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

Strategic Control of Invasive Weed Species
1st Quarter Report - FY 2019-20: Report #21 for Project

January 1st, 2020 – March 31st, 2020

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

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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 January 1st to March 31st 2020.

Covid 19: The outbreak has modified work procedures. Small crews are continuing field work following County and State guidelines. Special permission and authorizations are also being required by municipalities. County AWM is following these procedures as they complete work.

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. Covid 19 has required authorization and additional procedures for several municipalities.

The coordinator worked on two species at two large field sites:

Work tasks included working with field crews, assessing treatment success, and pre-mapping and surveying target plants. Work focused on initiating work at two new large sites. The Ward's weed site in the City of Carlsbad (Bressi Ranch) required coordination with multiple city staff and partners, including coordination on temporarily closing trails in the treatment area. Treated plants were monitored to assess if the pre-emergent was effective when plants were beyond cotyledon growth stage. Efficacy is very high through the second set of true leaves. Once plants grow beyond this stage, especially if they start to bolt and flower, efficacy drops off. The addition of Milestone was found to boost efficacy, but this can only be used in grasslands and disturbed areas (no shrub cover). Barbed goat grass treatments required coordinating with State Parks, CalFire, and private landowners. Species and sites are presented under task 2 and 3.

Regulatory permits:

No new work.

Report preparation:

The quarterly report was prepared.

Mapping and occurrence data:

Mapping and surveying for Ward's weed and barbed goatgrass occurred. County GIS staff were worked with to restore AWM crew access to field mapping software (Collector). There has been an interruption in County AWM and consultant access to GIS systems at the county. Access has been restored for field crews (4-21-2020), but not for consultants. Data collection is also being simplified for field mapping.

Work plan:

No new work.

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, two invasive weed species (barbed goatgrass and desert knapweed) 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 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
Aegilops triuncialis	Barbed goatgrass	1	6.3	7.1	>100,000
Volutaria tubilflora	Desert knapweed	1	6.5	1.0	Pre-emergent

