NEW YORK STATE WATER RESOURCES INSTITUTE
Cornell University

Region 7 Aquatic Invasive Species Program

Cayuga Lake

2025

Prepared by:

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Bureau of Invasive Species and Ecosystem Health, Invasive Species Coordination Section
in cooperation with NYS Water Resources Institute at Cornell University

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Executive Summary

Aquatic invasive species (AIS) are non-native plants, animals or pathogens that have the potential to cause harm to the environment, economy, or human health once introduced. Negative impacts of AIS can include competition with native species for habitat and food resources, predation on native species, and impairment of water quality.

In 2015, the New York State Department of Environmental Conservation (NYSDEC) published the NYS Aquatic Invasive Species Management Plan, outlining existing regulations and detailed actions for prevention, surveillance, response, and capacity. Since then, numerous state and federal programs, Partnerships for Regional Invasive Species Management (PRISMs), and non-governmental organizations have carried out activities to meet the goals of this plan, but capacity for conducting AIS monitoring and control projects was still limited. To meet this need the NYS AIS Management Program initiated regional coordinators in 2022.

Program Introduction

The Region 7 AIS Program represents a partnership between New York State Water Resources Institute and the Invasive Species Coordination Section (ISCS) of the NYS Department of Environmental Conservation Division of Lands and Forests. WRI is a federally and state mandated institution housed within Cornell University's Department of Biological & Environmental Engineering in the College of Agriculture and Life Sciences with a mission to advance water resource management and address critical water resource problems in New York State and the nation. We build towards this mission by leveraging our unique access to scientific and technical resources at Cornell University to conduct and support research on emerging water resource issues like aquatic invasive species, collaborate with resource managers and policymakers, and promote water literacy with the public. WRI hosts regional staff for other water resource programs, including the Hudson River Estuary Program, the Great Lakes Program, the Mohawk River Basin Program, and regional AIS coordinators in DEC Regions 3, 5, 6, 7, and 9.

Site and Project Background Information

Cayuga Lake is the longest Finger Lake in NYS at 38.9 miles long, and 3.5 miles across at its widest point with a total surface area of approximately 66 sq miles. *Hydrilla verticillata*, a federally listed noxious weed, was first discovered in 2011 in the southern inlet of Cayuga Lake, in Ithaca NY. It has since been detected in other parts of Cayuga Lake: the Wells College Boat House (Aurora NY) (2016), a marina in Kings Ferry, NY (2018), a Marina in Lansing NY and Myers Park (2019) and near Sheldrake Point (2022). In response to the increase in hydrilla detections, local stakeholders and government agencies partnered together to form the Cayuga Lake Hydrilla Task Force and create the "Cayuga Lake Hydrilla Management Plan 2021-2026". This plan relies heavily on adaptive management to address new detections. This management plan outlines strategies for monitoring, management, and education and outreach. The plan allows for agencies and stakeholders involved to remain flexible and adjust plans as needed to address changes in priorities or changes in treatment outcomes.

In 2025 the NYS DEC and US Army Corps of Engineers (USACE), along with USFWS and FL PRISM, coordinated control and monitoring of hydrilla throughout Cayuga Lake. In 2025 NYS DEC monitored four sites for hydrilla and other submerged aquatic vegetation. These sites include Sheldrake, Long Point, Canoga Island, and the Myers Park/Lansing Harbor/ Ladoga Bay area.

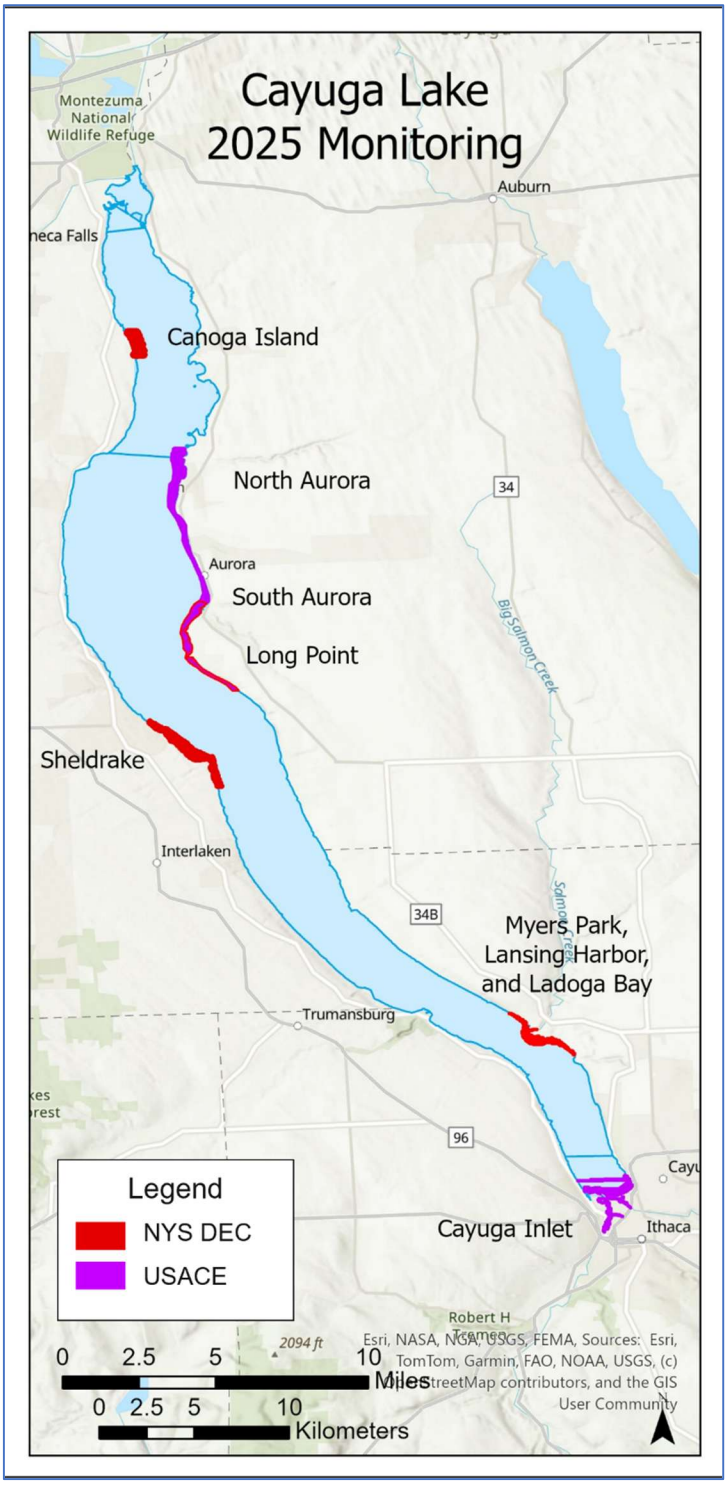

Figure 1. Map of Cayuga Lake Monitoring Sites.

In addition to monitoring, NYS DEC oversaw the application of herbicide to control hydrilla at four sites, with the Regional AIS coordinator, a certified application in 5A (aquatic vegetation) performing applications at two of the sites (Long Point and Myers Park/Ladoga/Lansing Harbor.

Hydrilla verticillata

Hydrilla verticillata, also known as water thyme, is an aquatic plant originally from Asia. It is believed that it was brought to the US through the aquarium trade.

Hydrilla is a federally listed noxious weed and is prohibited for sale in New York and prohibited from movement between states. Hydrilla was first discovered in NYS in Orange County in 2008 and has subsequently been found throughout the state.

Identification and Reproduction:

Hydrilla can become established in most bodies of water, including wetlands, streams and lakes.

The leaves of hydrilla grow in whorls of 4-8 around the center stem are serrated along the edges, depicted in **Figure 2**. Hydrilla can quickly grow up to one inch per day.

Hydrilla reproduces through tubers and turions. Tubers and turions are the reproductive over wintering structures produced by the plant in the late summer and early fall. Tubers store energy and will stay in sediments where they will sprout the following spring. They can remain viable in the sediment for up to 7 years.

Hydrilla can also spread by fragmentations to new locations through water currents, boats, or trailers it can quickly become established.

