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

Strategic Control of Invasive Weed Species
3rd Quarter Report - FY 2022-23: Report #33 for Project

January 1st, 2023 – March 31st, 2023

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

To: Kim Smith
San Diego Association of Governments (SANDAG)
401 B Street, Suite 800
San Diego CA 92101

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 January 1st through March 31st, 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 several sites for the following species: Euphorbia terracina, Volutaria tubuliflora, Ward's weed, and Limonium ramosissimum.

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

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 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).

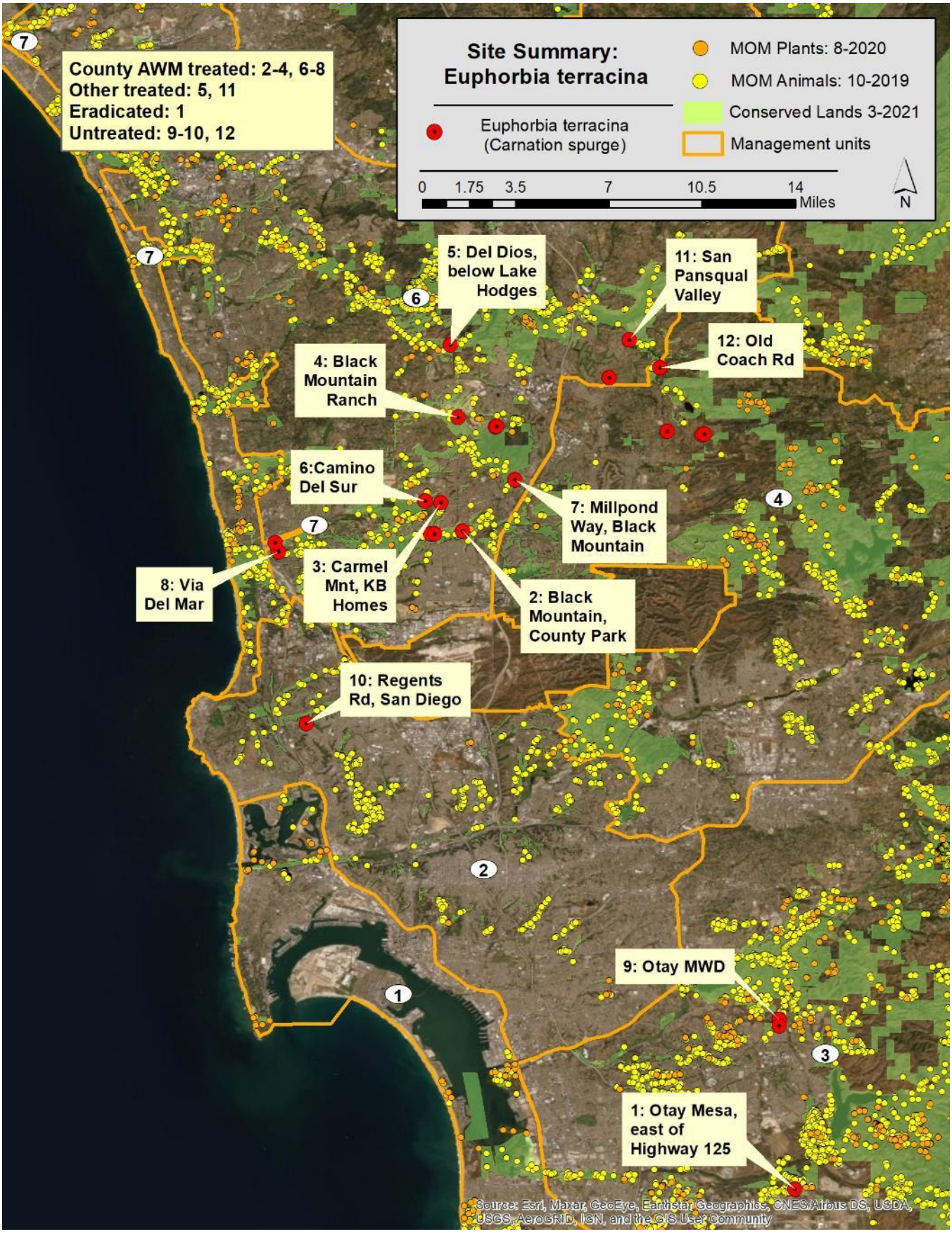
The coordinator surveyed and removed two invasive weed species (Euphorbia and Volutaria) at five sites this quarter. Maps for each site show treated areas (red polygons) and surveyed areas as white lines which track pathways used by crews to survey and control plants. AWM Integrated Pest Control (IPC) carried out optimal plant control, either hand polling 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
Euphorbia terracina	Carnation Spurge	3	0.4	0.6	2,400
Volutaria tubuliflora	Desert Knapweed	2	0.3	2.4	55

***Euphorbia terracina* (Carnation Spurge):**



***Euphorbia terracina* (carnation spurge): Site #4 Black Mt. Ranch, along 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 #4 Black Mt. Ranch	Carnation Spurge	1	0.1	0.2	200

The coordinator visited this site on March 28th, 2023. Scattered seedlings (200) were hand pulled. The site has had good suppression of plants (>90%).

