# 2013 Noxious and Invasive Weed Final Report for Lake Tahoe Nevada State Park and Van Sickle Bi-State Park

Great Basin Institute-International Conservation Volunteer Exchange
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## Introduction

In partnership with Nevada Division of State Lands and the Lake Tahoe Basin Weed Coordinating Group, the Great Basin Institute's International Conservation Volunteer Exchange (ICVE) inventoried and mapped the presence of noxious and invasive weeds in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park during the summer and early fall of 2011 and 2012. In 2012, the ICVE also treated known weed sites. During the summer of 2013, the ICVE returned to the known sites and performed the following:

- Confirmation of historic weed occurrence and distribution at 2011 and 2012 sites;
- Recorded changes in occurrence and distribution of weeds at historic sites;
- Surveyed the region for previously undocumented weed sites and spread of existing sites;
- Mechanical and chemical treatment of weed sites.

## Methods

*Monitoring*
Historic sites were monitored using GIS data collected in the 2011 and 2012 field seasons. Historic and new weed sites were recorded using the Lake Tahoe Basin Weed Coordinating Group Mapping Protocol. Data was entered in an Excel spreadsheet and downloaded from GPS units to generate GIS shapefiles. Maps were generated using ArcGIS software to compare new and historic weed distribution.

*Treatment*
Mechanical and chemical treatment methods were used for the removal of invasive weeds. Methods were determined by plant species, potential effects to native species, weed density, and location of the infestation (Appendix A).

Over the course of four weeks the interns monitored and/or treated noxious weeds located throughout Lake Tahoe Nevada State Park and Van Sickle Bi-State Park. Mapping data was collected using the Lake Tahoe Basin Weed Coordinating Group Mapping Protocol. All noxious weed locales mapped in 2011 and 2012 were monitored.

One hundred twenty-two historic weeds sites were identified in 2011 and 2012, 37 of which were confirmed as continual weeds sites in summer of 2013. An additional 156 weed sites have been identified in summer of 2013.

Perennial pepperweed, Canada thistle and Hoary cress infestations were identified and treated with Telar and Milestone. Oxeye daisy was treated with Milestone.

Details of treatment by species:

- Bull thistle and Oxeye daisy were mechanically treated. For Bull thistle, this entailed removing the weed with shovels before flowering, ensuring roots were fully dug. Oxeye daisy was hand pulled and dug using hand spades since they have fairly shallow roots. Any plant carcasses that had flowered were bagged and disposed of.
- Oxeye daisy was chemically treated when mechanical treatment was insufficient. Milestone™ herbicide was used along with a surfactant, dye, and water. This was applied using a spray pack and proper personal protective equipment was worn. The application rate for Oxeye daisy is between 4 and 6 fl oz/acre. The measurements used were 59.2 ml Milestone, 100 ml Turf Trax (dye), 50 ml Activator 90 (surfactant), and 3 gal water.
- Perennial pepperweed and Hoary cress were treated with 1 oz. per acre of Telar.
- Canada thistle was treated with .1 oz. Milestone per backpack sprayer.

**Data and Results**

*Monitoring*

GBI-ICVE crews identified six invasive species in this assessment (Table 1). The descriptive mapping metadata (Appendix B) identifies the location of each infestation, the species in each infestation, the size of each infestation, and the plant phenology at the time of observation. Photo documentation of mapping and identification activities can be found in Appendix D.(Note: Might want to put Appendices in order they are referenced in the text, so I think this should be Appendix C and moved ahead of the maps below)

Table 1. Invasive plant species found by GBI-ICVE crews, including common names, scientific names, and codes.

| Common Name | Scientific Name | Plant Code |
|---|---|---|
| Bull thistle | *Cirsium vulgare* | CIVU |
| Canada thistle | *Cirsium arvense* | CIAR4 |
| Cheatgrass | *Bromus tectorum* | BRTE |
| Hoary cress | *Cardaria draba* | CADR |
| Oxeye daisy | *Chrysanthemum leucanthemum* | LEVU |
| Perennial pepperweed | *Lepidium latifolium* | LELA |

Graph 1 represents the composition of weed sites in both Lake Tahoe Nevada State Park and Van Sickle Bi-State Park. It shows that there was only one site of Perennial pepperweed present from historic weed sites. Hoary cress had one site present from historic weed sites and 11 new sites were found. Canada thistle had two sites present from historic weed sites and seven new sites were found. Bull thistle had 12 sites present from historic weed sites and 59 new sites were found. Oxeye daisy had 21 sites present from historic weed sites and 20 new sites were found. Refer to Table 2 for individual number of plants species in 2011, 2012, and 2013.

Cheatgrass was sighted during the tours and was surveyed for occurrence and distribution. An abundance of Cheatgrass was found around Spooner Lake and North Canyon in Lake Tahoe Nevada State Park.

Graphs 3-5 show the composition of plant species infestations in 2011, 2012, and 2013 in both Lake Tahoe Nevada State Park and Van Sickle Bi-State Park. It is evident that Oxeye daisy is the most abundant invasive species throughout the last three years. Graphs 6-8 show the area composition of plant species infestations in 2011, 2012, and 2013, supporting our previous statement that Oxeye daisy is the most abundant. It can also be seen that Bull thistle distribution has increased over the last two years and Canada thistle distribution has increased in the last year.

GIS maps were generated from the data to show invasive plant infestations and their locations. In Appendix C, Figures 1 and 2 show infestations of Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2011, 2012, and 2013.

Figures 3, 4 and 5 are enlarged maps of North Canyon, Spooner Lake, and Van Sickle Bi-State Park, respectively. In these maps, it can be seen that Lake Tahoe Nevada State Park is dominantly infested with Cheatgrass, Oxeye daisy, and Bull thistle, while Van Sickle Bi-State Park is dominantly infested with Bull thistle. In Lake Tahoe Nevada State Park, Bull thistle occurred mainly around the Spooner Lake area, Oxeye daisy occurred along North Canyon Road, and Cheatgrass occurred throughout both areas. In Van Sickle Bi-State Park, Bull thistle infestations occurred in disturbed areas including roadsides and fields.

Graph 1: Comparison of weed sites in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2011, 2012, and 2013. See Table 1 for names corresponding with plant codes.

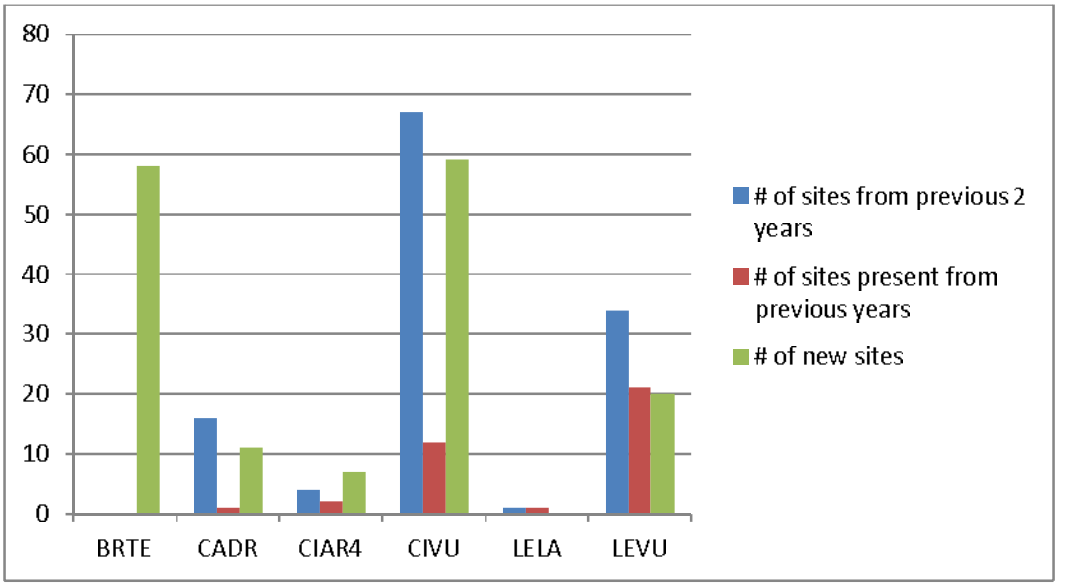
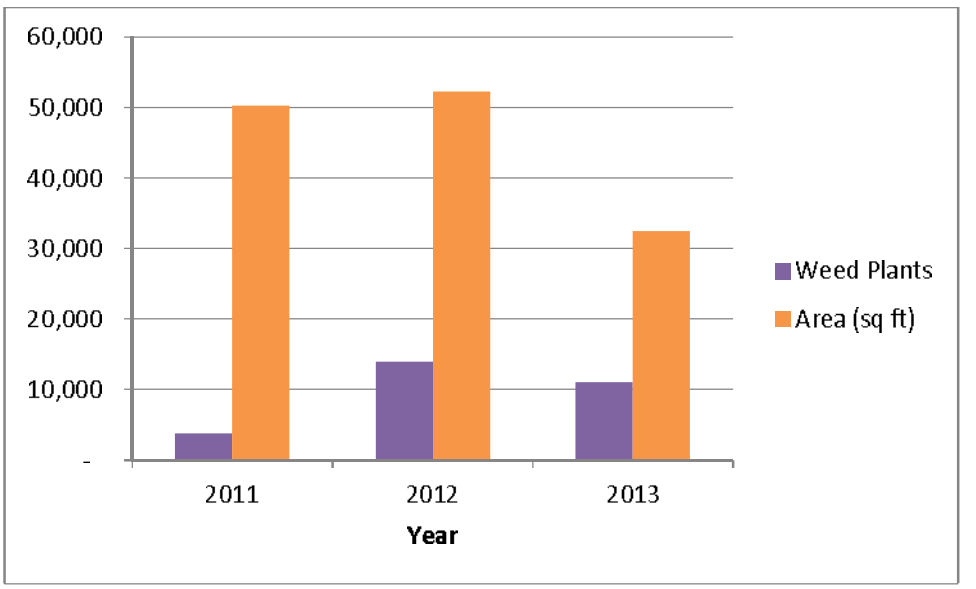


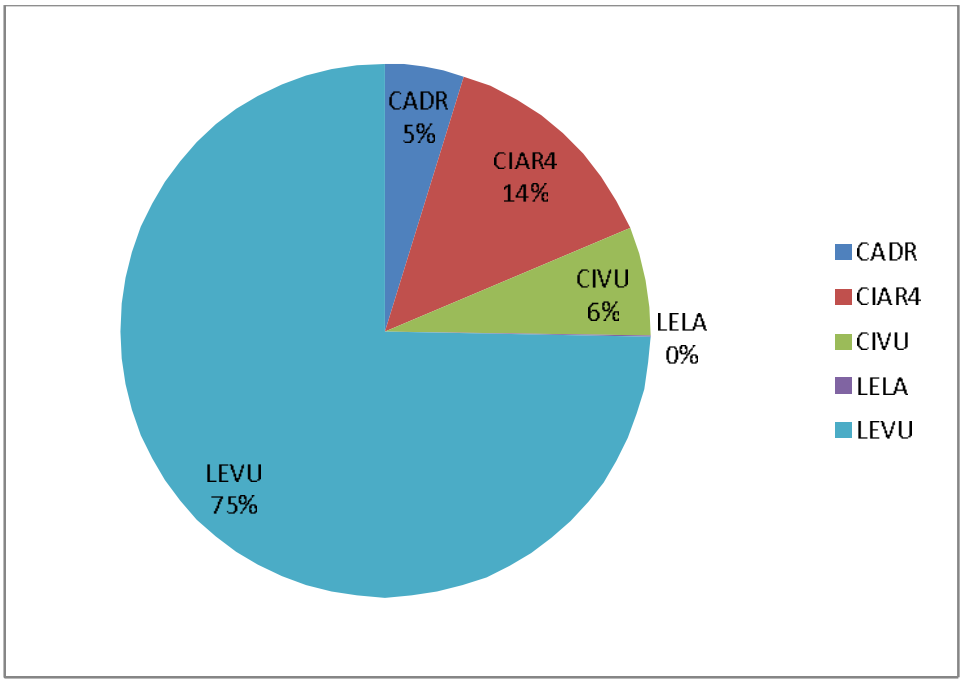

Table 2. Number of invasive plants found by GBI-ICVE crews in 2011, 2012, and 2013.

| Common Name | 2011 | 2012 | 2013 |
|---|---|---|---|
| Bull Thistle | 291 | 636 | 725 |
| Canada Thistle | 509 | 61 | 385 |
| Cheatgrass | - | - | 29,345 |
| Hoary Cress | 175 | 100 | 364 |
| Oxeye Daisy | 3,529 | 13,174 | 9,469 |
| Perennial Pepperweed | 2 | - | 21 |

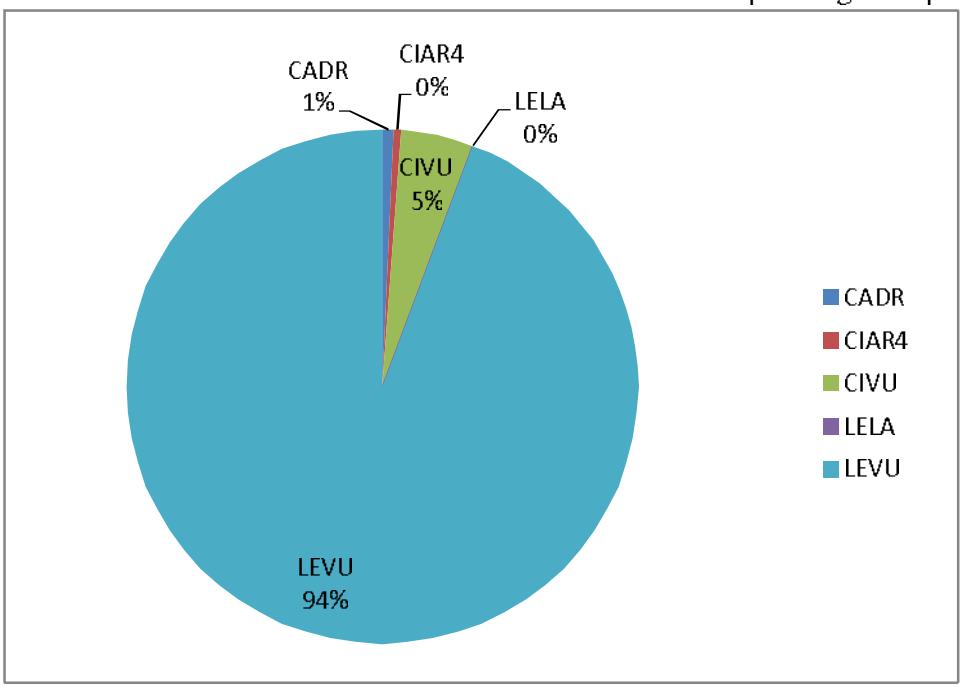
Graph 2: Individual ? weed plants and total area (sq ft) in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2011, 2012, and 2013.