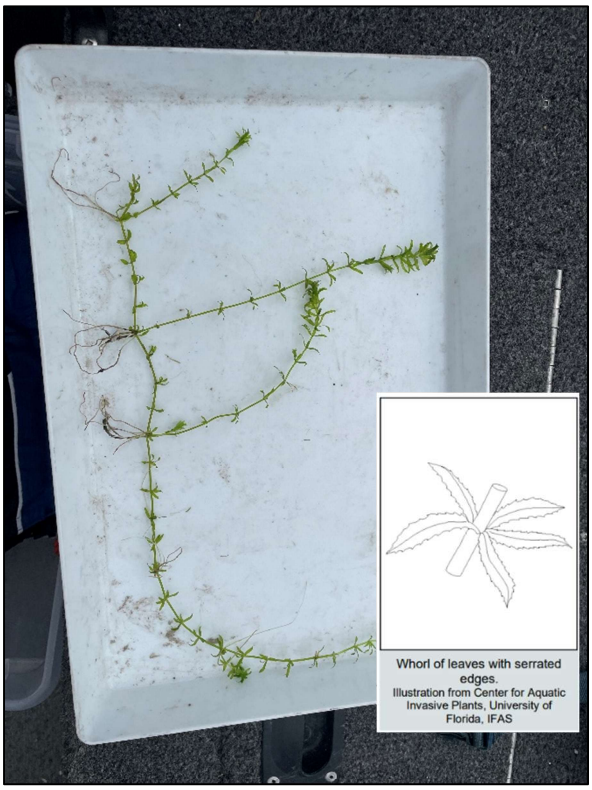

Figure 2. Hydrilla identification

Environmental and Economic Impacts:

Due to the rapid and dense growth of hydrilla, it can easily crowd out native vegetation and reduce biodiversity in an infested area. The loss of native species can have an impact on native fish and wildlife, who rely on aquatic vegetation for food and shelter from predators. This dense plant growth can get caught in boat motors and make paddling though heavily infested areas very difficult. The dense vegetation can also negatively impact swimming and fishing activities. Waterfronts that rely on tourism as a source of income can be greatly impacted when hydrilla becomes so dense that these recreational activities are impeded.

Figure 3. Left – Patch of hydrilla observed in Cayuga Lake. Hydrilla in this area is the only species present, excluding a trace amount of native eel grass. Center- close up of hydrilla observed in Cayuga Lake. Right – Region 7 AIS Team members surveying for hydrilla on Cayuga Lake.

Control

Many options exist for hydrilla control, however, only a few are appropriate for the management scale in Cayuga Lake.

- *Manual/ Mechanical* – removal of hydrilla using a mechanical harvester or hand pulling is not recommended due to the size and depth of hydrilla patches in Cayuga Lake and the ability for it to spread via fragmentation. Diver Assisted Suction Harvesting (DASH) has been utilized in Cayuga Lake but was not found to be effective at control due to fragmentation.
    - *Dredging* – Dredging, or the removal of the sediment of an area has been successful in some situations. It was successfully used to control hydrilla at a private marina in Kings Ferry NY (Cayuga Lake) in 2019. Dredging feasibility can be limited by the location and size of the project site. This would not be a viable option for a large deep patch of hydrilla due to cost and feasibility.
- *Benthic barriers* – a benthic barrier is a large mat that is placed and secured to the bottom of the waterbody. Benthic barriers cannot exceed over 1 acre in size and must be removed seasonally. Due to the depth and size of the hydrilla infestations, benthic barriers are not recommended.
- *Biocontrol* – Sterile grass carp have been used as a bio control in small, isolated ponds in NYS, however due to Cayuga Lake's large size and connectivity to other water bodies, grass carp are not recommended. Currently there are no other viable biocontrol options.
- *Chemical* – There are a number of NYS and EPA approved herbicides for use on hydrilla in NYS. More information about the herbicides used can be found in the **Invasive Species Control** section of this document (*page 12*).

Aquatic Ecosystem Monitoring

Methods

To determine sample point locations on a water body or area of interest, a 25 m^2 or 50 m^2 grid was laid over an aerial map of the pre-determined area, with points being generated at the center of each grid square. 25m grids are used in areas with known hydrilla detections. The 50m grid was used to monitor all other areas. Only sample points that fell within <30' depth were used in field data collection. Adjustments were made in the field as needed. If points were located >30' no sample was taken under the assumption that little to no plant growth would occur at this depth. Sample points were also eliminated if they fell on land or were inaccessible (too shallow for motorized boat access, typically less than 1.5' or within private docks and marinas). Field staff would navigate to each pre-determined point using a GPS unit. Examples of sample point distribution can be seen in **Appendix A** and **Figure 8**.

Figure 4. Region 7 AIS strike team member pictured with a "dense" rake of submerged aquatic vegetation.

To collect SAV data, at least 2 rake tosses were performed at each monitoring point, with subsequent tosses occurring if species composition varied between the two original rake tosses. Tosses would continue at each point until no new species were detected. Typically, at least 3-4 rake tosses were done at each vegetated point. Individual species density estimates were averaged to yield a single record per sample location. Density is recorded using the following scale: Zero (0), Trace (1), Sparse (2), Moderate (3), and Dense (4) (**Figure 5**). Data is recorded using the Simple Aquatic Survey-Pro Survey in Survey123, developed and managed by the New York Natural Heritage Program for iMapInvasives. Visual observations were also made outside of rake tosses. These observations often included floating vegetation, such as water chestnut and European frogbit, or vegetation that is found when monitoring streams where rake tosses were not appropriate to collect data.

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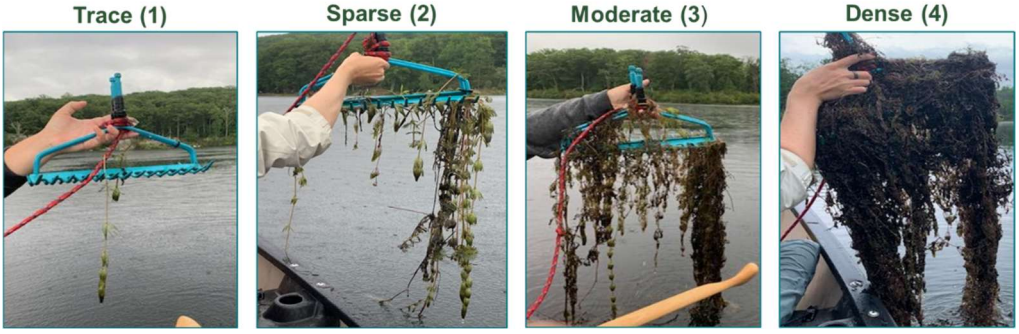

Figure 5. Visual representation of overall rake density. Photo credit, Lindsay Yoder, Aquatic Invasive Species Coordinator, Region 9

Results

In total, 2,380 points were sampled for submerged aquatic vegetation by the Region 7 AIS team on Cayuga Lake during the 2025 field season. Out of the sampled points, 1788 contained vegetation (**Table 1**). The number of points and acres covered at each monitoring site is outlined in **Table 2**. This year the Region 7 AIS team covered 638 surface acres. Overall, 24 species were observed, including 1 species of unidentified pondweed and 1 unknown species. Of the 24 species observed, 5 are considered invasive. The invasive species from most to least common included starry stonewort, Eurasian water milfoil, curly leaf pondweed, hydrilla, and brittle naiad with 2 observations. The most common native species included eel grass, coontail, Sago pondweed, Richardson's pondweed, and leafy pondweed. Overall species density and composition are detailed in **Figure 7**. In addition to species composition, overall rake density is also mapped to provide a visualization of vegetation distribution and density (**Figure 8**).

This year, fewer points were sampled compared to 2024 (6,230 points) due to a change in program priorities, including having the regional AIS team perform herbicide applications. Additionally, fewer locations were monitored by the region 7 team, from 12 sites in 2024 to 4 in 2025.

The Ladoga Bay site had about 520 monitoring points added due to hydrilla detections in 2024. This allowed the regional team to better delineate plants within the Bay and gain a better understanding of the hydrilla distribution to develop a treatment plan for the upcoming season.

Overall Rake Density	Value	# of points	point % total	% veg total
No Plants	0	592	24.9%	
Dense	4	102	4.3%	5.7%
Moderate	3	284	11.9%	15.9%
Sparse	2	810	34.0%	45.3%
Trace	1	592	24.9%	33.1%
total points		2380		100.0%
Veg total Points		1788		75.1%

Table 1. Summary of overall rake density recorded at Cayuga Lake during 2025 monitoring season.

Location	# PIS Points	Acres
Sheldrake	1319	258
Lansing Harbor, Myers Park Marina, and Ladoga Bay	721	211
Canoga Island	162	117
Long Point	183	52
total	**2380**	**638**
North and South Aurora/ Long Point (w/ USACE, USFWS, and FLPRISM	3134	865

Table 2. The sites and number of acres monitored by NYS DEC Regional AIS Field team during the 2025 field season. NYSDEC provided assistance to USACE to monitor the North and South Aurora and Long Point areas.

