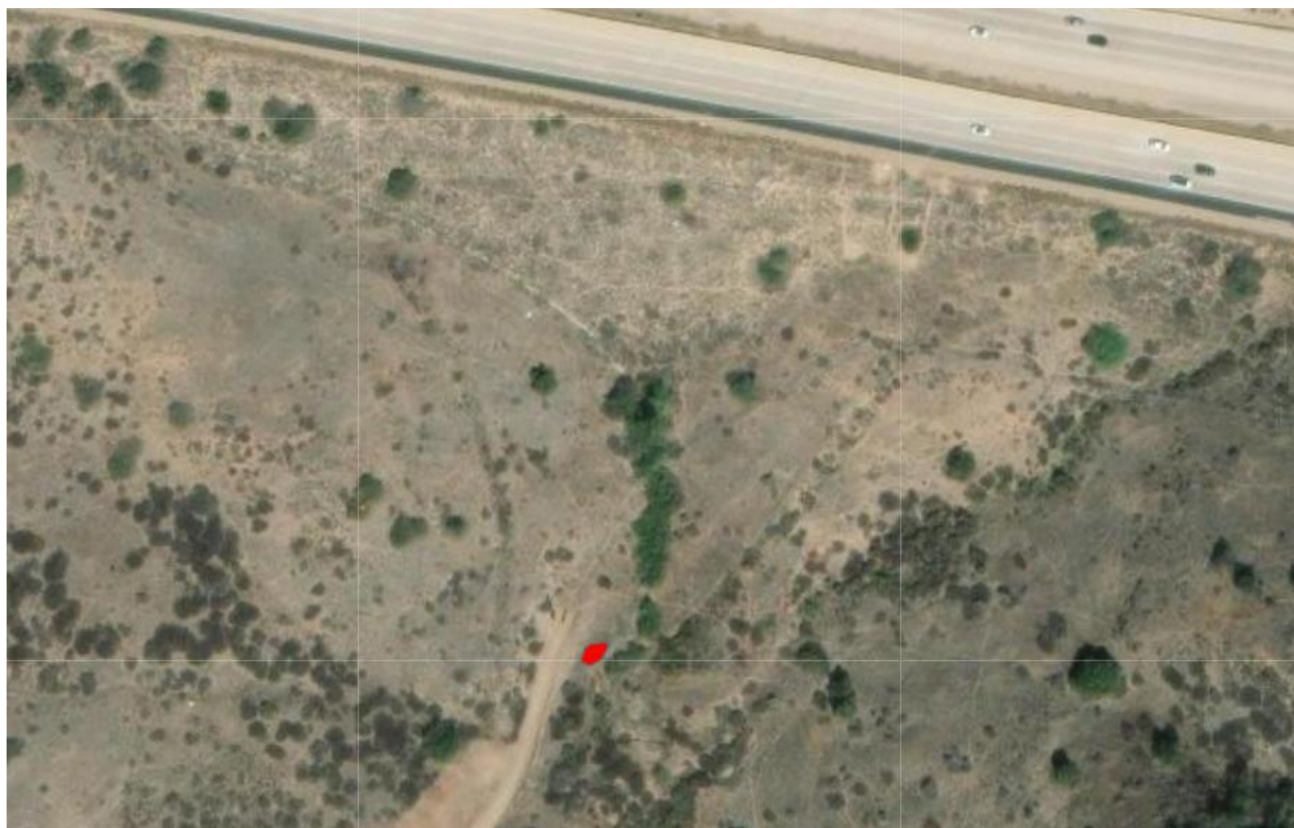


Table 6. Summary of treatments performed by AWM on *Centaurea solstitialis* (Yellow Starthistle).

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #2, Mission Trails, San Diego	Yellow Starthistle	1	0.1	0.6	300

***Centaurea solstitialis*, Yellow Starthistle: Site #2, Mission Trails Park**

An AWM crew of one individual worked at the site on June 30th 2023. 300 plants were hand pulled and granular pre-emergent was applied (several more days were worked in the next quarter). No plants were observed in 2022 and 86 plants were found in patches in 2021.