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

Table 5. 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 #6, Camino Del Sur	Carnation Spurge	1	0.1	0.2	1,500

The coordinator visited this site on March 27th, 2023. Scattered seedlings (1,500) were hand pulled. This site has had moderate to poor control. Nature Collective will work with Caltrans to treat this site, there are many seedlings along the bike trail. This work will occur in the spring.

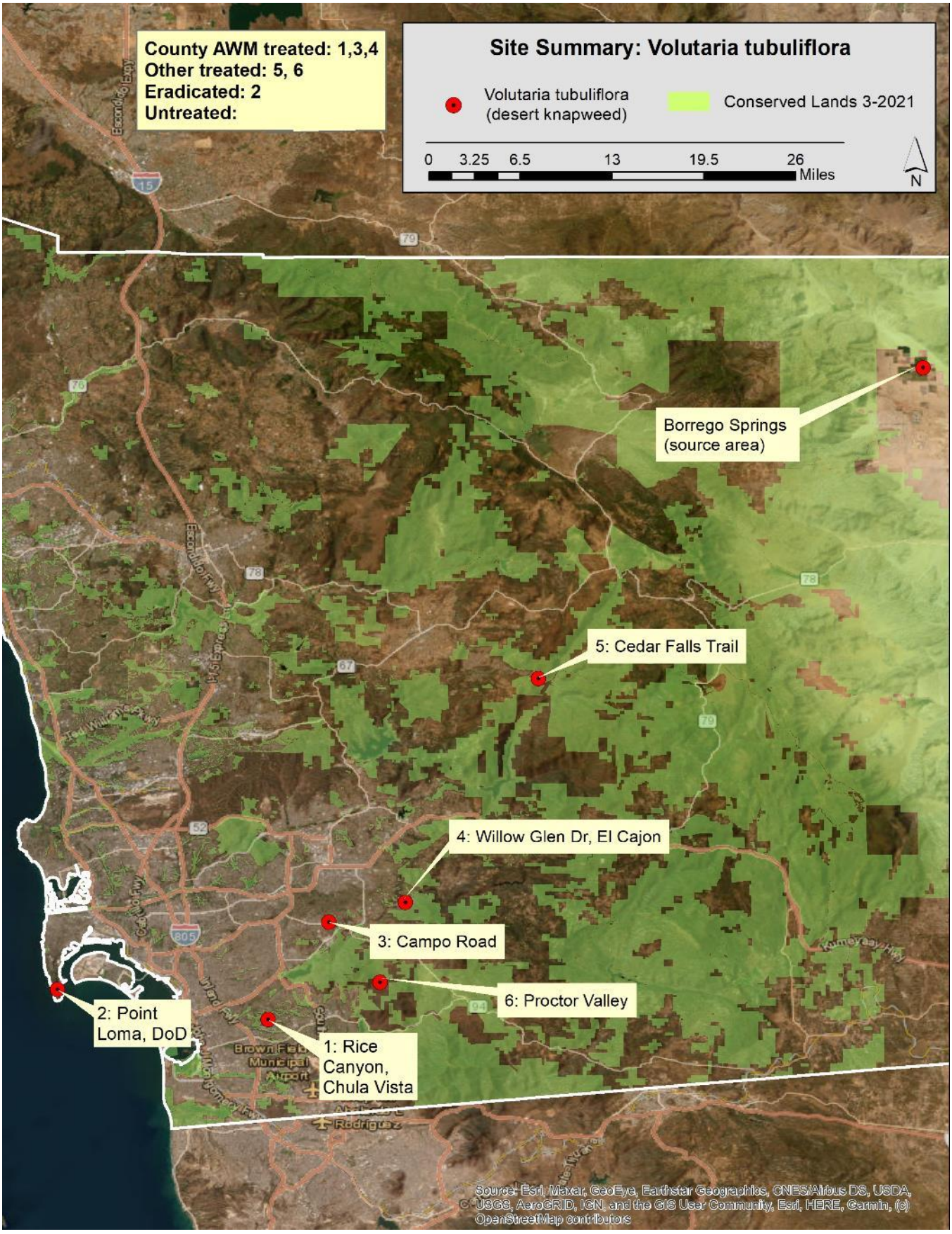
Euphorbia terracina **(Carnation Spurge): Site #7 Millpond Way**

Table 6 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 #7 Millpond Way	Carnation Spurge	1	0.1	0.2	500

The coordinator visited this site on February 28th, 2023. Scattered seedlings (500) were hand pulled.

***Volutaria tubuliflora*, Volutaria Knapweed:**



***Volutaria tubuliflora*, Volutaria Knapweed:**

Table 2. Summary of treatments performed by AWM on *Volutaria tubuliflora* (Volutaria Knapweed).