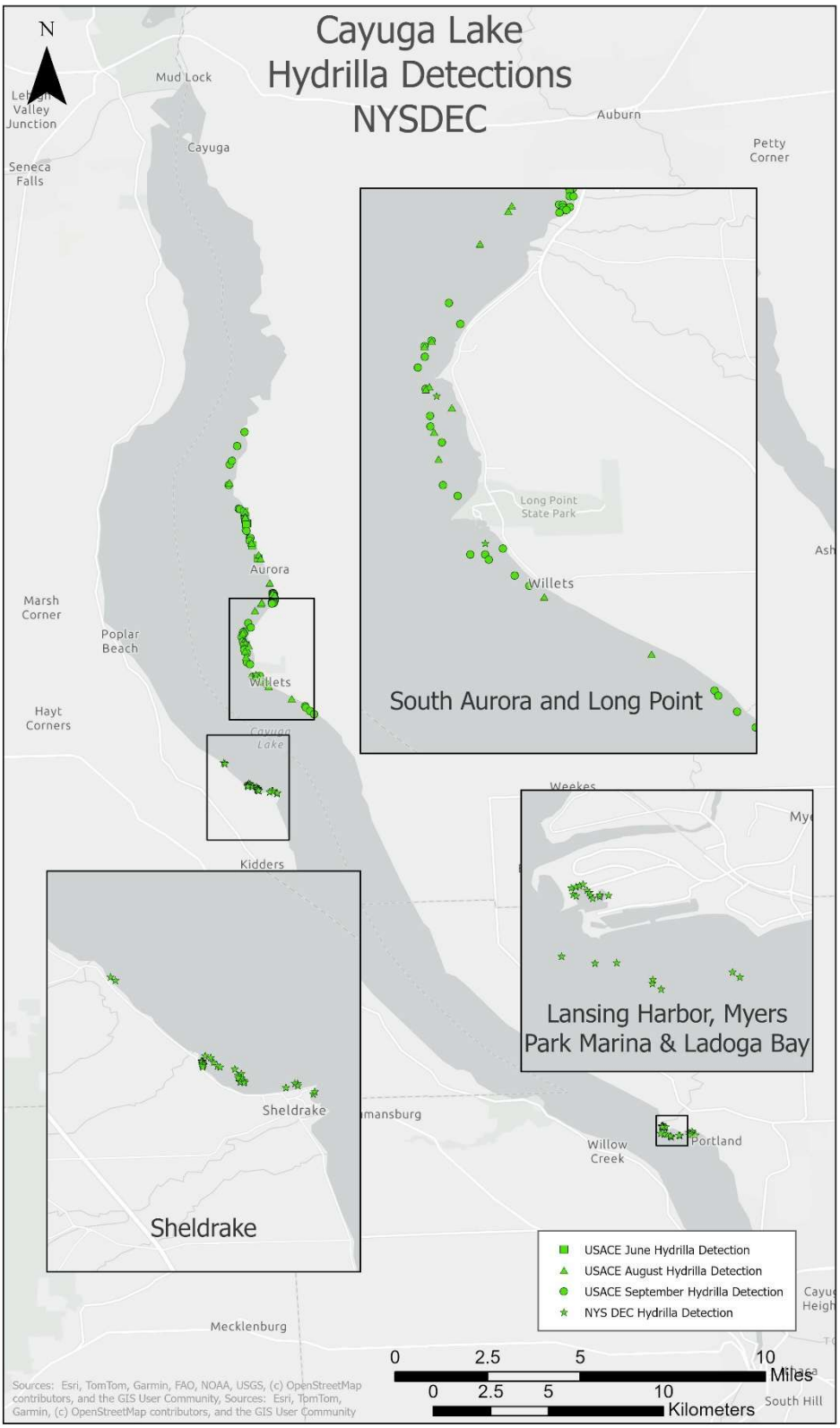

Figure 6. Map of Hydrilla verticillata detections made by USACE and NYS DEC during 2025 monitoring events. NYS DEC monitored the Sheldrake, Lansing Harbor, Myers Park Marina, and Ladoga Bay areas. USACE, in collaboration with USFWS, FLPRISM, and NYSDEC monitored both the South and North Aurora Areas and the Cayuga Inlet.

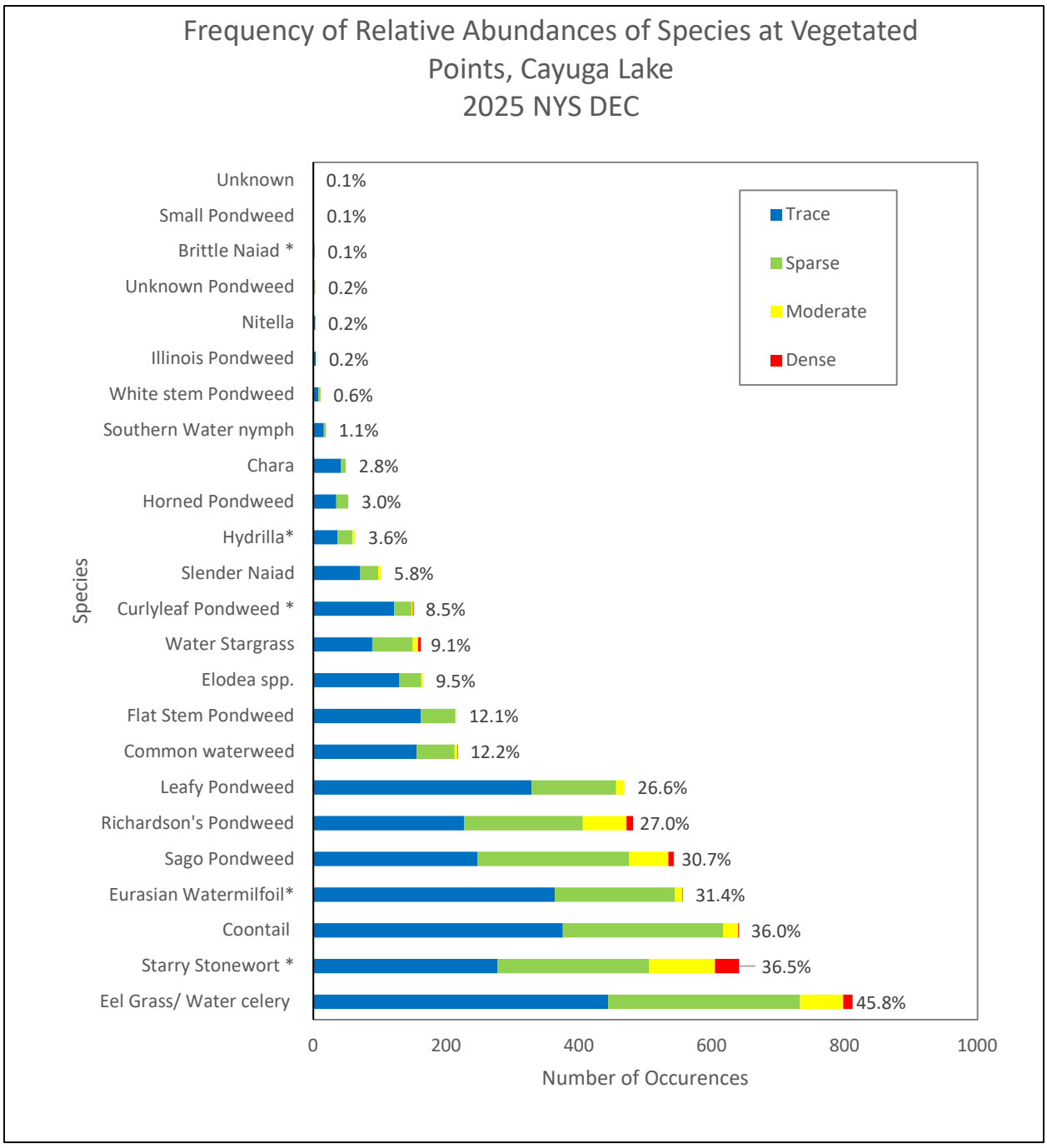

Figure 7. Frequency of relative abundance of species at vegetated points at select locations in Cayuga Lake. Locations include Sheldrake Point, Long Point, Canoga Island, and Lansing Harbor, Myers Park Marina, and Ladoga Bay. Percentage represents the frequency that each species was observed on a vegetated rake toss. Ex – 45.8% of rake tosses with vegetation contained eel grass.