Chrysanthemoides monilifera ssp. monilifera, Boneseed:

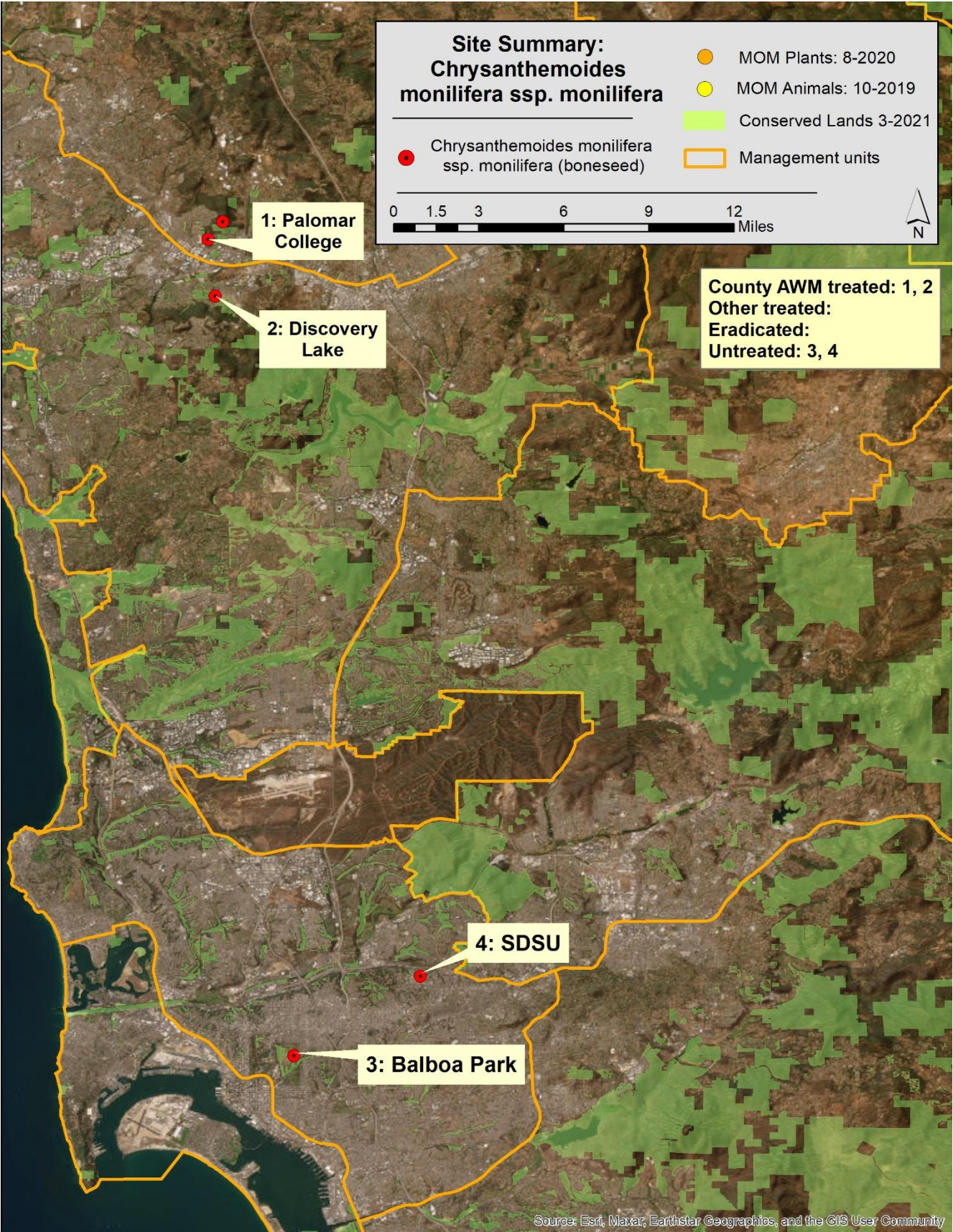


Table 7. Summary of treatments performed by AWM on *Chrysanthemoides monilifera* ssp. Monilifera (Boneseed).

