

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

**Strategic Removal of Invasive Weed Species  
4th Quarter Report - FY 2016-17: Report #10 for Project**

**May 18th, 2017 – June 30th, 2017 (contract start date to end of quarter)**

Project: County of San Diego, Department of Agriculture, Weights & Measures (AWM)–  
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 start on May 18, 2017. Work did occur from March 1 through May 17 2017 and was funded by the County of San Diego. A table listing species and work sites appears at the end of this report (Appendix 1).

**TASK 1 – Invasive Plant Species Coordinator:**

Level of Effort: (25%) of overall contract

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

AWM staff coordinated throughout the quarter with property owners and land managers on obtaining access to areas where the crews needed to perform invasive weed work.

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

Work tasks included monitoring field crews, assessing treatment success, and mapping and surveying target plants. Work also occurred on treatment planning and time estimates for the second contract, covering field seasons 2017 and 2018.

**Report preparation:**

Quarterly report for Q4 FY 2016-17 was prepared. The two year project completion report for the first amendment was prepared (combined with 2017-2018 work plan). Work on the second amendment scope occurred.

**Work plan 2017-18:**

The work plan for 2017-2018 was worked on (part of the first amendment two year project report).

## **TASK 2 – AWM: Invasive Plant Level 1 Management**

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

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

Integrated Pest Management (IPC) crews surveyed and treated two invasive weed species (Carnation spurge and Volutaria knapweed) at three sites this quarter. AWM IPC made optimal pesticide applications, utilizing 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, and presence of irrigation systems.
3. Identified and avoided streamside management areas, surface waters and storm drains to prevent drift and application of pesticides not labeled for aquatic use onto surface waters.
4. Used integrated pest management methods, to:
  - a. Identify the most appropriate method of control in order to minimize the scale and number of pesticide applications and
  - b. Apply 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.**

<b>Scientific Name</b>	<b>Common Name</b>	<b># of Sites Worked</b>	<b>Acres Surveyed</b>	<b>Acres Treated</b>	<b>Plants Controlled</b>
<i>Euphorbia terracina</i>	Carnation spurge	2	3.8	1.1	3,300
<i>Volutaria tubiliflora</i>	Volutaria knapweed	1	3.5	0.5	1,080

**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 Surveyed	Acres Treated	Plants Controlled
Site #2, KB Homes	Carnation spurge	1	2.7	1.0	3,000
Site #3, Black Mountain, County Park	Carnation spurge	1	1.1	0.1	300

**Euphorbia terracina (Carnation spurge): Site #2, KB Homes**

Mature plants and seedlings were manually removed. A crew of two individuals worked on 6-6-2017 and 6-8-2017. There has been a greater than 50% reduction in cover, but there is still an extensive seedbank that will likely continue to express itself for some time.



Site #2 KB Homes: 6-6-2017 treatment of 500 plants of *Euphorbia terracina*.



Site #2 KB Homes: 6-8-2017 treatment of 200 plants of *Euphorbia terracina*.



Site #2 KB Homes: 6-8-2017 treatment of 1,300 plants of *Euphorbia terracina*.



Site #2 KB Homes, Millpond Way area: 6-8-2017 treatment of 1,000 plants of *Euphorbia terracina*.



Site #3 Black Mountain County Park: 6-9-2017 treatment of 300 plants of *Euphorbia terracina*.

Volutaria tubiliflora, Volutaria knapweed:





**Table 3. Summary of treatments performed by AWM IPC on *Volutaria tubiliflora* (Volutaria knapweed).**

Site Name	Common Name	# of Visits	Acres Surveyed	Acres Treated	Plants treated
Site #1: <i>Volutaria tubiliflora</i>	Volutaria knapweed	1	3.5	0.5	1,080

A follow up treatment of this site revealed that plants are still being found. A crew of two, hand pulled 1,080 mature plants and seedlings on 6-22 thru 6-23-2017.



Site #1 Rice Canyon: 6-5-2017 treatment of 400 plants of *Volutaria tubiliflora*.



Site #1 Rice Canyon: 6-7-2017 treatment of 680 plants of *Volutaria tubiliflora*.

