OSWEGO RIVER BASIN AQUATIC INVASIVE CONTROL

Oswego County Soil and Water Conservation District
Water Chestnut Control

Final Report
September 22, 2016

1. Due to the fact that New York State/Department of Environmental Conservation permitting protocols changed beginning in the 2016 season and was late being noticed at the local level, such requirements were then shifted over to the awarded contractor for completion. General chemical permit application work and public notification was completed by contractor and spraying was conducted on Monday, August 29th, 2016. Approximately 60 acres of Water chestnut was treated in Ox Creek between the RR Bridge overpass and Co. Rt. 14 highway culvert. Another 20 acres were treated just on the north side of Big Island located downstream from Ox Creek, in the Oswego River. Water samples were pulled and analyzed for any chemical concentrations; by September 2nd concentration levels were below 1ppb, and the lifting of the restriction of water usage notice was sent out to all targeted property owners within the treatment areas. On September 14th a visual observation was conducted and clearly showed that the treated areas were decaying and decomposing as expected.

As the season progressed, other areas within the Oswego River Corridor showed increase numbers of plants, more than what could be hand pulled. Therefore, for 2017 a more intense chemical treatment campaign will be necessary to keep Water chestnut in check.

2. Five college students formed the first Oswego County Water Chestnut Assault Team (aka Water CATs). Team began work on June 7th and continued throughout the summer, for a ten week period, ending on August 11th. Team members were trained in water and boat safety, as well as CPR; aquatic plant ID, and iMap Invasive inventory program.

[*see separate report attached as developed by the Water CATs*]

3. For the 2016 Water chestnut control in Oswego County, our efforts needed to shift from a strong chemical treatment campaign to now a hard hitting hand pulling effort. Success in diminishing the well over 220 acres (down to 20 acres) of water chestnut that resided in just the Oswego River alone, has caused this shift in control methods. There are also other water bodies throughout Oswego County in need of this same attention. This agency is working with other groups and private property owners to help facilitate the control of Water chestnut in these other areas.

4. The spring of 2016 was a cold and drawn out season, which held back the growth of Water chestnut. Even so, this aquatic plant emerged at expectedly different times beginning in May and throughout the growing season. Our attempt with the hand pulling effort for 2016 was to go in early, hand pull the plants when they are small; go back and repeat our efforts and pull again in the same areas. This approach was able to control the majority of the 2016 emerging population.

Water Chestnut Control & Management Through the use of Physical Techniques

Team Members:

Joe Dyson, Alexandra Henderson, Geoffry Michaels, Peter Vitiello, Kiersten Williams

Photo by: Alexandra Henderson

Introduction and Background

Trapa Natans L., or more commonly known as Water chestnut, is an aquatic invasive species found in many waterways throughout New York including many in Oswego County. Water chestnuts originate from parts of Europe, Asia, and Africa and were brought over initially for aesthetic purposes. Water chestnuts out-compete native species of aquatic plants due to their nature to invade an area and spread quickly. Areas of concern include public access points especially if they are shallow with a soft sediment bottom. Once an invasive species becomes established in an area it can be very difficult to eradicate it completely. One very effective way to keep this species under control is through hand pulling methods. With Water chestnut being an annual plant, removing the plant before it can produce its chestnuts, next year's population would be diminished with effective pulling.

To help control the Water chestnut population in Oswego County, the Oswego County Soil and Water Conservation District has hired a team of five college interns to hand pull Water

chestnuts during the summer of 2016. Chemical treatments are used in areas where denser populations of chestnuts reside, however due to past chestnut removal; many areas have thinned out and do not require chemical treatment. Hand pulling is utilized in these areas to continue to remove the last of the residing Water chestnuts. The duration of this internship lasted ten weeks and covers waterways within Oswego County including areas such as the Oswego River, Rice Creek, Ox Creek, Sage Creek, Little Salmon River, Big Bay Creek, Salmon River, Oneida Lake, Grindstone Creek, and Oneida River. Our main objective is to control and reduce the population size of the invading Water chestnuts in areas to help maintain aquatic ecosystem dynamics as well as clear the waterways for recreational use for the public. An annual effort such as this would be beneficial in suppressing this species over the course of many years.