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #1 Palomar College, San Marcos	Boneseed	1	0.2	5.0	70

***Chrysanthemoides monilifera* ssp. monilifera, Boneseed: Site #1, Palomar College, San Marcos**

Two individuals worked at the site on May 9th 2023. 70 plants (30 medium plants and 40 seedlings) were hand pulled. This was the first re-treatment of the site following last year's initial work. Control was >95% of adult plants, and seedlings were very spotty.

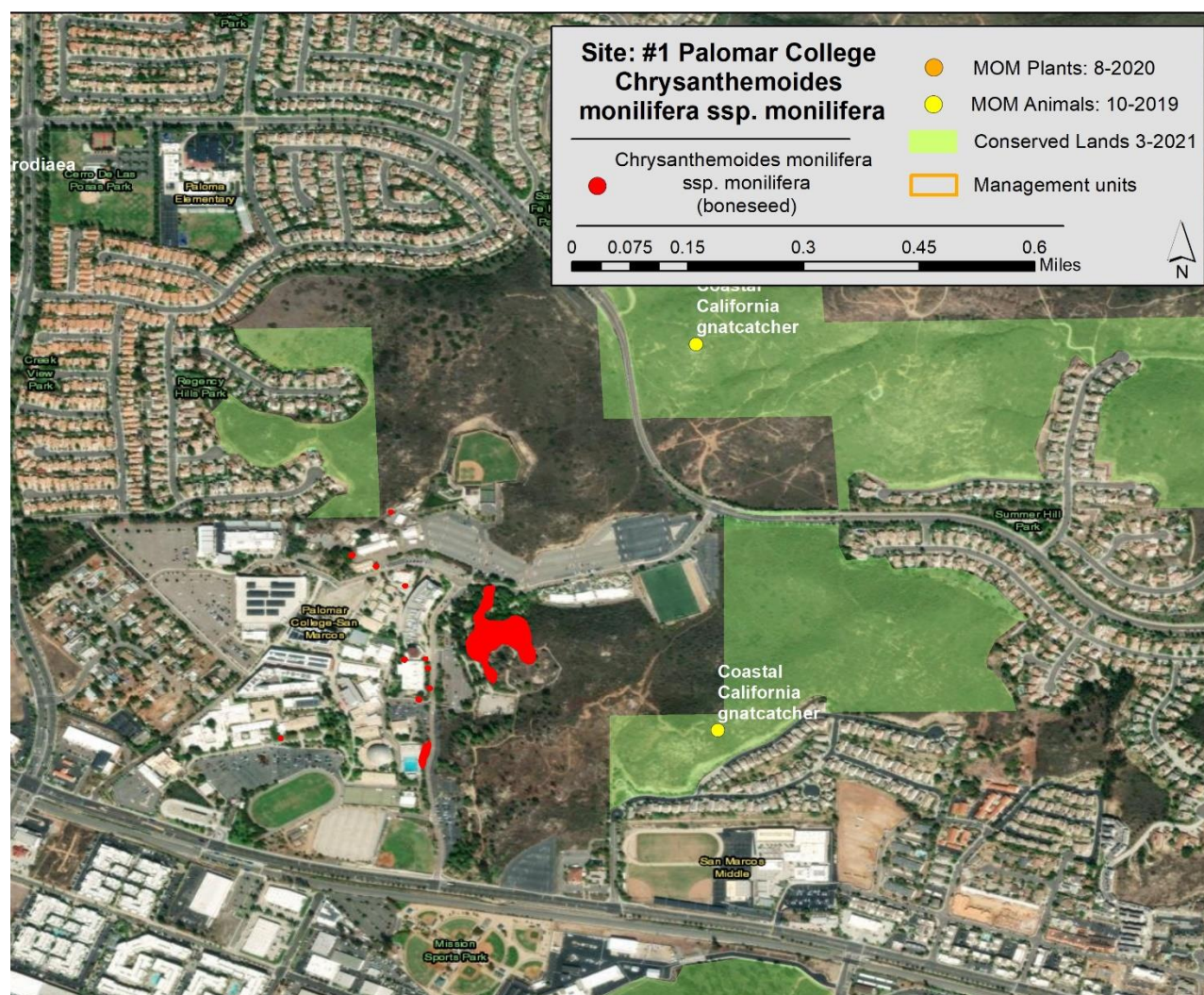


Table 8. Summary of treatments performed by AWM on *Chrysanthemoides monilifera* ssp. *Monilifera* (Boneseed).