**Indicates invasive species.*

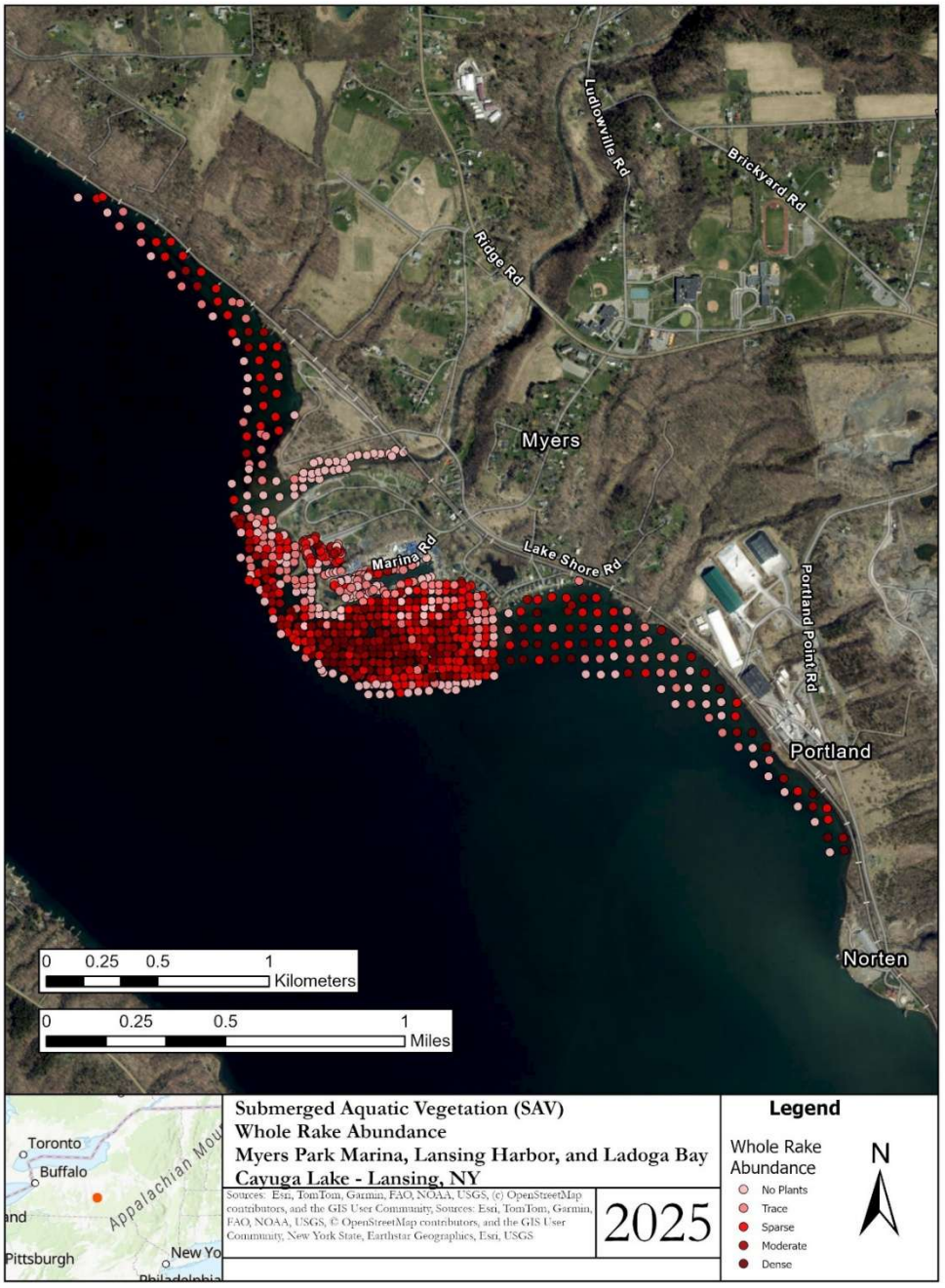

Figure 8. Map of overall rake abundance at Myers Park Marina, Lansing Harbor, and Ladoga Bay. Darker points represent high vegetation density.

Additional whole rake abundance maps and species composition graphs located in appendix A and appendix B, respectively.

Invasive Species Control

The Sheldrake area was managed in response to hydrilla detections by AIS Strike team staff and FLPRISM monitoring. In 2025 a total of 222.9 acres were managed by NYS DEC via herbicide application over 4 different defined areas. Control areas include South Aurora, Long Point, Sheldrake Point, and Lansing Harbor, Myers Park Marina, and Ladoga Bay (**Figure 7 & Appendix C**). Additionally, USACE coordinated herbicide application in 2 locations, the North Aurora Area and Cayuga Inlet (**Figure C9** and **Figure C10**).

Location	Area (acres)
South Aurora	141.5
Sheldrake	28.7
Long Point	30
Lansing Harbor, Myers Park Marina, Ladoga Bay	22.7
NYSDEC Total:	**222.9**
North Aurora (USACE)	71.9
Cayuga Inlet (USACE)	17
Total (USACE)	**88.9**
Total (Full Lake)	**311.8**

Table 3. Hydrilla control sites and surface acre coverage.

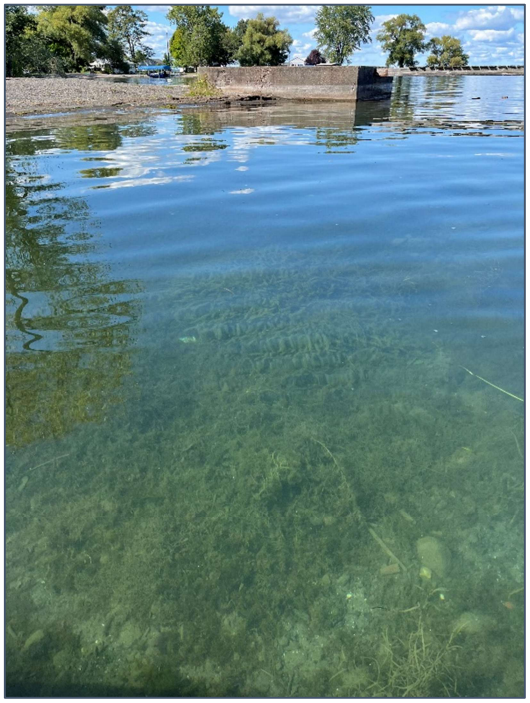

Figure 9. Hydrilla patch located at the Sheldrake Boat Launch

The herbicide used to control hydrilla, Sonar H4C (active ingredient of fluridone) is a selective systemic herbicide. Fluridone is taken up by the roots of aquatic vegetation and then travels to other parts of the plant. The herbicide acts by inhibiting photosynthesis, causing affected plants to turn white (chlorosis) and eventually die. For Sonar H4C to be fully effective, low concentrations of the herbicide must be maintained over an extended period of time, typically 30-90 days. In order to maintain low concentration over the specified time period, a series of applications are performed weekly over a period of 10 consecutive weeks. Applications began on 6/25/25 and concluded on 9/29/2025. Start and end dates of applications varied throughout different locations on Cayuga Lake due to permitting timelines, funding, and herbicide availability. **Figure 10 and Table 3** outline the Sonar H4C treatment areas across Cayuga Lake.