### **TASK 3 – AWM: Invasive Plant Level 2 Management.**

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

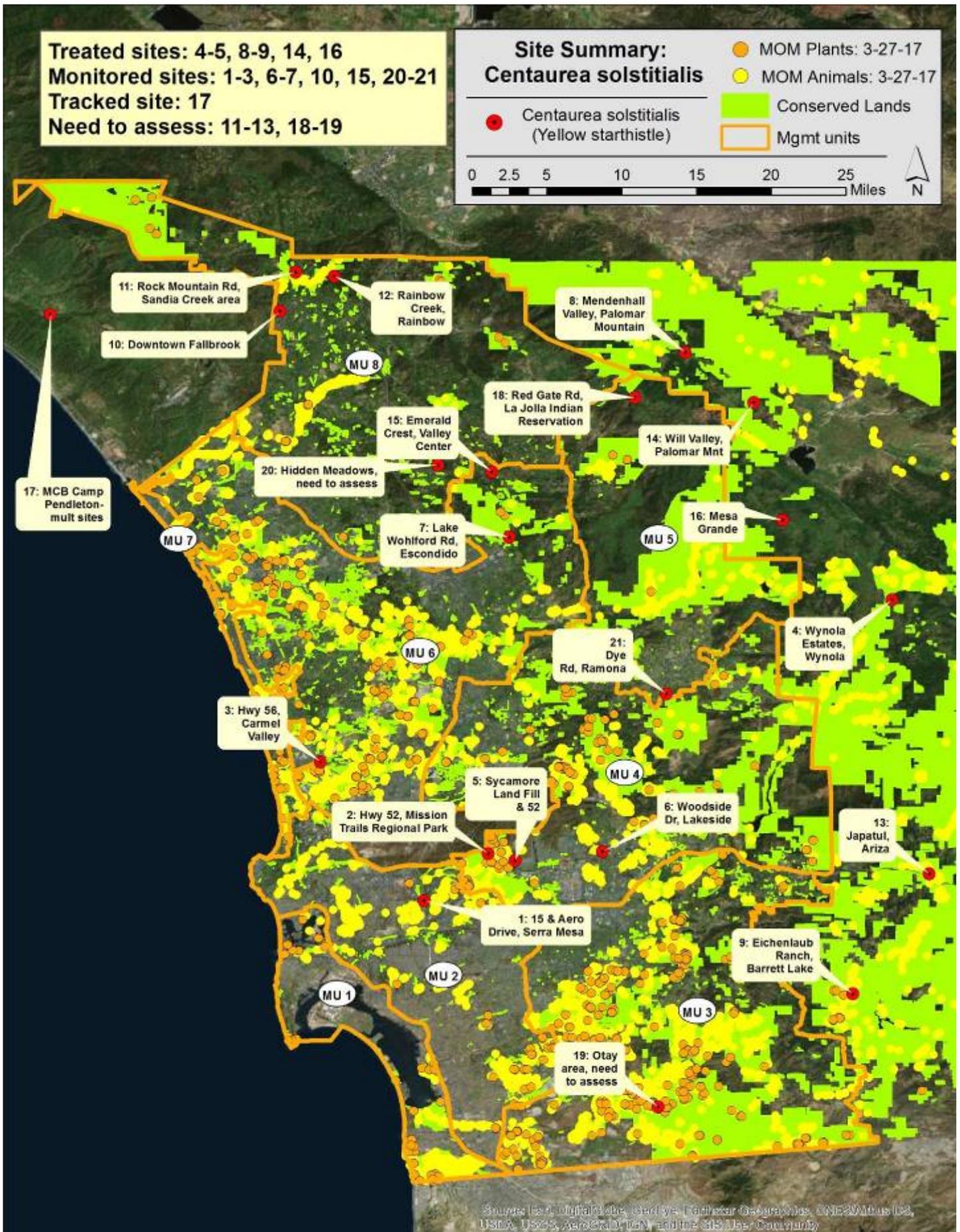
Level 2 Management Species are EDRR targets that were of limited distribution in the county when the IPSP was written in 2012.

IPC crews surveyed and treated three invasive weed species (yellow star thistle, Canary Island St John's wort and Algerian sea lavender) at four sites this quarter. AWM IPC made optimal pesticide applications, utilizing 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, and presence of irrigation systems.
3. Identified and avoided streamside management areas, surface waters and storm drains to prevent drift and application of pesticides not labeled for aquatic use onto surface waters.
4. Used integrated pest management methods, to:
  - a. Identify the most appropriate method of control in order to minimize the scale and number of pesticide applications and
  - b. Apply the least persistent and least toxic pesticide that effectively mitigates the target pest.