Methods and Results

Proper Technique is required for pulling Water chestnuts. For example, it is not necessary to pull the whole plant but failure to remove certain parts would allow for the survival of the plant in the years to come. One way to effectively pull Water chestnut is to snap the stem off right under the site where the nuts form which is located underneath the rosette that floats on the surface of the water. Should multiple rosettes be attached to a primary stem, it is advised to snap this stem low enough to capture all rosettes. Once collected into bags it is vital to drain the water out of them to get a more accurate reading for weight. Canoes were used in order to reach targeted sites. When needed, the handles of the paddles could hook onto the stem of the Water chestnut and allow us to pull it closer to the canoe instead of trying to maneuver to each plant. We also wore gloves to ensure protection from the sharp points on the chestnut and to allow us better grip on the stem itself. An average day of work consisted of about 6 hours of actual pull time due to the time required to travel and pack supplies each day during the 8 hour work day.

In order to ensure our safety we wore life jackets equipped with whistles. In case of emergencies, our canoes had an air horn located in the safety compartment. One person was designated as the safety officer that would stay on land and watch to make sure we were safe on the water. The safety officer's responsibility is to watch for storms, call the appropriate number in case of an emergency situation and stay alert at all times. The safety officer occasionally spoke to the public when approached and discussed the team's objectives and knowledge on Water chestnuts. A sign was placed roadside to designate where we are located in case of an emergency. While in the canoes we would also pick up trash that we saw floating on the surface.

We are all CPR certified and are confident swimmers.

Group Members from left to right: Kiersten Williams, Alexandra Henderson, Geoffry Michaels, Joe Dyson, Peter Vitiello

Over the ten weeks we pulled throughout the county, we collected a total of 6889.56 pounds of Water chestnuts. We have covered over 204 acres with a pulling rate of 33.77 pounds per acre. We pulled more each week due to the fact that Water chestnuts were growing more densely as the summer progressed, and water temperatures increased. Our data shows the amount we collected in pounds compared to the amount of acres we covered as seen below in *Figure A*. We analyzed and graphed the amount we collected in pounds per day as seen in *Figure B*. below.

We have recorded the amount of pounds pulled per acre and pounds pulled per day to show correlations between locations of interest and their Water chestnut coverage. For example, plot 1 is Battle Island and this plot has the highest Water chestnut density. We pulled much more Water chestnut during our time at that location due to the abundance and denseness of the invasive species. Overall we have found that there is an average of 40 pounds of Water chestnut per acre in the sites we went to. It is important to know these statistics to track the invasive plants population density throughout the years to come. Hopefully our efforts and the efforts of others will help in reducing the pounds of Water chestnut per acre in the years to come.

Hand pulling Water chestnuts, in order to keep the species from spreading further is important in keeping local aquatic ecosystems balanced. While working on the Oswego River we were able to experience seeing a variety of species that depend on the river in order for survival, these include; many species of birds such as duck, swan, geese, Great Blue heron, Bald Eagle, along with fish species such as carp, Longnose Gar, small water mammals, and numerous types

of insects. It may be of interest in the areas surrounding Selkirk state park to know that there were numerous reports of volunteers being stung by an unknown aquatic insect. Many local property owners that allowed us to use their launch sites often discussed the importance of pulling Water chestnuts, allowing us to spread the word about invasive species and how to control them.