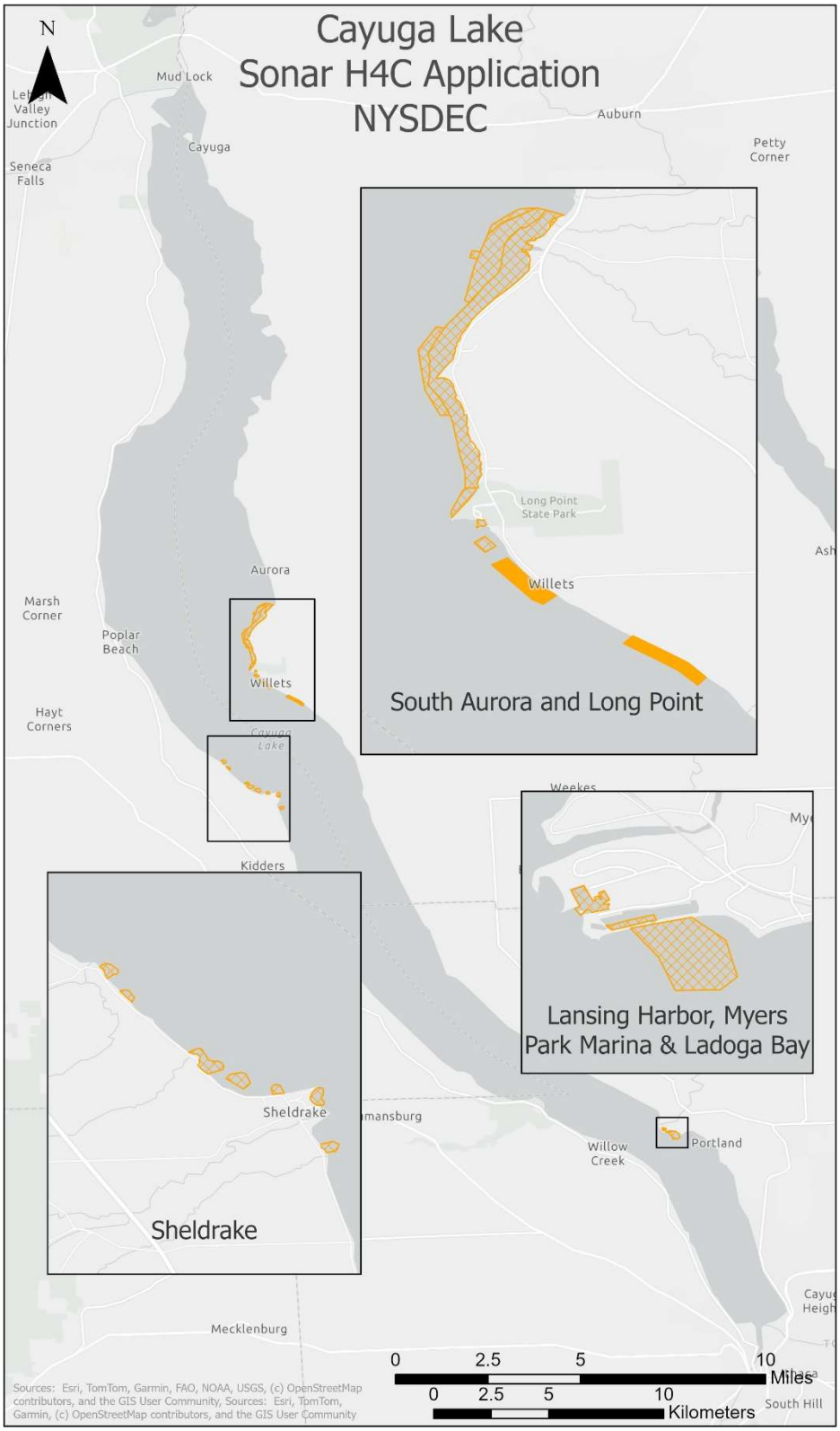

*Figure 10. Areas treated using Sonar H4C by NYS DEC (Contractors) and the regional AIS Coordinator Sonar application areas are depicted in orange. *USACE application sites are not depicted.*

To abide by product label and Aquatic Pesticide Use Permit conditions water samples were collected within the treatment zone and 0.5 miles south and 0.5 miles north of the application area. Samples were collected using Gold Standard ELISA kits and are analyzed by Community Science Institute (CSI), located in Ithaca NY. Water samples within the treatment areas are needed to determine if the desired herbicide concentrations are being maintained. Water samples collected outside of the application area are needed to determine if water use restrictions listed on the product label can be lifted. Water samples were collected 24-48 hours after each Sonar H4C application the by the Regional AIS Team, contractor, or partner.

***Results and maps of individual sample locations are in appendix* D.**

Figure 11. Van Dorn Sampler used to collect deep water samples.

In Addition to Sonar H4C, supplementary Harpoon granular applications occurred as spot treatment to manage hydrilla present during August monitoring events (**Figure 12**) and hydrilla patches that were found outside of the initial treatment area. Applications were made in the Myers Park Marina, Ladoga Bay, Long Point and South Aurora. Harpoon application areas are outlined in **Figure 12.** Maps of individual locations can be found in **Appendix C**.

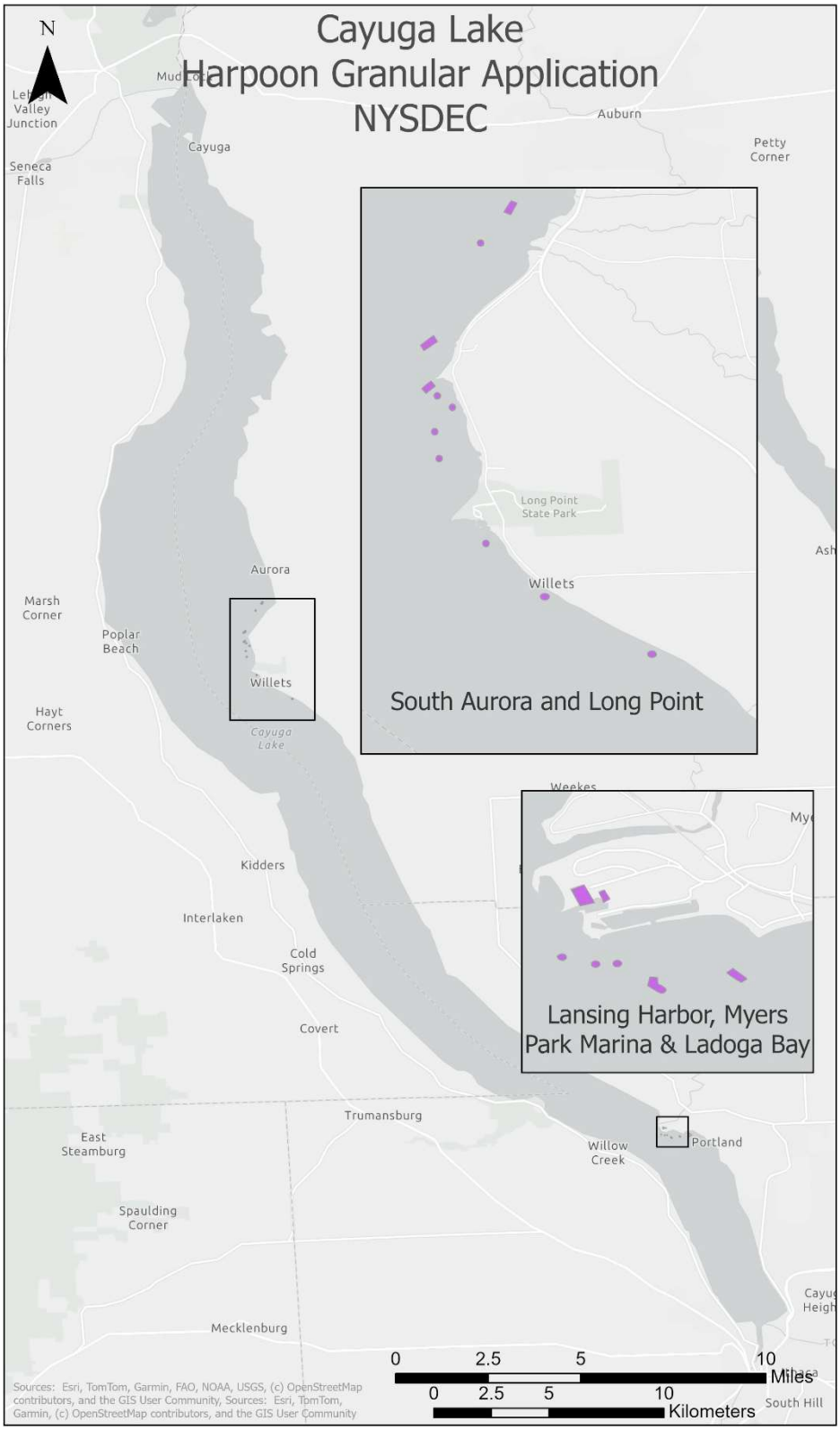

Figure 12. Harpoon granular application Locations in Cayuga Lake. Harpoon Granular was applied in the Myers Park Marina, Ladoga Bay, South Aurora, and Long Point.

Looking Forward

In 2026, USACE will be stepping down from coordinating treatments but will still provide technical support in the form of monitoring and advisement on management. Control and monitoring for hydrilla will continue in 2026 with DEC now acting as the lead agency on the project. In 2026, NYS DEC will be treating the North Aurora and Cayuga Inlet Areas in addition to the areas treated in 2025 (South Aurora, Sheldrake, Long Point, and Myers Park Marina/ Lansing Harbor/ Ladoga Bay). The regional AIS team will continue to collaborate with DEC ISCS, USACE, FLPRISM, and USFWS.