**Table 4. Summary of treatments performed by AWM on Level 2 Management Species this quarter.**

<b>Scientific Name</b>	<b>Common Name</b>	<b># of Sites Worked</b>	<b>Acres Surveyed</b>	<b>Acres Treated</b>	<b>Plants Controlled</b>
<i>Centaurea solstitialis</i>	Yellow star thistle	2	17.5	0.3	385
<i>Hypericum canariense</i>	Canary Island St. John's Wort	1	12.8	1.6	670
<i>Limonium duriusculum</i>	European sea lavender	1	1.1	0.6	16,500

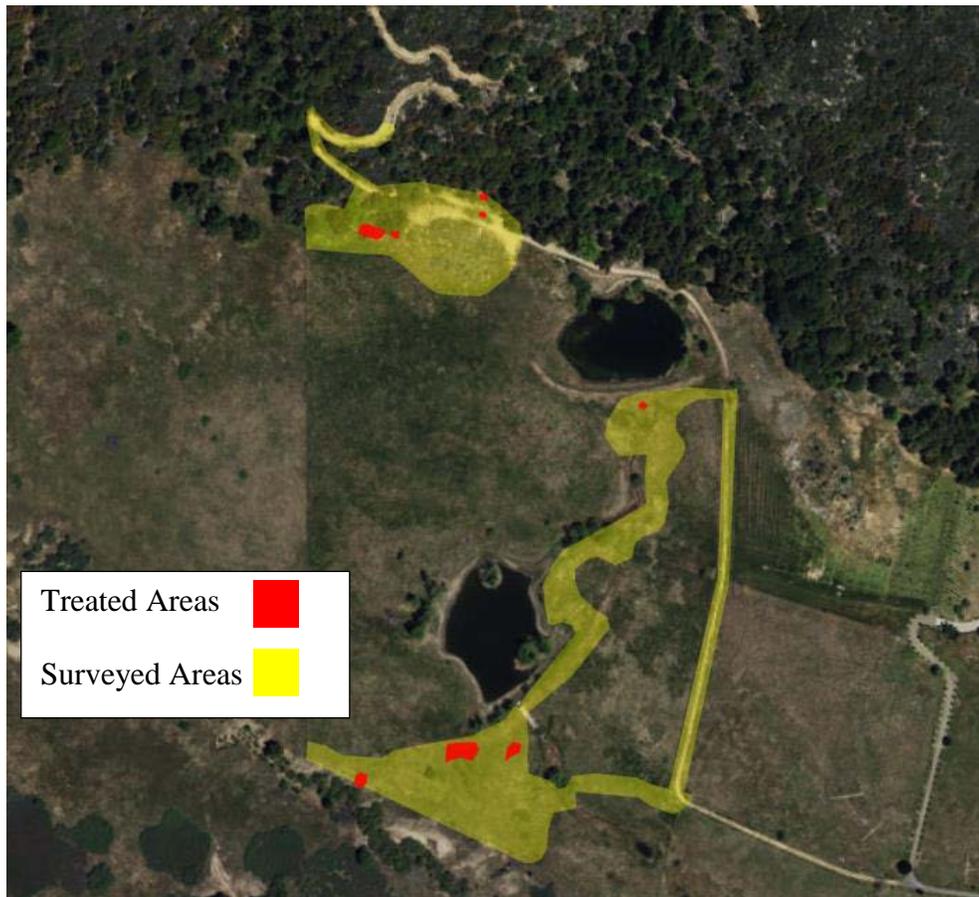


**Centaurea solstitialis, Yellow star thistle: Site #8 Mendenhall Valley**

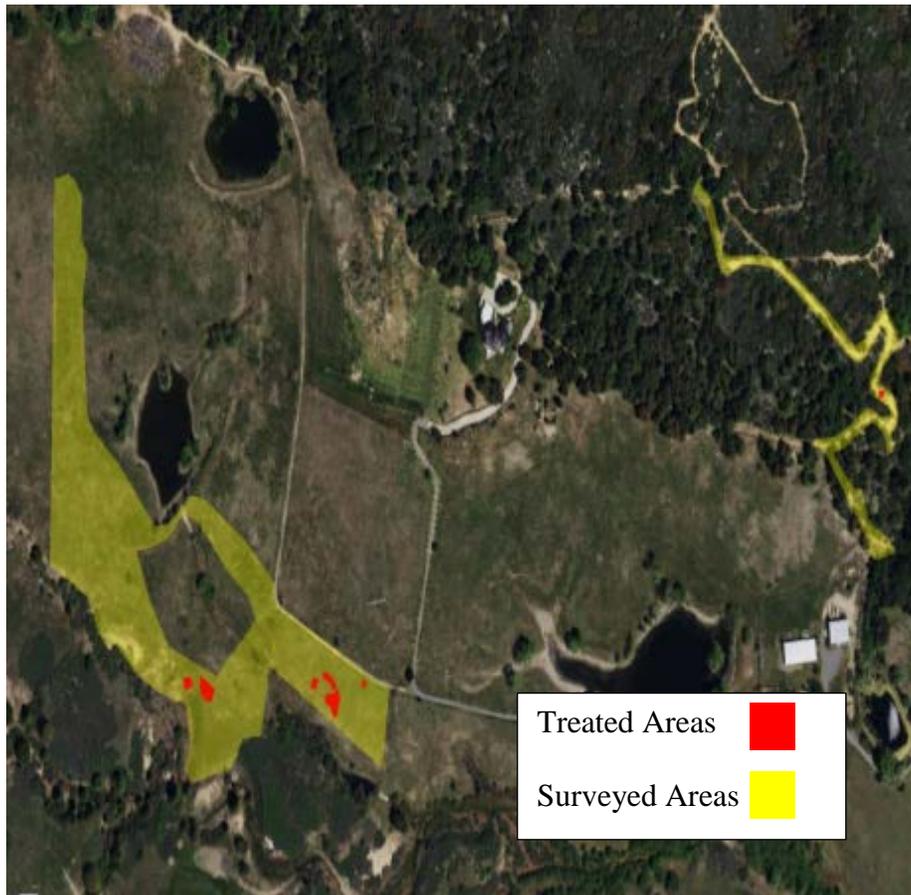