Recommendations

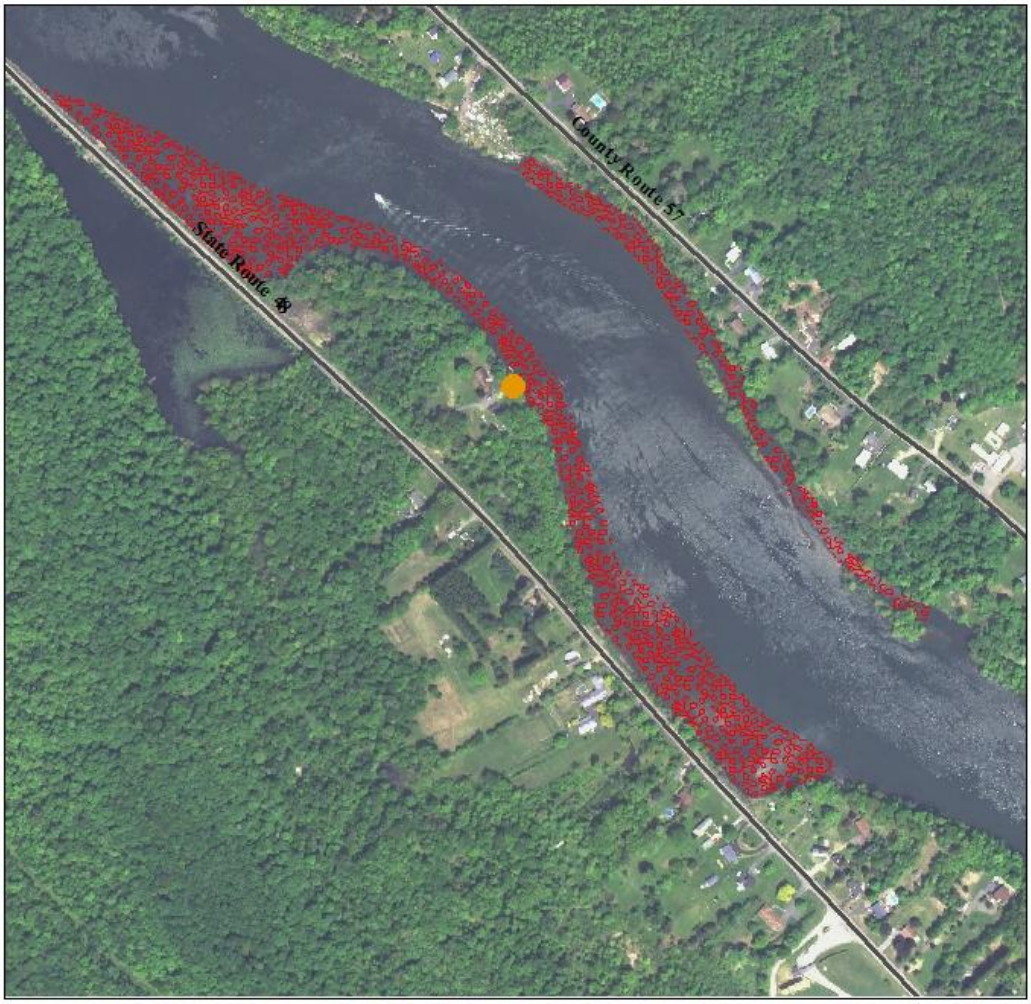
In the future it would be helpful to increase the size of the Water chestnut team to increase the amount pulled in a shorter period of time per site. This would also allow us to split up and cover more surface area. More community involvement would be beneficial in stopping the long-term spread of the Water chestnuts by covering more surface area as well. The more awareness of this invasive species that gets spread to the general public, the more we can come together as a community to help stop this species from spreading and taking over local waterways. This effort will encourage and help in motivating others to join the effort in controlling the aquatic invasive plant species known as Water chestnut.

Gratitude

We would like to extend a personal thank you to all of the property owners and land managers, that allowed us to use their waterfront properties to launch our canoes and for all the support and interest on the subject. Thank you to the Oswego County Soil and Water Conservation District for putting this effort together.

Financial support for this program was supported by the Finger Lakes - Lake Ontario Watershed Protection Alliance (FLLOWPA), the Great Lakes Restoration Initiative and New York State Senator Patty Ritchie.