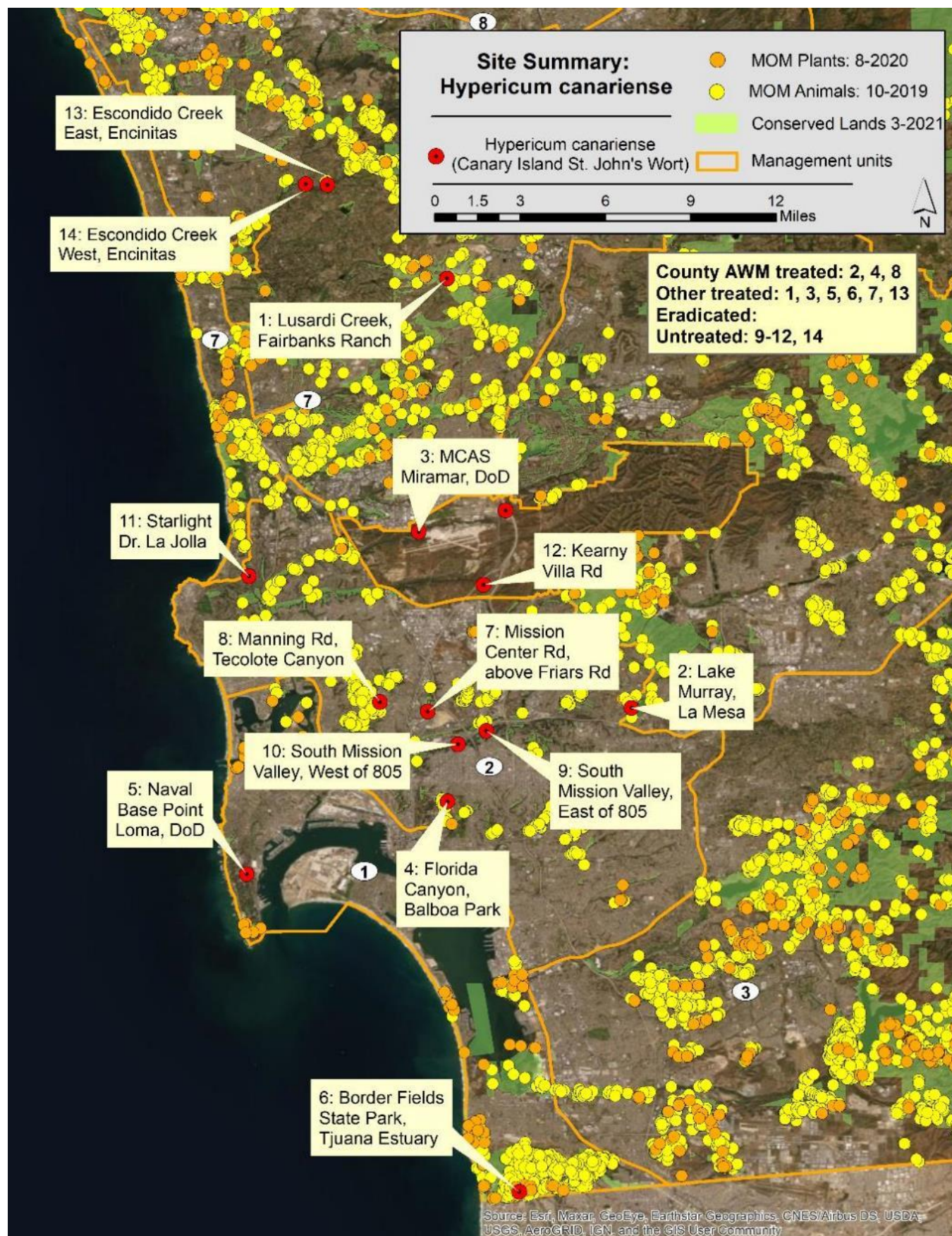
Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #2 Discovery Lake, San Marcos	Boneseed	1	0.1	0.2	25

***Chrysanthemoides monilifera* ssp. *monilifera*, Boneseed: Site #2 Discovery Lake, San Marcos**

One individual worked at the site on May 11th 2023. 25 plants (10 medium plants and 15 seedlings) were hand pulled. This was the first treatment of the site, plants were restricted to a small area. A second iNaturalist report was verified as being from this same location, it has poor spatial accuracy.



