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

Strategic Removal of Invasive Weed Species
1st Quarter Report - FY 2019-20: Report #19 for Project

July 1st, 2019 – September 30th, 2019

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

To: Kim Smith and Sarah Pierce
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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 July 1st to September 30th 2019.

TASK 1 – Invasive Plant Species Coordinator:

Level of Effort: (25%) of overall contract

Right of Entry (ROE) Work and Coordination With Property Owners:

Coordination with property owners, land managers and AWM crew occurred throughout the quarter.

The coordinator worked on two species at four field sites:

Work tasks included checking in with field crews, assessing treatment success, and mapping and surveying target plants. Species and sites are presented under task 2 and 3.

Regulatory permits:

California Environmental Quality Act (CEQA) Notice of Exemption (NOE) documents were updated and posted with a wider range of herbicides. New California Departments of Food and Agriculture (CDFA) funded work on Early Detection Rapid Response (EDRR) targets also has separate CEQA NOEs covering Ward's weed, Barbed goatgrass, Desert knapweed and Spotted knapweed.

Report preparation:

Quarterly report for Q1 FY 2019-20 was prepared.

Mapping and occurrence data:

Mapping and surveying for potential new EDRR targets was carried out. These were reports for Yellowstar thistle, Carnation spurge, and Ward's weed. Some of these sites were new reports (Carnation spurge) others were false reports (Ward's weed at Hell Hole Canyon). iNaruralist and Calflora are valuable reporting platforms for identifying potential new EDRR populations.

Work plan:

A meeting was attended at SANDAG to discuss both EDRR sites and other priority invasive non-native plant targets.

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).

Crews surveyed and treated, one invasive weed species (Carnation spurge) at two sites this quarter. Maps for sites 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 by 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 Surveyed	Acres Treated	Plants Controlled
Euphorbia terracina	Carnation spurge	3	1.4	2.7	1,970

***Euphorbia terracina* (Carnation spurge):**

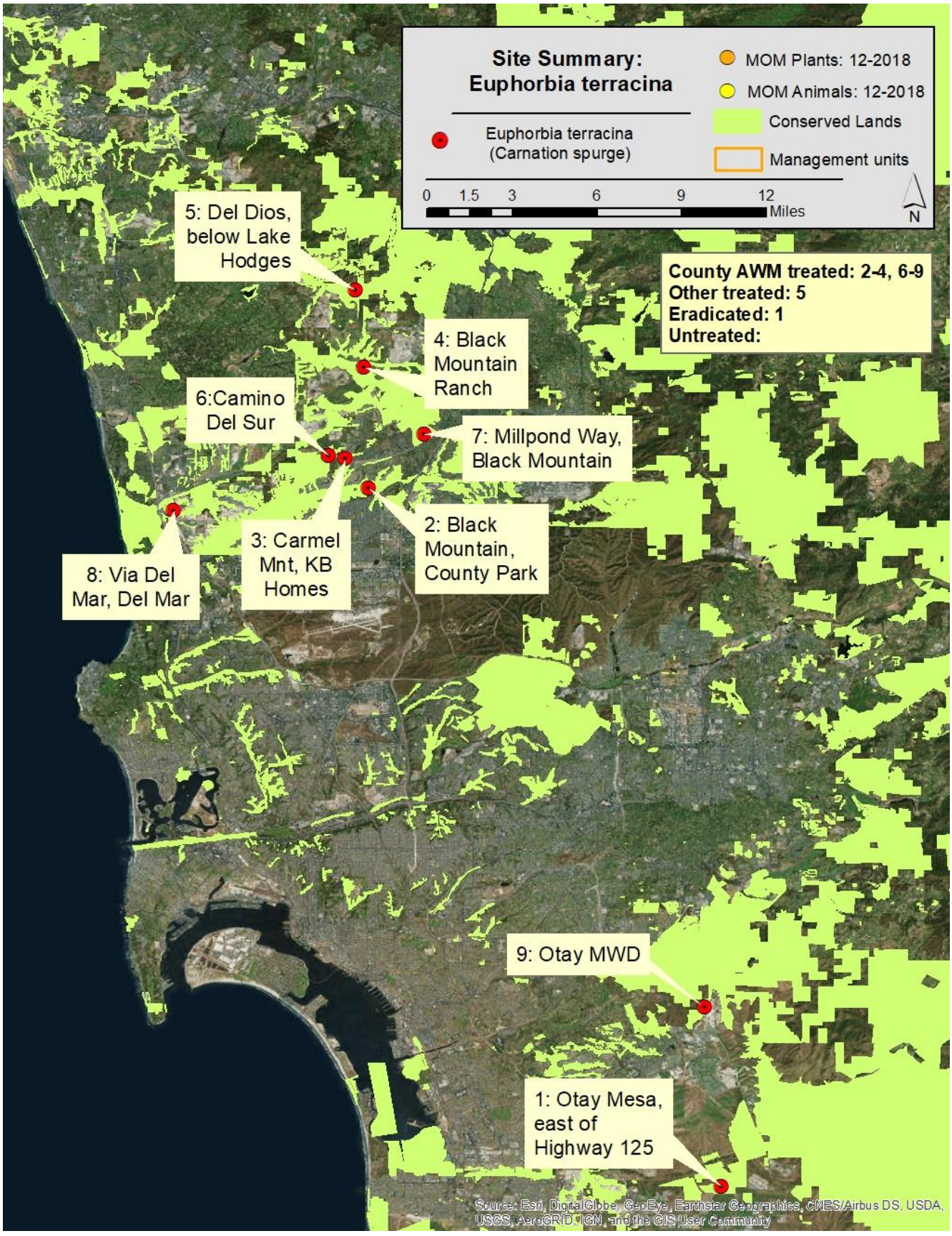


Table 2. Summary of treatments performed by AWM on *Euphorbia terracina* (Carnation spurge).

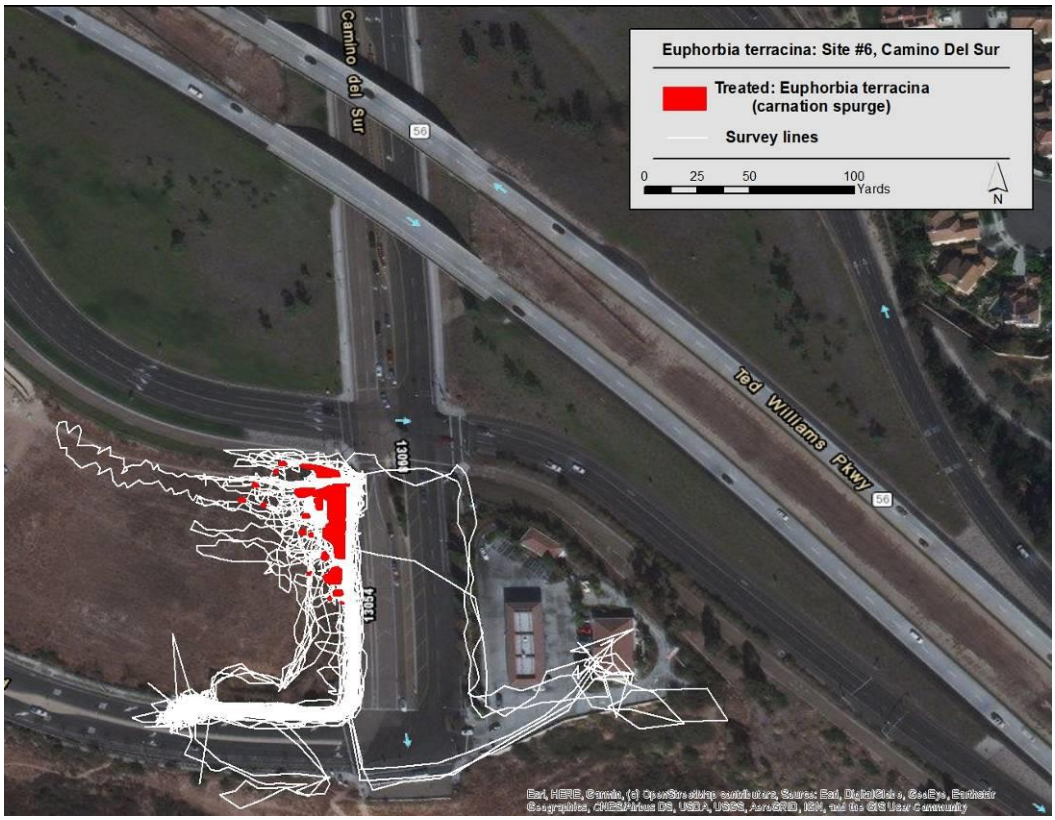
Work Site	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants Controlled
Site #3 Carmel Mnt	Carnation spurge	1	0.7	1.9	830
Site #6 Camino Del Sur	Carnation spurge	1	0.6	0.6	1,020
Site #7 Mill Pond Way	Carnation spurge	1	0.1	0.2	120

***Euphorbia terracina* (Carnation spurge): Site #3 Carmel Mnt.**

830 young plants and seedlings were treated with glyphosate. A crew of four individuals worked July 9th and 10th 2019. There has been a reduction in cover (>80%), but there is an extensive seedbank that continues to generate new seedlings each spring. At KB Homes portion of site 750 plants were treated. In addition, 20 plants at Deer Canyon and 60 plants at Dufresne were treated.

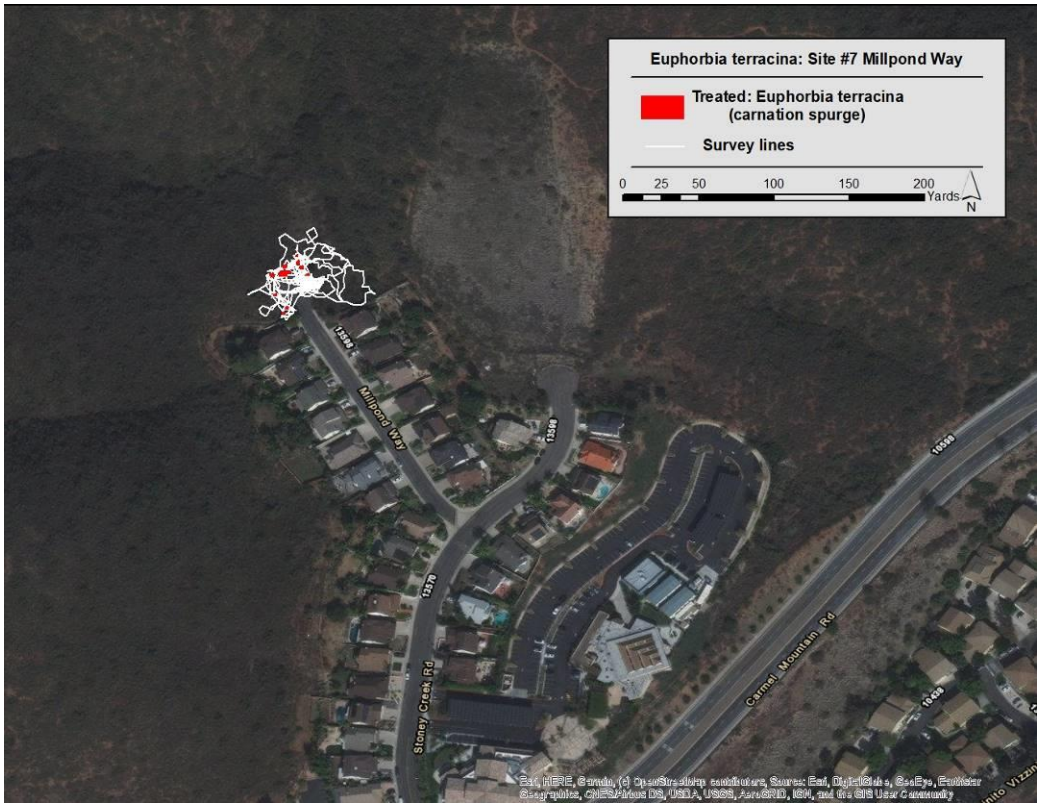
Euphorbia terracina **(Carnation spurge): Site #6 Camino Del Sur**

1,020 young plants and seedlings were pulled and bagged. A crew of four individuals worked on July 10th, 11th and 12th 2019. There has been a reduction in cover (>80%), but there is an extensive seedbank that continues to generate new seedlings each spring.