**Table 5. Summary of treatments performed by AWM on *Centaurea solstitialis* (Yellow star thistle)**

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #8, Mendenhall Valley	Yellow star thistle	1	15.4	0.2	370

Plants were treatable (not near seed set), so they were controlled with herbicide (Milestone). A crew of two individuals visited the site over two days, 6-22 thru 6-23-2017. Cover was low, but there were scattered plants.



Site #8: 6-22-2017 treatments of *Centaurea solstitialis*.



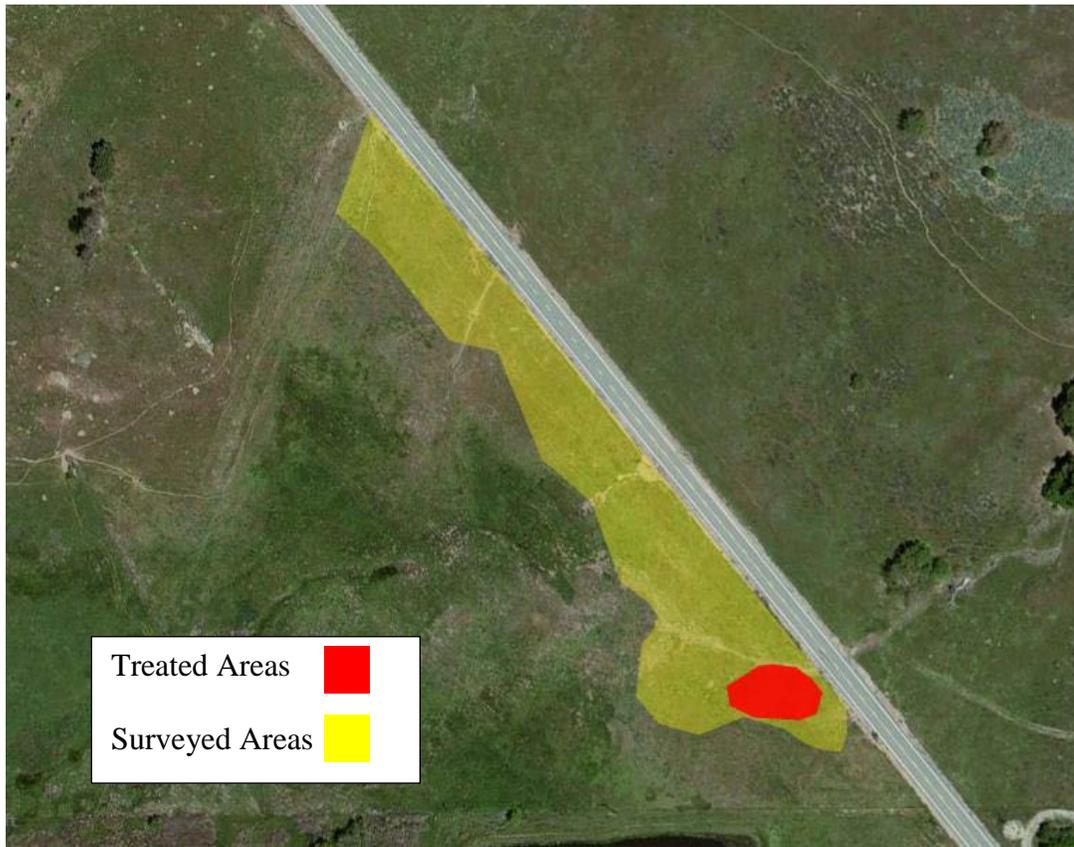
Site #8: 6-23-2017 treatments of *Centaurea solstitialis*.