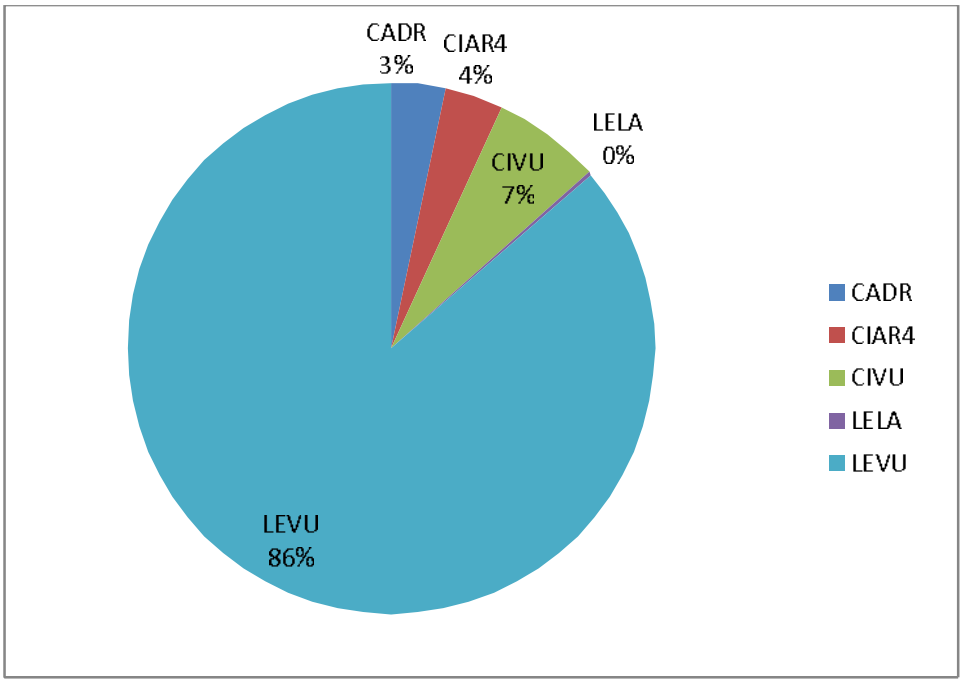
Graph 3. Composition of plant species infestations in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2011. See Table 1 for names corresponding with plant codes.



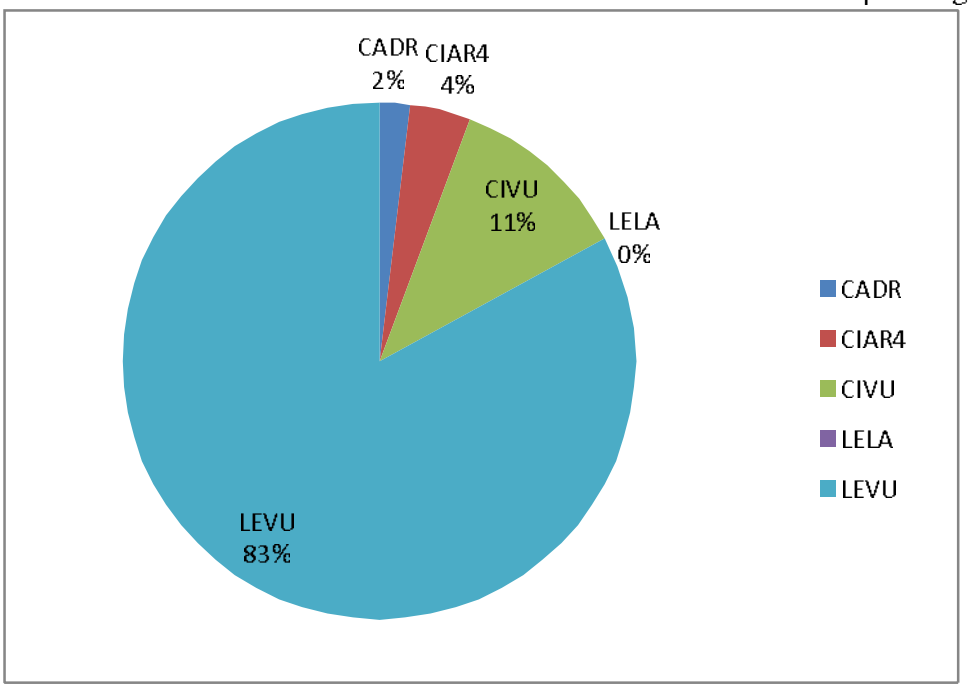

Graph 4. Composition of plant species infestations in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2012. See Table 1 for names corresponding with plant codes.



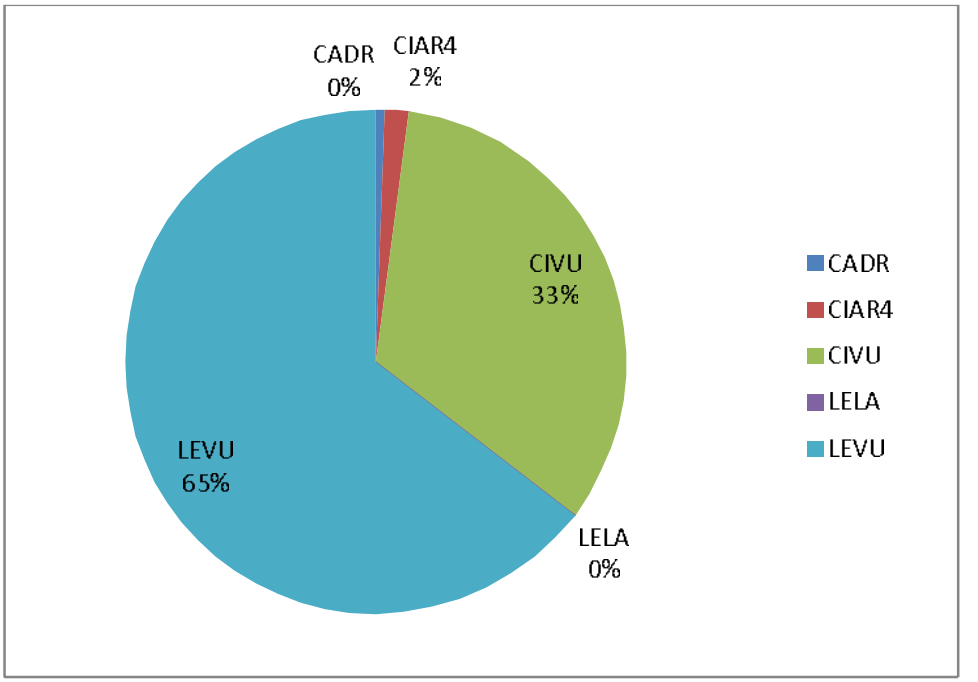
Graph 5. Composition of plant species infestations in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2013. See Table 1 for names corresponding with plant codes.



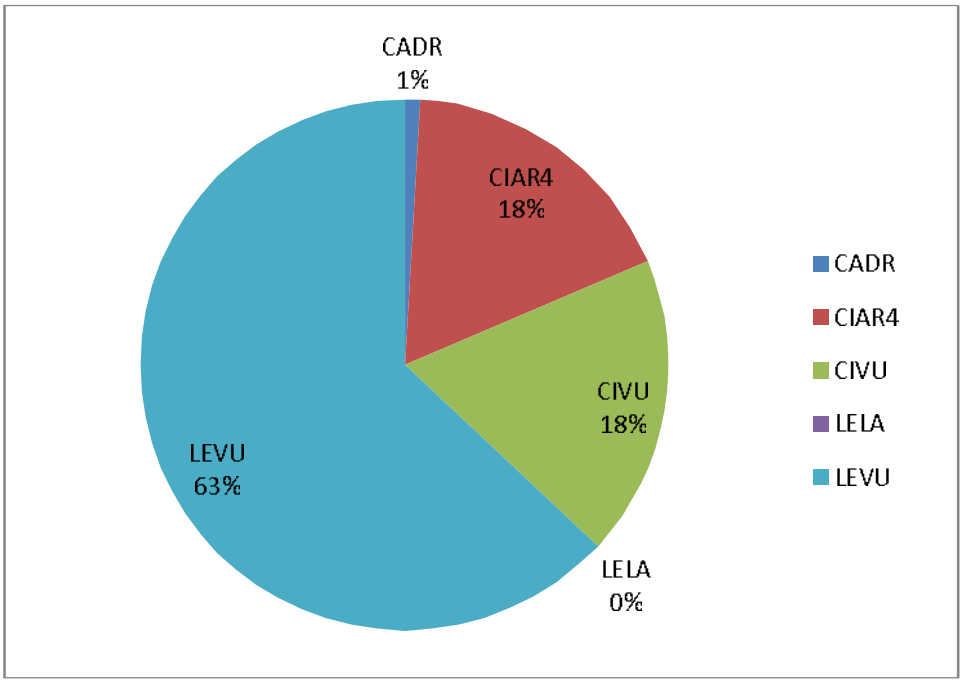

Graph 6. Area (sq ft) composition of plant species infestation in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2011. See Table 1 for names corresponding with plant codes.



Graph 7. Area (sq ft) composition of plant species infestation in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2012. See Table 1 for names corresponding with plant codes.




Graph 8. Area (sq ft) composition of plant species infestation in Lake Tahoe Nevada State Park and Van Sickle Bi-State Park in 2013. See Table 1 for names corresponding with plant codes.



*Treatment*

A total of 20,444 square feet of Oxeye daisy was chemically and mechanically treated. 11,228 square feet of Oxeye daisy was mechanically treated at Lake Tahoe Nevada State Park. Of the mechanically treated approximately 10,550 square feet was not effectively removed and thus re-treated chemically along with the remaining 9,216 square feet of Oxeye daisy. 1,346 square feet of Bull thistle was mechanically treated in the summer and an additional 4,597 square feet was chemically treated in the fall. 5,719 square feet of Canada thistle was chemically treated in the fall. 316 square feet of Hoary cress and 2 square feet of Perennial pepperweed were also treated in the fall. Cheatgrass was not treated chemically or mechanically. Photo documentation of chemical and mechanical treatment activities can be found in Appendix D.

It is important to note that plant numbers and areas were estimated by crew members which changed yearly, resulting in reduced data consistency and accuracy.

**Discussion and Conclusion**

Canada thistle and Hoary cress, whose infestations were less numerous in both parks, have been identified as Group 1 species by the Lake Tahoe Weed Management Group (Appendix A). These species are to be reported and treated immediately. Bull thistle and Oxeye daisy, the most common invasive species infestations along with Perennial pepperweed are identified as Group 2 species. These species are to be monitored with a goal of treatment.

Canada thistle, Hoary cress and Perennial pepperweed were monitored over a five week period but not treated. Mechanical removal is not an effective treatment method for these noxious weeds. Upon approval of the herbicides Milestone™ and Telar for this use, these weeds were chemically treated during the fall tour.