***Euphorbia terracina* (Carnation spurge): Site #7 Millpond Way**

120 young plants and seedlings were treated with glyphosate. A crew of four individuals worked July 9th 2019. There has been a reduction in cover (>80%), but there is an extensive seedbank that continues to generate new seedlings each spring.



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 seven invasive weed species (French broom, Bridal broom, Yellowstar thistle, Spotted knapweed, Canary Island St. John's Wort, European sea lavender and Algerian sea lavender) at four sites this quarter. 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 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 3. 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
Centaurea solstitialis	Yellowstar thistle	6	3.5	19.2	2,701
Centaurea stoebe	Spotted knapweed	3	6.5	12.8	1,118
Genista monosperma	Bridal broom	2	0.5	2.2	280
Genista monspessulana	French broom	1	2.9	8.0	5,050
Hypericum canariense	Canary Island St. John's wort	1	1.4	10.0	745
Limonium duriusculum	European sea lavender	1	0.4	1.0	140
Limonium ramosissimum	Algerian sea lavender	1	0.3	0.6	140

***Centaurea solstitialis*, Yellowstar thistle:**

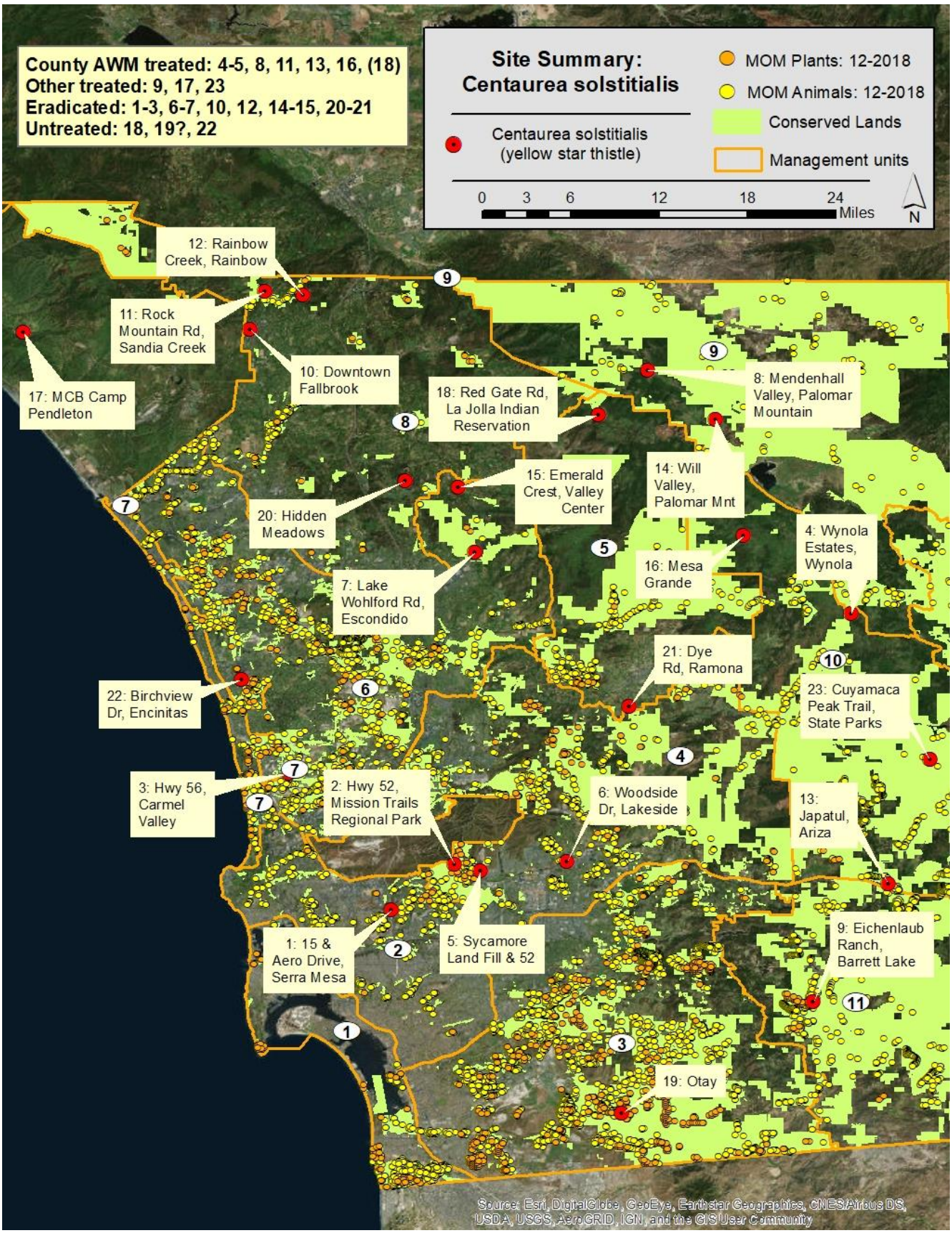
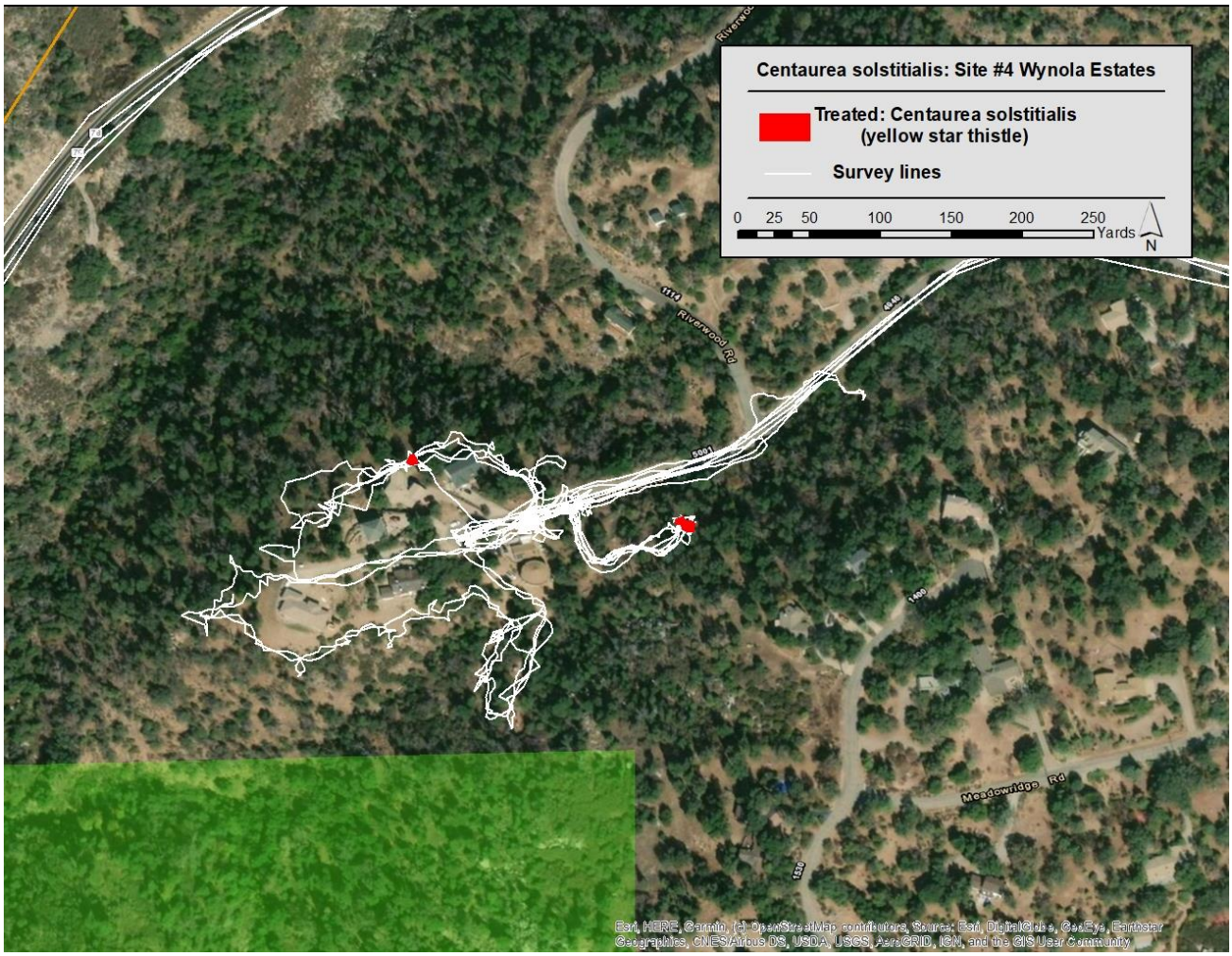


Table 4. Summary of treatments performed by AWM on *Centaurea solstitialis* (Yellowstar thistle).

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #4, Wynola Estates, Wynola	Yellowstar thistle	1	0.3	0.7	138
Site #5, Sycamore Landfill	Yellowstar thistle	1	0.2	3.0	3
Site #8, Mendenhall Valley, Palomar	Yellowstar thistle	1	1.4	8.2	1,455
Site #12, Rainbow Creek, Rainbow	Yellowstar thistle	1	0	0.3	0
Site #13, Japatul, Ariza	Yellowstar thistle	1	0.2	0.4	280
Site #16, Mesa Grande	Yellowstar thistle	1	1.4	6.6	825

***Centaurea solstitialis*, Yellowstar thistle: Site #4, Wynola Estates, Wynola**

138 plants were found in patches and were removed by hand. A crew of three individuals visited the site over three days on July 17th, 19th and 22nd 2019.