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #1: Rice Canyon, Chula Vista	Volutaria Knapweed	2	0.1	2.0	25 pulled

The coordinator visited this site on March 6th, 2023. Scattered seedlings (25) were hand pulled. This site has nearly reached eradication, 99% of plants have been controlled.

Table 3. Summary of treatments performed by AWM on *Volutaria tubuliflora* (Volutaria Knapweed).

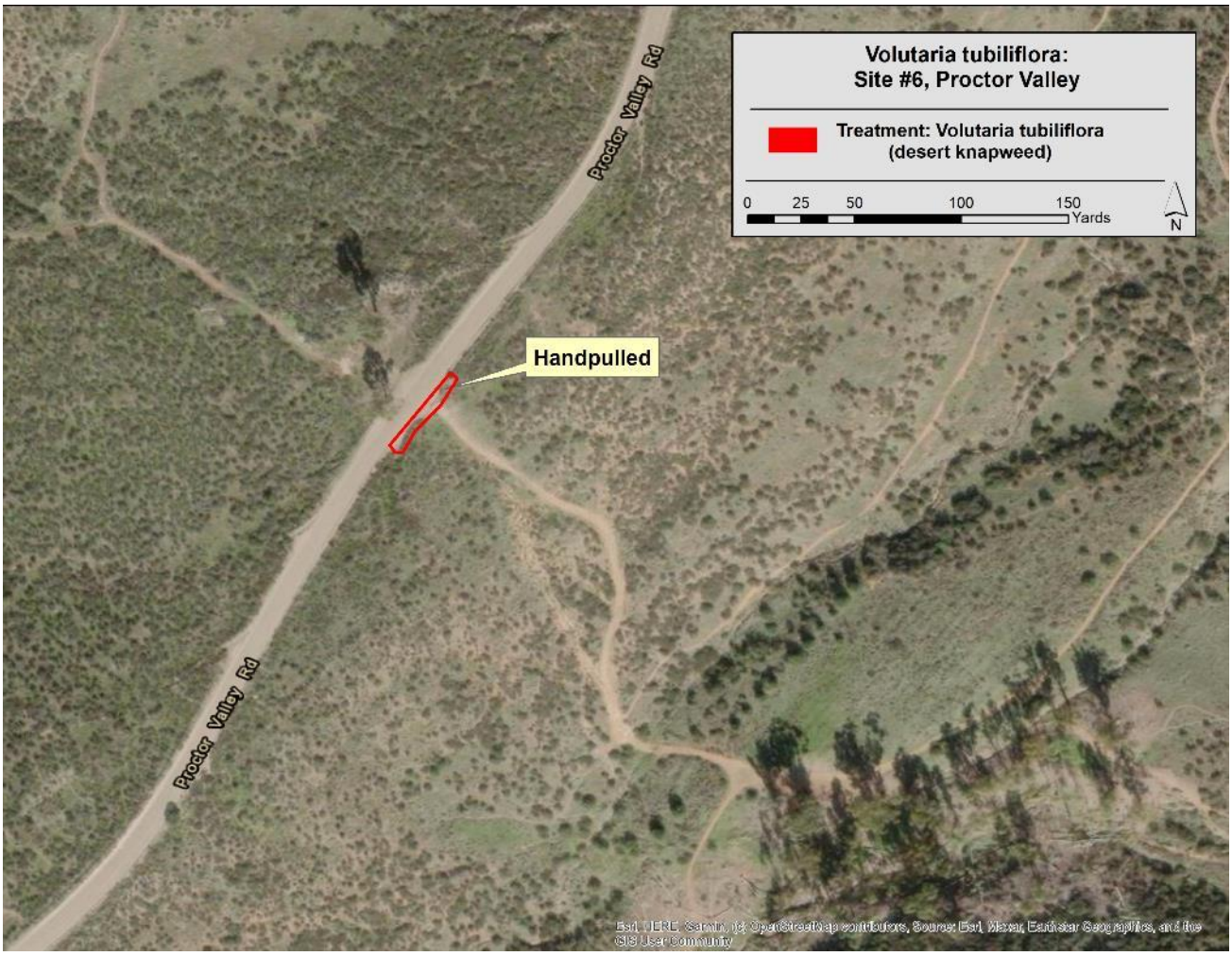
Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #3 Campo Road	Volutaria Knapweed	1	0.1	0.2	15

The coordinator visited this site on March 6th, 2023. Scattered seedlings (15) were hand pulled. Control is good, plants are restricted to one small area.

Table 3. Summary of treatments performed by AWM on *Volutaria tubuliflora* (Volutaria Knapweed).

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #6 Proctor Valley	Volutaria Knapweed	1	0.1	0.2	15

The coordinator visited this site on March 7th, 2023. Scattered seedlings (15) were hand pulled. Only a few plants were found along the road. California Department of Fish and Wildlife is controlling this population, they controlled the plant on the dirt road extending 200 yards down the hill face. They controlled 1,000's of plants. This site was discovered this year.



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).