Oxeye daisy and Bull thistle were monitored over a four week period in 2013, and showed an increase in occurrence and distribution. Bull thistle and small areas of Oxeye daisy were mechanically treated upon identification. Although areas of Bull thistle were mechanically treated in previous years, infestation sites continued to increase in abundance. Long-term monitoring and treatment is necessary to determine if mechanical treatment is effective in this area. Mechanical treatment of Oxeye daisy from 2012 and the first four weeks in 2013 proved to be ineffective. I think to make these statements, we should look at whether or not the sites treated had re-occuring weeds versus whether NEW sites contributed to the increase in abundance. From Graph 1, it looks like sites that we have treated have shown pretty significant reductions in weed occurance. GBI-ICVE crews chemically treated the large areas of Oxeye daisy and previously treated areas from 2012 and 2013. Additional monitoring is necessary to conclude whether chemical treatment is effective for long-term eradication of this invasive species.

Cheatgrass was sighted in Lake Tahoe Nevada State Park for the first time this year. GBI-ICVE crews monitored and recorded occurrence and distribution of this grass as management strategies need to be explored to determine the best option of control.

From 2011 to 2012 the individual weed plants increased from 3,679 to 13, 971. The area in square feet also increased from 50,218 to 52,207. Species were not treated in 2011 resulting in an increase in weed occurrence and distribution. From 2012 to 2013 the individual weed plants decreased from 13,971 to 10,964 and the area in square feet decreased from 52,207 to 32,425. This proves that mechanical treatment in 2012 was effective but insufficient for complete eradication of invasive species weed sites.

Three years of monitoring and treatment has reduced populations of invasive species but has proven insufficient in their eradication. This indicates it is necessary to continue efforts to reduce and/or eradicate weed species to ensure the ecosystem of the Tahoe Basin does not continue to be threatened by the spread of these weeds.

*Appendix A: Weed mapping protocol used by GBI-ICVE crews for Invasive Weed Assessment of Nevada State Parks in the East Lake Tahoe Basin.*

**Lake Tahoe Basin Weed Coordinating Group**
**Mapping Protocol**
**Updated April 2011**

- All infestations of less than 0.01 acres (436 square feet, or about 20.9 feet x 20.9 feet) should be mapped as single points. Assign an estimated acreage or approximate square footage to the infestation and document the number of plants within the plot. Whenever possible, provide the approximate length and width in feet.
- All infestations greater than 0.01 acres should be mapped as polygons or lines.
- If multiple species coexist at the same site, map each as a separate infestation.
- Whenever possible, map parcels separately.
- Revisit and remap infestations from previous years to document changes.
- Provide all data to El Dorado County Agriculture Department no later than December of each year

Continue to collect data as required for your agency. We suggest using paper forms or a spreadsheet as well as GPS to provide backup data in the event of GPS failure. Additionally, make sure the following data is available for weed group maps:

1. Date
2. Plant common name
3. Plant code - utilizing standard Animal and Plant Health Inspection Service (APHIS) codes (see table).
4. Latitude and longitude (use your existing datum; provide the projection when reporting the data)
5. Line width (if applicable) based on greatest width infested
6. Age of infestation – new or historic (mapped during previous years)
7. Size of infestation, in units of feet, for point infestations. This is effectively the gross acreage. For points we need a length and width of the infestation (for example, 5 ft by 10 ft). For cumulative reporting this is essential and must be provided.
8. Density (assign a specific percent cover using the attached graphic as a guide; base density on canopy cover). For points, we need this to calculate the net acreage, or the percent coverage of the gross acreage. For cumulative reporting this is essential and must be provided.
9. Number of plants (if infestation is small enough to count the plants).

The following data is also very useful, but not required:

10. Growth stage

11. Distance to water (>/< 25 feet)
12. Disturbance type
13. Street address or other description of site location

**Plant Codes for Mapping**

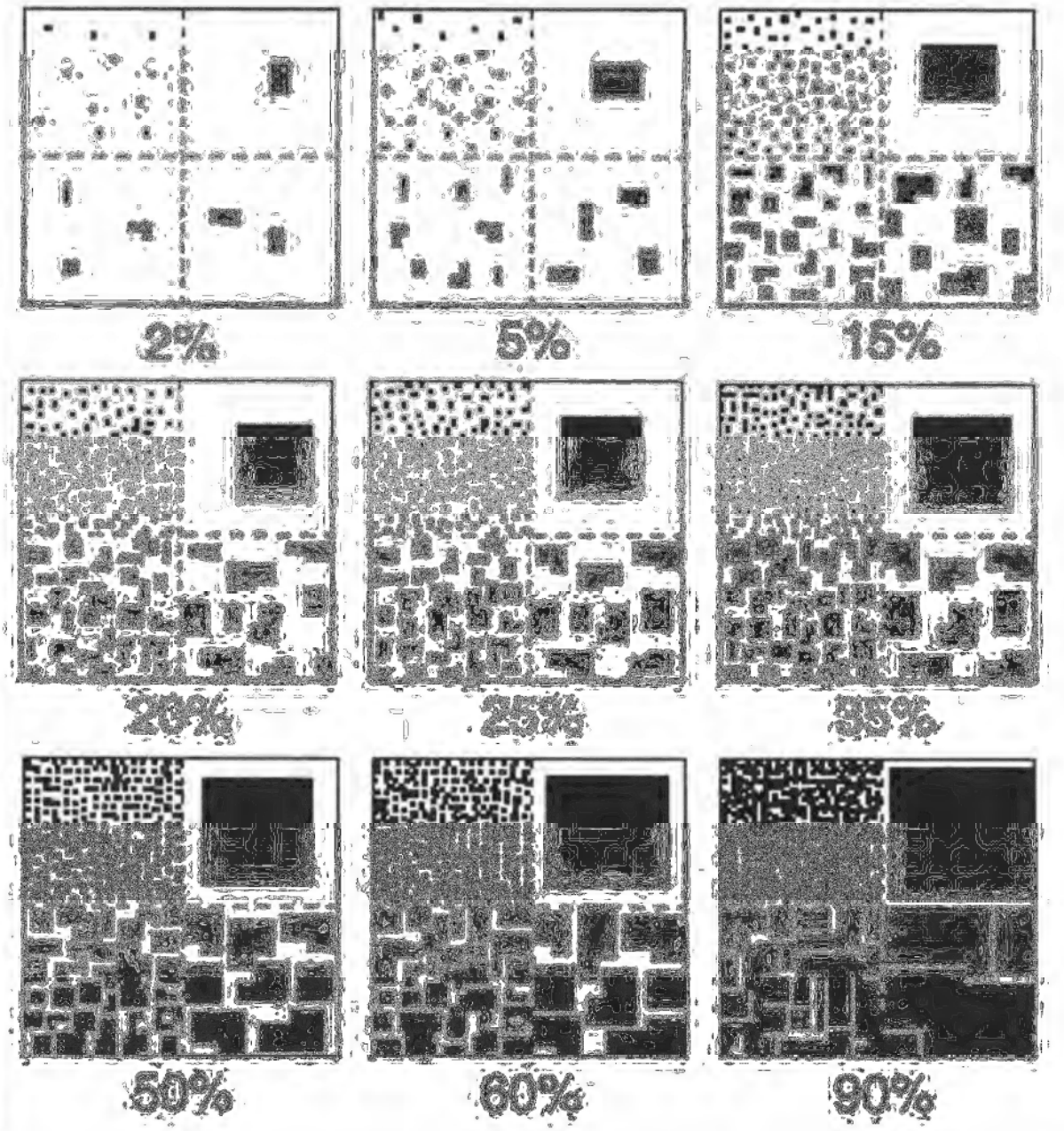
**Group 1 Species: Watch For, Report, and Eradicate Immediately:**

| | |
|---|---|
| Canada thistle (*Cirsium arvense*) | CIAR4 |
| Diffuse knapweed (*Centaurea diffusa*) | CEDI3 |
| Dyer's woad (*Isatis tinctoria*) | ISTI |
| Hoary cress (*Cardaria species*) | CADR |
| Hydrilla (*Hydrilla veticillata*) | HYVE3 |
| Medusahead (*Taeniatherum caput-medusae*) | TACA8 |
| Musk thistle (*Carduus nutans)* | CANU4 |
| Purple Loosestrife (*Lythrum salicaria*) | LYSA2 |
| Purple starthistle (*Centaurea calcitrapa*) | CECA2 |
| Reed canarygrass (*Phalaris arundinacea*) | PHAR3 |
| Rush skeletonweed (*Chondrilla juncea*) | CHJU |
| Russian knapweed (*Centaurea repens*) | ACRE3 |
| Scotch thistle (*Onopordum acanthium*) | ONAC |
| Stinkwort (*Dittrichia graveolens*) | DIGR3 |
| Sulfur cinquefoil (*Potentilla recta*) | PORE5 |
| Tamarisk/saltcedar (*Tamarix spp.)* | TARA |
| Teasel (*Dipsacus fullonum*) | DIFU2 |
| Tree of Heaven (*Ailanthus altissima*) | AIAL |
| Yellow starthistle (*Centaurea solstitialis*) | CESO3 |

**Group 2 Species: Manage Infestations With a Goal of Eradication:**

| | |
|---|---|
| Bull thistle (*Cirsium vulgare*) | CIVU |
| Curlyleaf pondweed (*Potamogeton crispus*) | POCR3 |
| Dalmatian toadflax (*Linaria dalmatica*) | LIDA |
| Eurasian watermilfoil (*Myriophyllum spicatum*) | MYSP |
| Klamathweed (*Hypericum perforatum*) | HYPE |
| Oxeye daisy (*Chrysanthemum leucanthemum*) | LEVU |
| Perennial pepperweed (*Lepidium latifolium*) | LELA |
| Scotch broom (*Cytisus scoparius*) | CYSC4 |
| Spotted knapweed (*Centaurea biebersteinii*) | CEMA4 |
| Yellow toadflax (*Linaria vulgaris*) | LIVU2 |

# Estimating plant density:



*Appendix B: Mapping metadata from the Invasive Weed Assessment of Nevada State Parks in the East Lake Tahoe Basin.*