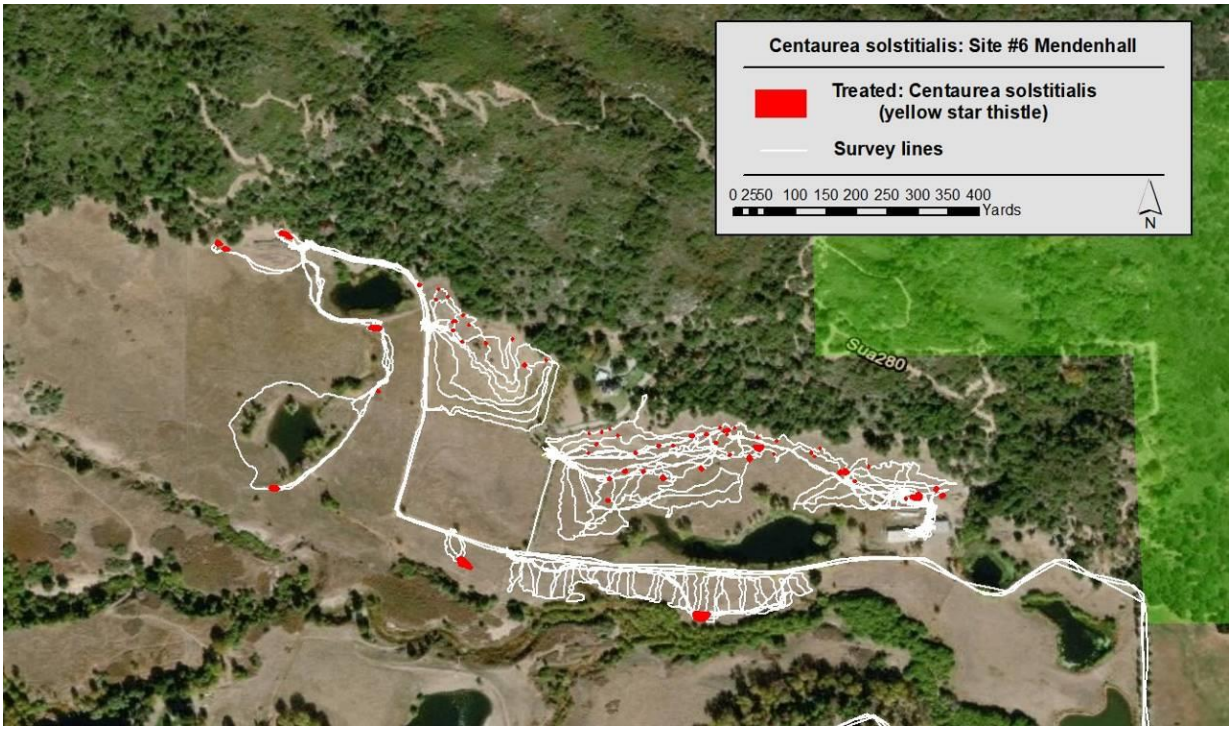


***Centaurea solstitialis*, Yellowstar thistle: Site #5 Sycamore Landfill**

Three plants were found during a survey of the site, they were pulled and removed. A crew of four individuals visited the site on July 15th and 16th 2019.

***Centaurea solstitialis*, Yellowstar thistle: Site #8 Mendenhall**

1,455 plants were found and manually removed or treated with Milestone during a survey of the site. A crew of two to three individuals visited the site on ten days between August 20th and September 6th 2019.

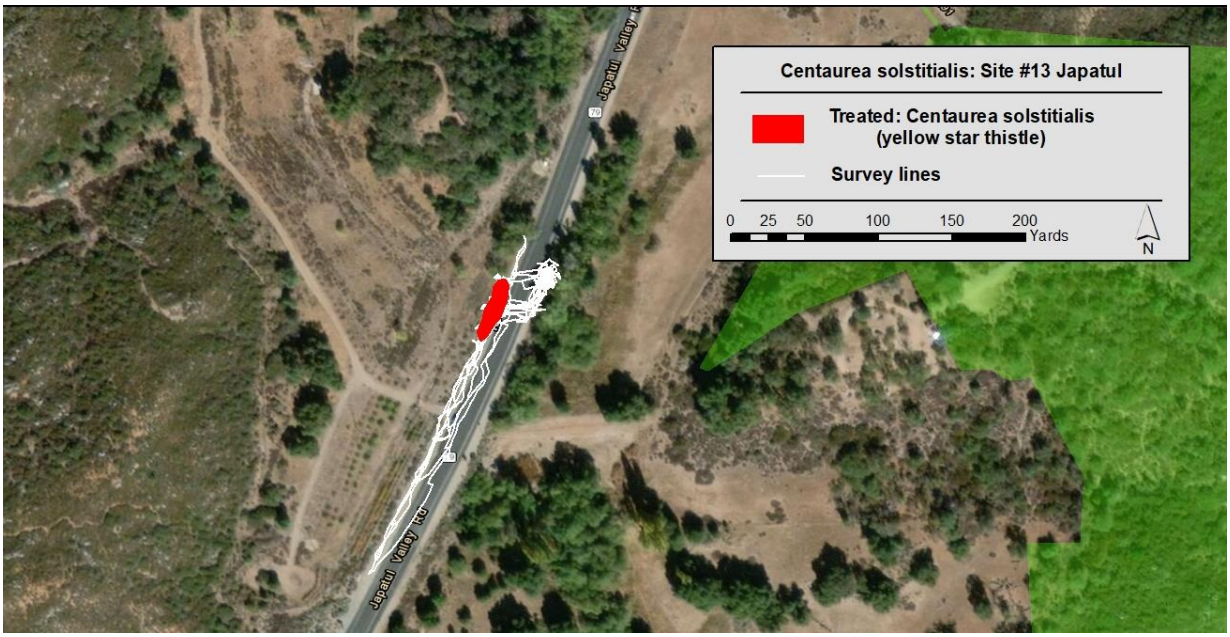


***Centaurea solstitialis*, Yellowstar thistle: Site #12 Rainbow Creek**

No plants were found during a survey of the site. A crew of two individuals visited the site on July 16th 2019.

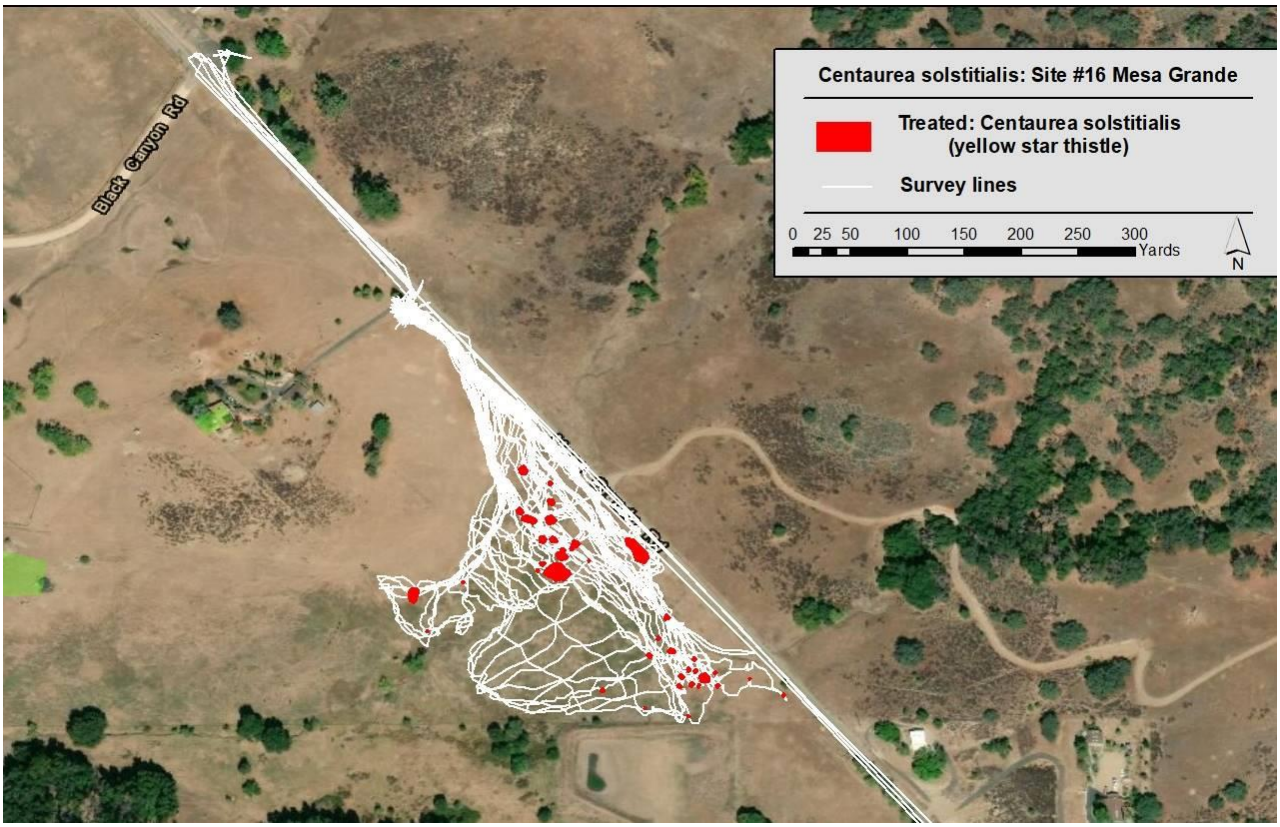
***Centaurea solstitialis*, Yellowstar thistle: Site #13 Japatul**

280 plants were found and manually removed during a survey of the site. A crew of four individuals visited the site on July 17th 2019. Part of the site could not be accessed, the property owner is being contacted to obtain an ROE agreement. There are also plants on the east side of the road. These are being controlled by the United States Forest Service and San Diego Gas & Eelectric.



***Centaurea solstitialis*, Yellowstar thistle: Site #16 Mesa Grande**

825 plants in scattered patches and were removed by hand. A crew of three to four individuals visited the site over eight days between July 23rd and August 7th 2019.