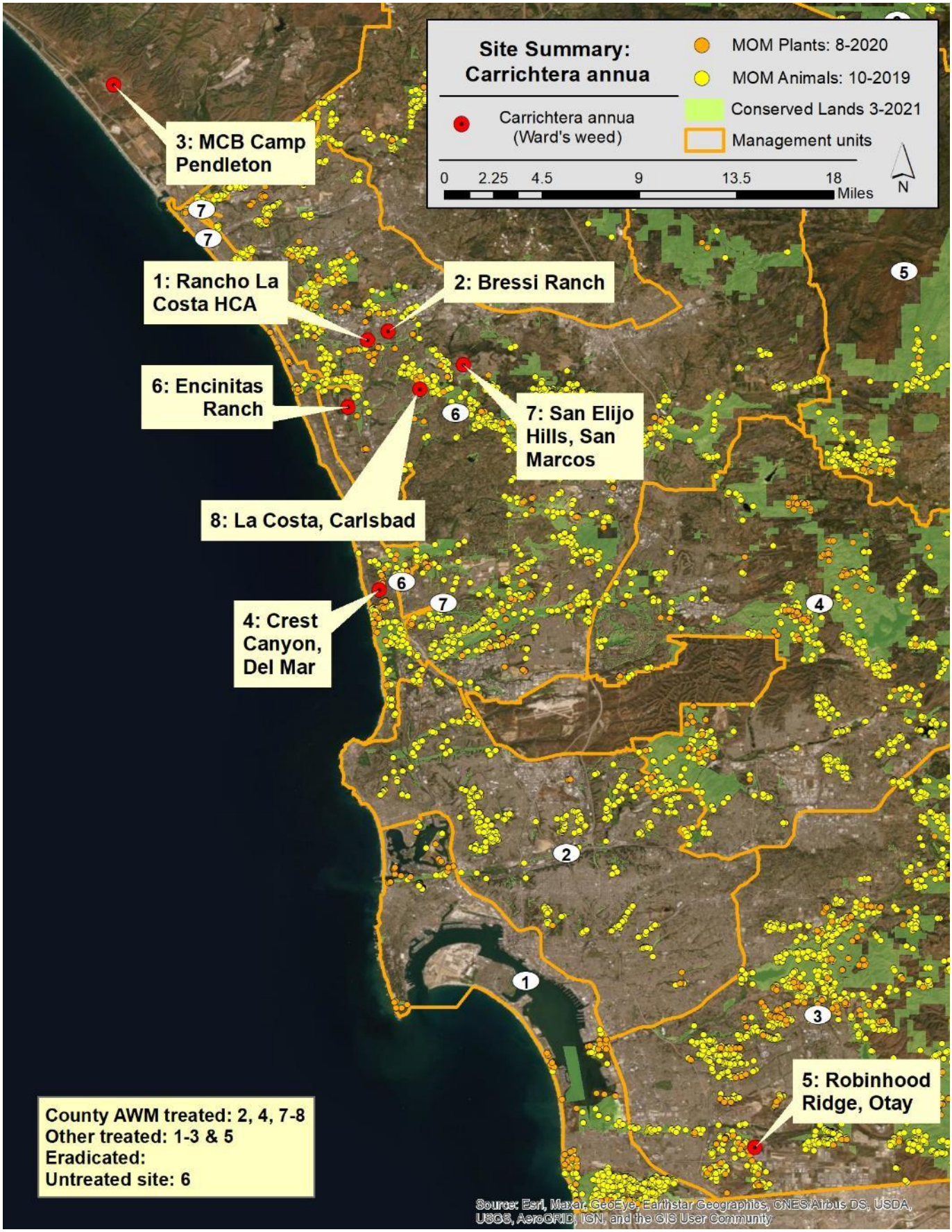
AWM IPC surveyed and treated two invasive weed species (Algerian Sea Lavender, and Wards Weed) at six sites this quarter. Maps for each site show treated areas (red polygons) and surveyed areas as white lines which track pathways used by crews to survey and control plants. AWM IPC made optimal pesticide 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 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 2. 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
Carrichtera annua	Ward's Weed	4	3.2	7.9	29,520
Limonium ramosissimum	Algerian Sea Lavender	2	0.2	1.0	280