The NYS DEC regional AIS Team will continue to monitor active control and early detection sites with the assistance of FLPRISM. Early detection monitoring will be focused on the northern end of Cayuga Lake, where hydrilla has the highest potential to become widely established due to shallow water depth and the proximity to the Seneca-Cayuga Canal.

Information about future treatments plans will be posted on the project website:

Cayuga Lake Hydrilla Control Project

Scan QR code to view the Region 7 Project Webpage

The Cayuga Lake Hydrilla Management Plan (2021- 2026) will be revised by the Cayuga Lake Hydrilla Task Force in 2026 to reflect changes and current conditions.

Appendix A: Whole rake abundance of SAV at 2025 monitoring sites.

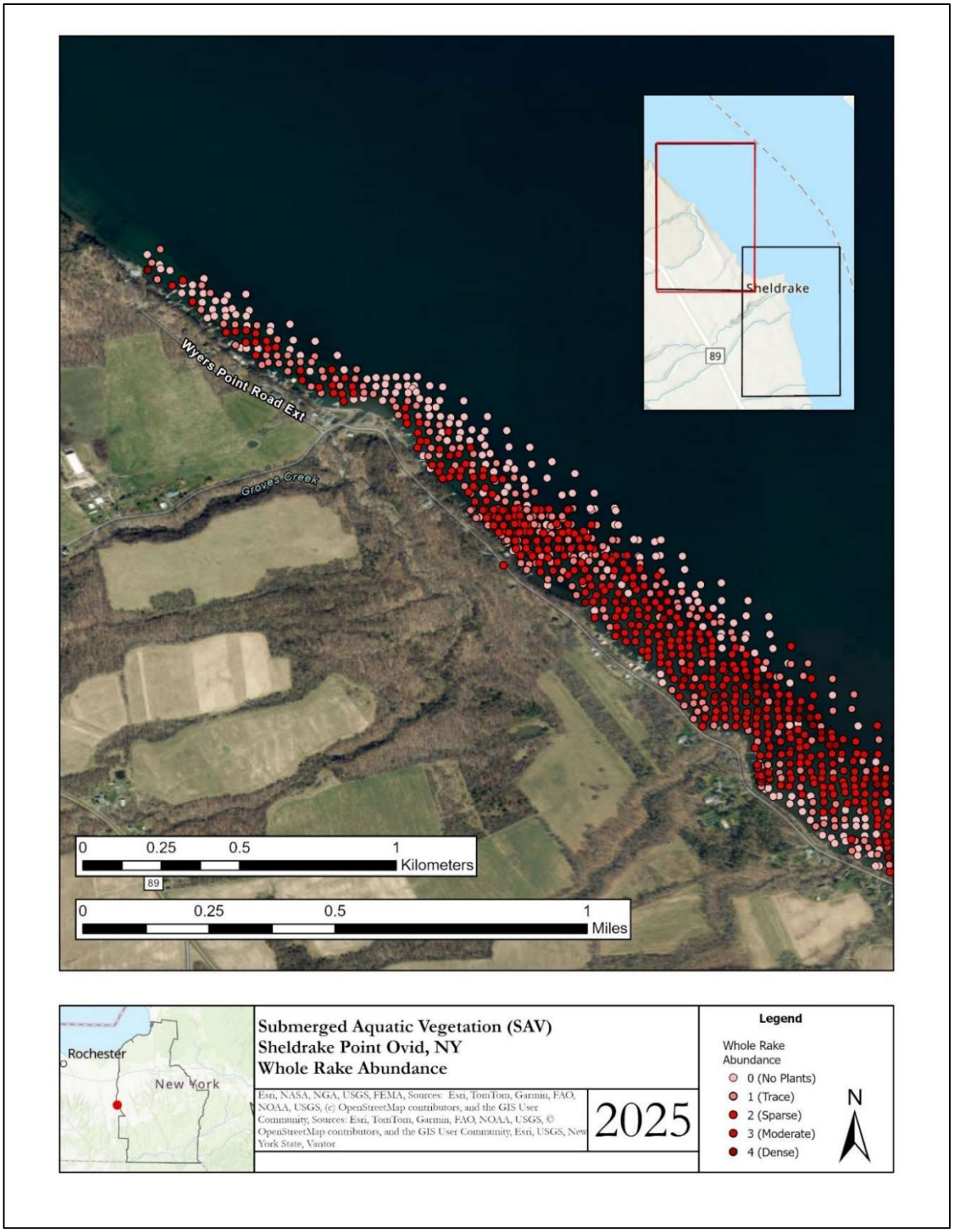

Figure A 1. Map of whole rake abundance at Sheldrake Point at Cayuga Lake (Ovid, NY). Data was collected from 7/3/2025 to 9/25/2025 by the Region 7 AIS team. Darker points represent higher vegetation density. Map 1 of 2.

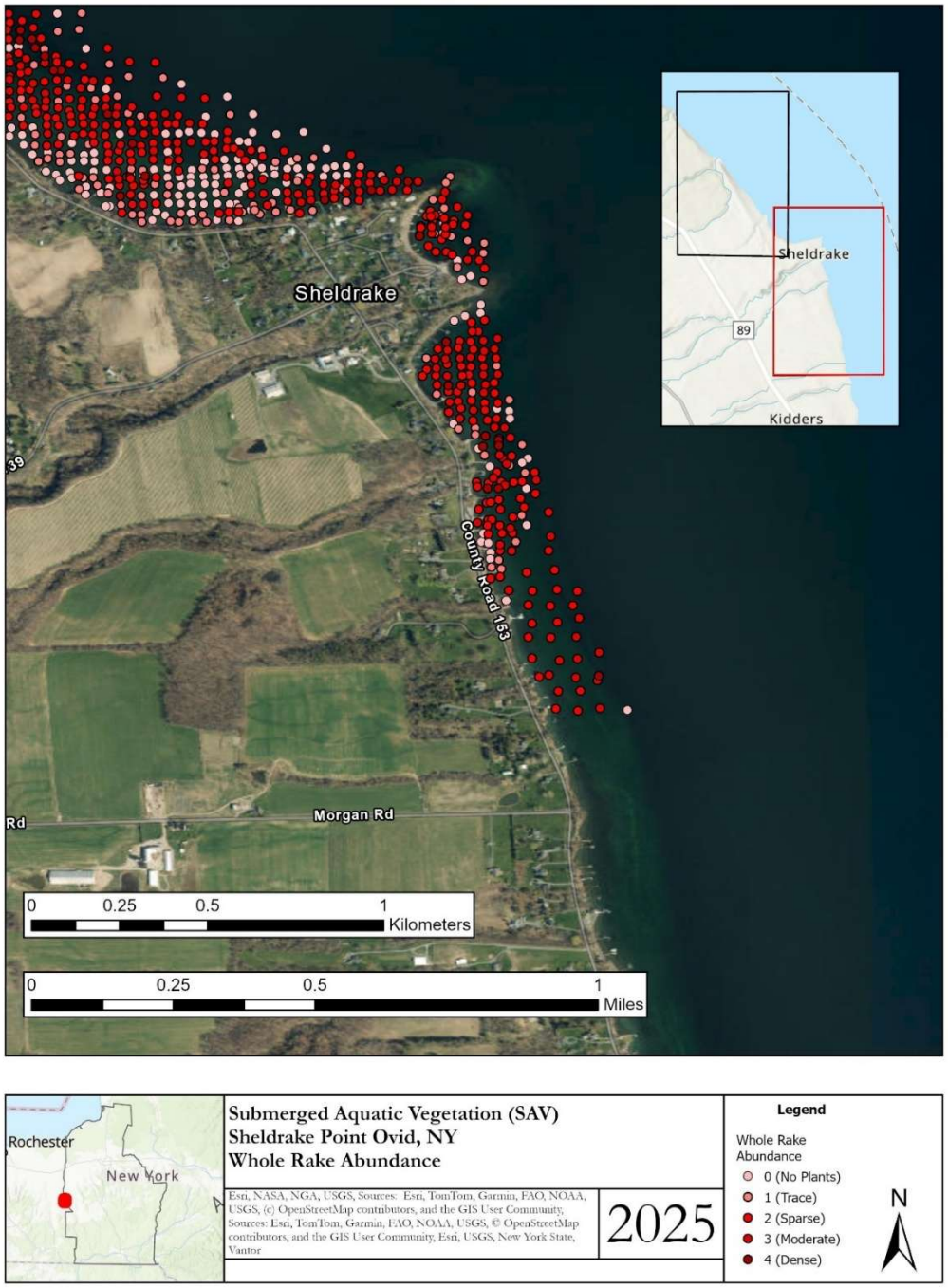

Figure A 2. Map of whole rake abundance at Sheldrake Point at Cayuga Lake (Ovid, NY). Data was collected from 7/3/2025 to 9/25/2025 by the Region 7 AIS team. Darker points represent higher vegetation density. Map 2 of 2.