Minetto, Oswego River
Water Chestnut Pull Locations 2016



1 inch = 500 feet

N

Legend

Water chestnut Locations

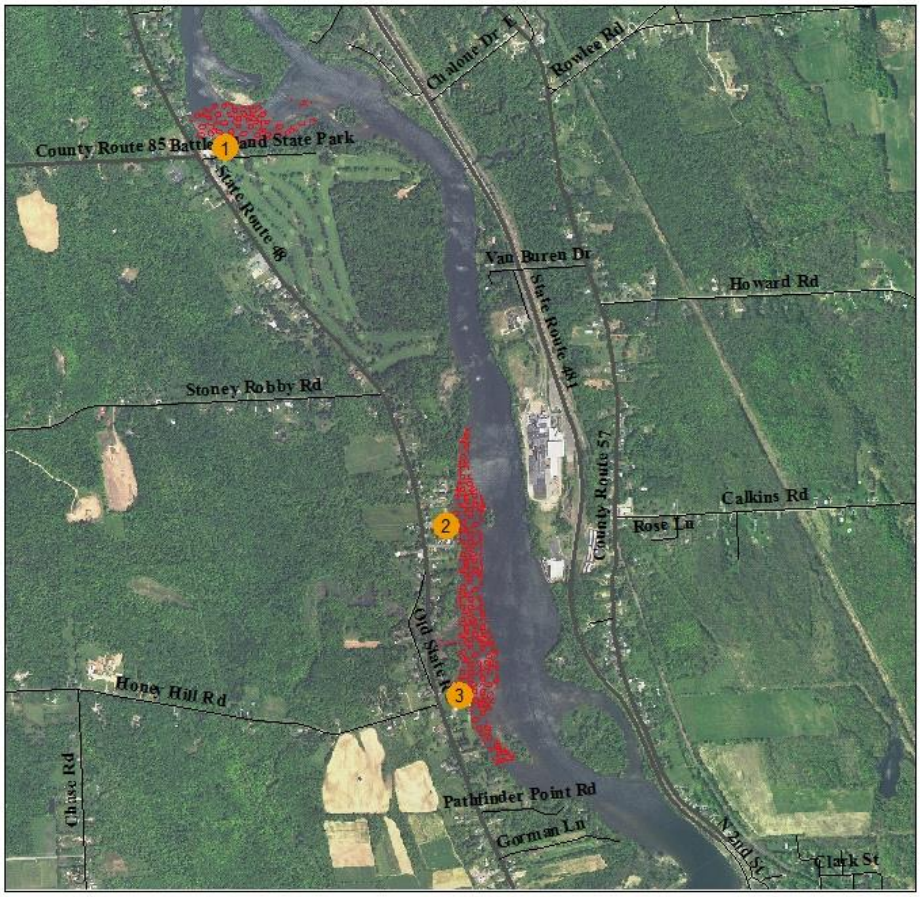
Launch Site

Disclaimer:

The GIS map above is comprised of shapefiles obtained from the Office of Oswego County Real Property, Oswego County Department of Tourism, Planning and Community Development, and the NYS GIS Clearinghouse. The accuracy of the data is not guaranteed. This map is not a survey and is intended for planning purposes only.

July 2016
Oswego County Soil and Water Conservation District

Northern Oswego River
WaterChestnut Pull Locations 2016



1 inch = 1,833.333333 feet

Legend

Waterchestnut Locations

Plots

N

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July 2016
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Plot 1: Battle Island

Plot 2: Route 48 Trailer Park

Plot 3: Bob Tetro

Oswego River Plots 4 and 5
WaterChestnut Pull Locations 2016

1 inch = 1,500 feet

Legend

Waterchestnut Locations

Plots

N

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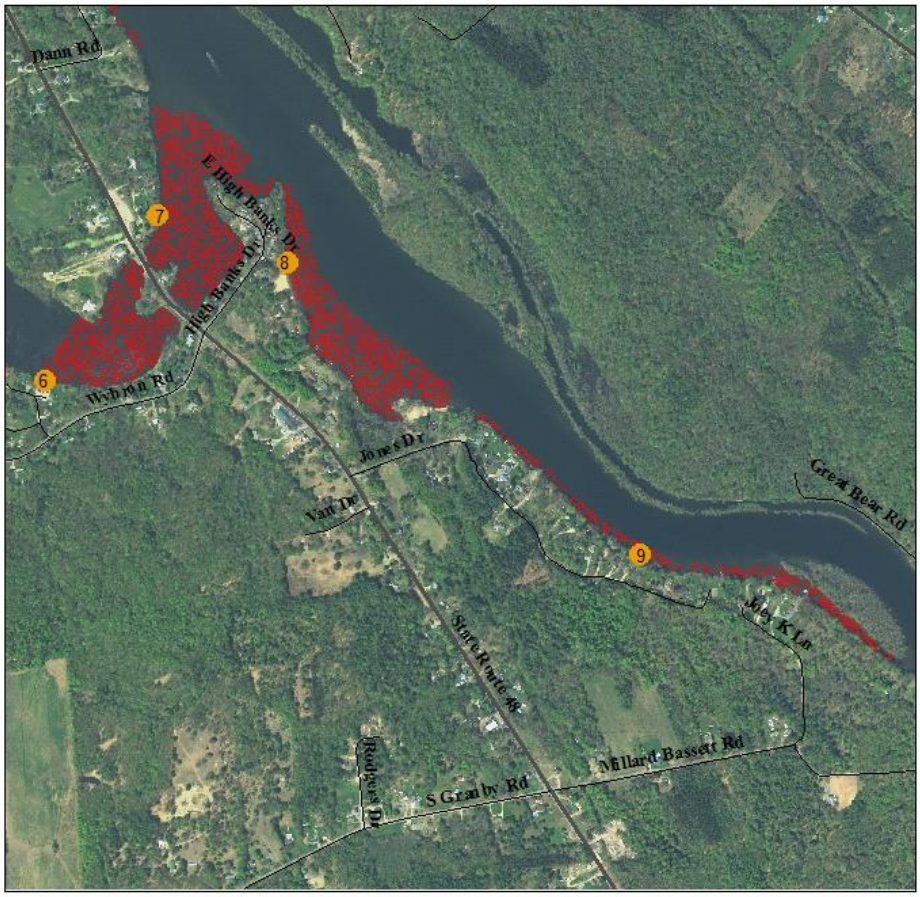
Plot 4: Aspen Cove