| date | Object ID | Latitude | Longitude | species | observation kind | new or historic | Line Width | size class | cover class | approx size (ft^2) | number of plants | growth stage | treated Y/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/6/2011 | 21 | 245630 | 4316017 | CIVU | P | N | | T | L | 1 | 1 | BU | N |
| 7/7/2011 | 22 | 245633 | 4316018 | CIVU | P | N | | T | L | 1 | 1 | BU | N |
| 7/7/2011 | 23 | 245611 | 4316017 | CIVU | P | N | | T | L | 1 | 1 | BU | N |
| 7/7/2011 | 24 | 245639 | 4316025 | CIVU | P | N | | T | L | 1 | 1 | BO | N |
| 7/7/2011 | 25 | 245641 | 4316026 | CIVU | P | N | | T | L | 1 | 1 | BU | N |
| 7/11/2011 | 69 | 248033 | 4332868 | LEVU | P | N | | T | M | 1 | 3 | FL | N |
| 7/11/2011 | 70 | 248031 | 4332877 | LEVU | P | N | | T | M | 60 | 35 | FL | N |
| 7/12/2011 | 3 | 24762 | 4332798 | CADR | A | N | | T | T | 174 | 43 | FL/SE | N |
| 7/12/2011 | 26 | 247384 | 4333754 | CIVU | A | N | | T | T | 130 | 30 | BU/BO | N |
| 7/12/2011 | 27 | 247396 | 4333765 | CIVU | P | N | | T | T | 54 | 4 | BO | N |
| 7/12/2011 | 28 | 247344 | 4333825 | CIVU | P | N | | T | T | 6 | 2 | BO | N |
| 7/12/2011 | 29 | 247335 | 4333822 | CIVU | A | N | | T | T | 1324 | 21 | BU/BO | N |
| 7/12/2011 | 30 | 247514 | 4333690 | CIVU | P | N | 1 | T | T | 6 | 2 | BO | N |
| 7/12/2011 | 31 | 247861 | 4333632 | CIVU | P | N | | T | M | 1 | 1 | BO | N |
| 7/12/2011 | 91 | | | LEVU | L | N | 18 | T | T | 740 | 121 | BU | N |
| 7/12/2011 | 92 | 247952 | 4333901 | LEVU | L | N | 18 | T | T | | 121 | BU | N |
| 7/14/2011 | 1 | 2447863 | 4332711 | CADR | P | N | | T | T | 1 | 1 | SE | N |
| 7/14/2011 | 6 | 248025 | 4332391 | CADR | P | N | | T | S | 30 | 20 | FL/BU | N |
| 7/14/2011 | 7 | 24396 | 4332924 | CADR | P | N | | T | T | 1 | 1 | FL | N |
| 7/14/2011 | 8 | 247586 | 4332818 | CADR | P | N | | T | T | 9 | 12 | FL | N |
| 7/14/2011 | 9 | 248087 | 4332677 | CADR | P | N | | T | S | 2 | 3 | FL | N |
| 7/19/2011 | 4 | 251004 | 4344730 | CADR | P | N | | T | T | 1 | 2 | SE | N |
| 7/19/2011 | 5 | 251158 | 4344559 | CADR | P | N | | T | T | 12 | 11 | FL | N |
| 7/19/2011 | 93 | 250993 | 4344699 | LEVU | L | N | 3 | T | T | | 72 | BU | N |
| 7/19/2011 | 94 | 250996 | 4344697 | LEVU | L | N | 3 | T | T | | 72 | BU | N |
| 8/3/2011 | 10 | 248721 | 4335269 | CADR | P | N | | T | T | 1 | 1 | FL | N |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/3/2011 | 11 | 248691 | 4335263 | CADR | P | N | | T | T | 2 | 3 | FL | N |
| 8/3/2011 | 12 | 248002 | 4334331 | CADR | P | N | | T | T | 450 | 10 | SE | N |
| 8/3/2011 | 13 | 247999 | 4334274 | CADR | P | N | | T | T | 12 | 3 | SE | N |
| 8/3/2011 | 14 | 247988 | 4333314 | CADR | P | N | | T | T | 90 | 25 | SE | N |
| 8/3/2011 | 15 | 248040 | 4332897 | CADR | P | N | | T | T | 126 | 21 | SE | N |
| 8/3/2011 | 17 | 248114 | 4332438 | CIAR4 | P | N | | T | T | 500 | 200 | BU | N |
| 8/3/2011 | 18 | 248295 | 4332447 | CIAR4 | P | N | | T | S | 120 | 45 | BU | N |
| 8/3/2011 | 19 | 248569 | 4332283 | CIAR4 | P | N | | T | S | 1200 | 250 | BU | N |
| 8/3/2011 | 42 | 248565 | 4332269 | CIVU | P | N | | T | T | 6 | 3 | BU | N |
| 8/3/2011 | 43 | 248559 | 4332277 | CIVU | P | N | | T | T | 1 | 1 | BU | N |
| 8/3/2011 | 44 | 248579 | 4332278 | CIVU | P | N | | T | T | 54 | 9 | BU | N |
| 8/3/2011 | 71 | 247982 | 4333314 | LEVU | P | N | | T | S | 60 | 20 | FL | N |
| 8/3/2011 | 72 | 247968 | 4333330 | LEVU | A | N | | T | M | 1655 | 200 | FL | N |
| 8/3/2011 | 73 | 247950 | 4333303 | LEVU | A | N | | T | M | 2177 | 200 | FL | N |
| 8/3/2011 | 74 | 248033 | 4332851 | LEVU | P | N | | T | M | 450 | 52 | FL | N |
| 8/3/2011 | 75 | 248042 | 4332898 | LEVU | P | N | | T | S | 450 | 50 | FL | N |
| 8/3/2011 | 76 | 248030 | 4332909 | LEVU | P | N | | T | T | 45 | 2 | FL | N |
| 8/3/2011 | 77 | 247926 | 4333372 | LEVU | P | N | | T | S | 240 | 50 | FL | N |
| 8/3/2011 | 78 | 247951 | 4333375 | LEVU | P | N | | T | M | 180 | 150 | FL | N |
| 8/3/2011 | 79 | 247957 | 4333385 | LEVU | A | N | | T | S | 12660 | 500 | FL | N |
| 8/3/2011 | 80 | 247749 | 4333122 | LEVU | A | N | | T | T | 2162 | 100 | FL | N |
| 8/3/2011 | 87 | 247861 | 4333262 | LEVU | L | N | 45 | T | M | | 500 | FL | N |
| 8/3/2011 | 88 | 247863 | 4333339 | LEVU | L | N | 45 | T | M | | 500 | FL | N |
| 8/4/2011 | 16 | 247875 | 4332324 | CADR | P | N | | T | S | 2 | 2 | SE | N |
| 8/4/2011 | 20 | 248650 | 433275 | CIAR4 | P | N | | T | T | 72 | 14 | BU | N |
| 8/4/2011 | 45 | 248650 | 4332275 | CIVU | P | N | | T | T | 625 | 35 | BU | N |
| 8/4/2011 | 46 | 248722 | 4332374 | CIVU | P | N | | T | T | 4 | 2 | BU | N |
| 8/4/2011 | 47 | 248691 | 4332977 | CIVU | P | N | | T | T | 12 | 8 | BU | N |
| 8/4/2011 | 48 | 248385 | 4332986 | CIVU | P | N | | T | T | 1 | 1 | BU | N |
| 8/4/2011 | 49 | 248342 | 4332944 | CIVU | P | N | | T | T | 1 | 2 | BU | N |
| 8/4/2011 | 50 | 248284 | 4332895 | CIVU | P | N | | T | T | 8 | 2 | BU | N |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/4/2011 | 51 | 248280 | 4332870 | CIVU | P | N | | T | T | 1 | 1 | BU | N |
| 8/4/2011 | 52 | 248195 | 4332822 | CIVU | P | N | | T | T | 270 | 5 | BU | N |
| 8/4/2011 | 53 | 248170 | 4332703 | CIVU | P | N | | T | T | 1 | 4 | BU | N |
| 8/4/2011 | 54 | 250174 | 4332461 | CIVU | P | N | | T | T | 144 | 17 | FL/BU | N |
| 8/4/2011 | 68 | 250030 | 4332503 | LELA | P | N | | T | T | 1 | 2 | FL | N |
| 9/14/2011 | 2 | 249767 | 4338551 | CADR | P | N | | T | T | 48 | 17 | SE | N |
| 9/15/2011 | 32 | 247865 | 4333638 | CIVU | P | N | | T | T | 126 | 2 | FL | N |
| 9/15/2011 | 33 | 247404 | 4333725 | CIVU | P | N | | T | M | 1 | 1 | SE | N |
| 9/15/2011 | 34 | 247388 | 4333753 | CIVU | A | N | | T | S | 226 | 12 | FL/SE | N |
| 9/15/2011 | 35 | 247334 | 4333825 | CIVU | A | N | | T | S | 2629 | 28 | FL/SE | N |
| 9/15/2011 | 36 | 247507 | 4333685 | CIVU | P | N | | T | L | 1 | 1 | BO | N |
| 9/15/2011 | 81 | 247975 | 4333624 | LEVU | P | N | | T | T | 500 | 50 | FL | N |
| 9/15/2011 | 82 | 247997 | 4333387 | LEVU | P | N | | T | M | 4 | 6 | FL | N |
| 9/15/2011 | 83 | 247971 | 4333415 | LEVU | P | N | | S | S | 1500 | 150 | FL | N |
| 9/15/2011 | 84 | 247958 | 4333335 | LEVU | A | N | | T | T | 13799 | 200 | FL | N |
| 9/15/2011 | 85 | 247866 | 4333325 | LEVU | P | N | | T | S | 1200 | 100 | FL | N |
| 9/15/2011 | 86 | 248036 | 4332855 | LEVU | P | N | | T | T | 3750 | 75 | FL | N |
| 9/15/2011 | 89 | 247954 | 4333929 | LEVU | L | N | | T | S | | 100 | FL, MA | N |
| 9/15/2011 | 90 | 247954 | 4333900 | LEVU | L | N | | T | S | | 100 | FL, MA | N |
| 9/22/2011 | 37 | 245327 | 4315820 | CIVU | P | N | | T | T | 10 | 2 | SE | N |
| 9/22/2011 | 38 | 245297 | 4319832 | CIVU | P | N | | T | S | 1 | 1 | FL | N |
| 9/22/2011 | 39 | 245588 | 4315975 | CIVU | P | N | | T | S | 2 | 3 | FL | N |
| 9/22/2011 | 40 | 245617 | 4316006 | CIVU | P | N | | T | T | 50 | 3 | MA, SE | N |
| 9/22/2011 | 41 | 245631 | 4316019 | CIVU | P | N | | | | | | | N |
| 9/22/2011 | 55 | 245683 | 4316049 | CIVU | P | N | | T | T | 1 | 1 | SE | N |
| 9/22/2011 | 56 | 245635 | 4316026 | CIVU | P | N | | T | T | 9 | 2 | SE | N |
| 9/22/2011 | 57 | 245599 | 4316013 | CIVU | P | N | | T | T | 1 | 3 | FL | N |
| 9/22/2011 | 58 | 245602 | 4316001 | CIVU | P | N | | T | T | 1 | 1 | BU | N |
| 9/22/2011 | 66 | 245253 | 4315845 | CIVU | L | N | | S | T | | 16 | FL/SE | N |
| 9/22/2011 | 67 | 245216 | 4315853 | CIVU | L | N | | S | T | | 16 | FL/SE | N |
| 9/23/2011 | 59 | 245590 | 4316001 | CIVU | P | N | | T | T | 1 | 1 | BU | N |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/23/2011 | 60 | 245578 | 4315953 | CIVU | P | N | | T | T | 1 | 1 | SE | N |
| 9/23/2011 | 61 | 245594 | 4315978 | CIVU | P | N | | T | T | 1 | 1 | SE | N |
| 9/23/2011 | 62 | 245585 | 4315962 | CIVU | P | N | | T | T | 15 | 4 | FL | N |
| 9/23/2011 | 63 | 245224 | 4315840 | CIVU | P | N | | T | T | 1 | 1 | FL | N |
| 9/23/2011 | 64 | 245213 | 4315858 | CIVU | L | N | | T | T | | 18 | SE | N |
| 9/23/2011 | 65 | 245343 | 4315801 | CIVU | L | N | | T | T | | 18 | SE | N |
| 7/2/2012 | 122 | 248722 | 4332374 | CIVU | A | N | | T | T | 1200 | 10 | BU | Y |
| 7/3/2012 | 132 | 248277 | 4332881 | CIVU | P | H | | T | S | 25 | 8 | BO | Y |
| 7/3/2012 | 133 | 248284 | 4332895 | CIVU | P | H | | T | S | 28 | 2 | BU | Y |
| 7/3/2012 | 136 | 248548 | 4333132 | CIVU | A | H | | T | S | 2700 | 40 | BO | Y |
| 7/3/2012 | 139 | 248579 | 4332278 | CIVU | P | H | | T | T | 25 | 4 | BU | Y |
| 7/3/2012 | 140 | 248569 | 4332283 | CIVU | P | H | | T | T | 25 | 3 | BU | Y |
| 7/3/2012 | 141 | 248565 | 4332269 | CIVU | P | H | | T | T | 25 | 4 | BU | Y |
| 7/3/2012 | 120 | 248201 | 4332824 | CIVU | P | N | | T | S | 60 | 11 | BU | Y |
| 7/3/2012 | 121 | 248557 | 4333138 | CIVU | A | N | | S | T | 7800 | 20 | BU | Y |
| 7/5/2012 | 138 | 248722 | 4332374 | CIVU | P | H | | T | T | 11 | 3 | BU | Y |
| 7/5/2012 | 153 | 248650 | 4332275 | CIVU | P | H | | T | T | 1 | 1 | BU | Y |
| 7/6/2012 | 134 | 248342 | 4332944 | CIVU | P | H | | T | T | 5 | 2 | BO | Y |