Hypericum canariense, Canary Island St. John's Wort

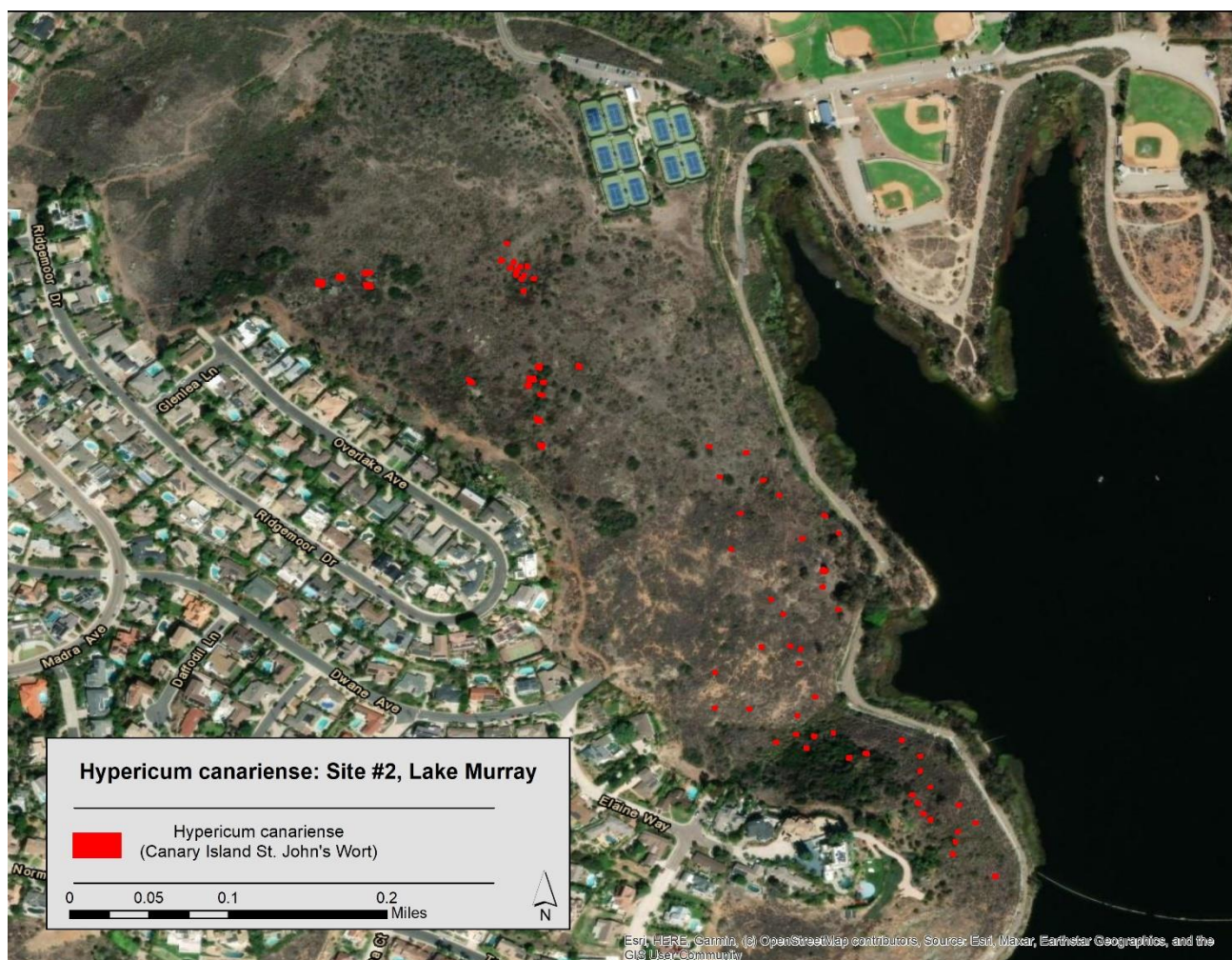


Hypericum canariense, Canary Island St. John's Wort: Site #2 Lake Murray

Table 9. Summary of treatments performed by AWM on *Hypericum canariense*, Canary Island St. John's Wort.

Site Name	Common Name	# of Visits	Acres Treated	Acres Surveyed	Plants treated
Site #2 Lake Murray	Canary Island St. John's Wort	1	0.8	5.5	850

A crew of two worked four days in May 2023. Small plants (40%) and seedlings (60%) were foliar treated with a post emergent herbicide. Cover is greatly reduced (>95% cover reduction), but there are scattered seedlings.