Plot 5: Sandy Ware

Ox Creek and Southern Oswego River
Water Chestnut Pull Locations 2016



1 inch = 1,000 feet

N

Legend

Water chestnut Locations

Plots

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Plot 6 & 7: Ox Creek

Plot 8: Bill Baum

Plot 9: Joe Kempston

Grindstone Creek
Water Chestnut Pull Locations 2016

1 inch = 125 feet

Legend

Water Chestnut Locations

Launch Points

N

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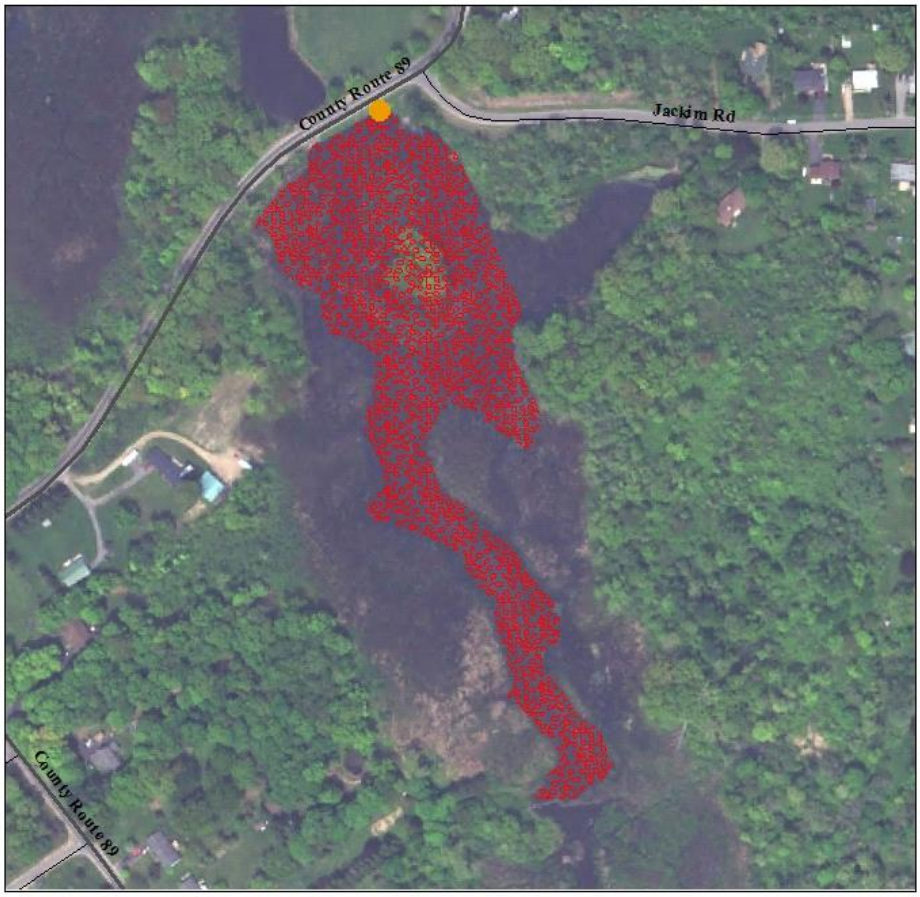
Plot: Grindstone Creek