***Aegilops triuncialis (barbed goatgrass)*:**

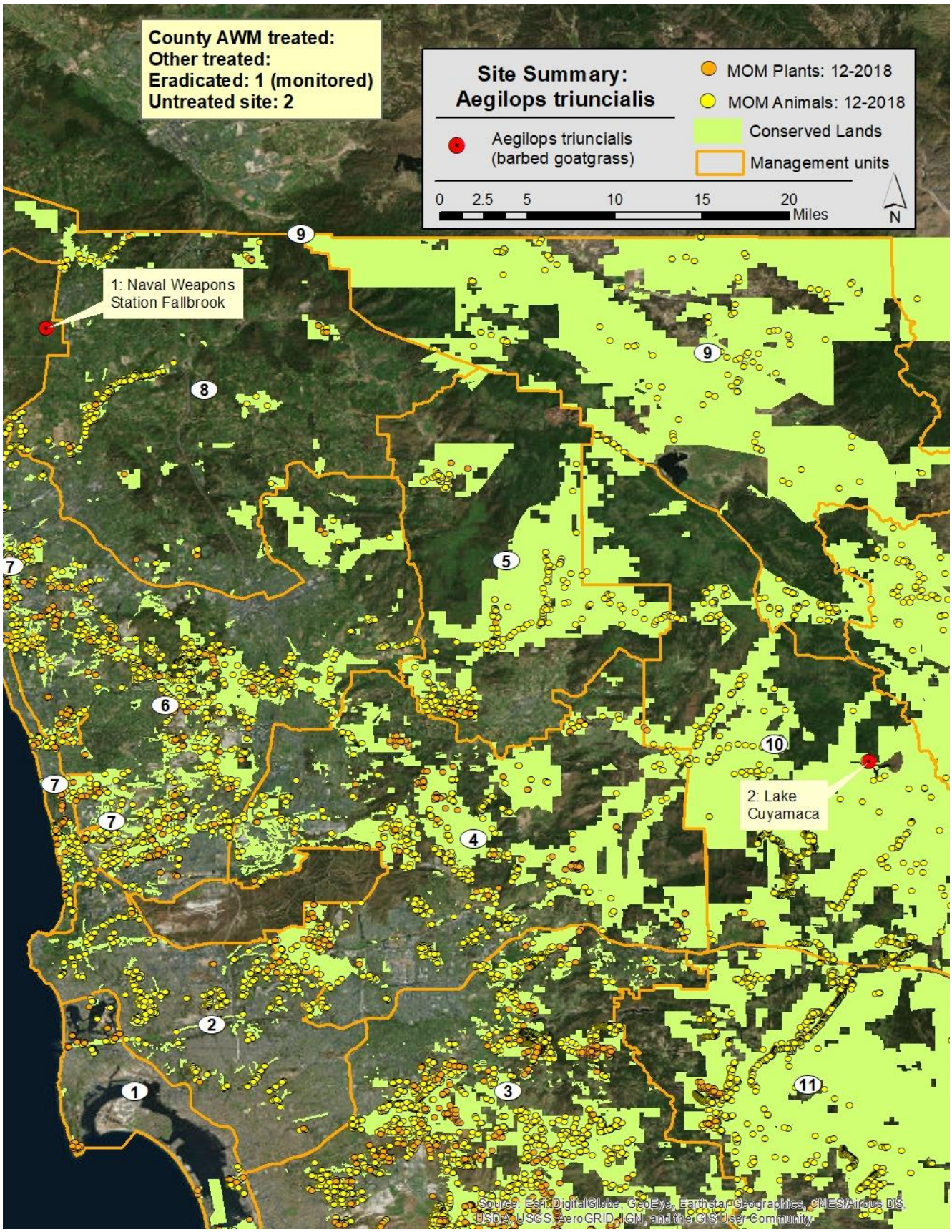
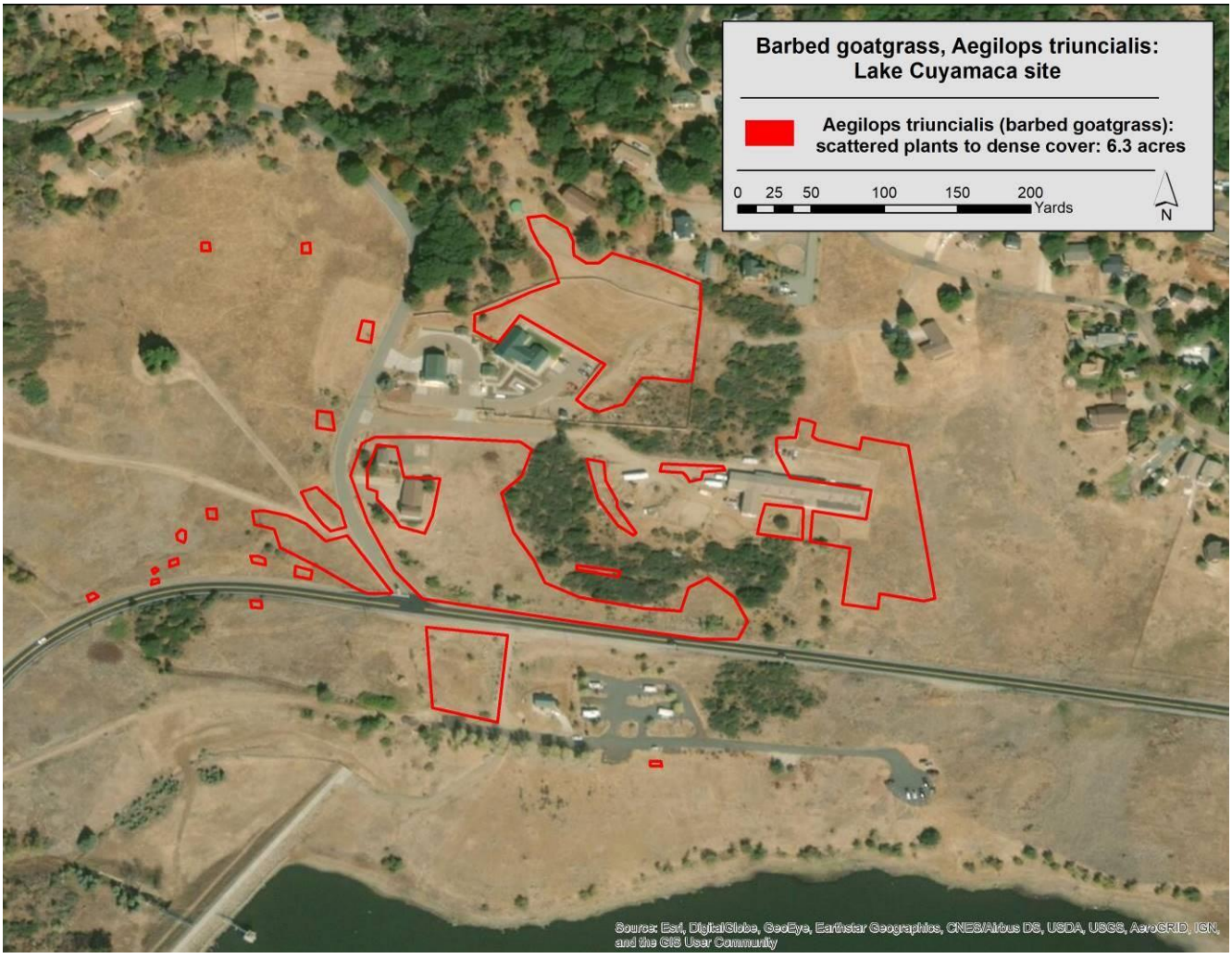