***Centaurea solstitialis*, Yellow star thistle: Site #16 Mesa Grande**

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

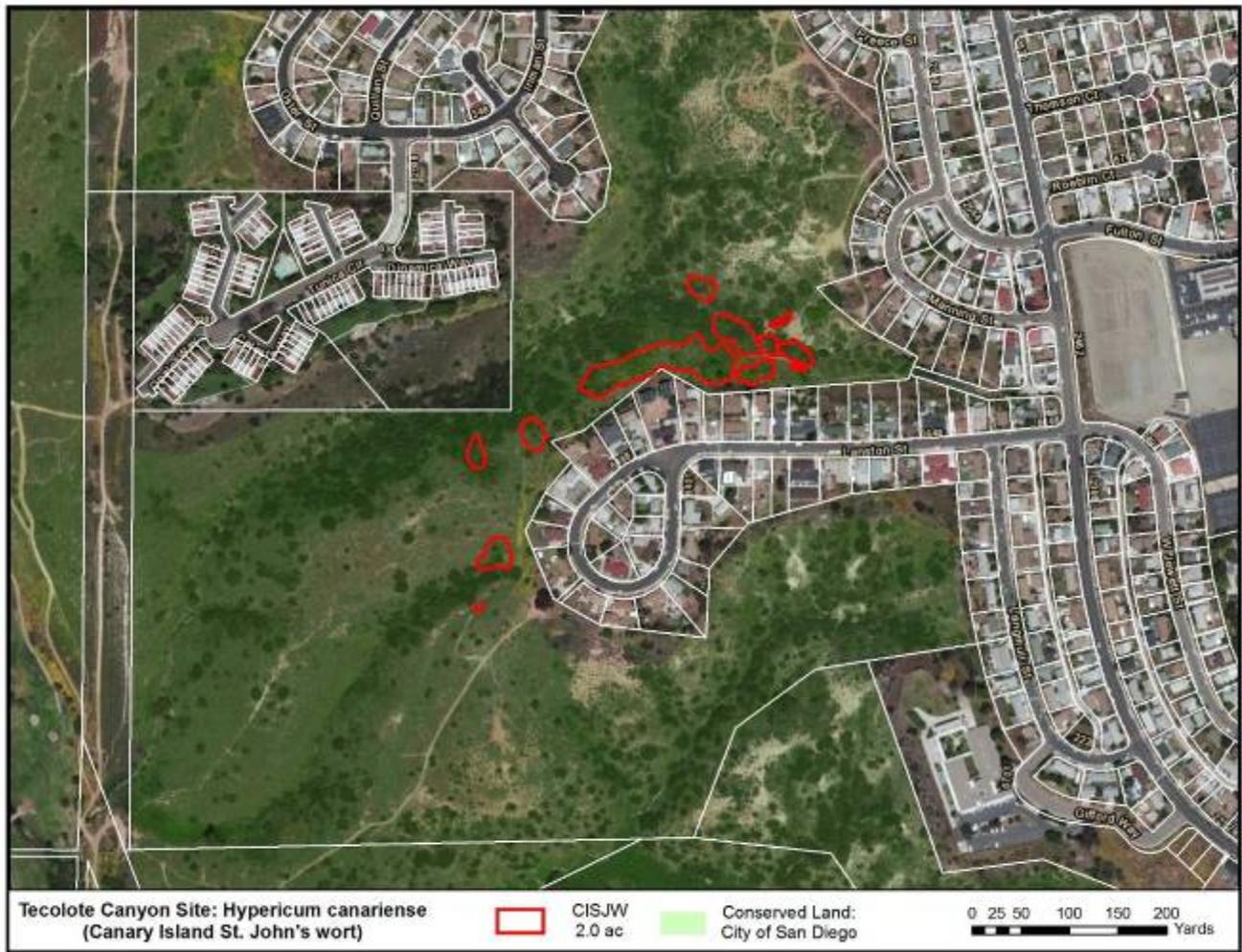
Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #16, Mesa Grande	Yellow star thistle	1	17.5	0.3	15

Plants were small and few in number. Winds were strong restricting herbicide use, so plants were removed by hand. A crew of two individuals visited the site over two days 6-22 thru 6-23-2017. Cover was low, but there were scattered plants. This was a treatment of a portion of the site.