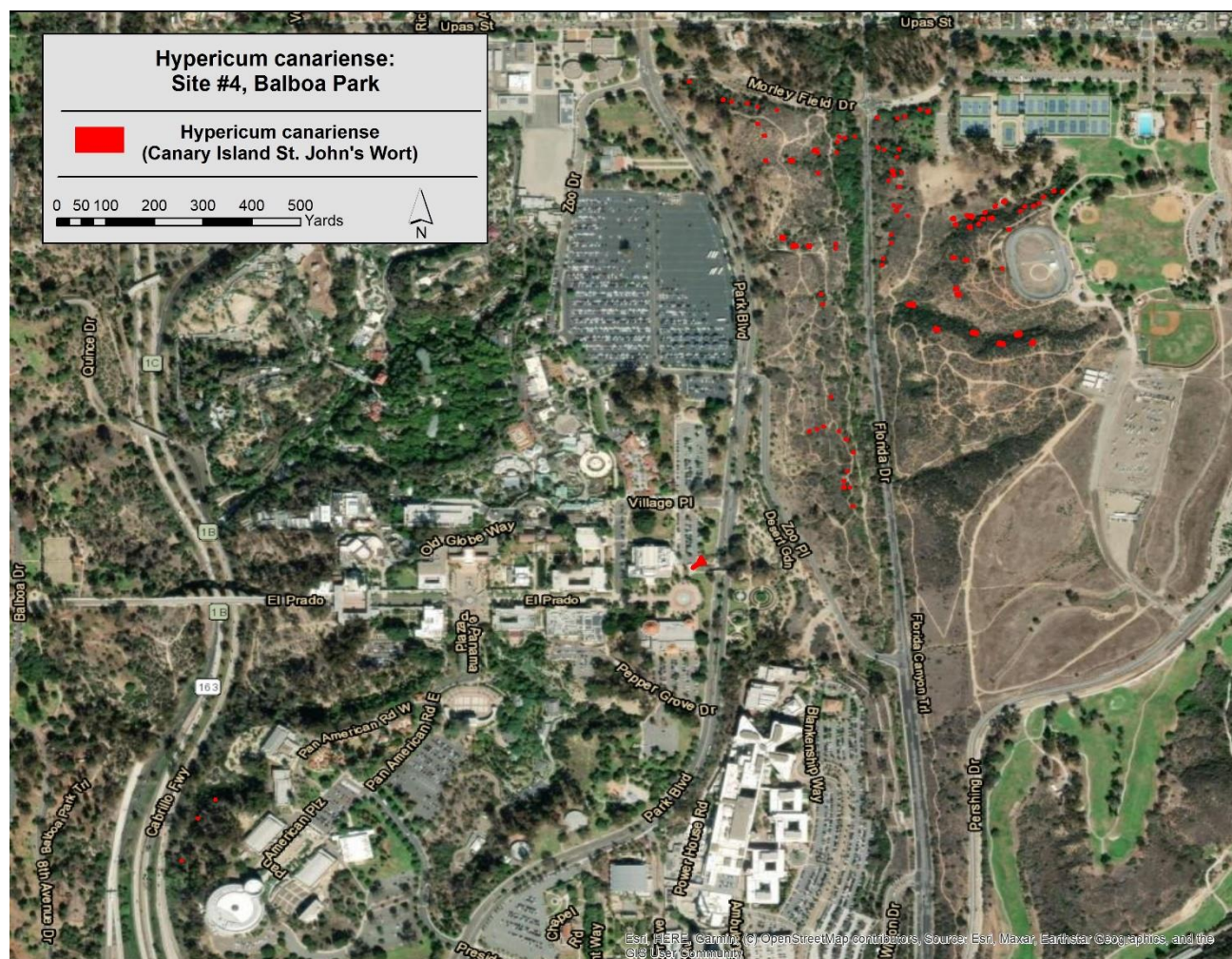


***Hypericum canariense*, Canary Island St. John's Wort: Site #4 Balboa Park**

Table 10. Summary of treatments performed by AWM on *Hypericum canariense*, Canary Island St. John's Wort.

Site Name	Common Name	# of Visits	Acres Treated	Acres Surveyed	Plants treated
<i>Site #4, Balboa Park</i>	Canary Island St. John's Wort	1	1.6	8.5	1,715

Small plants (40%) and seedlings (60%) were foliar treated with herbicide (Garlon SC). A crew of two individuals visited the site over eight days in April 2023. Cover is greatly reduced (>95% cover reduction), but there were scattered seedlings still emerging.