Table 2. Summary of treatments performed by AWM on *Aegilops triuncialis (barbed goatgrass*).

Work Site	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants Controlled
Site #2 Lake Cuyamaca	Barbed goatgrass	1	6.3	7.1	>100,000

***Aegilops triuncialis (barbed goatgrass*): Site #2 Lake Cuyamaca**

A CDFA Weed Management Area grant has provided funding for two years (2019 and 2020) to start control of this high priority EDRR target that was discovered in summer 2018. This is the only known active site in the county (Site #1 Fallbrook is considered eradicated). All seven property owners granted permission for work, including State Parks. A work crew of 3-4 individuals completed the second treatment of 6.3 acres over four days in January. A split application (one late fall and one early spring) at a lower rate using Method herbicide was used. Control is supposed to be over 99% for barbed goat grass, while leaving other grasses. A January site visit did not show this level of control, it is possible that the rate used was too low. A late spring visit will give further information.



***Volutaria tubiliflora*, Volutaria knapweed:**

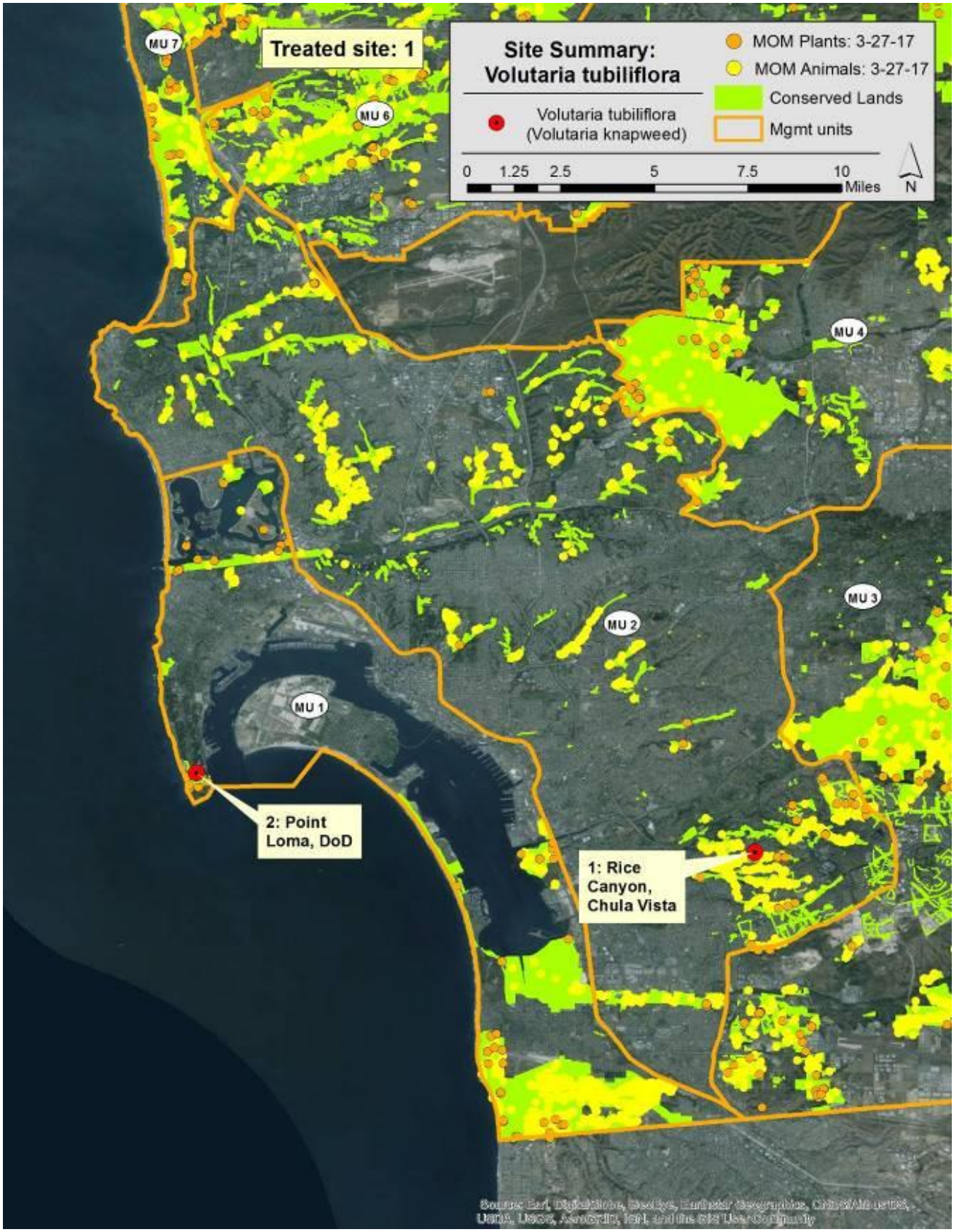


Table 5. Summary of treatments performed by AWM on *Volutaria tubuliflora* (Volutaria knapweed).

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #1: Rice Canyon, Chula Vista	Volutaria desert knapweed	2	6	6	Pre-emergent

This is the fourth year of treating this site and the third year of applying pre-emergent. Rains this year were early and heavy. Pre-emergent (Milestone) was applied in early winter on treatment areas by a crew of two individuals on three days 1-14,15,16-2020.

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).

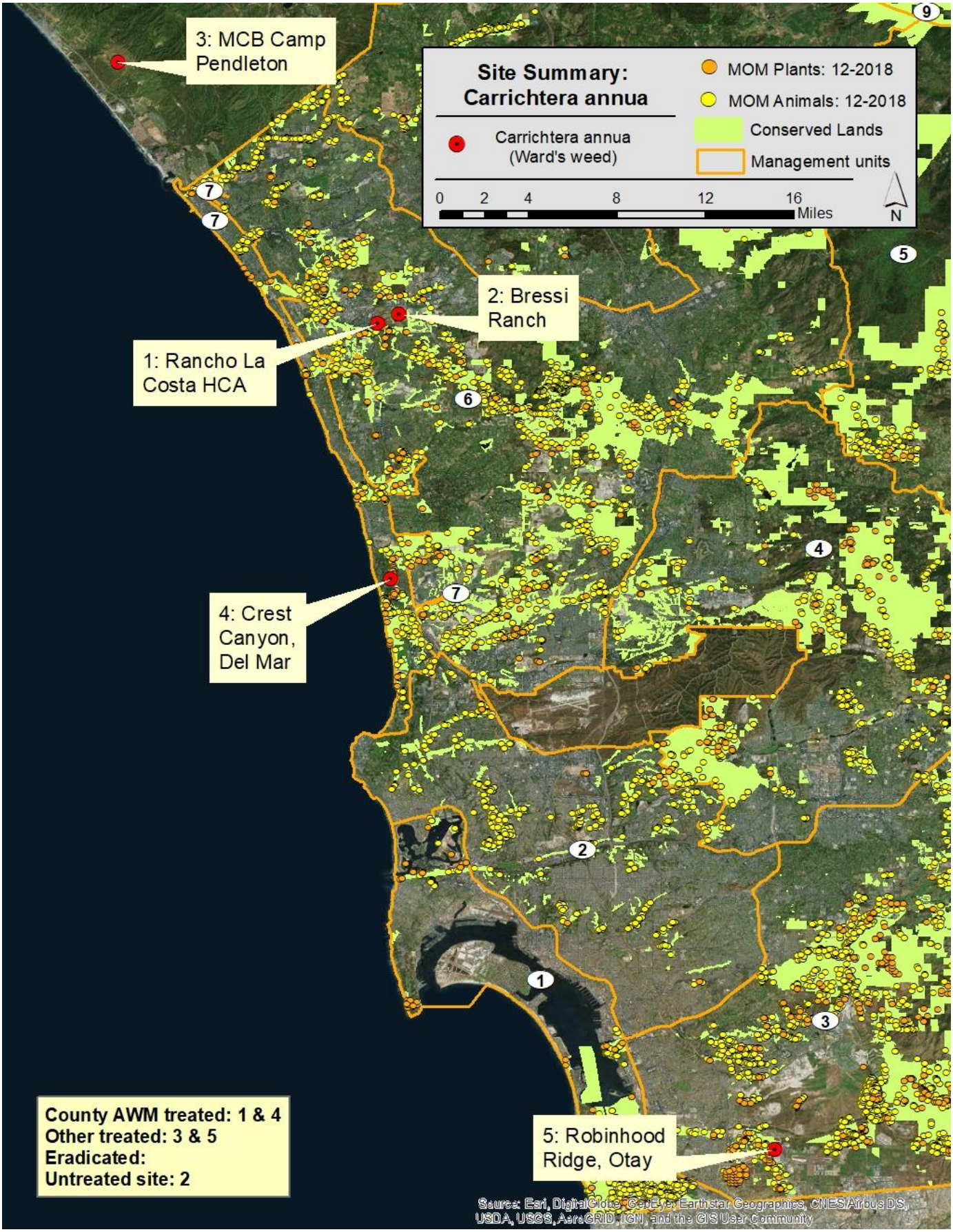
Crews surveyed and treated two invasive weed species (Ward's weed and Canary Island St. John's wort) at two sites this quarter. AWM IPC made optimal pesticide applications, protected the natural environment by preventing off-site movement of pesticides, and utilized Best Management Practices (BMPs) that 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
Carrichtera annua	Ward's weed	1	11.3	11.3	>100,000
Hypericum canariense	Canary Island St. John's wort	1	0.7	4.0	690