| 7/6/2012 | 135 | 248385 | 4332986 | CIVU | P | H | | T | T | 1 | 1 | BO | Y |
| 7/6/2012 | 137 | 248691 | 4332977 | CIVU | P | H | | T | S | 12 | 8 | BU | Y |
| 7/6/2012 | 105 | 248375 | 4332979 | CIVU | P | N | | T | S | 64 | 20 | BO | Y |
| 7/6/2012 | 106 | 248280 | 4332882 | CIVU | P | N | | T | T | 12 | 3 | BO | Y |
| 7/6/2012 | 109 | 248652 | 4333003 | CIVU | P | N | | T | S | 9 | 3 | BO | Y |
| 7/6/2012 | 110 | 248447 | 4333234 | CIVU | P | N | | T | S | 6 | 2 | BU | Y |
| 7/6/2012 | 111 | 248439 | 4333219 | CIVU | P | N | | T | S | 10 | 3 | BU/BO | Y |
| 7/6/2012 | 112 | 248441 | 4333232 | CIVU | P | N | | T | S | 36 | 6 | BU/BO | Y |
| 7/6/2012 | 113 | 248371 | 4332972 | CIVU | P | N | | T | T | 1 | 1 | BO/BU | Y |
| 7/6/2012 | 125 | 248684 | 4332971 | CIVU | P | N | | T | S | 500 | 20 | BO | Y |
| 7/9/2012 | 104 | 248635 | 4332290 | CIVU | P | N | | T | L | 1 | 1 | BO | Y |
| 7/9/2012 | 107 | 248700 | 4332923 | CIVU | P | N | | T | M | 50 | 20 | BO | Y |
| 7/9/2012 | 108 | 248631 | 4332290 | CIVU | P | N | | T | M | 2600 | 35 | BO | Y |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/9/2012 | 124 | 248480 | 4332384 | CIVU | P | N | | T | S | 9 | 5 | BO | Y |
| 7/10/2012 | 96 | 248114 | 4332438 | CIAR4 | A | H | | T | L | 840 | 60 | BO/BU | N |
| 7/10/2012 | 97 | 248635 | 4332290 | CIAR4 | P | N | | T | L | 1 | 1 | BO | N |
| 7/10/2012 | 117 | 248453 | 4332392 | CIVU | P | N | | T | M | 216 | 40 | BO/BU | Y |
| 7/10/2012 | 118 | 248327 | 4332433 | CIVU | P | N | | T | L | 1 | 1 | BO | Y |
| 7/10/2012 | 119 | 248321 | 4332923 | CIVU | P | N | | T | L | 25 | 10 | BO/BU | Y |
| 7/10/2012 | 175 | 248024 | 4332928 | LEVU | P | H | | T | L | 25 | 20 | FL | Y |
| 7/10/2012 | 176 | 248037 | 4332887 | LEVU | P | H | | T | M | 25 | 10 | FL | Y |
| 7/10/2012 | 159 | 248024 | 4332972 | LEVU | P | N | | T | L | 7 | 7 | FL | Y |
| 7/10/2012 | 160 | 248034 | 4332864 | LEVU | P | N | | T | L | 160 | 27 | FL | Y |
| 7/10/2012 | 166 | 248034 | 4332901 | LEVU | P | N | | T | L | 200 | 80 | FL | Y |
| 7/11/2012 | 145 | 247306 | 4333752 | CIVU | P | H | | T | L | 3 | 2 | BO | Y |
| 7/11/2012 | 114 | 248084 | 4332794 | CIVU | P | N | | T | M | 90 | 30 | BO | Y |
| 7/11/2012 | 115 | 248089 | 4332794 | CIVU | P | N | | T | S | 25 | 3 | BO | Y |
| 7/11/2012 | 116 | 248087 | 4332879 | CIVU | P | N | | T | S | 50 | 9 | BO | Y |
| 7/11/2012 | 158 | 248030 | 4332912 | LEVU | P | N | | T | S | 40 | 10 | FL | Y |
| 7/12/2012 | 146 | 247404 | 4333725 | CIVU | P | H | | T | S | 435 | 40 | BO | Y |
| 7/12/2012 | 147 | 247514 | 4333690 | CIVU | P | H | | T | L | 5 | 2 | BU | Y |
| 7/12/2012 | 148 | 247335 | 4333822 | CIVU | P | H | | T | M | 50 | 30 | BO | Y |
| 7/12/2012 | 149 | 247334 | 4333825 | CIVU | P | H | | T | M | 50 | 20 | BO | Y |
| 7/12/2012 | 150 | 247396 | 4333765 | CIVU | P | H | | T | S | 36 | 3 | BO | Y |
| 7/12/2012 | 151 | 247384 | 4333754 | CIVU | P | H | | T | M | 45 | 7 | BU | Y |
| 7/12/2012 | 152 | 247334 | 4333825 | CIVU | P | H | | T | L | 10 | 50 | BO | Y |
| 7/12/2012 | 123 | 247334 | 4333835 | CIVU | P | N | | T | L | 120 | 50 | BO | Y |
| 7/12/2012 | 167 | 247965 | 4333406 | LEVU | P | H | | S | L | 5514 | 1600 | FL | N |
| 7/12/2012 | 168 | 247865 | 4333347 | LEVU | A | H | | T | L | 3955 | 1200 | FL | N |
| 7/12/2012 | 172 | 247957 | 4333285 | LEVU | P | H | | T | L | 45 | 100 | FL | N |
| 7/12/2012 | 173 | 247957 | 4333375 | LEVU | P | H | | T | L | 203 | 100 | FL | N |
| 7/12/2012 | 174 | 247926 | 4333372 | LEVU | A | H | | T | L | 166 | 1600 | FL | N |
| 7/12/2012 | 154 | 247945 | 4333430 | LEVU | P | N | | T | L | 96 | 60 | FL | Y |
| 7/12/2012 | 155 | 247932 | 4333443 | LEVU | P | N | | T | L | 2184 | 600 | FL | N |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/12/2012 | 156 | 247974 | 4333605 | LEVU | P | N | | S | L | 13698 | 5000 | FL | N |
| 7/12/2012 | 157 | 247954 | 4333605 | LEVU | P | N | | T | L | 1400 | 1200 | FL | N |
| 7/12/2012 | 163 | 246924 | 4333476 | LEVU | P | N | | T | L | 200 | 10 | FL | Y |
| 7/12/2012 | 164 | 247874 | 4333373 | LEVU | P | N | | T | L | 1 | 20 | FL | Y |
| 7/12/2012 | 165 | 247880 | 4333390 | LEVU | P | N | | T | L | 225 | 200 | FL | N |
| 7/13/2012 | 169 | 247959 | 4333423 | LEVU | A | H | | S | S | 5300 | 300 | FL | N |
| 7/13/2012 | 170 | 247997 | 4333387 | LEVU | P | H | | T | T | 22 | 10 | FL | Y |
| 7/13/2012 | 171 | 247749 | 4333122 | LEVU | P | H | | T | T | 30 | 80 | FL | Y |
| 7/13/2012 | 177 | 247982 | 4333314 | LEVU | P | H | | T | M | 80 | 200 | FL | N |
| 7/13/2012 | 161 | 247773 | 4333063 | LEVU | P | N | | T | S | 4 | 60 | FL | Y |
| 7/13/2012 | 162 | 247944 | 4333373 | LEVU | P | N | | T | L | 25 | 600 | FL | N |
| 7/30/2012 | 126 | 245343 | 4315801 | CIVU | P | H | | T | L | 1 | 1 | BU | Y |
| 7/30/2012 | 127 | 245213 | 4315858 | CIVU | P | H | | T | L | 1 | 1 | BU | Y |
| 7/30/2012 | 128 | 245585 | 4315962 | CIVU | P | H | | T | M | 9 | 1 | FL | Y |
| 7/30/2012 | 129 | 245599 | 4316013 | CIVU | P | H | | T | M | 45 | 5 | BO | Y |
| 7/30/2012 | 130 | 245635 | 4316026 | CIVU | P | H | | T | L | 1 | 1 | FL | Y |
| 7/30/2012 | 142 | 245631 | 4316019 | CIVU | P | H | | T | L | 9 | 1 | FL | Y |
| 7/30/2012 | 143 | 245589 | 4315895 | CIVU | P | H | | T | M | 4 | 1 | FL | Y |
| 7/30/2012 | 144 | 245253 | 4315845 | CIVU | P | H | | T | S | 400 | 3 | BU | Y |
| 7/30/2012 | 98 | 245266 | 4315804 | CIVU | P | N | | T | S | 60 | 3 | BU | Y |
| 7/30/2012 | 99 | 245269 | 4315866 | CIVU | P | N | | T | L | 4 | 1 | BU | Y |
| 7/30/2012 | 100 | 245332 | 4315033 | CIVU | P | N | | T | M | 240 | 60 | BO/BU | Y |
| 7/30/2012 | 101 | 245522 | 4315913 | CIVU | P | N | | T | L | 4 | 1 | BU | Y |
| 7/30/2012 | 102 | 245633 | 4316042 | CIVU | P | N | | T | L | 1 | 1 | FL | Y |
| 7/30/2012 | 103 | 245622 | 4315984 | CIVU | P | N | | T | S | 20 | 3 | FL | Y |
| 7/31/2012 | 178 | 250993 | 4344699 | LEVU | L | H | | T | T | 120 | 80 | FL | Y |
| 8/1/2012 | 95 | 248295 | 4332447 | CADR | A | N | | T | M | 265 | 100 | BO/BU | Y |
| 8/1/2012 | 131 | 248195 | 4332822 | CIVU | P | H | | T | M | 200 | 20 | BO/BU | Y |
| 6/11/2013 | 260 | 248280 | 4332882 | CIVU | P | H | | T | T | 1 | 1 | BO | Y |
| 6/11/2013 | 261 | 248667 | 4333234 | CIVU | P | H | | T | T | 1 | 1 | BU | Y |
| 6/11/2013 | 262 | 248439 | 4333219 | CIVU | P | H | | T | T | 1 | 2 | BO | Y |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/11/2013 | 263 | 248195 | 4332822 | CIVU | P | H | | T | T | 20 | 3 | BO | Y |
| 6/11/2013 | 264 | 248371 | 4332979 | CIVU | P | H | | T | T | 5 | 6 | BO | Y |
| 6/11/2013 | 266 | 248321 | 4332923 | CIVU | A | H | | T | S | 276.7 | 25 | BO | Y |
| 6/11/2013 | 289 | 248375 | 4332979 | CIVU | P | H | | T | T | 2 | 2 | SE | Y |
| 6/11/2013 | 290 | 248284 | 4332895 | CIVU | P | H | | T | S | 5 | 3 | BO | Y |
| 6/11/2013 | 291 | 248453 | 4332392 | CIVU | P | H | | T | T | 9 | 4 | BO | Y |
| 6/11/2013 | 292 | 248201 | 4332826 | CIVU | P | H | | T | T | 5 | 4 | BO | Y |
| 6/11/2013 | 278 | 248695 | 4332969 | CIVU | P | N | | T | T | 2 | 2 | BO | Y |
| 6/11/2013 | 288 | 248407 | 4333162 | CIVU | A | N | | T | S | 153.8 | 40 | BO | Y |
| 6/11/2013 | 295 | 248385 | 4332990 | CIVU | P | N | | T | T | 1 | 1 | BO | Y |
| 6/11/2013 | 302 | 248692 | 4332969 | CIVU | P | N | | T | T | 5 | 2 | BO | Y |
| 6/11/2013 | 316 | 248195 | 4332822 | CIVU | P | N | | T | T | 10 | 10 | BO | Y |
| 6/11/2013 | 317 | 248413 | 4333168 | CIVU | P | N | | T | S | 10 | 10 | BO | Y |
| 6/11/2013 | 338 | 248037 | 4332887 | LEVU | P | H | | T | S | 256.7 | 90 | BU | Y |
| 6/11/2013 | 345 | 248030 | 4332912 | LEVU | A | H | | T | S | 140.9 | 50 | BU | Y |
| 6/11/2013 | 359 | 248026 | 4332928 | LEVU | P | H | | T | S | 25 | 60 | BU | Y |
| 6/11/2013 | 351 | 248036 | 4332855 | LEVU | A | N | | T | M | 46.9 | 120 | BU | Y |
| 6/12/2013 | 331 | 247874 | 4333373 | LEVU | P | H | | T | M | 1 | 10 | BU | Y |
| 6/12/2013 | 332 | 247951 | 4333375 | LEVU | P | H | | T | S | 2 | 20 | BU | Y |
| 6/12/2013 | 336 | 247982 | 4333314 | LEVU | P | H | | T | S | 10 | 50 | BU | Y |
| 6/12/2013 | 339 | 247932 | 4333443 | LEVU | A | H | | T | M | 34.6 | 200 | BU/FL | Y |
| 6/12/2013 | 340 | 247974 | 4333605 | LEVU | A | H | | T | M | 25.8 | 200 | BU/FL | Y |
| 6/12/2013 | 341 | 247863 | 4333339 | LEVU | A | H | | S | M | 5058.1 | 500 | BU/FL | Y |
| 6/12/2013 | 342 | 247950 | 4333303 | LEVU | A | H | | T | M | 444.9 | 600 | BU/FL | Y |
| 6/12/2013 | 343 | 247959 | 4333423 | LEVU | A | H | | | M | 4158 | 1600 | BU/FL | Y |
| 6/12/2013 | 358 | 247773 | 4333063 | LEVU | P | H | | T | T | 1 | 3 | FL | Y |
| 6/12/2013 | 360 | 247880 | 4333390 | LEVU | P | H | | T | M | 5 | 80 | BU/FL | Y |
| 6/12/2013 | 361 | 247865 | 4333347 | LEVU | A | H | | T | M | 8 | 100 | BU/FL | Y |
| 6/12/2013 | 362 | 247926 | 4333372 | LEVU | A | H | | | M | 753 | 2000 | BU/FL | Y |
| 6/12/2013 | 363 | 247954 | 4333605 | LEVU | A | H | | | M | 1258.1 | 1000 | BU/FL | Y |
| 6/12/2013 | 347 | 247976 | 4333632 | LEVU | P | N | | T | S | 3 | 30 | BU | Y |