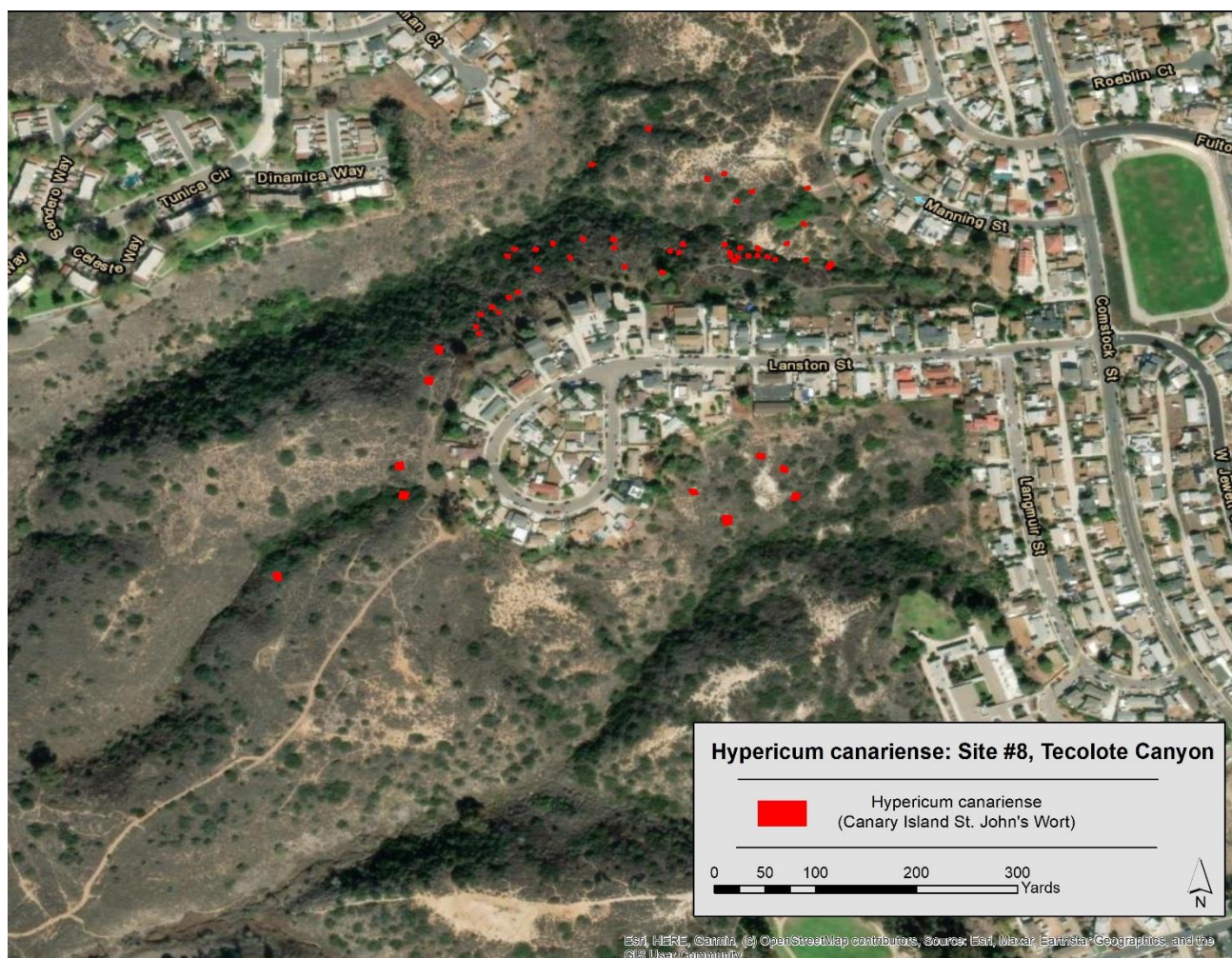


Hypericum canariense, Canary Island St. John's Wort: Site #8 Tecolote Canyon

Table 11. Summary of treatments performed by AWM on *Hypericum canariense*, Canary Island St. John's Wort.

Site Name	Common Name	# of Visits	Acres Treated	Acres Surveyed	Plants treated
Site #8 Tecolote Canyon	Canary Island St. John's Wort	1	0.4	3.7	550

A crew of one to two worked three days in May 2023. Small plants (40%) and seedlings (60%) were foliar treated with a post emergent herbicide. Cover is greatly reduced (>95% cover reduction), but there are scattered seedlings.



TASK 5 – Coordinator: Tracking and Updating Invasive Species for Priority Removal.

Level of Effort: (5%) of overall contract

- Co-ordination to continue control of Ward's Weed in Carlsbad.
- Surveying of reports from iNaturalist.
- Co-ordination with San Diego Weed Management Area at quarterly meeting.
- Co-ordination to survey and control European and Algerian Sea Lavender species in South San Diego Bay. Managers from FWS, DoD, SDMMP and CBI discussed expanded and coordinated surveying and treatment.

Work Anticipated for next Quarter:

This work will be under a new Agreement.

Task 1 – Invasive Plant Species Coordinator:

- Coordinate ROE work with AWM, update database.
- Monitor and coordinate with AWM during implementation.
- Survey and map sites as needed.
- Prepare quarterly report.

Task 2 – AWM: Invasive Plant Level 1 Management.