Site #16: 5-19-2017 treatments of *Centaurea\_solstitialis*.

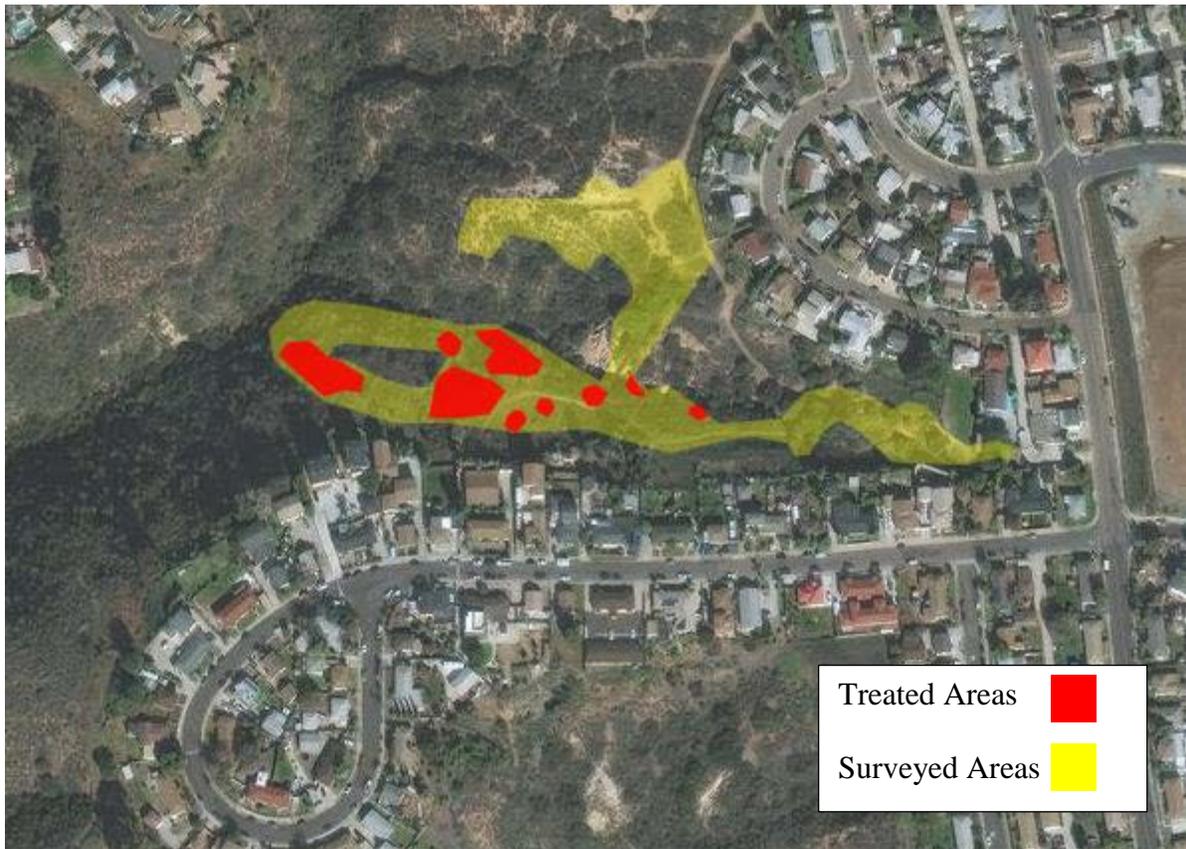
**Hypericum canariense, Canary Island St. John's wort: Site #8 Tecolote Canyon**



**Table 7. Summary of treatments performed by AWM on *Hypericum canariense* (Canary Island St. John's wort)**

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #8, Tecolote Canyon	Canary Island St. John's Wort	1	12.8	1.6	670