***Carrichtera annua*, Ward's Weed:**



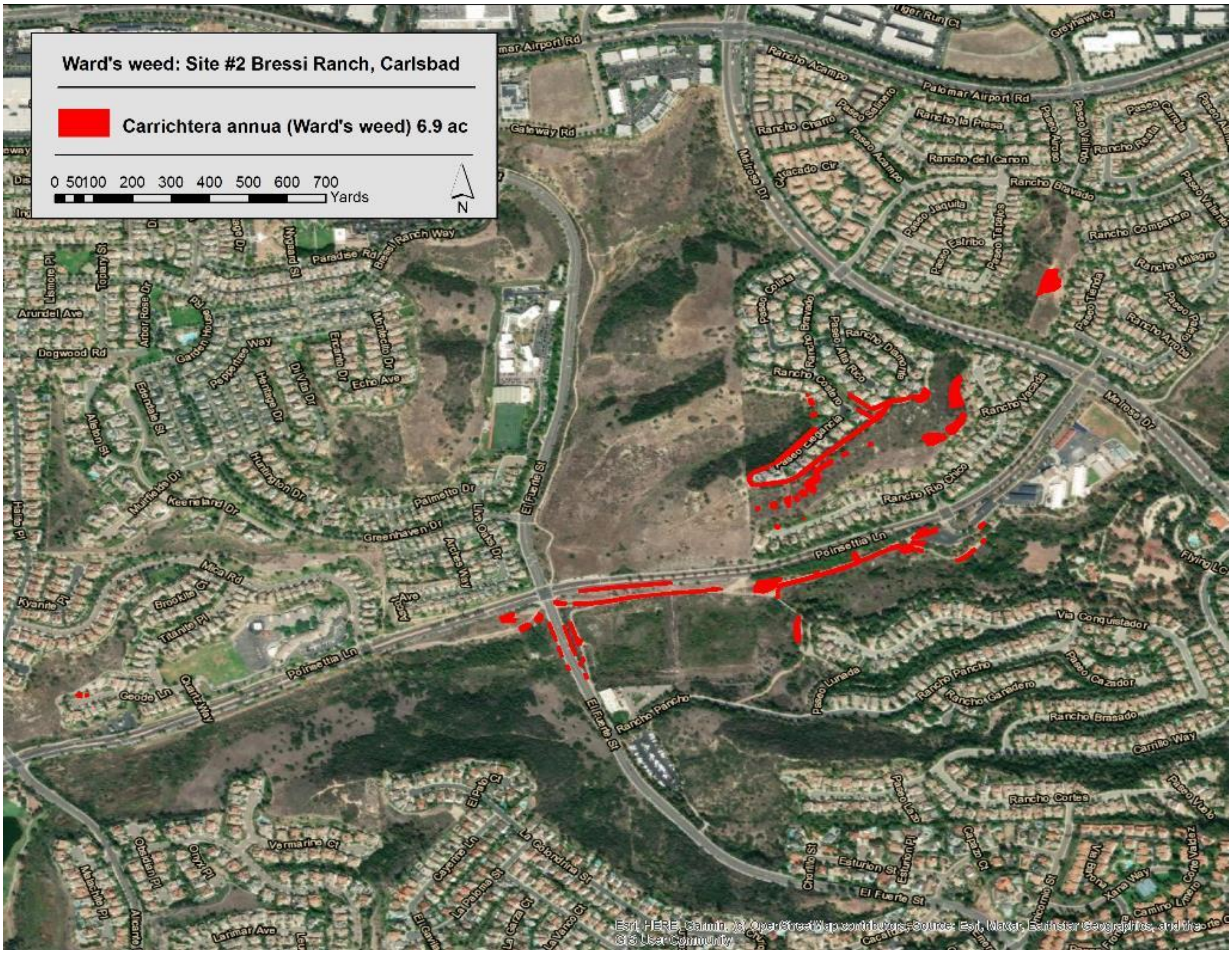
***Carrichtera annua*, Ward's Weed, Site #2 Bressi Ranch**

Table 5. Summary of treatments performed by AWM on *Carrichtera annua*, Ward's Weed.

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #2 Bressi Ranch, Carlsbad	Wards Weed	1	3.0	7.2	Pre-emergent: >2,500

The Bressi Ranch (City of Carlsbad) Ward's Weed site is a very large site (>200 acres) covering rolling hills with many property owners (city, open space, and private yards). A group collaboration has been working on the site since 2019: City of Carlsbad and The Nature Collective are working on the northern and western portions of the site and County AWM has worked on the southern and eastern portions of the site. Center for Natural Land Management is taking the lead on the eastern La Costa Greens site.

The AWM IPC crew (2-4 personnel) spent 15 days between January 26th and March 3rd, 2023, surveying 6.9 acres of habitat and treating 3.0 acres of Ward's Weed. Most work was backpack treatment with Gallery SC pre-emergent herbicide. A few areas along trails were line hand pulled or trimmed and then treated with granular pre-emergent herbicide. Although cover is greatly reduced, heavy rains triggered a flush of seedlings across much of the historic treatment area. The seedbank is surprisingly persistent.


Ward's weed: Site #2 Bressi Ranch, Carlsbad
Carrichtera annua (Ward's weed) 6.9 ac
0 50100 200 300 400 500 600 700
Yards
N

***Carrichtera annua*, Ward's Weed, Site #4 Crest Canyon, Del Mar**

Table 4. Summary of treatments performed by AWM on *Carrichtera annua*, Ward's Weed.

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #4 Crest Canyon, Del Mar	Wards Weed	1	0.1	0.5	20

The coordinator visited this site on March 17th, 2023. Scattered seedlings (20) were hand pulled. Control is very good; plants are restricted to one small area. The site has nearly achieved eradication.