***Centaurea stoebe*, Spotted knapweed:**

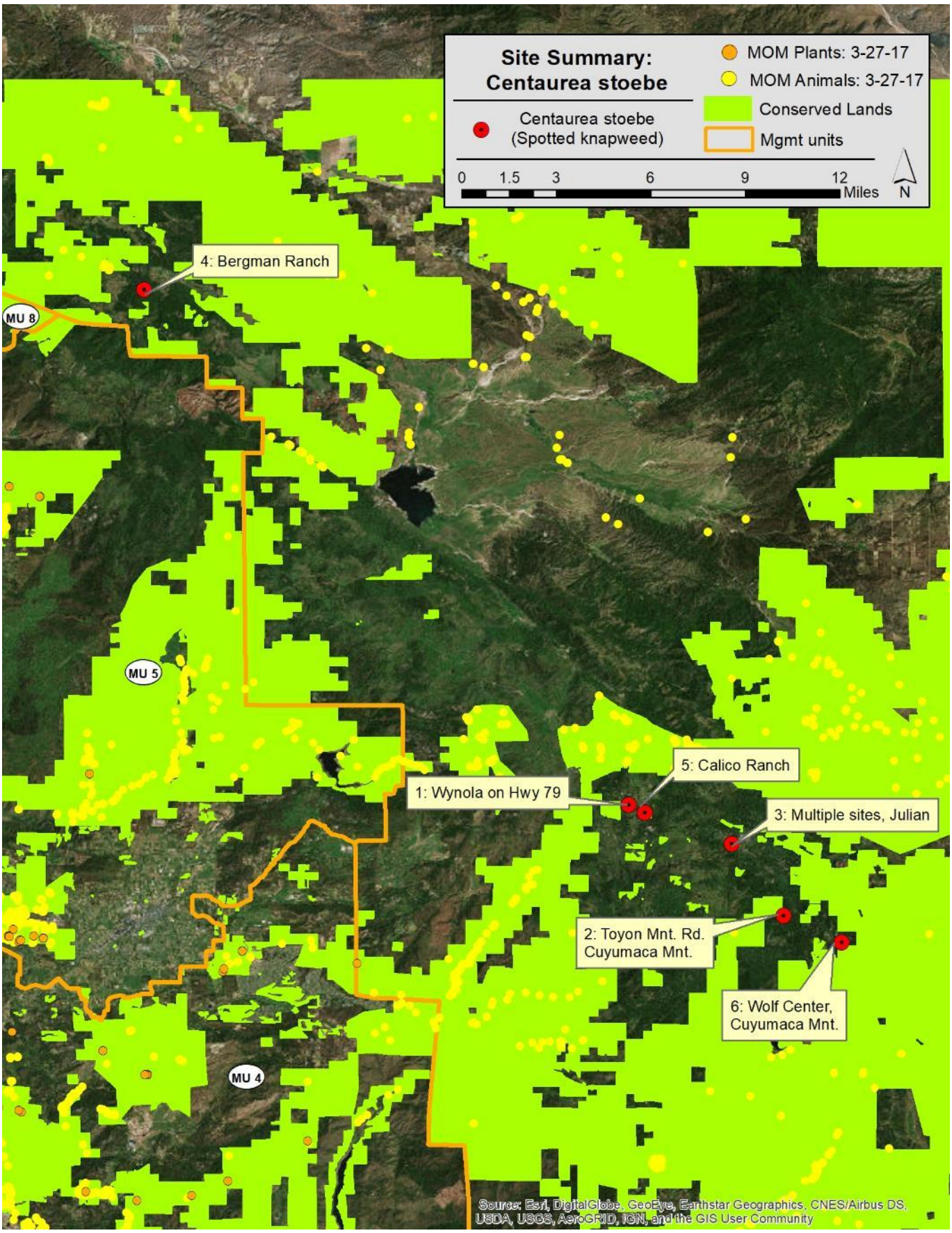
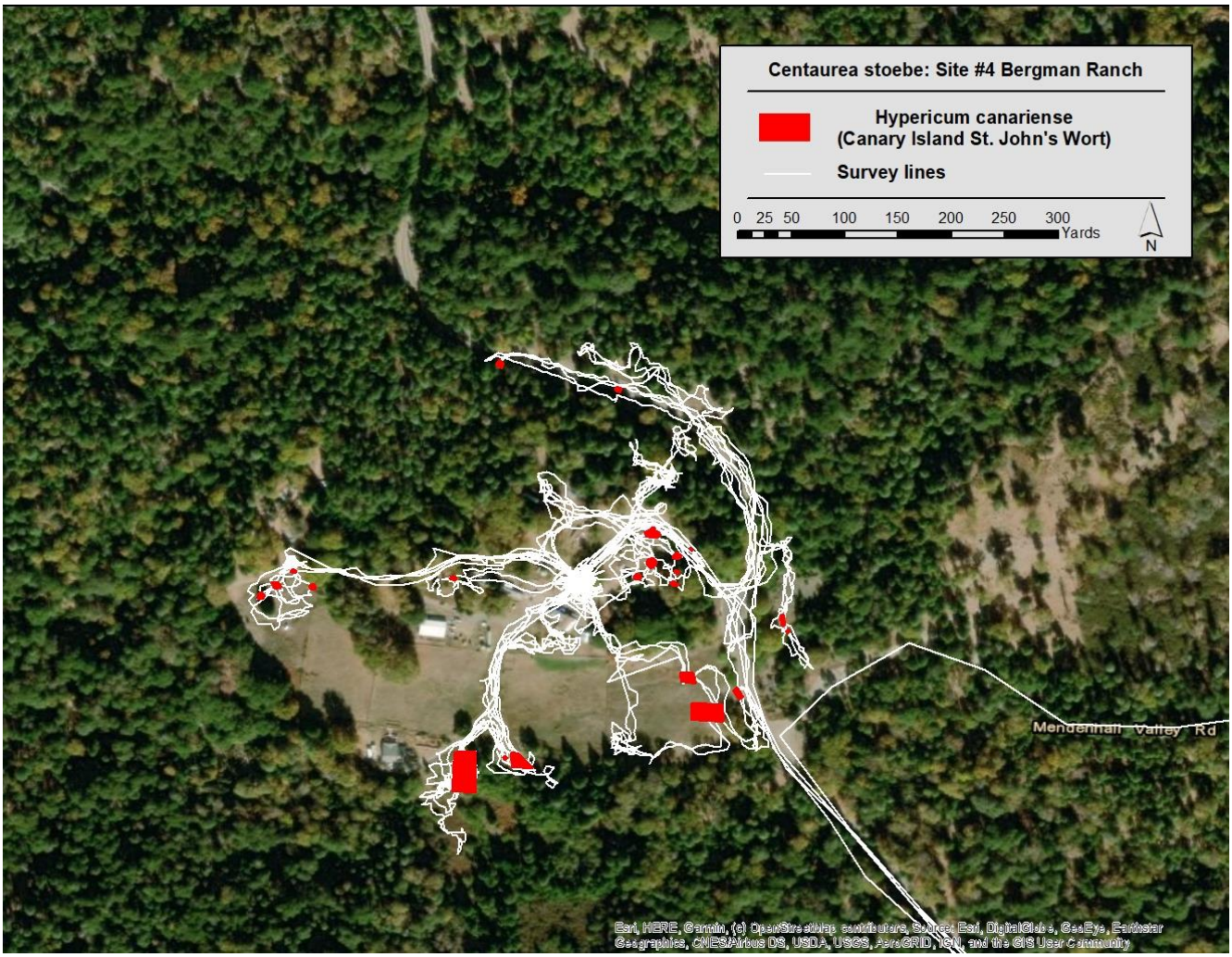


Table 5. Summary of treatments performed by AWM on *Centaurea stoebe* (Spotted knapweed).

Site Name	Common Name	# of Visits	Acres Treated	Acres Surveyed	Plants treated
Site #4 Bergman Ranch	Spotted knapweed	1	1.2	4.8	340
Site #5 Calico Ranch	Spotted knapweed	1	0.5	1.5	178
Site #6, Wolf Center	Spotted knapweed	1	4.8	6.5	600

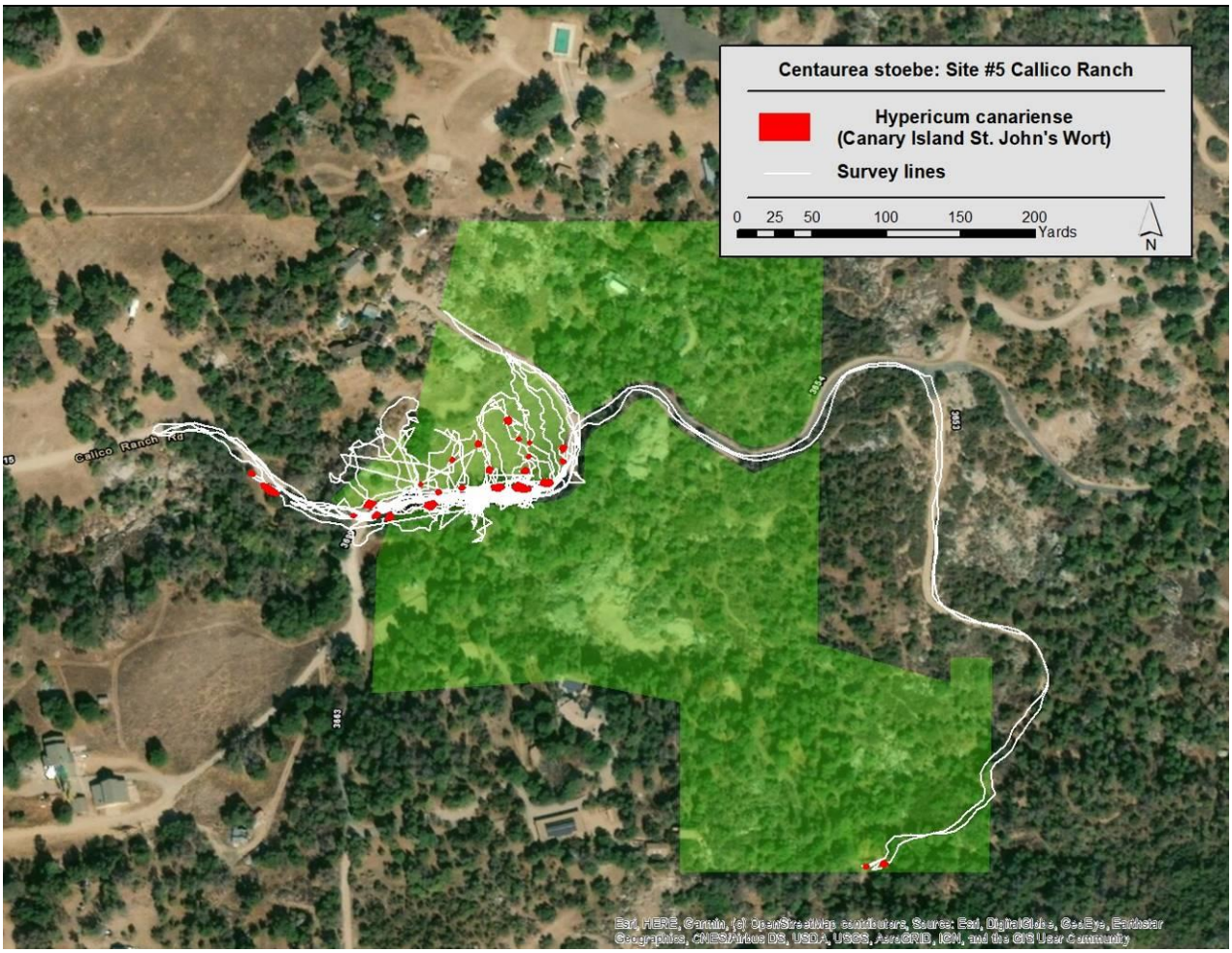
***Centaurea stoebe*, Spotted knapweed: Site #4 Bergman Ranch**

340 plants were treated by a crew of two to three over nine days from August 7th to the 13th 2019. Multiple treatment methods were used: hand pulling mature plants and herbicide application using glyphosate. This EDRR treatment work was funded by CDFA, but is reported here as the species is a Level 2 EDRR target.