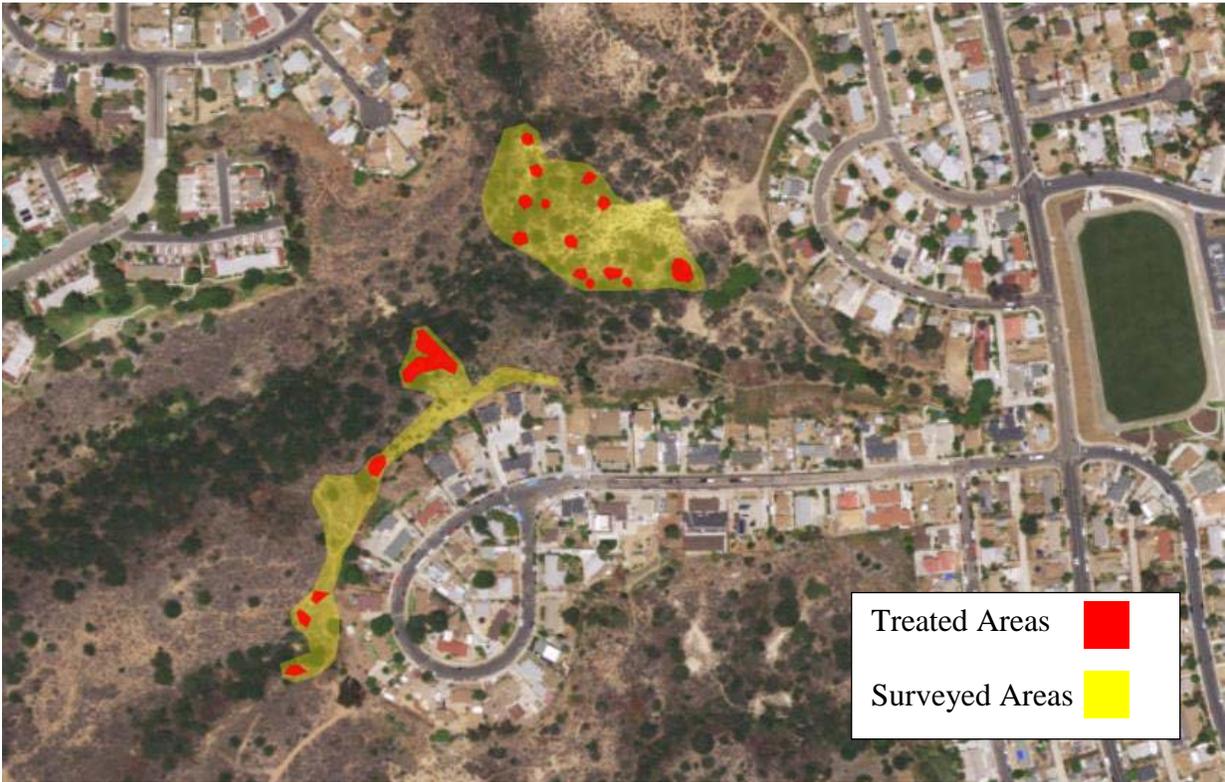
Re-sprouting plants and seedlings were treated with herbicide (Element 4). A crew of two individuals visited the site over four days 5-24, 5-25, 6-1 and 6-2-2017. Cover is greatly reduced (>99% cover reduction), but there were scattered re-sprouts and seedlings.



Site #8: 5-24-2017 treatments of *Hypericum canariense*.



Site #8: 5-25-2017 treatments of *Hypericum canariense*.



Site #8: 6-1-2017 treatments of *Hypericum canariense*.



Site #8: 6-2-2017 treatments of *Hypericum canariense*.

**Limonium ramosissimum, Algerian sea lavender: Site #1 Lake Calavera**



**Table 8. Summary of treatments performed by AWM on *Limonium duriusculum* (European sea lavender) and *Limonium ramosissimum* (Algerian sea lavender).**

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
<i>Site #1 Lake Calavera, Cannon Rd</i>	Algerian and European sea lavender	1	1.1	0.6	16,500

Mature plants and seedlings were foliar treated with glyphosate. A crew of two individuals visited the site over three days 5-22, 5-23, and 5-31-2017. Cover is greatly reduced (>90% cover reduction), but there are seedlings sprouting.



Site #1: 5-22-2017 treatments of *Limonium ramosissimum*.



Site #1: 5-23-2017 treatments of *Limonium ramosissimum*.



Site #1: 5-31-2017 treatments of *Limonium ramosissimum*.