***Carrichtera annua*, Ward's Weed, Site #7 San Elijo Hills, San Marcos**

Table 4. Summary of treatments performed by AWM on *Carrichtera annua*, Ward's Weed.

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #7 San Elijo Hills, San Marcos	Wards Weed	1	0.1	0.5	600

The coordinator visited this site on February 21st, 2023. Scattered seedlings (600) were hand pulled along the trail. The larger portion of the site was treated by Nature Collective in the spring.

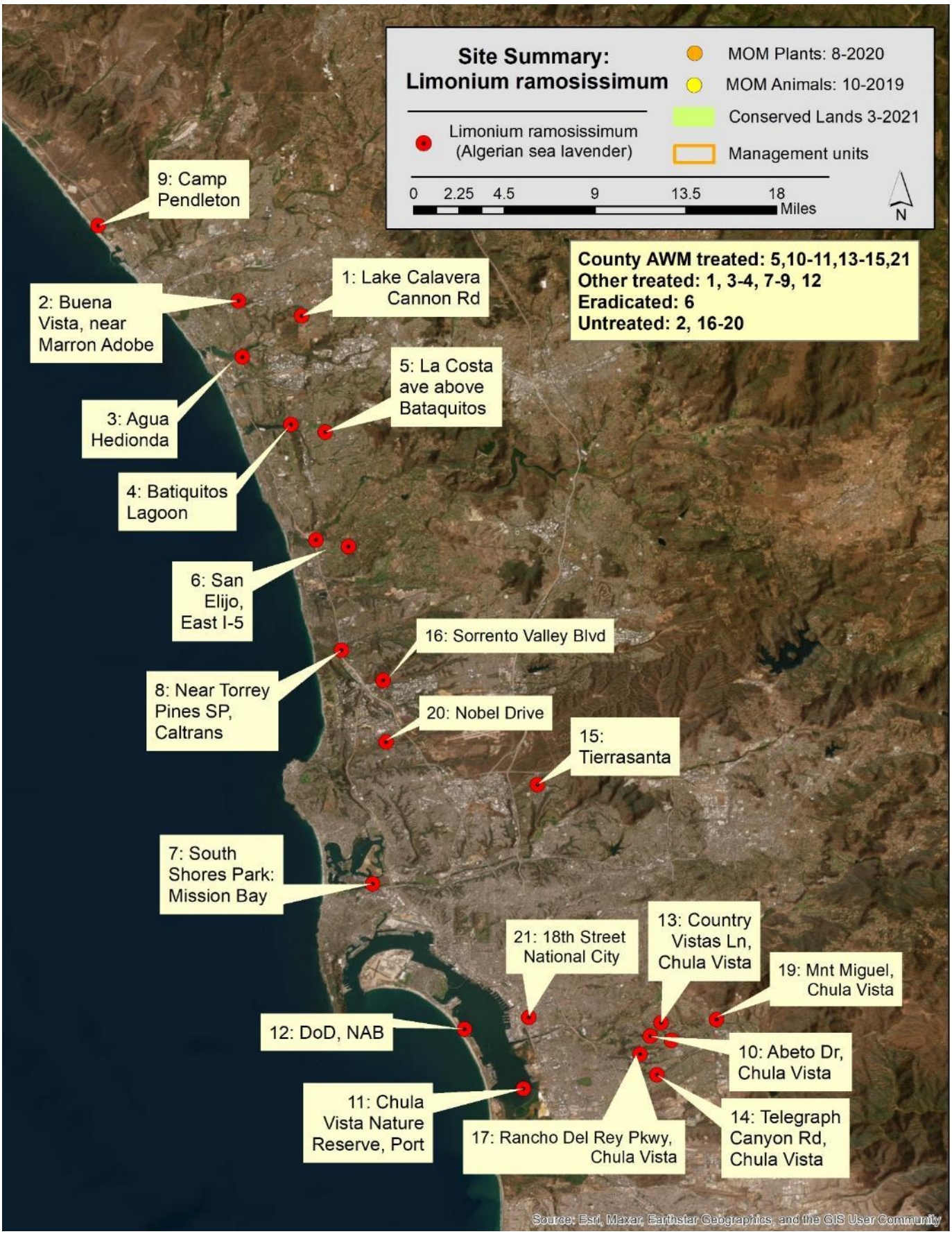
***Carrichtera annua*, Ward's Weed, Site #8 La Costa, Carlsbad**

Table 4. Summary of treatments performed by AWM on *Carrichtera annua*, Ward's Weed.

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #8 La Costa, Carlsbad	Wards Weed	1	-	0.3	None found

The coordinator visited this site on February 27th, 2023. No plants were found. Ward's weed may have been eradicated as this site. It will be checked next spring.

***Limonium ramosissimum*, Algerian Sea Lavender:**



***Limonium ramosissimum*, Algerian Sea Lavender: Site #5 La Costa Ave, Encinitas**

Table 6. 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 Encinitas	Algerian Sea Lavender	1	0.1	0.3	120

The coordinator visited this site on February 27th, 2023. Scattered seedlings (120) were hand pulled. Control is very good; plants are restricted to a few small patches.