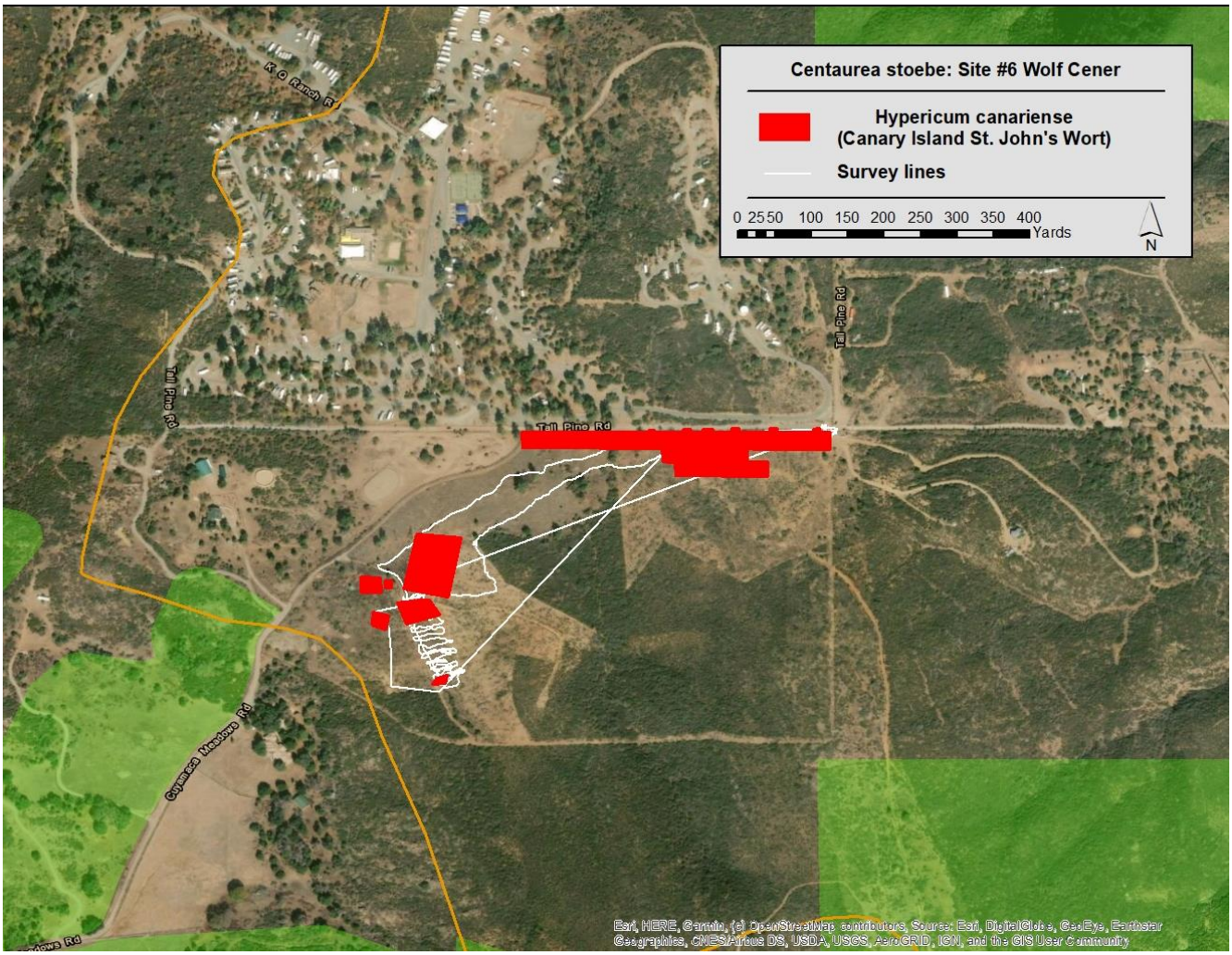
***Centaurea stoebe*, Spotted knapweed: Site #5 Calico Ranch**

178 plants were treated by a crew of two to six over two days, August 2nd and 15th 2019. Multiple treatment methods were used: hand pulling mature plants and herbicide application using Milestone and glyphosate. This EDRR treatment work was funded by CDFA, but is reported here as the species is a Level 2 EDRR target.

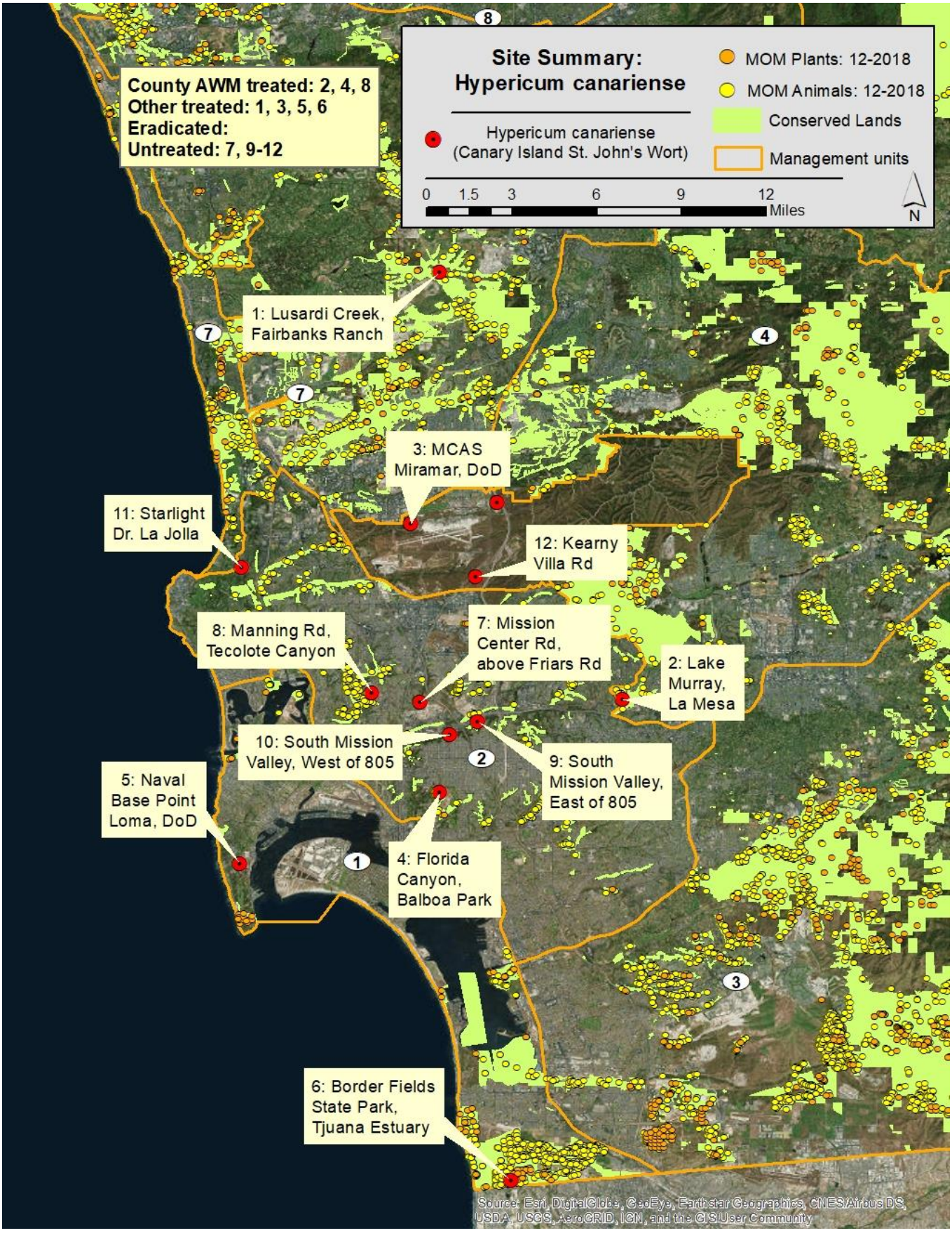


***Centaurea stoebe*, Spotted knapweed: Site #6 Wolf Center Calico**

600 plants were treated by a crew of two over five days, between October 29th and December 12th 2018. Multiple treatment methods were used: hand pulling mature plants and herbicide application using Milestone and glyphosate. This EDRR treatment work was funded by CDFA, but is reported here as the species is a Level 2 EDRR target.