## **TASK 4 – AWM: Invasive Plant Level 3 Management.**

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

- No work occurred during this quarter.

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

Level of Effort: (5%) of overall contract

- *Volutaria (Volutaria tubuliflora)* has been located in San Diego County (Chula Vista, Rice Canyon). This plant occurs in Anza Borrego (Borrego Springs) and Orange County (Newport Bay). Coordination work with these regions on mapping, ID and treatment approaches continued (emails and calls).
- Plant ID sheets were completed, and posted on website, for seven species (six cards) (Table 9).

**Table 9. Primary EDRR targets for program with status of San Diego Plant Assessment Form (SDPAF) and weed ID sheets noted. Six new cards have been prepared and distributed.**

<b>Scientific name</b>	<b>Common name</b>	<b>Growth form</b>	<b>Habitat</b>	<b>SD ID Sheet</b>
<i>Aegilops triuncialis</i>	Barbed goat grass	Annual grass	Grassland	Completed
<i>Ageratina adenophora</i>	Eupatory	Perennial forb	Riparian	Yes
<i>Carrichtera annua</i>	Ward's weed	Annual forb	Uplands (shrub & grass)	Completed
<i>Centaurea solstitialis</i>	Yellow star thistle	Annual forb	Grassland	Draft
<i>Elymus caput-medusae</i>	Medusahead	Annual grass	Grassland	Draft
<i>Euphorbia terracina</i>	Carnation spurge	Annual forb	Uplands	Completed
<i>Euphorbia virgata</i>	Leafy spurge	Annual forb	Uplands	Completed (on above)
<i>Genista monspessulana</i>	French broom	Perennial shrub	Riparian or uplands	Yes
<i>Genista monosperma</i>	Bridal broom	Perennial shrub	Uplands (shrub & grass)	Completed
<i>Hypericum canariense</i>	Canary Island St. John's wort	Perennial shrub	Shrublands	Completed
<i>Limonium duriusculum</i>	European sea lavender	Perennial forb	Wetlands (salt & fresh) & uplands	Yes
<i>Limonium ramosissimum</i>	Algerian sea lavender	Perennial forb	Wetlands (salt & fresh) & uplands	Yes
<i>Lythrum salicaria</i>	Purple	Perennial	Wetlands	Yes

Scientific name	Common name	Growth form	Habitat	SD ID Sheet
	loosestrife	forb	(fresh)	
<i>Sesbania punicea</i>	<i>Rattlebox</i>	Perennial shrub	Wetlands (fresh)	Yes
<i>Voluntaria tubuliflora</i>	<i>Egyptian knapweed</i>	Annual forb	Uplands (shrub & grass)	Completed

**Work Anticipated for 1st Quarter Period, July 1, 2017 – September 31, 2018:**

**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 and annual report.
- Submit GIS data for target EDRR species.

**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 points of targeted weeds, if found.

**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 points of targeted weeds, if found.

**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 (SDWMA) Area and the EDRR invasive weed group from the Orange County Chapter of the California Native Plant Society.

- Continue to aggregate data and track new prospective EDRR target species.
- Work on twelve SDPAFs for EDRR species will continue, so that the Invasives Strategic Plan can be updated to include them.
- Work on additional EDRR identification sheets for priority species will continue (for land managers and regional biologists, Table 8).
- Provide update to SDWMA at annual meeting. Attend SDMMP meetings if requested.
- Contribute to the invasive weed Stinknet, *Oncosiphon piluliferum*, meeting and work group.

## Appendix 1:

Work from March 1<sup>st</sup> through May 17<sup>th</sup> 2017 that was funded by the County of San Diego.

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

Scientific Name	Common Name	Site	Date	Acres Surveyed	Acres Treated	Plants Controlled
<i>Volutaria tubiliflora</i>	Volutaria knapweed	Site #1 Rice Canyon Chula Vista	5/4/17	3.6	0.3	300

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

Scientific Name	Common Name	Site	Date	Acres Surveyed	Acres Treated	Plants Controlled
<i>Centaurea solstitialis</i>	Yellow star thistle	Site #5 Sycamore Landfill & 52	4/18/17	18	0	0
<i>Hypericum canariense</i>	Canary Island St. John's Wort	Site #4 Balboa Park	4/21/17, 5/11/2017	9.1	1.0	250
<i>Limonium duriusculum</i>	European sea lavender	Site #4 Chula Vista Nature Reserve/Port	5/5, 5/8-10- 2017	21.7	6.4	>35,000