- Survey, map, and treat any reported sightings of target Level 1 plants.
- Supervision of staff, provide training, guidance, and preparation for field work.
- Collect GIS treatment polygons and survey routes (lines) of targeted weeds.

Task 3 – AWM: Invasive Plant Level 2 Management.

- Survey, map, and treat any reported sightings of target Level 2 plants.
- Re-treatment of sites: Canary Island Sant John's Wort, Yellow Starthistle, Spotted Knapweed
- Biological supervision of staff, provide training, guidance, and preparation for field work.
- Coordinate and finalize tracking methods for work completed.
- Initiate and continue work outlined in work plan.
- Obtain ROEs.
- Collect GIS treatment polygons and survey routes (lines) of targeted weeds.

Task 4 – AWM: Invasive Plant Level 3 Management.

- Treat Stinknet and other Level 3 species on sites as needed, especially populations on County of San Diego lands.

Task 5 – Coordinator: Tracking and Updating Invasive Species for Priority Removal.

- Continue coordination with: Department of Defense, California State Parks, City Department of Parks and Recreation, San Diego Weed Management Area and County of Orange CNPS EDRR invasives group.
- Continue to aggregate data and track new prospective EDRR target species.
- Present at San Diego Weed Managers meeting and other meetings as requested.
- Provide population status of EDRR regional targets to CDFA statewide assessment.