***Hypericum canariense*, Canary Island St. John's Wort:**

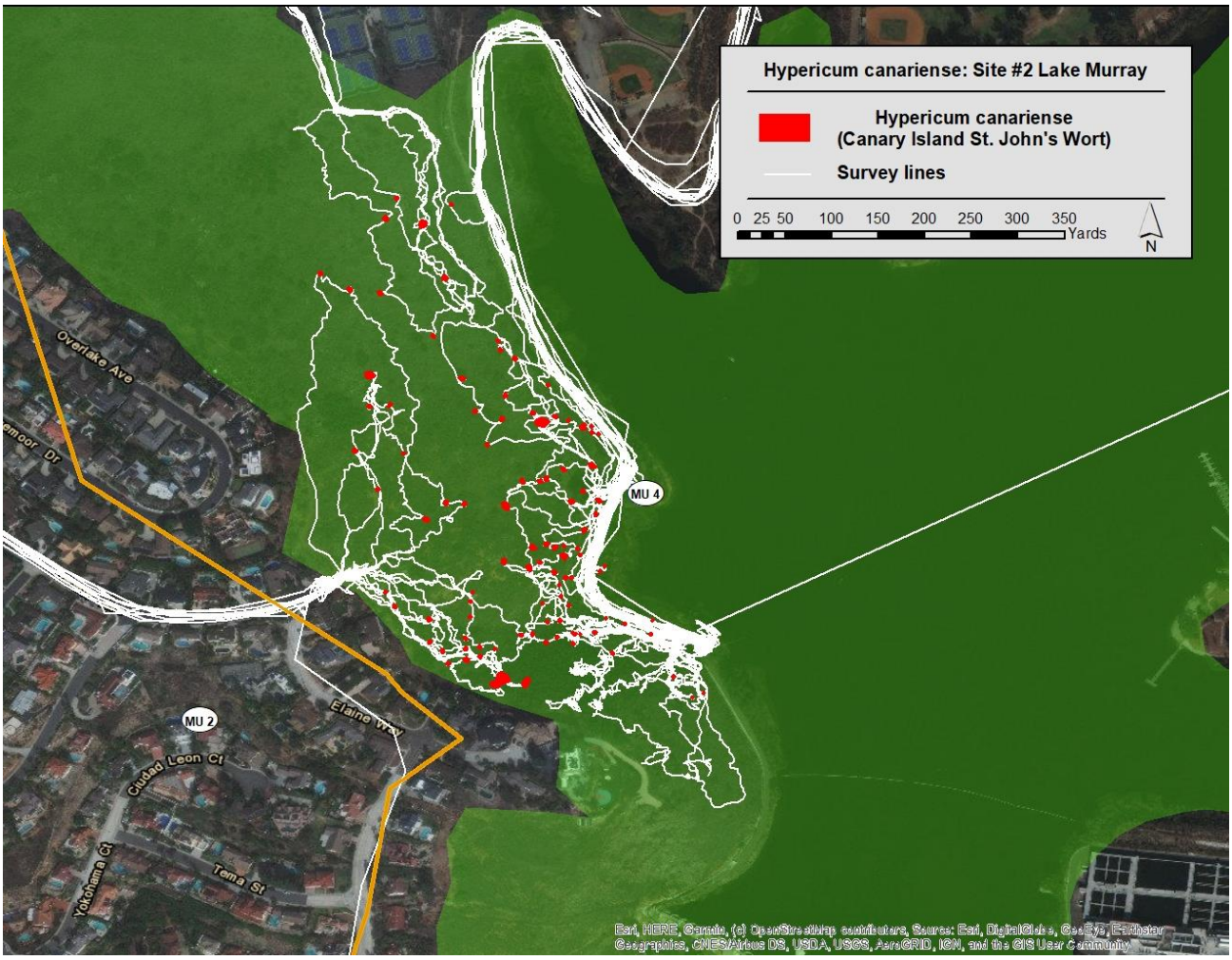


***Hypericum canariense*, Canary Island St. John's Wort: Site #2 Lake Murray**

Table 6. 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	1.4	10.0	745

This site was started at the end of the last quarter, work was completed this quarter. 749 re-sprouting plants, seedlings and mature plants were foliar treated with herbicide (imazapyr and glyphosate). A crew of three to five individuals visited the site on June 28th to July 8th 2019. Cover is greatly reduced (>90% cover reduction), but there were scattered re-sprouts and seedlings.



***Genista monosperma*, Bridal broom:**

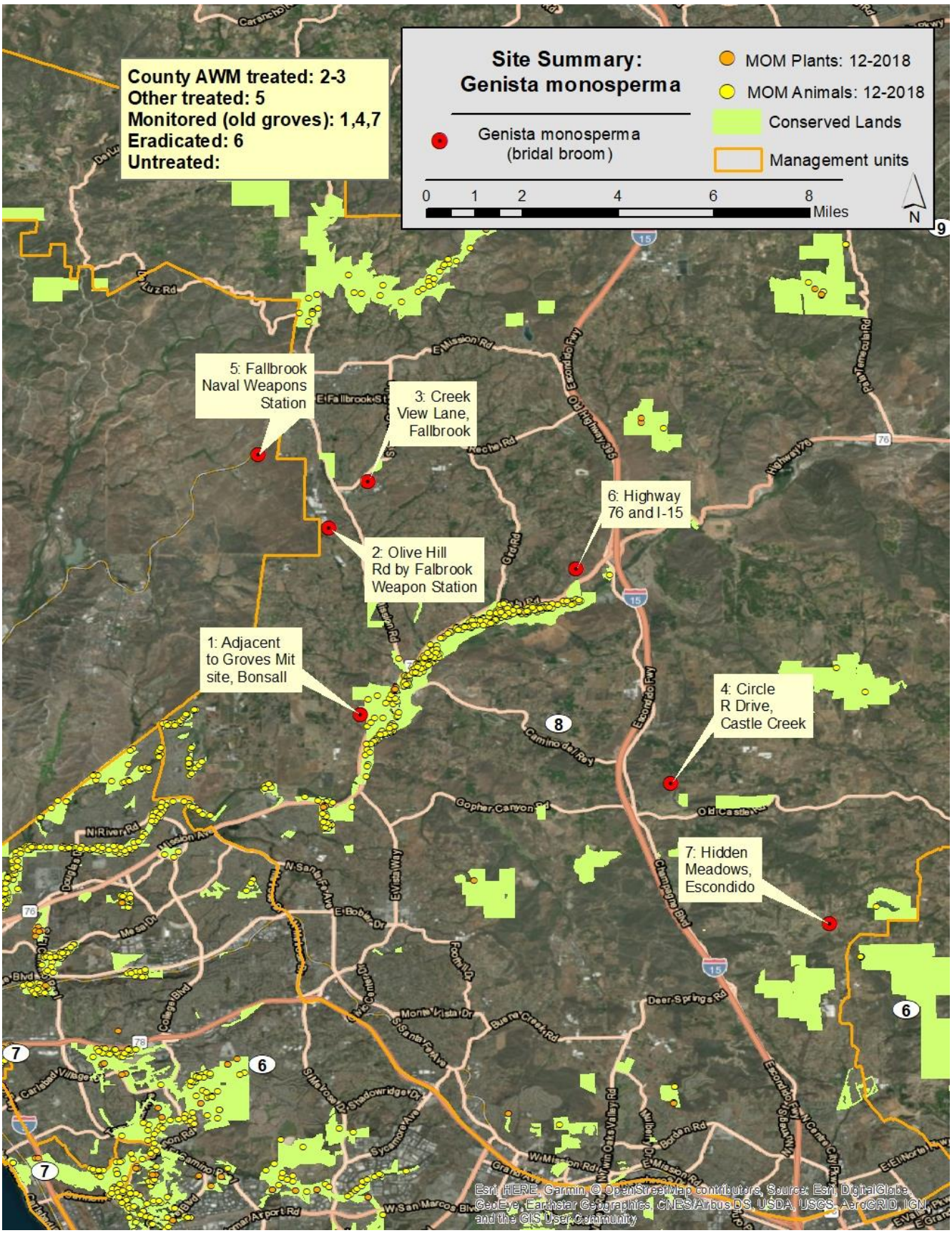
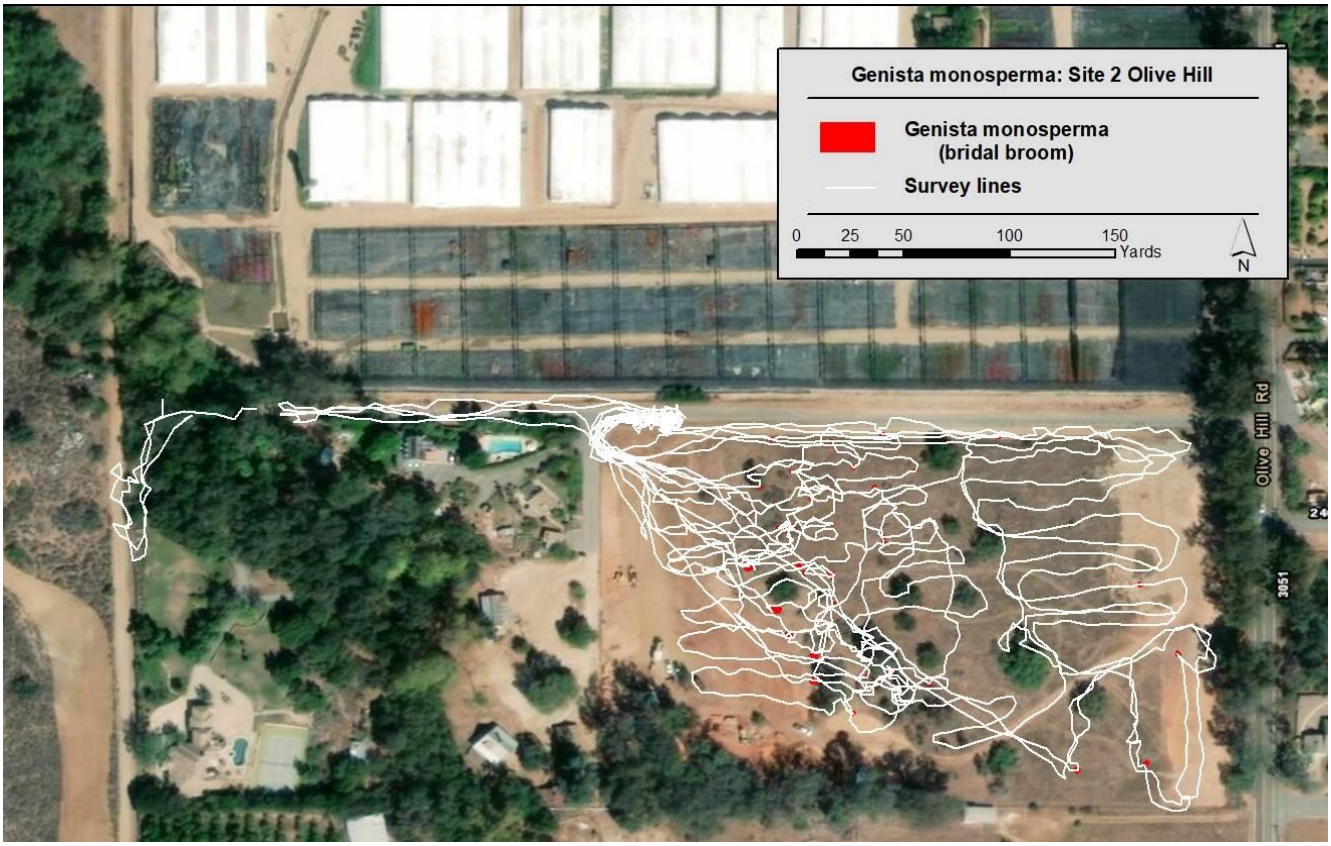


Table 7. Summary of treatments performed by AWM on *Genista monosperma*, Bridal broom:

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #2 Olive Hill Rd	Bridal broom	1	0.3	1.2	185
Site #3 Creek View Lane	Bridal broom	1	0.2	1	95