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| 6/12/2013 | 348 | 247996 | 4333330 | LEVU | P | N | | T | S | 5 | 40 | BU | Y |
| 6/12/2013 | 352 | 247862 | 4333332 | LEVU | P | N | | T | M | 10 | 200 | BU/FL | Y |
| 6/12/2013 | 354 | 247952 | 4333335 | LEVU | A | N | | T | M | 282.9 | 300 | BU/FL | Y |
| 6/12/2013 | 356 | 247995 | 4333640 | LEVU | A | N | | S | M | 7413 | 400 | BU | Y |
| 6/12/2013 | 365 | 247986 | 4333616 | LEVU | P | N | | T | S | 2 | 10 | BU | Y |
| 6/12/2013 | 367 | 247972 | 4333438 | LEVU | P | N | | T | S | 6 | 60 | BU | Y |
| 6/12/2013 | 368 | 247981 | 4333627 | LEVU | P | N | | T | S | 10 | 80 | BU | Y |
| 6/18/2013 | 246 | 245529 | 4315927 | CADR | P | N | | T | M | 16 | 60 | FL | Y |
| 6/18/2013 | 265 | 245617 | 4316006 | CIVU | P | H | | T | T | 4 | 10 | SE | Y |
| 6/18/2013 | 269 | 245696 | 4315986 | CIVU | P | N | | T | T | 1 | 1 | SE | Y |
| 6/18/2013 | 270 | 245300 | 4315825 | CIVU | P | N | | T | T | 1 | 1 | BU | Y |
| 6/18/2013 | 271 | 245416 | 4315824 | CIVU | P | N | | T | T | 1 | 1 | BO | Y |
| 6/18/2013 | 272 | 245417 | 4315822 | CIVU | P | N | | T | T | 1 | 1 | BO | Y |
| 6/18/2013 | 273 | 245548 | 4315945 | CIVU | P | N | | T | T | 1 | 1 | BO | Y |
| 6/18/2013 | 279 | 245597 | 4315985 | CIVU | | N | | T | T | 1 | 2 | BO | Y |
| 6/18/2013 | 280 | 245590 | 4315962 | CIVU | P | N | | T | T | 1 | 2 | BO/SE | Y |
| 6/18/2013 | 281 | 245600 | 4315962 | CIVU | P | N | | T | T | 2 | 3 | BO/SE | Y |
| 6/18/2013 | 285 | 245337 | 4315843 | CIVU | P | N | | T | S | 10 | 10 | BO/BU | Y |
| 6/18/2013 | 296 | 245637 | 4316026 | CIVU | | N | | T | T | 1 | 1 | BO | Y |
| 6/18/2013 | 297 | 245629 | 4316021 | CIVU | | N | | T | T | 1 | 1 | BO | Y |
| 6/18/2013 | 303 | 245641 | 4316017 | CIVU | | N | | T | T | 1 | 2 | BO | Y |
| 6/18/2013 | 346 | 245612 | 4315979 | LEVU | P | N | | T | T | 1 | 1 | FL | Y |
| 6/24/2013 | 298 | 248363 | 4332950 | CIVU | P | N | | T | T | 1 | 1 | BU | Y |
| 6/24/2013 | 299 | 248392 | 4333043 | CIVU | P | N | | T | T | 1 | 1 | SE | Y |
| 6/24/2013 | 300 | 248452 | 4333245 | CIVU | P | N | | T | T | 1 | 1 | BU | Y |
| 6/24/2013 | 304 | 248357 | 4332946 | CIVU | P | N | | T | T | 4 | 2 | BO | Y |
| 6/24/2013 | 305 | 248963 | 4333222 | CIVU | P | N | | T | T | 1 | 2 | BO | Y |
| 6/24/2013 | 308 | 248399 | 4333169 | CIVU | P | N | | T | T | 1 | 3 | SE | Y |
| 6/24/2013 | 311 | 248381 | 4332993 | CIVU | P | N | | T | T | 16 | 5 | BO | Y |
| 6/24/2013 | 312 | 248392 | 4333061 | CIVU | P | N | | T | T | 8 | 5 | BO/SE | Y |
| 6/24/2013 | 314 | 248913 | 4333169 | CIVU | P | N | | T | T | 1 | 8 | BO/SE | Y |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/24/2013 | 320 | 248392 | 4333008 | CIVU | P | N | | T | M | 9 | 15 | BO/SE | Y |
| 6/24/2013 | 322 | 248371 | 4332974 | CIVU | P | N | | T | T | 36 | 20 | BO/SE | Y |
| 6/24/2013 | 323 | 248915 | 4333167 | CIVU | P | N | | T | T | 81 | 20 | SE | Y |
| 6/24/2013 | 325 | 248325 | 4332926 | CIVU | P | N | | T | S | 25 | 25 | BO | Y |
| 6/24/2013 | 328 | 248911 | 4333159 | CIVU | P | N | | T | M | 49 | 60 | BO/BU | Y |
| 6/25/2013 | 258 | 248649 | 4332275 | CIAR4 | P | N | | T | T | 49 | 30 | BO/BU | Y |
| 6/25/2013 | 306 | 248702 | 4332308 | CIVU | P | N | | T | T | 9 | 2 | SE | Y |
| 6/25/2013 | 307 | 248705 | 4332289 | CIVU | P | N | | T | T | 9 | 2 | SE | Y |
| 6/25/2013 | 309 | 248649 | 4332275 | CIVU | P | N | | T | T | 49 | 3 | BO/BU | Y |
| 6/25/2013 | 310 | 248627 | 4332277 | CIVU | P | N | | T | S | 9 | 3 | BO | Y |
| 6/25/2013 | 313 | 248459 | 4332394 | CIVU | P | N | | T | T | 16 | 5 | BO | Y |
| 6/25/2013 | 315 | 248625 | 4332285 | CIVU | P | N | | T | S | 10 | 8 | BO/BU | Y |
| 6/25/2013 | 318 | 248612 | 4332294 | CIVU | P | N | | T | S | 25 | 10 | BO/SE | Y |
| 6/25/2013 | 319 | 248591 | 4332295 | CIVU | P | N | | T | T | 16 | 10 | SE | Y |
| 6/25/2013 | 321 | 247846 | 4332697 | CIVU | P | N | | T | S | 81 | 15 | BO/SE | Y |
| 6/25/2013 | 324 | 248647 | 4332278 | CIVU | P | N | | T | S | 25 | 20 | BO/BU | Y |
| 6/25/2013 | 326 | 248637 | 4332249 | CIVU | P | N | | T | S | 100 | 30 | BO/BU | Y |
| 6/25/2013 | 327 | 248727 | 4332341 | CIVU | P | N | | T | S | 81 | 50 | BO/SE | Y |
| 6/25/2013 | 329 | 248599 | 4332306 | CIVU | P | N | | T | T | 64 | 60 | BO/SE | Y |
| 6/25/2013 | 344 | 247980 | 4333652 | LEVU | P | H | | T | M | 100 | 300 | FL | Y |
| 6/25/2013 | 349 | 247950 | 4333690 | LEVU | P | N | | T | S | 16 | 40 | BU/FL | Y |
| 6/25/2013 | 350 | 247947 | 4333684 | LEVU | P | N | | T | M | 25 | 100 | BU/FL | Y |
| 6/25/2013 | 353 | 247958 | 4333921 | LEVU | P | N | | T | S | 49 | 200 | BU/FL | Y |
| 6/25/2013 | 355 | 247991 | 4333613 | LEVU | P | N | | T | M | 36 | 300 | BU/FL | Y |
| 6/25/2013 | 357 | 248049 | 4333628 | LEVU | P | N | | T | M | 49 | 100 | BU/FL | Y |
| 6/25/2013 | 364 | 247937 | 4333733 | LEVU | P | N | | T | T | 1 | 5 | SE/FL | Y |
| 6/25/2013 | 366 | 247940 | 4333768 | LEVU | P | N | | T | T | 15 | 50 | BU/FL | Y |
| 6/26/2013 | 274 | 245395 | 4315708 | CIVU | P | N | | T | T | 1 | 1 | BO | Y |
| 6/26/2013 | 275 | 245397 | 4315711 | CIVU | P | N | | T | T | 1 | 1 | BU | Y |
| 6/26/2013 | 276 | 245380 | 4315755 | CIVU | P | N | | T | T | 1 | 1 | SE | Y |
| 6/26/2013 | 277 | 245500 | 4315890 | CIVU | P | N | | T | T | 1 | 1 | BO | Y |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/26/2013 | 282 | 245411 | 4315729 | CIVU | P | N | | T | T | 9 | 3 | BO | Y |
| 6/26/2013 | 283 | 245689 | 4316085 | CIVU | P | N | | T | T | 4 | 3 | BU | Y |
| 6/26/2013 | 284 | 245400 | 4315731 | CIVU | P | N | | T | T | 16 | 5 | BU | Y |
| 6/26/2013 | 286 | 245404 | 4315707 | CIVU | P | N | | T | S | 25 | 15 | BU/FL | Y |
| 6/26/2013 | 287 | 245339 | 4315847 | CIVU | P | N | | T | S | 25 | 15 | BO/BU | Y |
| 6/27/2013 | 333 | 248042 | 4332899 | LEVU | P | H | | T | T | 4 | 20 | BU/FL | Y |
| 6/27/2013 | 334 | 248042 | 4332900 | LEVU | P | H | | T | T | 9 | 20 | BU/FL | Y |
| 6/27/2013 | 335 | 248020 | 4332914 | LEVU | P | H | | T | S | 15 | 30 | BU/FL | Y |
| 6/27/2013 | 337 | 248029 | 4332858 | LEVU | P | H | | T | S | 16 | 50 | BU/FL | Y |
| 7/2/2013 | 179 | 248033 | 4332927 | BRTE | P | N | | T | S | 1 | 3 | | N |
| 7/2/2013 | 180 | 248202 | 4332834 | BRTE | P | N | | T | T | 4 | 3 | | N |
| 7/2/2013 | 181 | 248882 | 4332654 | BRTE | P | N | | T | T | 4 | 5 | | N |
| 7/2/2013 | 182 | 248152 | 4332818 | BRTE | P | N | | T | S | 16 | 10 | | N |
| 7/2/2013 | 183 | 248597 | 4333132 | BRTE | P | N | | T | S | 4 | 15 | | N |
| 7/2/2013 | 184 | 248479 | 4333237 | BRTE | P | N | | T | S | 9 | 15 | | N |
| 7/2/2013 | 185 | 248014 | 4333401 | BRTE | P | N | | T | T | 1 | 20 | | N |
| 7/2/2013 | 186 | 248015 | 4333402 | BRTE | P | N | | T | L | 16 | 30 | | N |
| 7/2/2013 | 187 | 247981 | 4333233 | BRTE | P | N | | T | L | 8 | 30 | | N |
| 7/2/2013 | 188 | 248020 | 4332945 | BRTE | P | N | | T | L | 4 | 30 | | N |
| 7/2/2013 | 189 | 248876 | 4332666 | BRTE | P | N | | T | S | 400 | 50 | | N |
| 7/2/2013 | 190 | 248498 | 4333232 | BRTE | P | N | | T | M | 25 | 50 | | N |
| 7/2/2013 | 191 | 248074 | 4333603 | BRTE | P | N | | T | L | 36 | 100 | | N |
| 7/2/2013 | 192 | 248146 | 4332591 | BRTE | P | N | | T | M | 40 | 100 | | N |
| 7/2/2013 | 193 | 247995 | 4333353 | BRTE | P | N | | T | L | 15 | 150 | | N |
| 7/2/2013 | 194 | 248162 | 4332609 | BRTE | P | N | | T | S | 120 | 150 | | N |
| 7/2/2013 | 195 | 248060 | 4333637 | BRTE | P | N | | T | L | 75 | 200 | | N |
| 7/2/2013 | 196 | 248063 | 4333603 | BRTE | P | N | | T | L | 96 | 200 | | N |
| 7/2/2013 | 197 | 248031 | 4332937 | BRTE | P | N | | T | M | 125 | 200 | | N |
| 7/2/2013 | 198 | 247967 | 4333125 | BRTE | P | N | | T | L | 80 | 300 | | N |
| 7/2/2013 | 199 | 248001 | 4333054 | BRTE | P | N | | T | L | 250 | 400 | | N |
| 7/2/2013 | 200 | 248791 | 4332778 | BRTE | P | N | | T | T | 1 | 1 | | N |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/2/2013 | 201 | 248657 | 4333049 | BRTE | P | N | | T | T | 1 | 1 | | N |
| 7/2/2013 | 202 | 248071 | 4333612 | BRTE | P | N | | T | T | 1 | 2 | | N |
| 7/2/2013 | 203 | 248140 | 4332588 | BRTE | P | N | | T | T | 1 | 2 | | N |
| 7/2/2013 | 204 | 248152 | 4332822 | BRTE | P | N | | T | T | 4 | 3 | | N |
| 7/2/2013 | 205 | 248054 | 4333630 | BRTE | P | N | | T | L | 1 | 10 | | N |
| 7/2/2013 | 206 | 248076 | 4333605 | BRTE | P | N | | T | T | 4 | 10 | | N |
| 7/2/2013 | 207 | 248150 | 4332602 | BRTE | P | N | | T | S | 4 | 10 | | N |
| 7/2/2013 | 208 | 288871 | 4332672 | BRTE | P | N | | T | T | 4 | 10 | | N |
| 7/2/2013 | 209 | 248080 | 4333017 | BRTE | P | N | | T | S | 16 | 10 | | N |
| 7/2/2013 | 210 | 247994 | 4333356 | BRTE | P | N | | T | S | 4 | 15 | | N |
| 7/2/2013 | 211 | 248027 | 4332931 | BRTE | P | N | | T | S | 4 | 20 | | N |
| 7/2/2013 | 212 | 247265 | 4333385 | BRTE | P | N | | T | S | 10 | 20 | | N |
| 7/2/2013 | 213 | 248909 | 4332641 | BRTE | P | N | | T | S | 18 | 30 | | N |
| 7/2/2013 | 214 | 248886 | 4332642 | BRTE | P | N | | T | S | 60 | 40 | | N |
| 7/2/2013 | 215 | 248646 | 4333112 | BRTE | P | N | | T | S | 16 | 40 | | N |
| 7/2/2013 | 216 | 247990 | 4333331 | BRTE | P | N | | T | L | 18 | 50 | | N |
| 7/2/2013 | 217 | 248869 | 4332675 | BRTE | P | N | | T | M | 75 | 50 | | N |
| 7/2/2013 | 218 | 248589 | 4333132 | BRTE | P | N | | T | M | 25 | 50 | | N |
| 7/2/2013 | 219 | 247975 | 4333344 | BRTE | P | N | | T | L | 16 | 80 | | N |
| 7/2/2013 | 220 | 248568 | 4333159 | BRTE | P | N | | T | M | 120 | 80 | | N |
| 7/2/2013 | 221 | 248713 | 4332979 | BRTE | P | N | | T | M | 225 | 100 | | N |
| 7/2/2013 | 222 | 248064 | 4333027 | BRTE | P | N | | T | M | 12 | 100 | | N |
| 7/2/2013 | 223 | 247231 | 4333439 | BRTE | P | N | | T | M | 160 | 100 | | N |
| 7/2/2013 | 224 | 247284 | 4333373 | BRTE | P | N | | T | M | 120 | 100 | | N |
| 7/2/2013 | 225 | 247995 | 4333351 | BRTE | P | N | | T | M | 60 | 150 | | N |
| 7/2/2013 | 226 | 248186 | 4332828 | BRTE | A | N | | T | M | 1268 | 200 | | N |
| 7/2/2013 | 227 | 247976 | 4333234 | BRTE | P | N | | T | L | 240 | 500 | | N |
| 7/2/2013 | 228 | 248012 | 4332940 | BRTE | A | N | | T | L | 712 | 1000 | | N |
| 7/2/2013 | 229 | 248010 | 4333032 | BRTE | A | N | | T | L | 758 | 1000 | | N |
| 7/2/2013 | 230 | 248610 | 4333119 | BRTE | A | N | | T | L | 33328 | 1500 | | N |
| 7/2/2013 | 231 | 248857 | 4332684 | BRTE | A | N | | T | L | 3003.8 | 1500 | | N |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/2/2013 | 232 | 247998 | 4333028 | BRTE | A | N | | T | L | 867 | 1500 | | N |
| 7/2/2013 | 233 | 248515 | 4333193 | BRTE | A | N | | T | M | 2405 | 2000 | | N |
| 7/2/2013 | 234 | 247297 | 4333277 | BRTE | A | N | | T | L | 2434 | 2000 | | N |
| 7/2/2013 | 235 | 248682 | 4333005 | BRTE | A | N | | T | L | 2311.7 | 5000 | | N |
| 7/2/2013 | 236 | 247955 | 4333153 | BRTE | A | N | | S | L | 8653 | 10000 | | N |
| 7/2/2013 | 301 | 248169 | 4332815 | CIVU | P | N | | T | T | 1 | 1 | BO | Y |
| 7/2/2013 | 369 | 247259 | 4333392 | LEVU | P | N | | T | L | 49 | 150 | FL | Y |
| 7/2/2013 | 370 | 247269 | 4333377 | LEVU | P | N | | T | M | 98 | 300 | BU/FL | Y |
| 10/17/2013 | 237 | 247875 | 4332324 | CADR | P | H | | T | T | 4 | 12 | BU/FL | Y |
| 10/17/2013 | 238 | 250030 | 4332503 | CADR | P | H | | T | M | 3 | 6 | BU/FL | Y |
| 10/17/2013 | 241 | 247863 | 4332314 | CADR | | N | | T | T | 200.8 | 30 | BU/FL | Y |
| 10/17/2013 | 242 | 245540 | 4315935 | CADR | P | N | | T | S | 6 | 30 | SE/FL | Y |
| 10/17/2013 | 243 | 245571 | 4315969 | CADR | P | N | | T | M | 6 | 30 | BU/FL | Y |
| 10/17/2013 | 245 | 245305 | 4315820 | CADR | P | N | | T | M | 20 | 80 | FL | Y |
| 10/17/2013 | 239 | 245307 | 4315778 | CADR | P | N | | T | S | 9 | 15 | FL | Y |
| 10/17/2013 | 240 | 245528 | 4315903 | CADR | P | N | | T | S | 9 | 20 | FL | Y |
| 10/17/2013 | 244 | 245426 | 4315716 | CADR | P | N | | T | S | 16 | 50 | FL | Y |
| 10/17/2013 | 247 | 247982 | 4333198 | CADR | P | N | | T | S | 10 | 6 | | Y |
| 10/17/2013 | 248 | 247980 | 4333231 | CADR | P | N | | T | S | 8 | 10 | | Y |
| 10/17/2013 | 249 | 247290 | 4333306 | CADR | P | N | | T | S | 9 | 15 | BU/FL | Y |
| 10/17/2013 | 251 | 248114 | 4332438 | CIAR4 | A | H | | T | S | 546.4 | 150 | BO | Y |
| 10/17/2013 | 250 | 248579 | 4332278 | CIAR4 | A | H | | T | S | 5000 | 100 | BO/BU | Y |
| 10/17/2013 | 252 | 248723 | 4332354 | CIAR4 | P | N | | T | T | 0.5 | 1 | BO | Y |
| 10/17/2013 | 253 | 248636 | 4332275 | CIAR4 | P | N | | T | T | 1 | 4 | BO | Y |
| 10/17/2013 | 254 | 248604 | 4332310 | CIAR4 | P | N | | T | T | 9 | 10 | BO/SE | Y |
| 10/17/2013 | 255 | 248714 | 4332328 | CIAR4 | P | N | | T | S | 25 | 30 | BO/SE | Y |
| 10/17/2013 | 256 | 248612 | 4332294 | CIAR4 | P | N | | T | S | 25 | 30 | BO/BU | Y |
| 10/17/2013 | 257 | 248599 | 4332306 | CIAR4 | P | N | | T | T | 64 | 30 | BO/SE | Y |
| 10/17/2013 | 267 | 248305 | 4332443 | CIVU | A | N | | T | S | 1387.7 | 50 | BO | Y |
| 10/17/2013 | 294 | 248314 | 4332411 | CIVU | P | N | | T | S | 9 | 10 | BO | Y |
| 10/17/2013 | 259 | 248635 | 4332290 | CIVU | A | H | | T | S | 3000 | 20 | FL/BU | Y |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/17/2013 | 268 | 245387 | 4315747 | CIVU | P | N | | T | M | 200 | 60 | BO/BU/SE | Y |
| 10/17/2013 | 293 | 248648 | 4332207 | CIVU | P | N | | T | T | 1 | 1 | BO | Y |
| 10/17/2013 | 330 | 250006 | 4332501 | LELA | P | N | | T | T | 2 | 21 | BU/FL | Y |