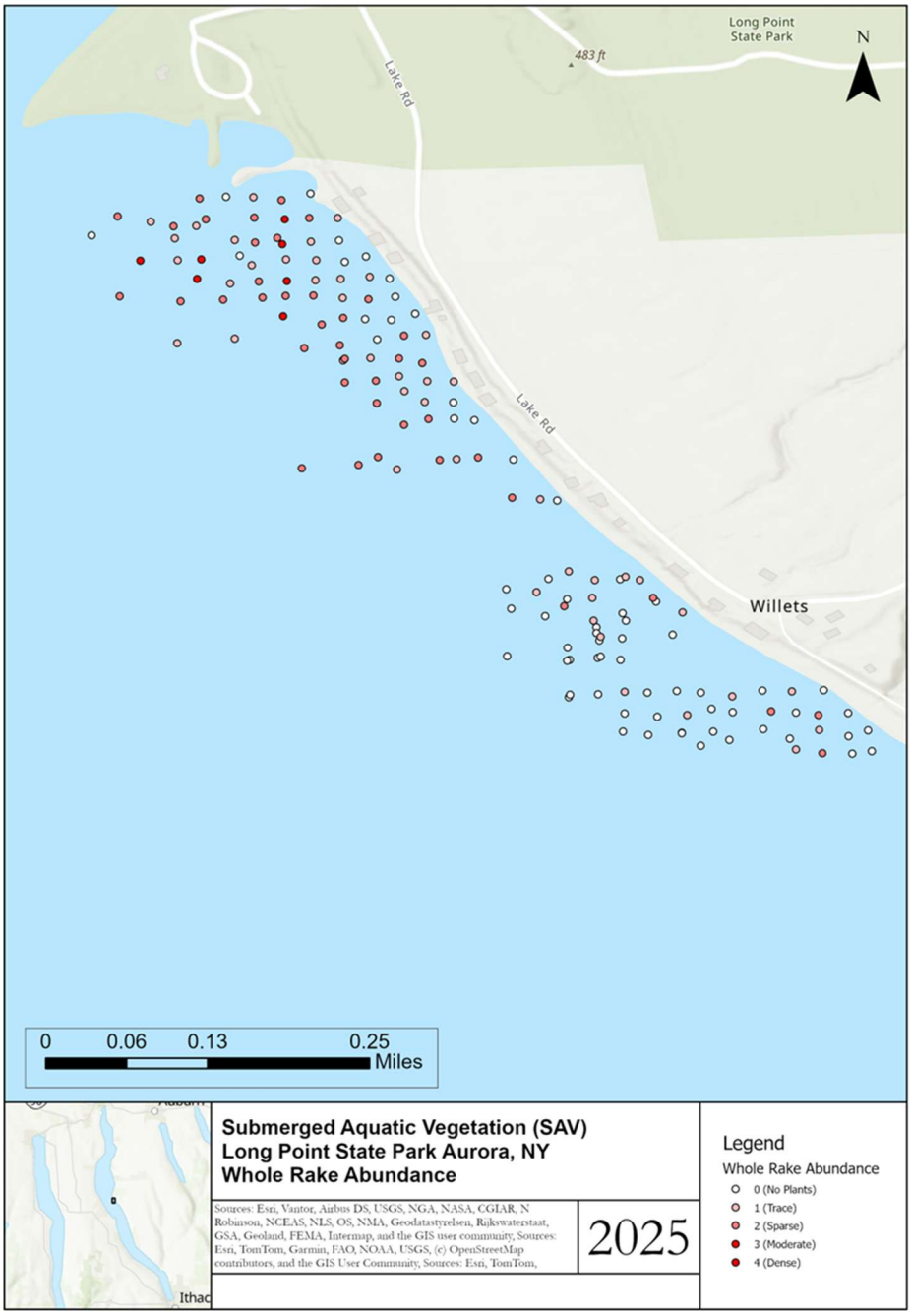

Figure A 3. Map of whole rake abundance at Long Point State Park Cayuga Lake (Aurora, NY). Data was collected from 6/3/2025 to 7/22/2025 by the Region 7 AIS team. Darker points represent higher vegetation density. Monitoring also occurred in June, August, and September with USACE.

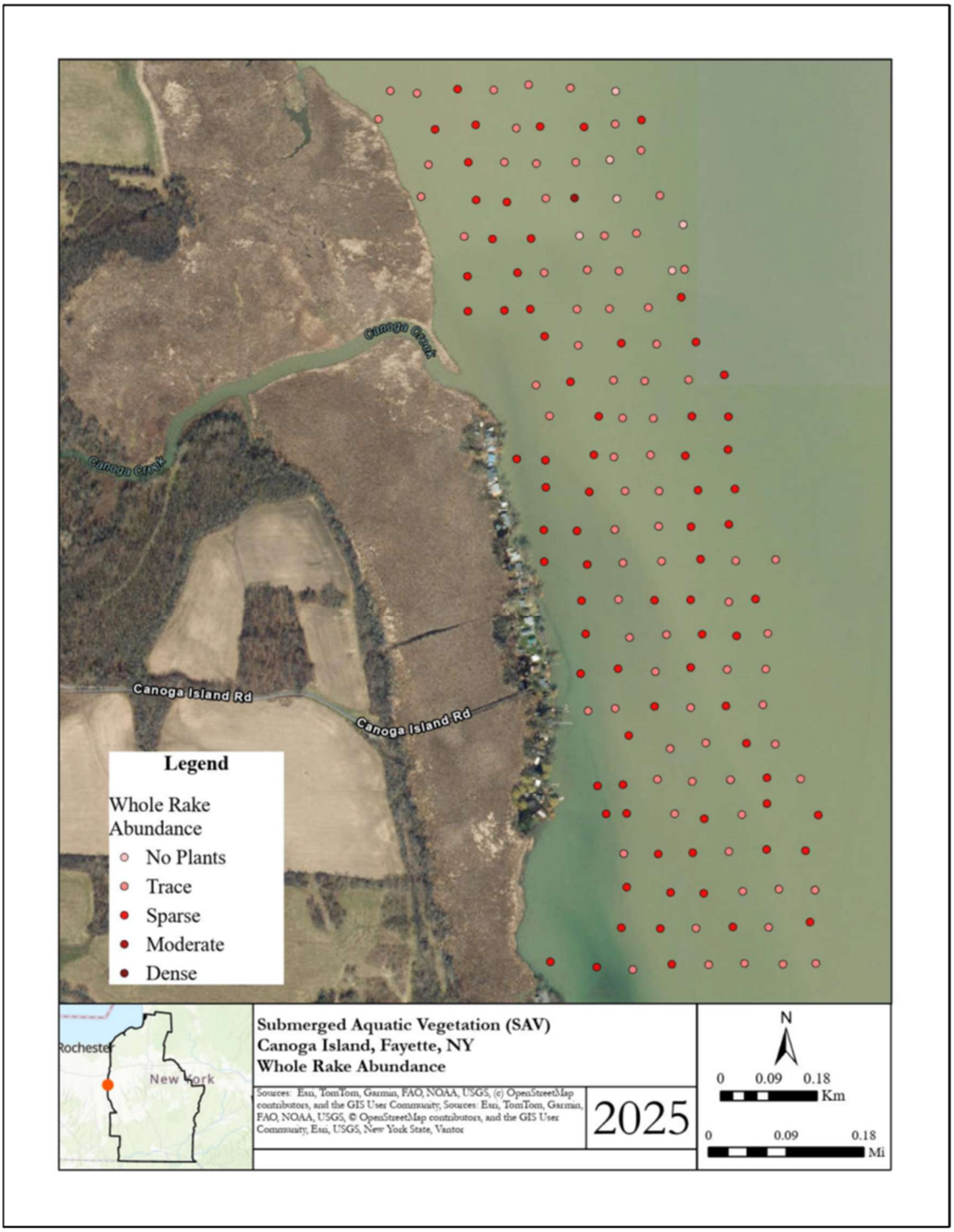

Figure A 4 . Map of whole rake abundance Canoga Island Cayuga Lake (Fayette, NY). Data was collected in June 2025 by the Region 7 AIS team. Darker points represent higher vegetation density.