***Limonium ramosissimum*, Algerian Sea Lavender: Site #21 Paradise Creek, National City**

Table 6. 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 #21 Paradise Creek, National City	Algerian Sea Lavender	1	0.1	0.7	160

The east side of the creek was treated this quarter (it required adding a lock to an access gate). The west side was treated last quarter. A crew of two treated the west side of the estuary/creek on January 18th, 2023. There were scattered patches of plants.

TASK 4 – AWM: Invasive Plant Level 3 Management.

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

Level 3 Management Species are invasive non-native targets that of a wider distribution in the county (they cannot be eradicated), but still limited enough that they can be contained to portions of the county, or they may be eradicated from watersheds or large landscape level units, when the IPSP was written (2012). These species may also be worked on to suppress them in high resource value areas.

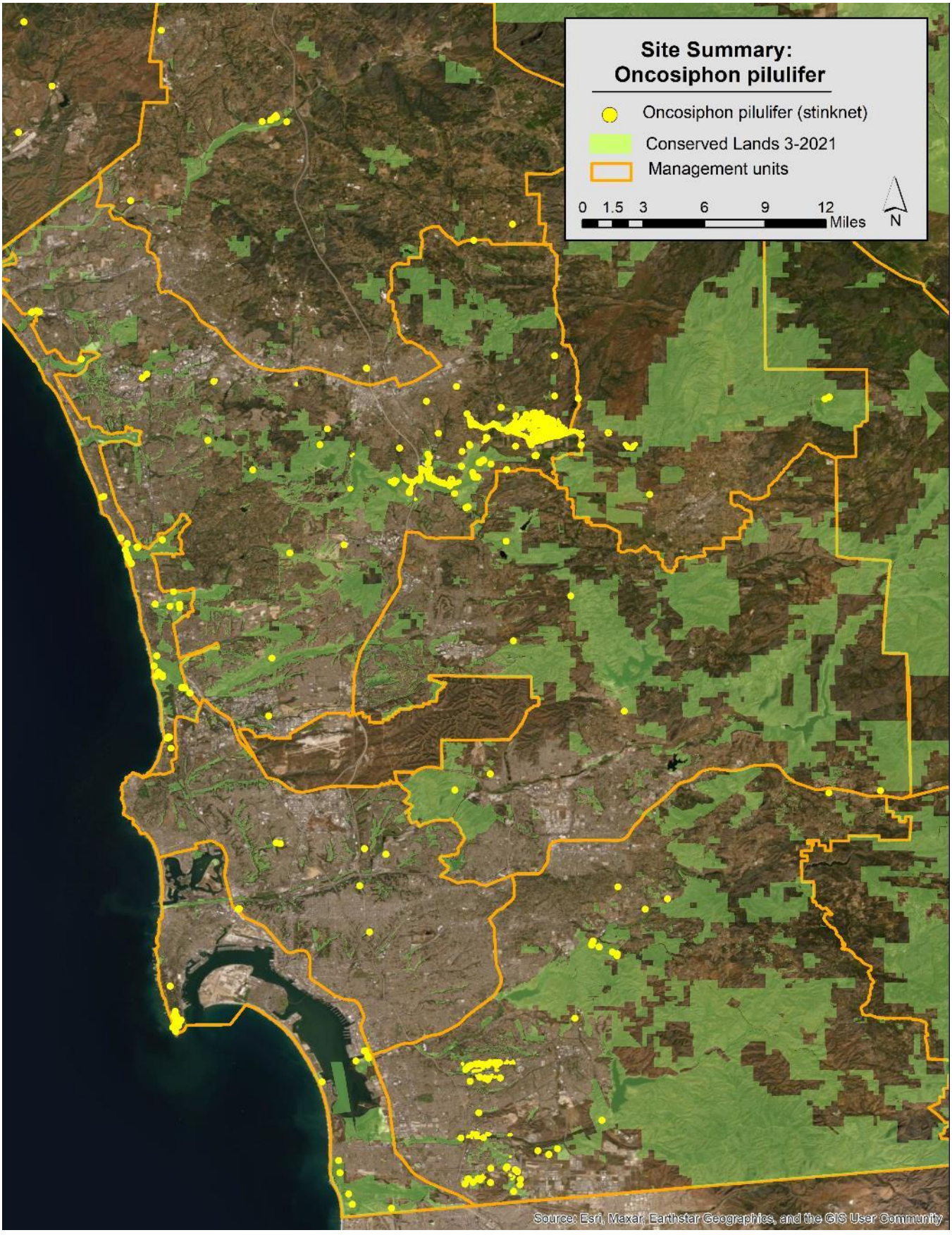
AWM IPC surveyed and treated one invasive weed species (stinknet) at one site this quarter. AWM IPC made optimal pesticide applications, protected the natural environment by preventing off-site movement of pesticides, and utilized Best Management Practices (BMPs) that prevented unintentional discharges 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 14. Summary of treatments performed by AWM on Level 3 species this quarter.