Rice Creek
Water Chestnut Pull Locations 2016



1 inch = 250 feet

N

Legend

Water Chestnut Locations

Launch Points

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July 2016
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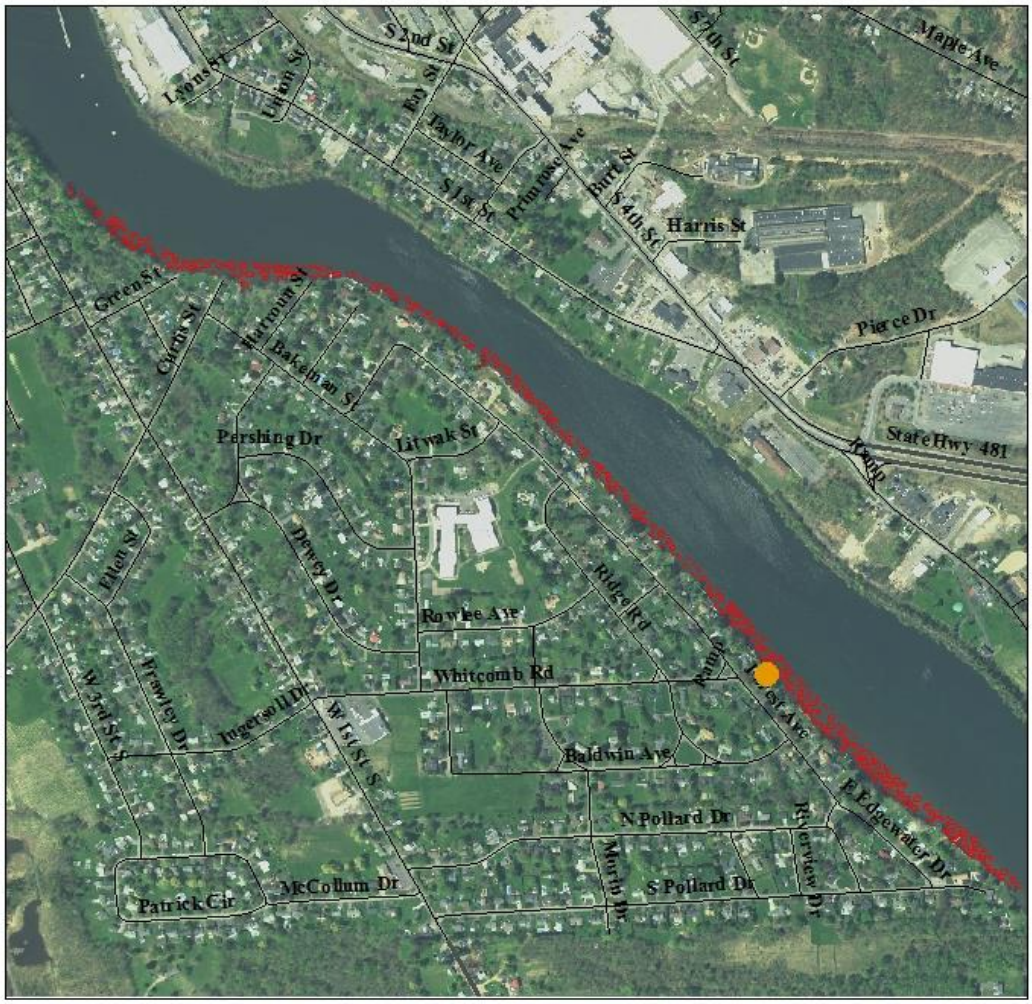
Plot: Rice Creek