*Appendix C: 2013 Weed Sites: Figures 1-5*

**Figure 1: Weed sites at Lake Tahoe Nevada State Park in 2011, 2012, and 2013: Spooner Lake Region.**

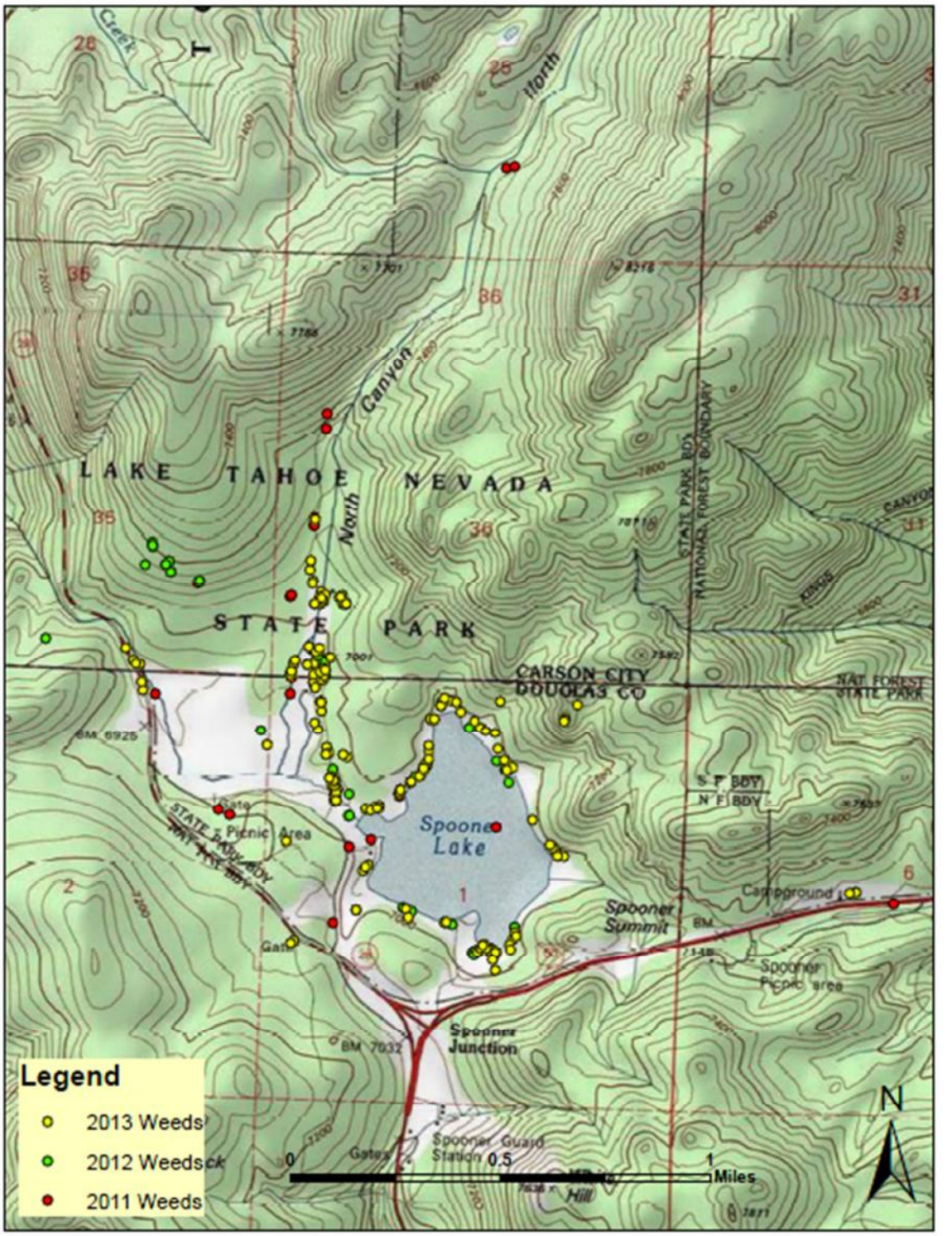


**Figure 2: Weed sites at Van Sickle Bi-State Park in 2011, 2012, and 2013.**

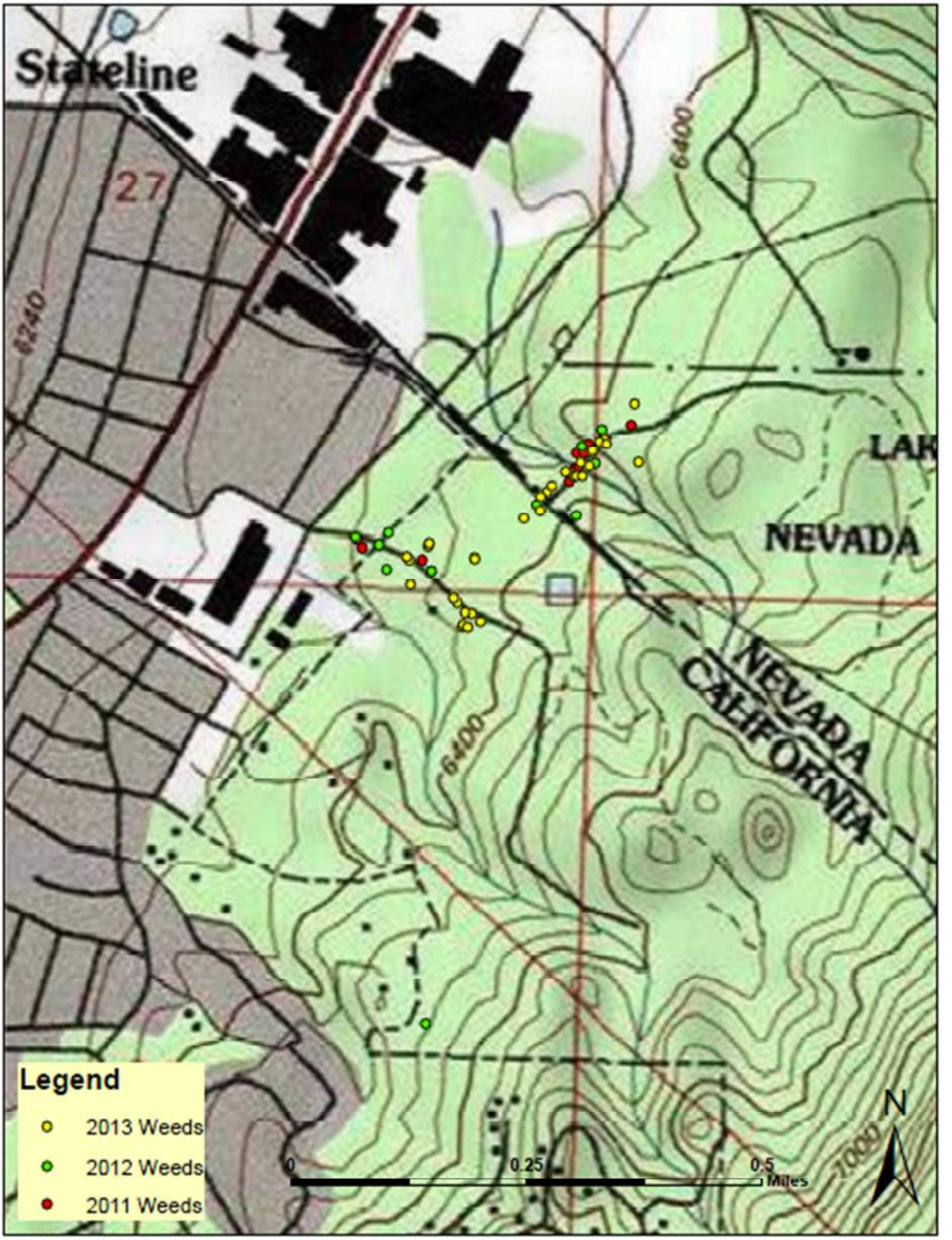


Figure 3: Weed Sites at Lake Tahoe Nevada State Park in 2013: North Canyon Region.