***Genista monosperma*, Bridal broom: Site #2 Olive Hill Rd**

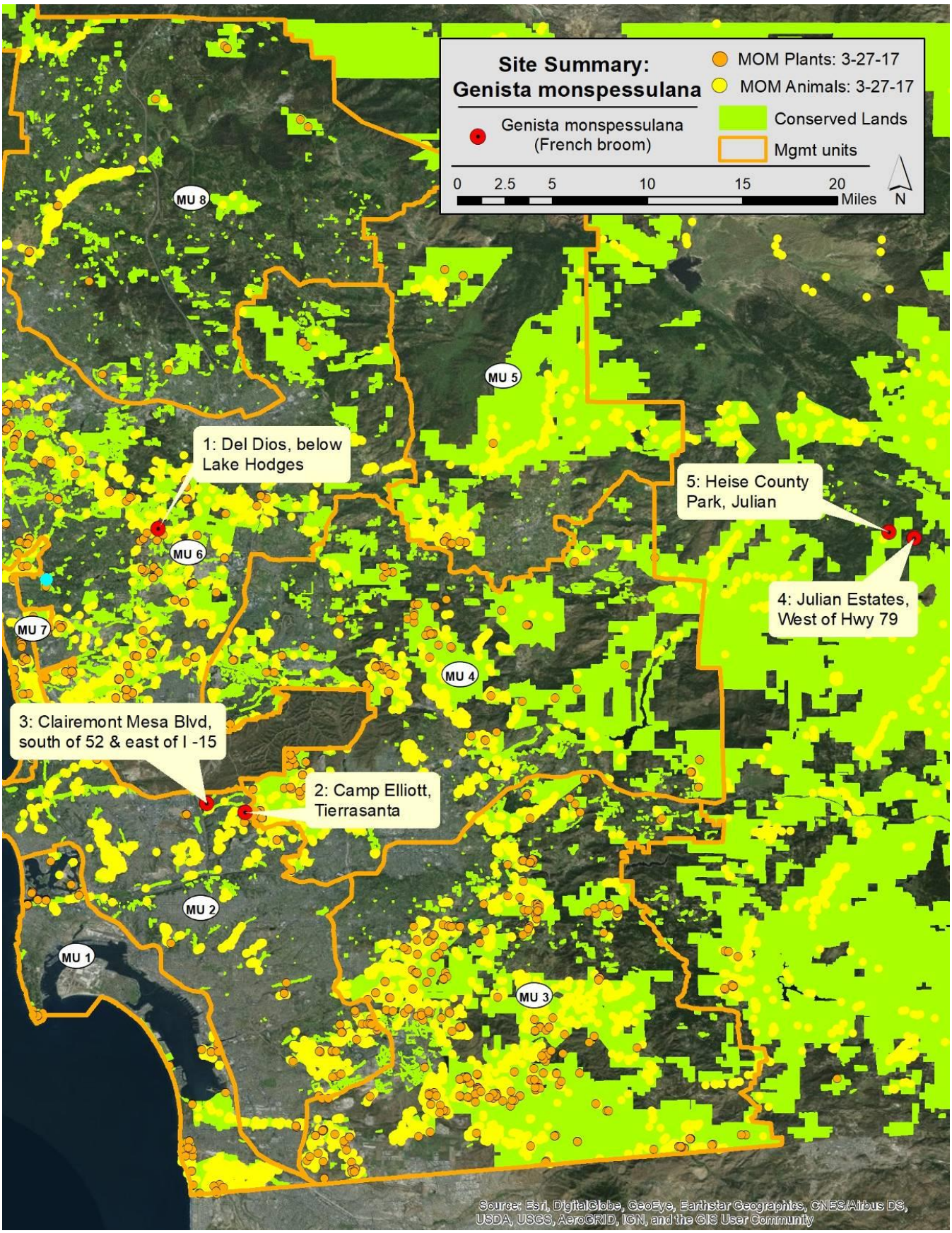
185 re-sprouts and seedlings were foliar treated with Triclopyr. A crew of two individuals worked two days September 9th and 10th 2019.



***Genista monosperma*, Bridal broom: Site #3 Creek View Lane**

95 re-sprouts and seedlings were foliar treated with Triclopyr. A crew of two individuals worked one day September 11th 2019.

***Genista monspessulana*, French broom:**

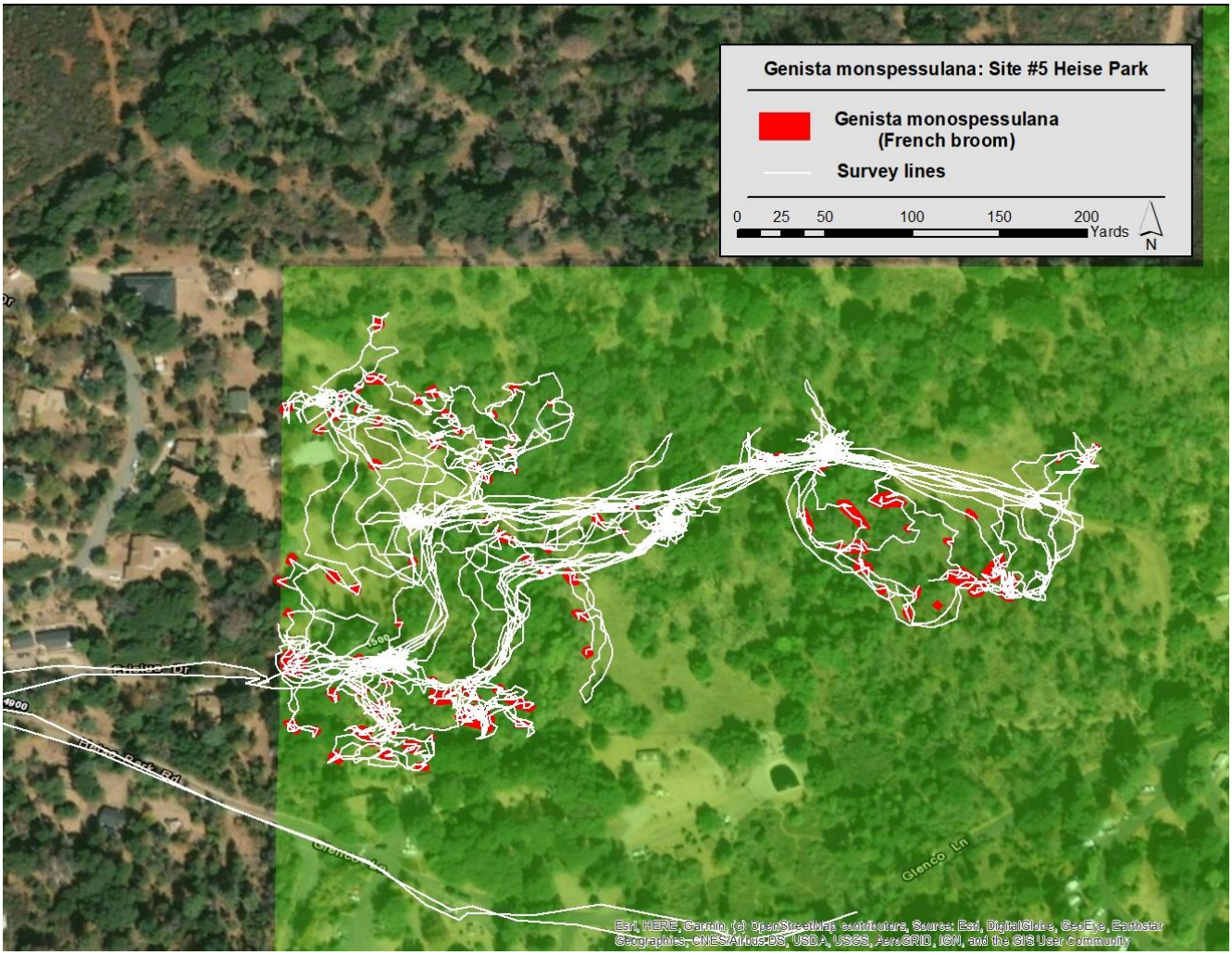


***Genista monspessulana*, French broom: Site #5 Heise Park.**

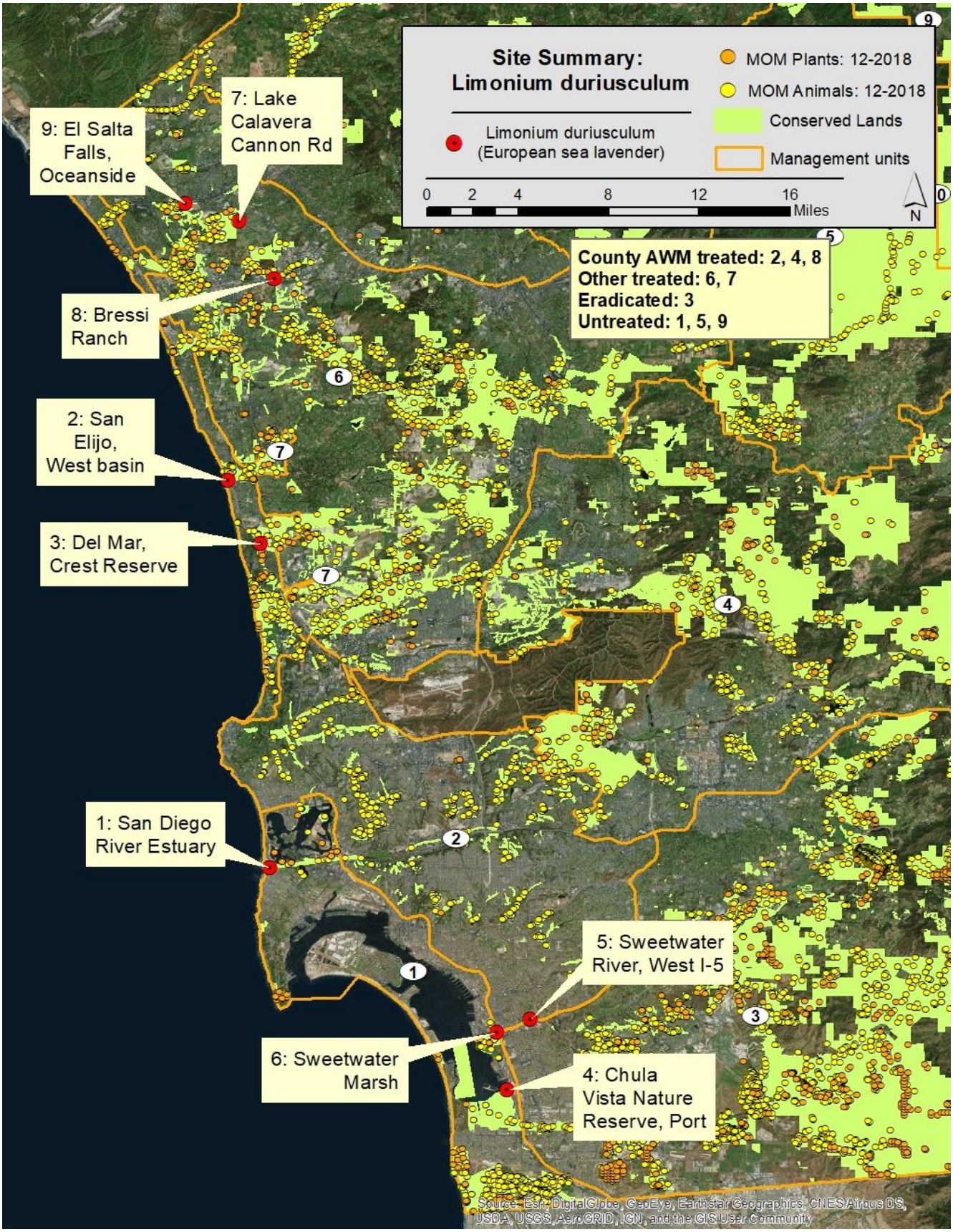
Table 8. Summary of treatments performed by AWM on *Genista monspessulana*, French broom.