Forest Ave, Oswego River
Water Chestnut Pull Locations 2016



1 inch = 850 feet

N

Legend

Water chestnut Locations

Launch Site

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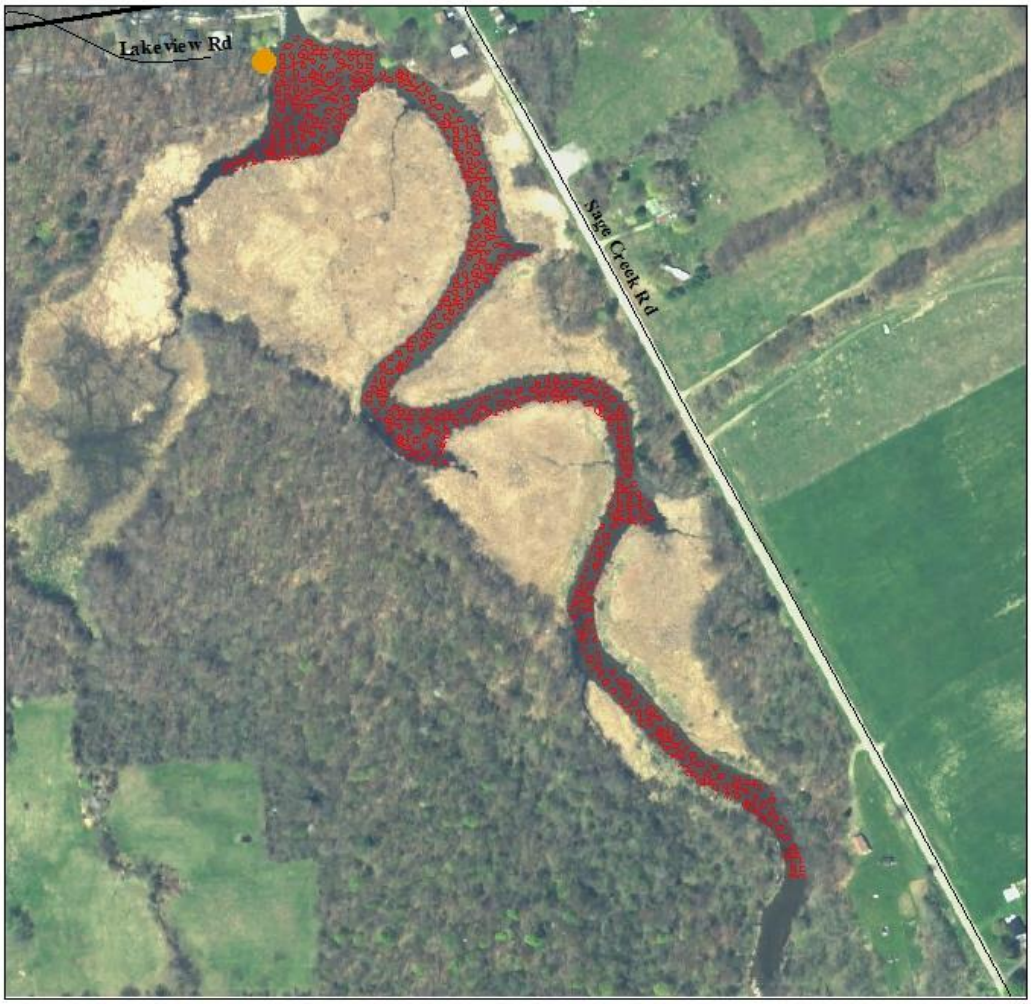
Sage Creek
Water Chestnut Pull Locations 2016



1 inch = 350 feet

N

Legend

Water chestnut Locations

Launch Site

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Oneida Lake
Water Chestnut Pull Locations 2016

1 inch = 500 feet

N

Legend

Water chestnut Locations

Launch Site

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July 2016
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Oneida River
Water Chestnut Pull Locations 2016

1 inch = 300 feet

N

Legend

Water chestnut Locations

Launch Site

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July 2016
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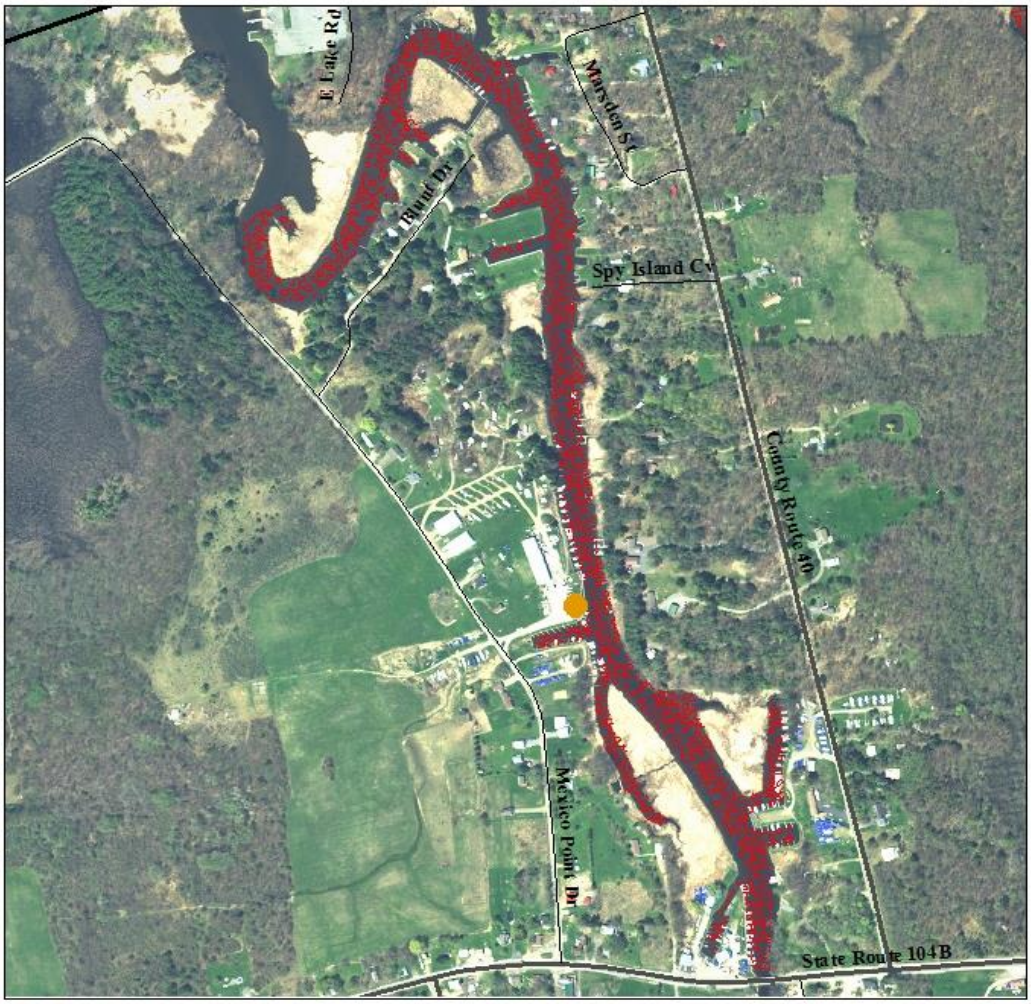
Little Salmon River
Water Chestnut Pull Locations 2016