Scientific Name	Common Name	# of Sites Worked	Acres Treated	Acres Surveyed	Plants Controlled
Oncosiphon pilulifer	Stinknet	1	0.5	0.5	2,000+

***Oncosiphon pilulifer*, Stinknet:**

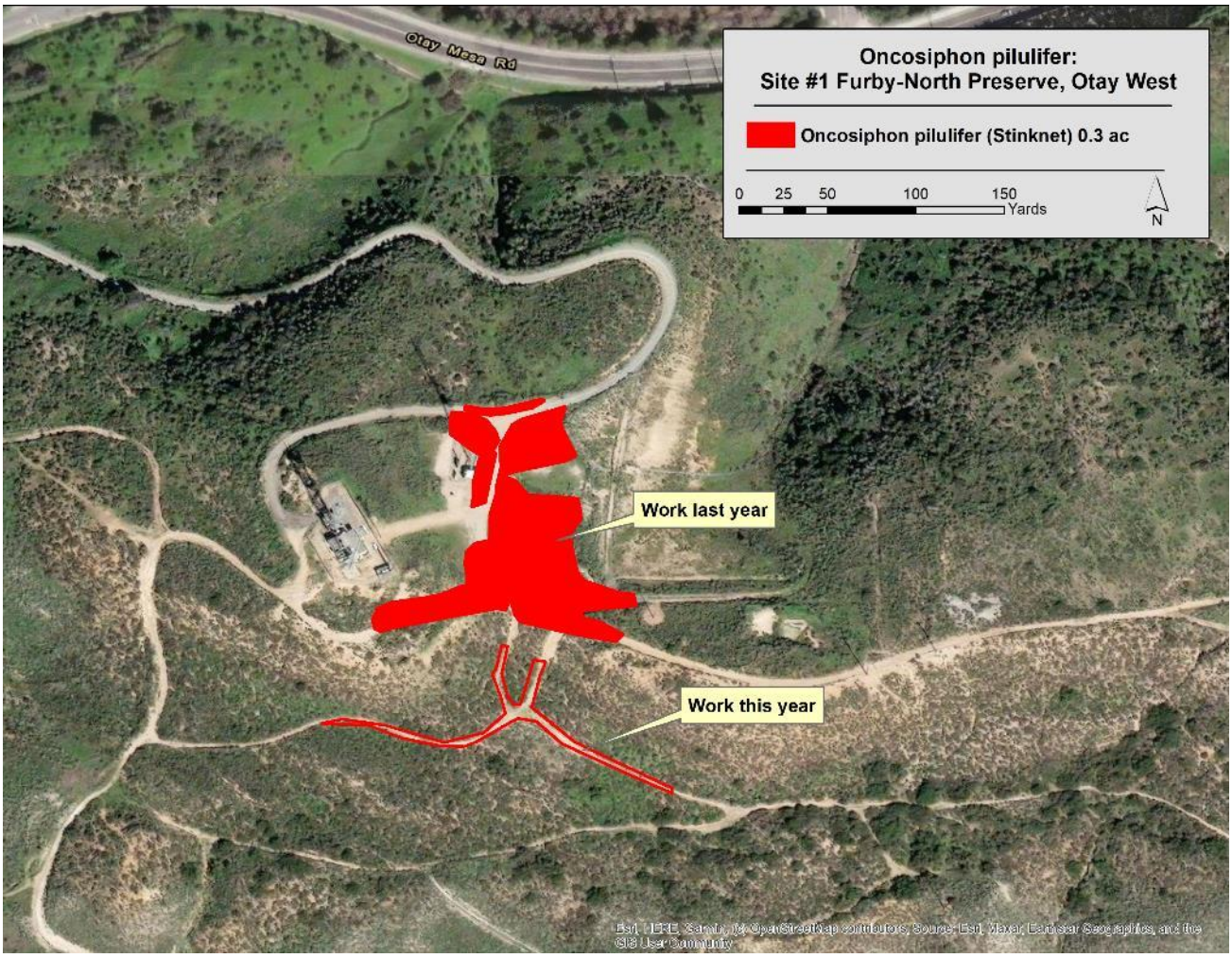


***Oncosiphon pilulifer*, Stinknet: Site #1 Furby-North, Otay West**

Table 15. Summary of treatments performed by AWM on *Oncosiphon pilulifer* (Stinknet).

Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #1 Furby-North, Otay West	Stinknet	1	0.5	0.5	2,000+

The AWM IPC crew completed treatments on an area below the communication towers at Furby-North County Preserve. This complimented work that occurred to the east on Caltrans and City of San Diego property. This effort is being initiated to suppress Stinknet in this portion of the county. The area is of high resource value with both vernal pools in the area (not part of this specific site) and occupied cactus wren habitat nearby. The crew foliar treated areas with pre and post emergent herbicides. Two crew members worked one day January 23rd, 2022. Over 2,000 plants were treated.



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, Amendment 6.

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 properties.

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.