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



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

Table 6. Summary of treatments performed by AWM on *Carrichtera annua*, Ward's Weed.

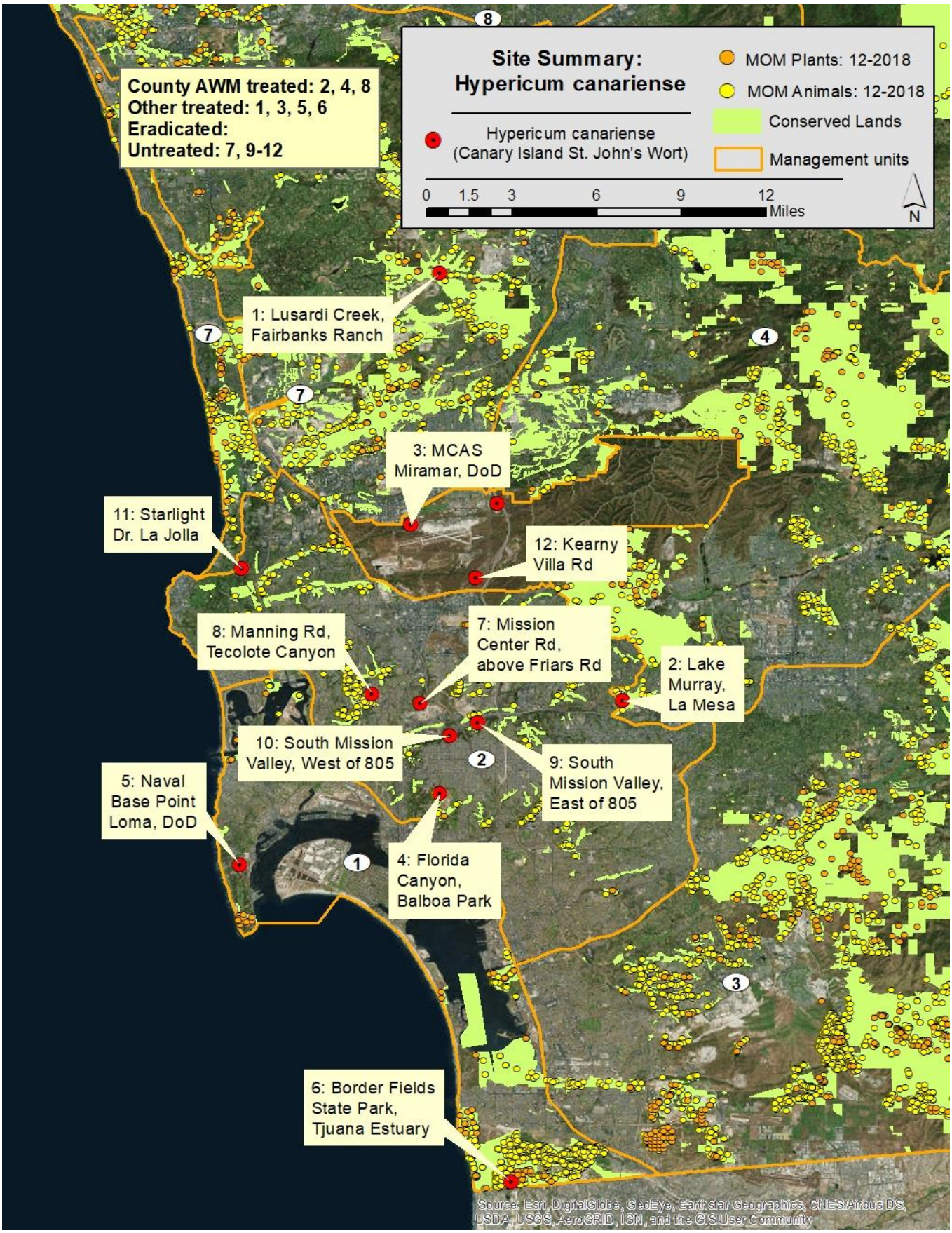
Site Name	Common Name	# of Work Cycles	Acres Treated	Acres Surveyed	Plants treated
Site #2 Bressi Ranch, Carlsbad	Wards weed	1	11.3	11.3	Pre-emergent: >500,000