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #5 Heise Park	French broom	1	2.9	8.0	5,050

5,050 scattered mature plants, re-sprouts and seedlings were foliar treated with Triclopyr. A crew of two individuals worked nine days September 12th to the 30th 2019.



***Limonium duriusculum*, European sea lavender:**



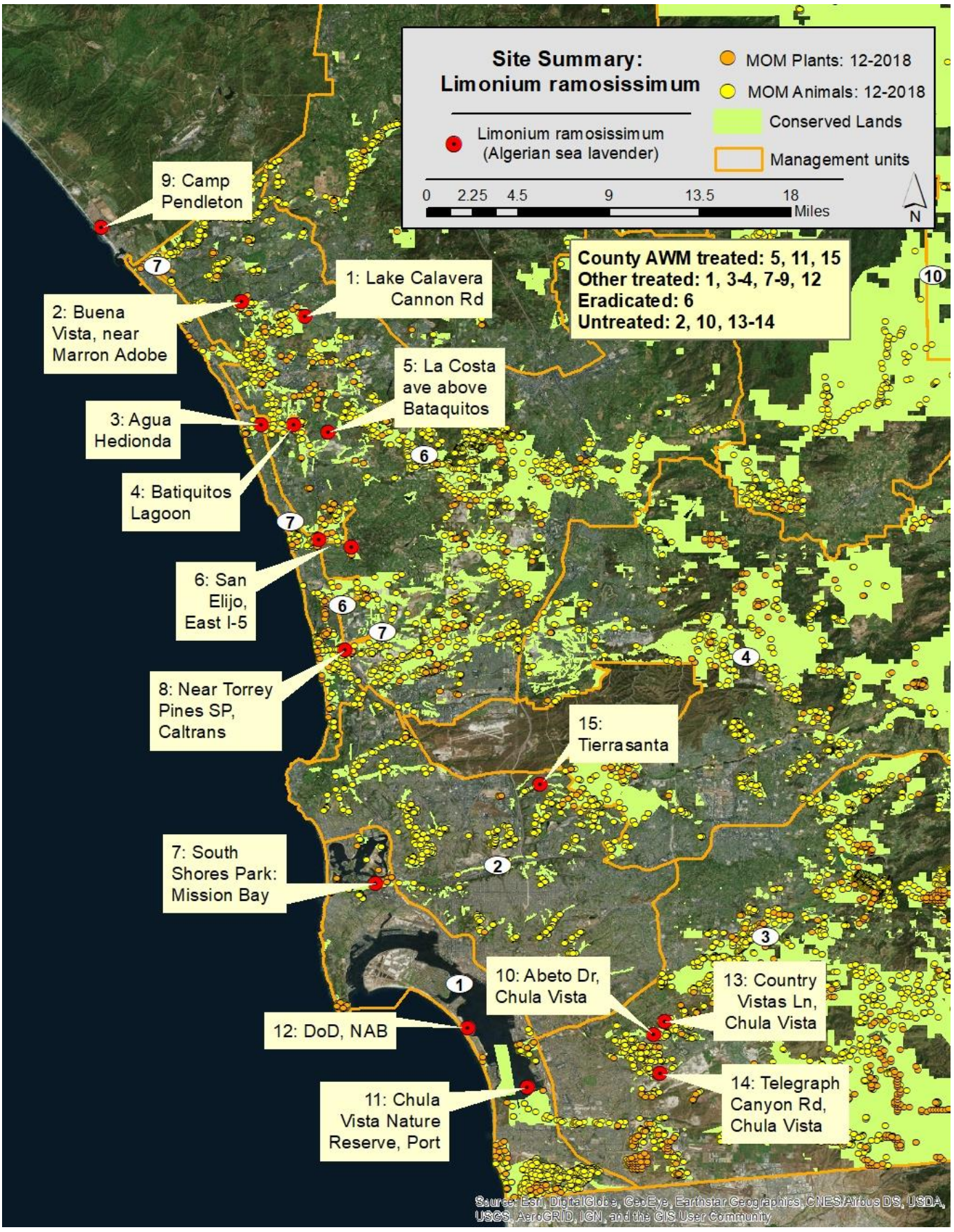
Limonium duriusculum, European sea lavender: Site #2 San Elijo, Solana Beach

Table 10. Summary of treatments performed by AWM on *Limonium duriusculum* (European sea lavender).

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #2 San Elijo, Solana Beach	European sea lavender	1	0.3	0.6	140

140 seedlings were hand pulled and bagged. A crew of two individuals worked one and a half days July 23rd and 24th 2019. Cover is greatly reduced in past treatment areas (>90% cover reduction), but there are seedlings sprouting.

***Limonium ramosissimum*, Algerian sea lavender:**



Limonium ramosissimum, Algerian sea lavender: Site #5 La Costa Ave, Carlsbad

Table 9. Summary of treatments performed by AWM on *Limonium ramosissimum* (Algerian sea lavender).

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #5 La Costa Ave, Carlsbad	Algerian sea lavender	1	0.4	1.0	140

140 seedlings were hand pulled and bagged. A crew of two individuals worked one and a half days July 24th and 25th 2019. Cover is greatly reduced in past treatment areas (>90% cover reduction), but there are seedlings sprouting.

TASK 4 – AWM: Invasive Plant Level 3 Management.

Level of Effort: (<20%) of overall contract

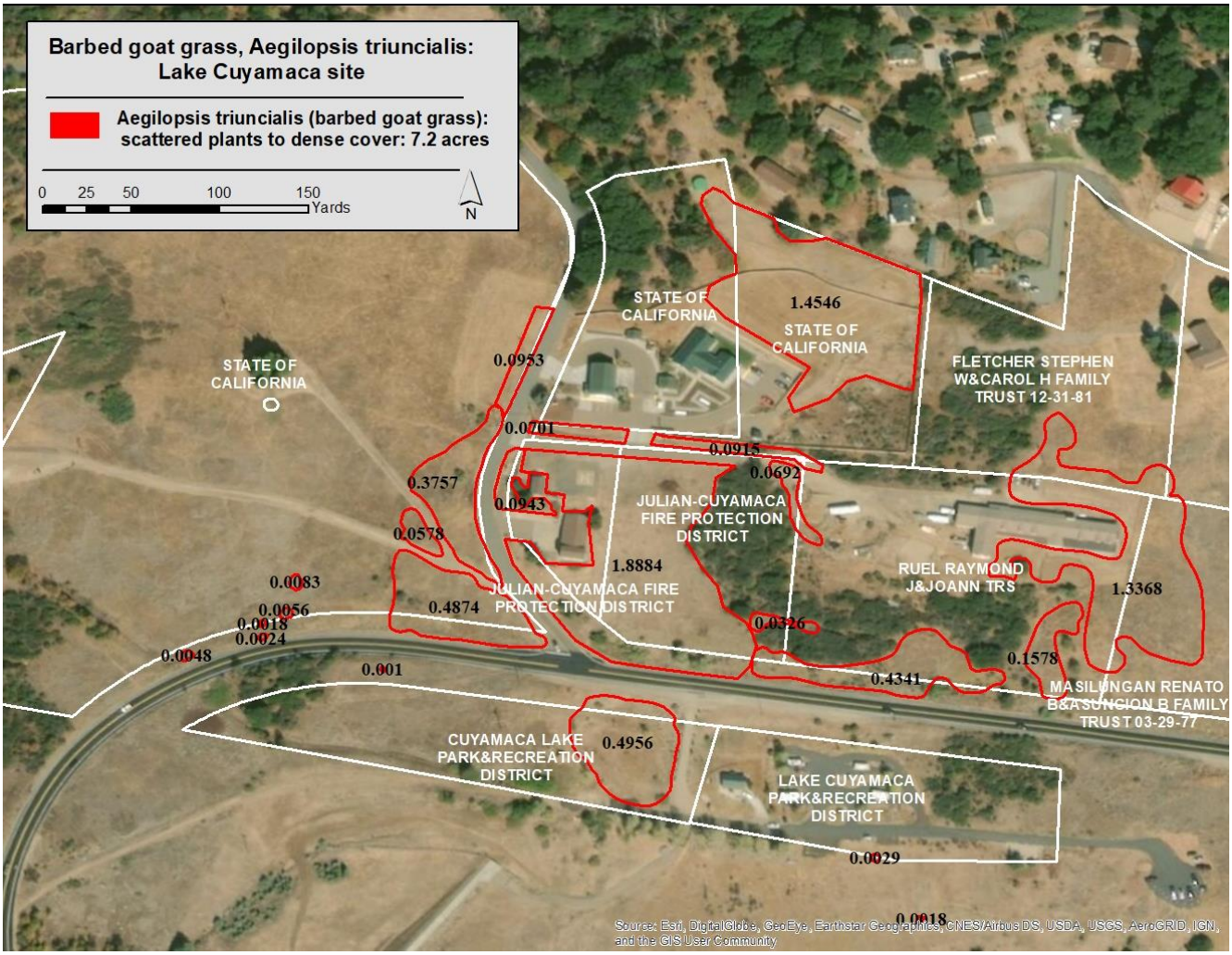
- No charges during this quarter.

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

Level of Effort: (5%) of overall contract

- Co-ordination with the 'Ward's weed control team' in Carlsbad at Bressi Ranch continued. A control program has been started to control Ward's weed at Bressi Ranch, the largest invaded side in North America. The City of Carlsbad, The Nature Collective, Center for Natural Land Management(CNLM), and County AWM are the primary team members. County AWM has secured $65k from CDFA to start work on the southern portion of the site. SANDAG Environmental Mitigation Program funding will be used to complete treatments and carryout re-treatments, if the CDFA funding does not cover all treatment work. The City of Carlsbad has allocated $200k to the overall control program. The Nature Collective will direct $100k in current Wildlife Conservation Board funding to the site. CNLM will direct $30k to its management areas. The long term goal is to eradicate Ward's weed.

- Coordination to initiate control on the only known population of barbed goat grass in San Diego County at Lake Cuyamaca occurred. County AWM has secured $65k in CDFA funding for two years of work. The project involves State Parks, private property, and CalFire.



Work Anticipated for 4th Quarter Period, October 1st – December 31st 2019:

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.

- Re-treatment of sites.
- 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 signed ROEs.
- Collect GIS treatment polygons and survey routes (lines) of targeted weeds.

Task 4 – AWM: Invasive Plant Level 3 Management.

- No work planned.

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

- Continue coordination with Department of Defense, California Department of Parks and Recreation, San Diego Weed Management Area and Orange County Native Plant Society EDRR invasive groups.
- Present EDRR update at Land Managers Meeting (December 2019).
- Continue to aggregate data and track new prospective EDRR target species.
- Attend SDMMP land manager, working group and other meetings as requested.