1 inch = 650 feet

N

Legend

Water chestnut Locations

Launch Site

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Results of 2016 Water Chestnut Hand Pulling Effort

Location	Plots	Acres	Pounds (lbs)	Days on site	Pounds/Day	Pounds/Acre
Battle Island	1	16	2260.06	5	452.01	141.25
Bob T. / Trailer Park	2 & 3	38	690.50	5	138.10	18.17
Aspen Cove	4	12	1523.98	4	381.00	127.00
Sandy Ware	5	4	188.44	0.5	376.88	47.11
Ox Creek	6 & 7	28	897.82	4	224.46	32.07
Bill's Beach	8	15	761.74	3	253.91	50.78
Joey K. Lane	9	6	84.26	0.5	168.52	14.04
Grindstone Creek		4	305.52	1	305.52	76.38
Rice Creek		6	177.24	1.5	118.16	29.54
Forest Ave		13	40.44	1	40.44	3.11
Minetto		16	967.12	3	322.37	60.45
Sage Creek		5	89.00	1	89.00	17.80
Oneida Lake		17	380.00	2	190.00	22.35
Oneida River		3	211.84	1	211.84	70.61
Little Salmon River		21	420.00	1	420.00	20.00
Total		204	6889.56	29.5	233.54	33.77

Figure A

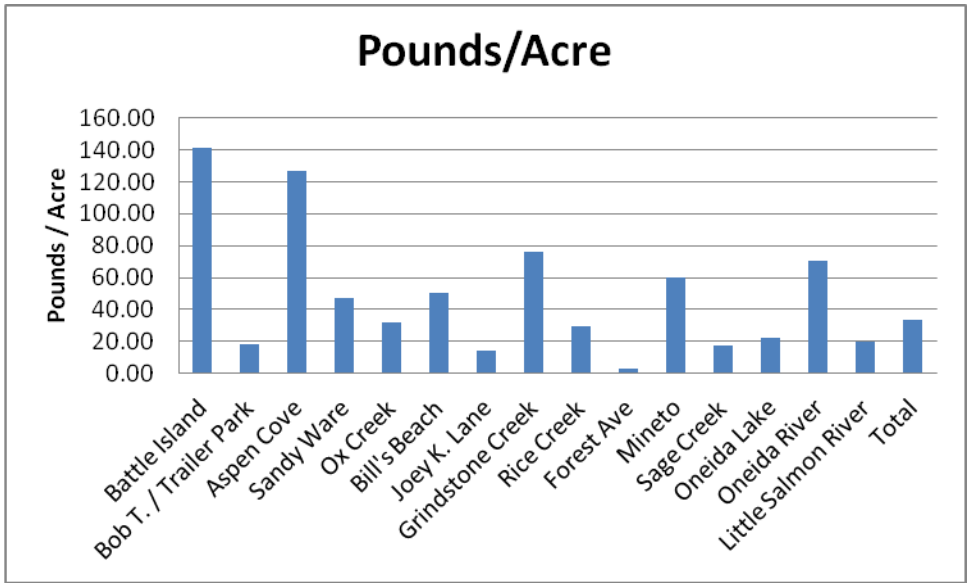

Figure B