The Bressi Ranch in the City of Carlsbad Ward's weed site is a very large site (>100 acres) covering multiple hillsides with many property owners. A collaboration has started work on the site: City of Carlsbad and Nature Collective are working on the northern and western portions of the site and County AWM has started on the southern and eastern portions of the site. CNLM is taking the lead on the eastern La Costa Greens site.

A CDFA Weed Management Area grant has provided funding for two years (2019 and 2020) to start control of this high priority EDRR target. This grant is covering most County AWM work on the site thus far. A pre-emergent herbicide (Gallery) was applied to the site. County AWM crews spent 25 days in Q2 2019-2020 treating the area. Work continued in Q3 2019/20 on eight days from January 2nd to the 13th 2020, finishing initial treatments for the season. The far eastern canyon was purposely treated late in the season to test how far the treatment season can be pushed. These plants had grown their third and fourth sets of leaves. Gallery was still effective, but not at 100%, closer to 80%. Milestone was added to the treatment mix for the western portion of the site. Adding this pre/post emergent was very effective, nearly 100% control was achieved. Milestone cannot be used in shrublands areas, however, so it extends treatment by time, but only for grassland treatment areas.

Crews also spent two days on March 16th and 17th, treating scattered plants that were not controlled by Gallery in the first treatment area. Most of these plants emerged where there was active soil movement, which likely negated the effects of the pre-emergent.