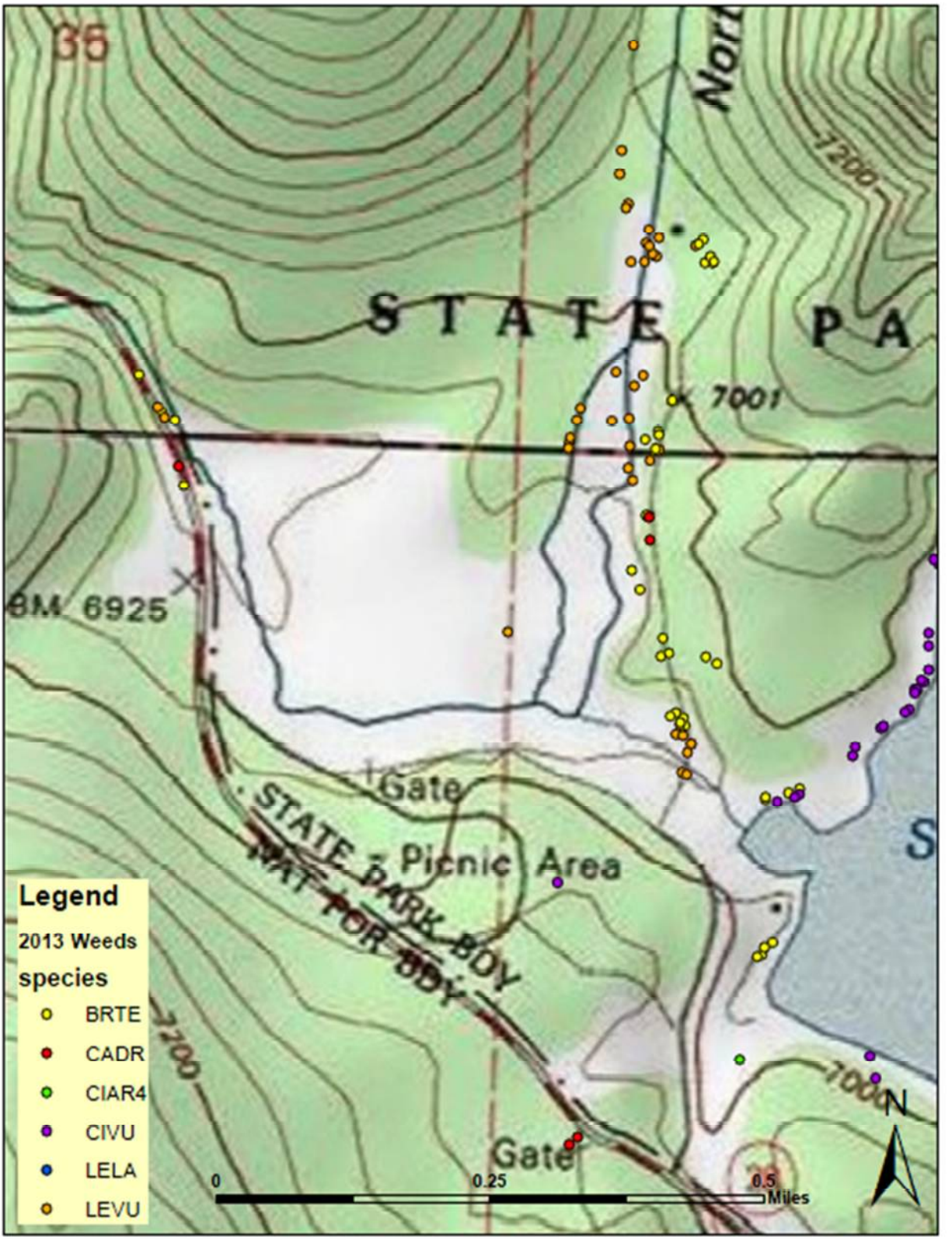


Figure 4: Weed Sites at Lake Tahoe Nevada State Park in 2013: Spooner Lake Region.

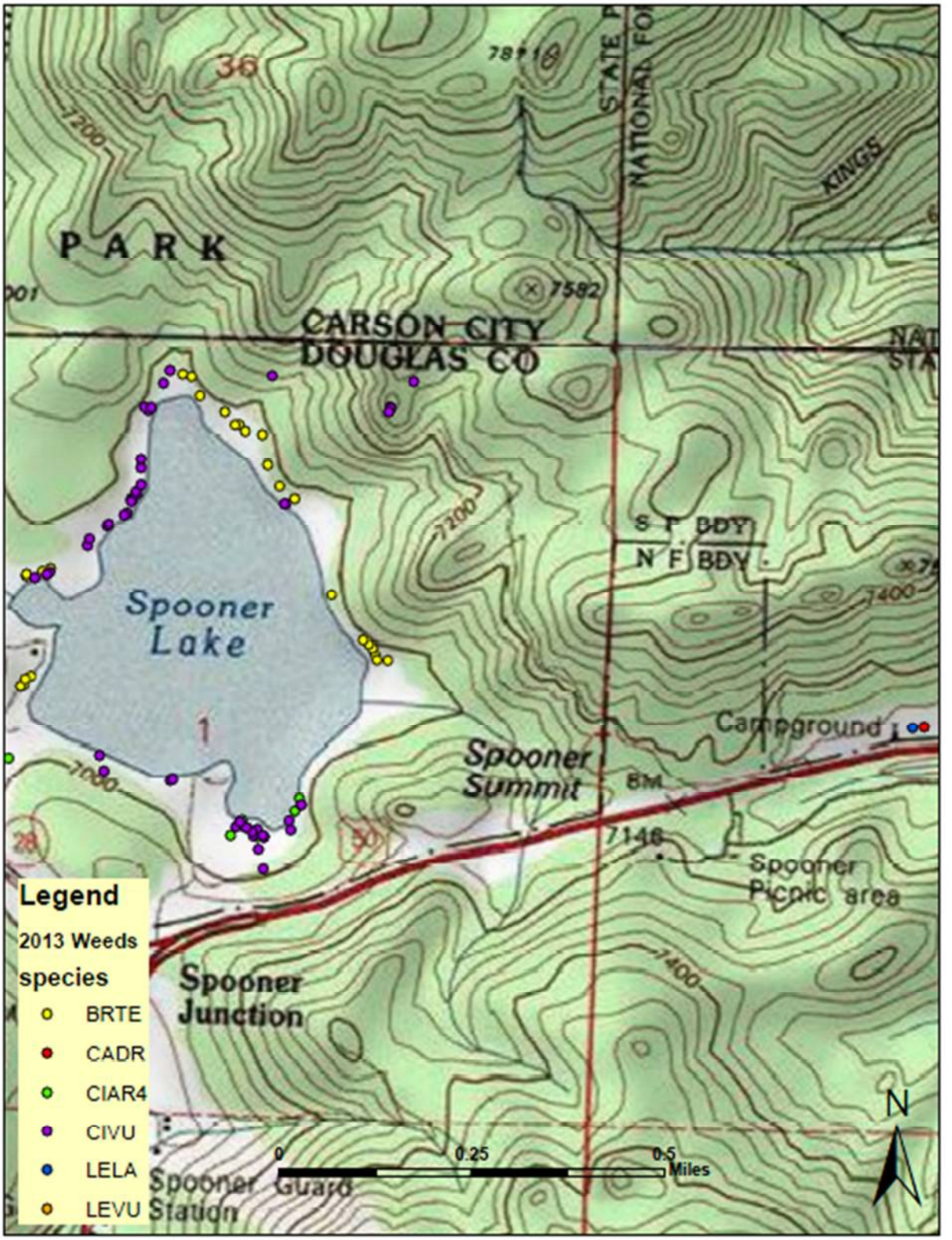
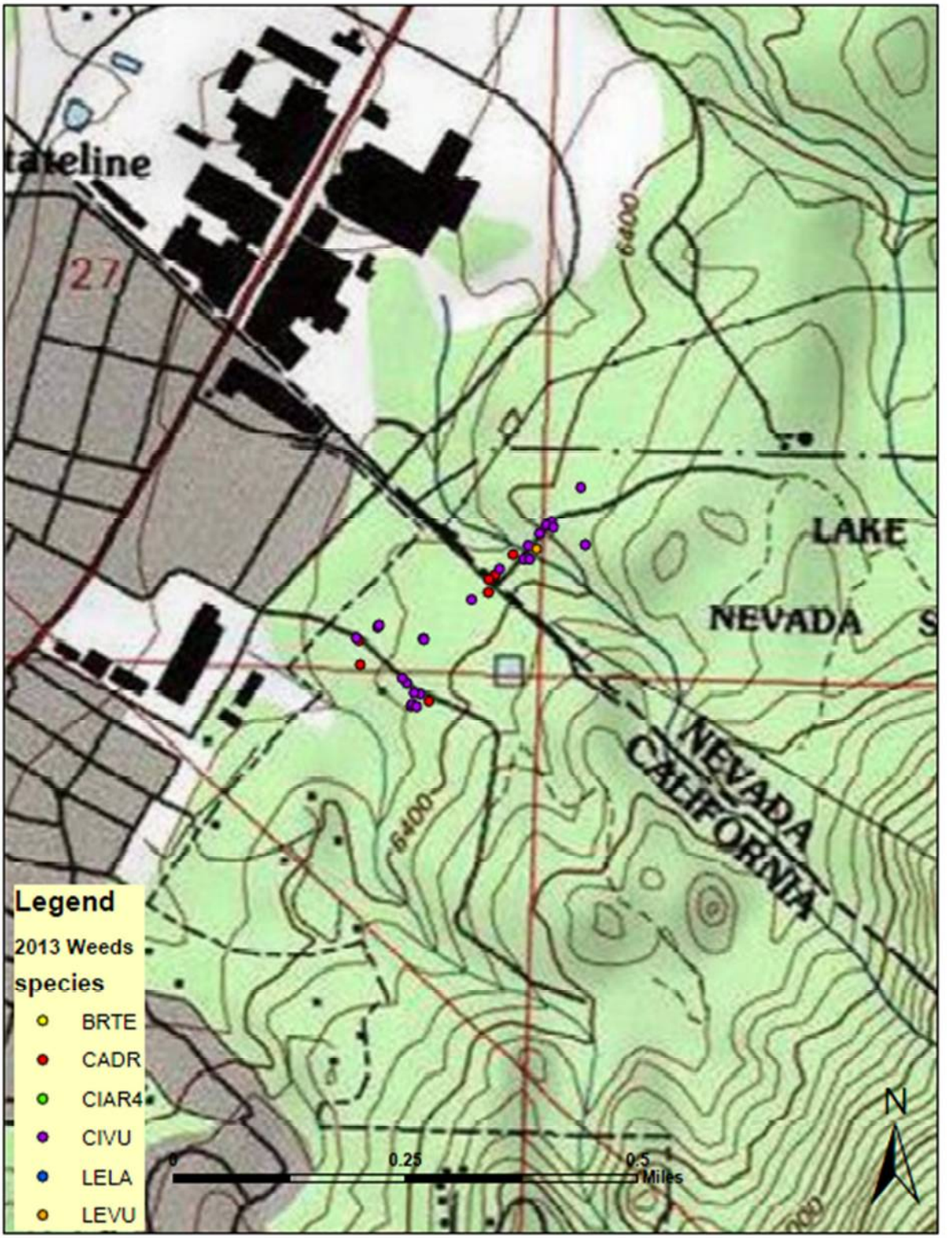


**Figure 5: Weed Sites at Van Sickle Bi-State Park in 2013.**



*Appendix D: Photo documentation of activities for the Invasive Weed Assessment of Nevada State Parks in the East Lake Tahoe Basin.*

**Interns mapping and identifying invasives in the Lake Tahoe Basin:**

**Interns mechanically and chemically removing invasives:**