***Hypericum canariense*, Canary Island St. John's wort**

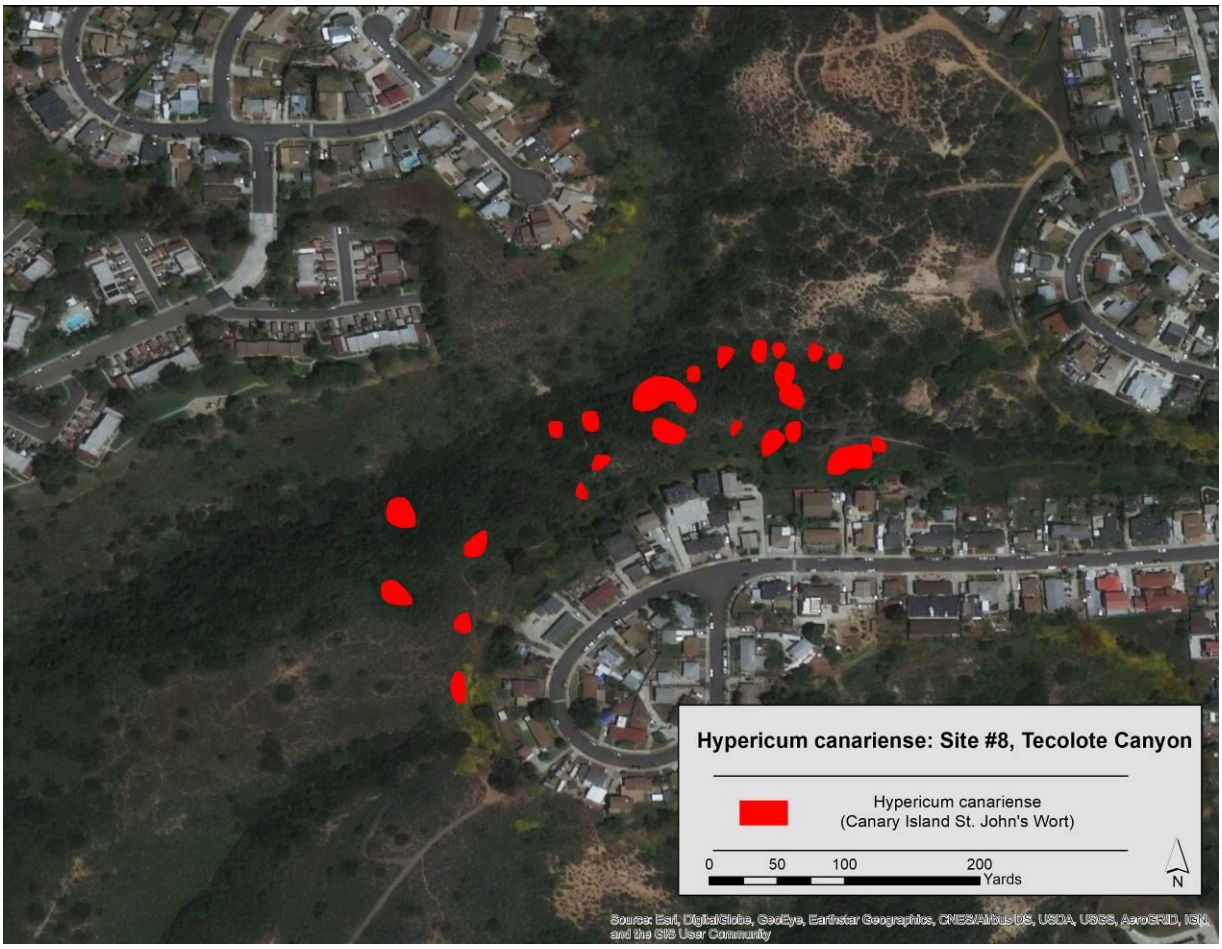


***Hypericum canariense*, Canary Island St. John's wort: Site #8 Tecolote Canyon**

Table 7. Summary of treatments performed by AWM on *Limonium duriusculum* (European sea lavender).

Site Name	Common Name	# of Visits	Acres Surveyed	Acres Treated	Plants treated
Site #8, Tecolote Canyon	Canary Island St. John's Wort	1	15.1	2.7	2,265

Small plants (40%) and seedlings (60%) were foliar treated with herbicide (imazapyr and glyphosate). A crew of two individuals visited the site over three days from March 19,24,26,27 2020. Work will continue in Q4 2019-2020. The Covid 19 restrictions also restricted access, but the City of San Diego established procedures to allow County AWM to continue work. Cover is greatly reduced (>90% cover reduction), but there were scattered seedlings still emerging.



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

- EDRR update was given at San Diego WMA steering committee meeting. Potential additional projects were discussed.
- A presentation was given at the SDMMP December meeting on the two new large efforts that have been initiated: Ward's weed in Carlsbad and barbed goatgrass.
- Co-ordination with the 'Ward's weed control team' in Carlsbad at Bressi Ranch continued. A control program has started work Ward's weed at Bressi Ranch, the largest invaded side in North America. The City of Carlsbad, Nature Collective, CNLM, and County AWM are the primary team members. County AWM has secured $65kfrom CDFA to start work on the southern portion of the site. SANDAG EMP 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 WCB funding to the site. CNLM will direct $30k to its management areas. The long term goal is to eradicate Ward's weed.
- Co-ordination to continue 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, April 1st – June 30th 2020:

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 County of Orange CNPS EDRR invasives group.
- Continue to aggregate data and track new prospective EDRR target species.
- Attend SDMMP land manager, working group and other meetings as requested.