Appendix B: Species composition and occurrence

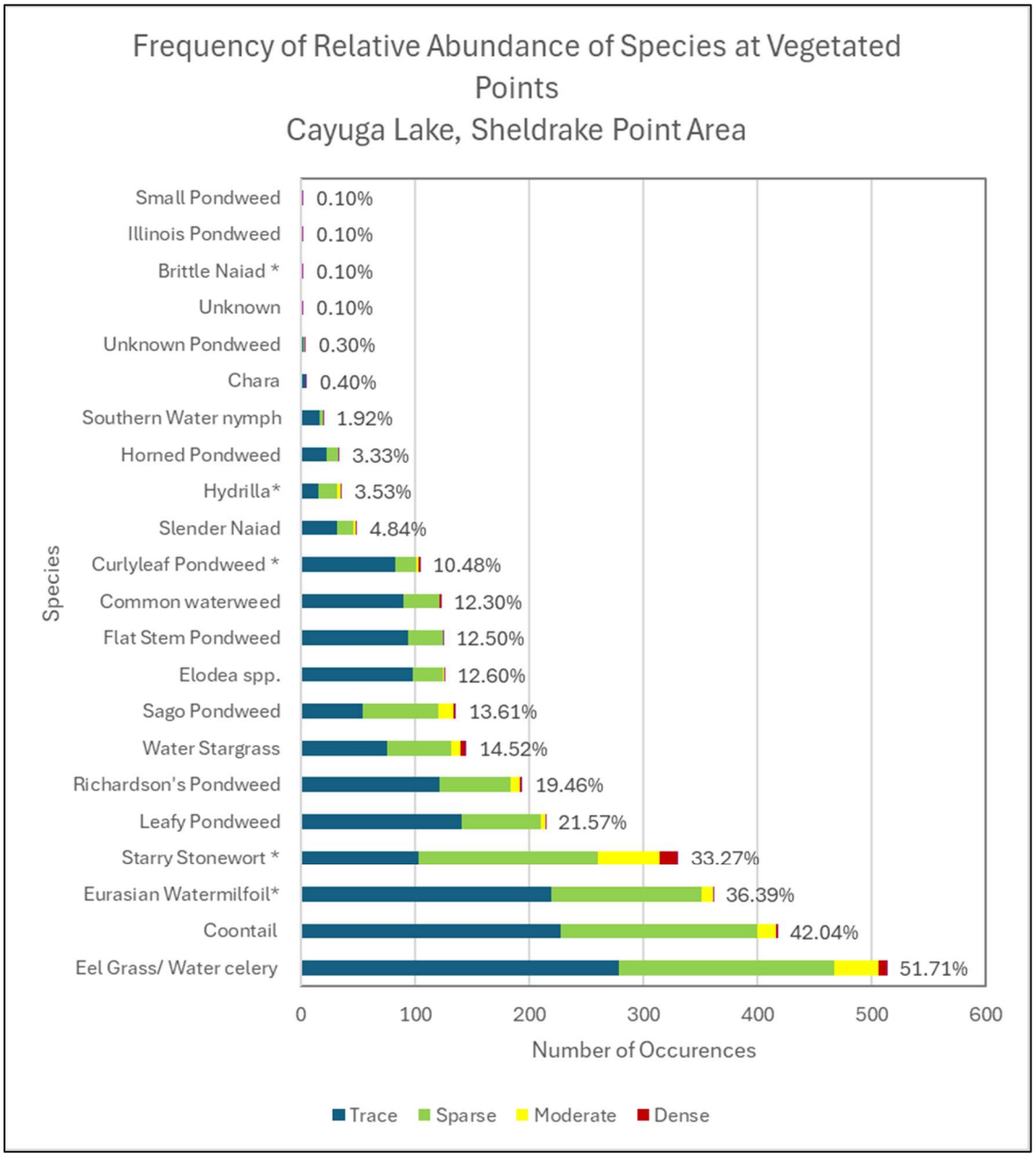

Figure B 1. Frequency of relative abundance of species at vegetated points at Sheldrake Point. Percentage represents the frequency that each species was observed on a vegetated rake toss.

* *Indicates Invasive Species*

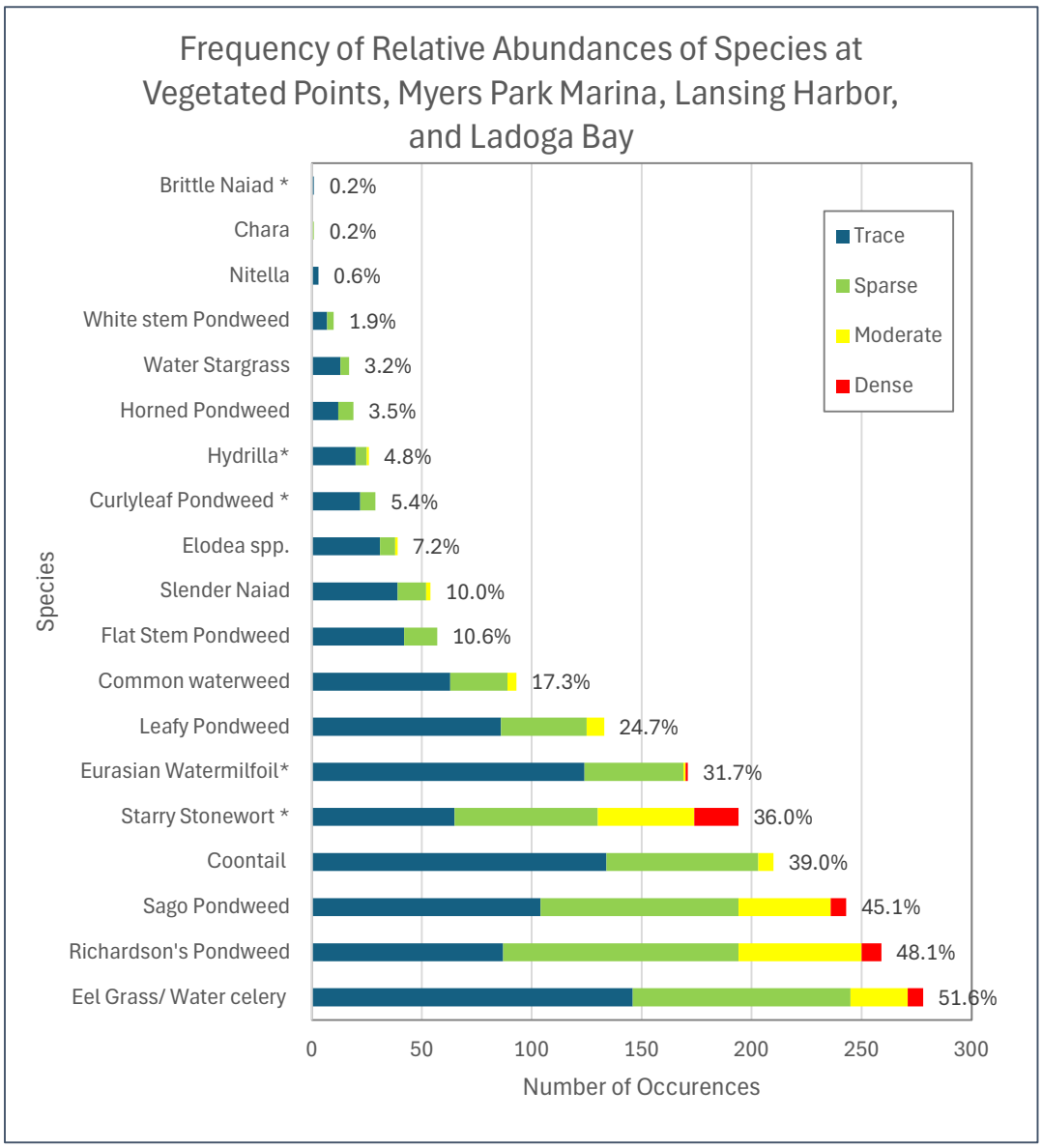

Figure B 2. Frequency of relative abundance of species at vegetated points at Myers Park Marina, Lansing Harbor, and Ladoga Bay. Percentage represents the frequency that each species was observed on a vegetated rake toss.

**Indicates Invasive Species*

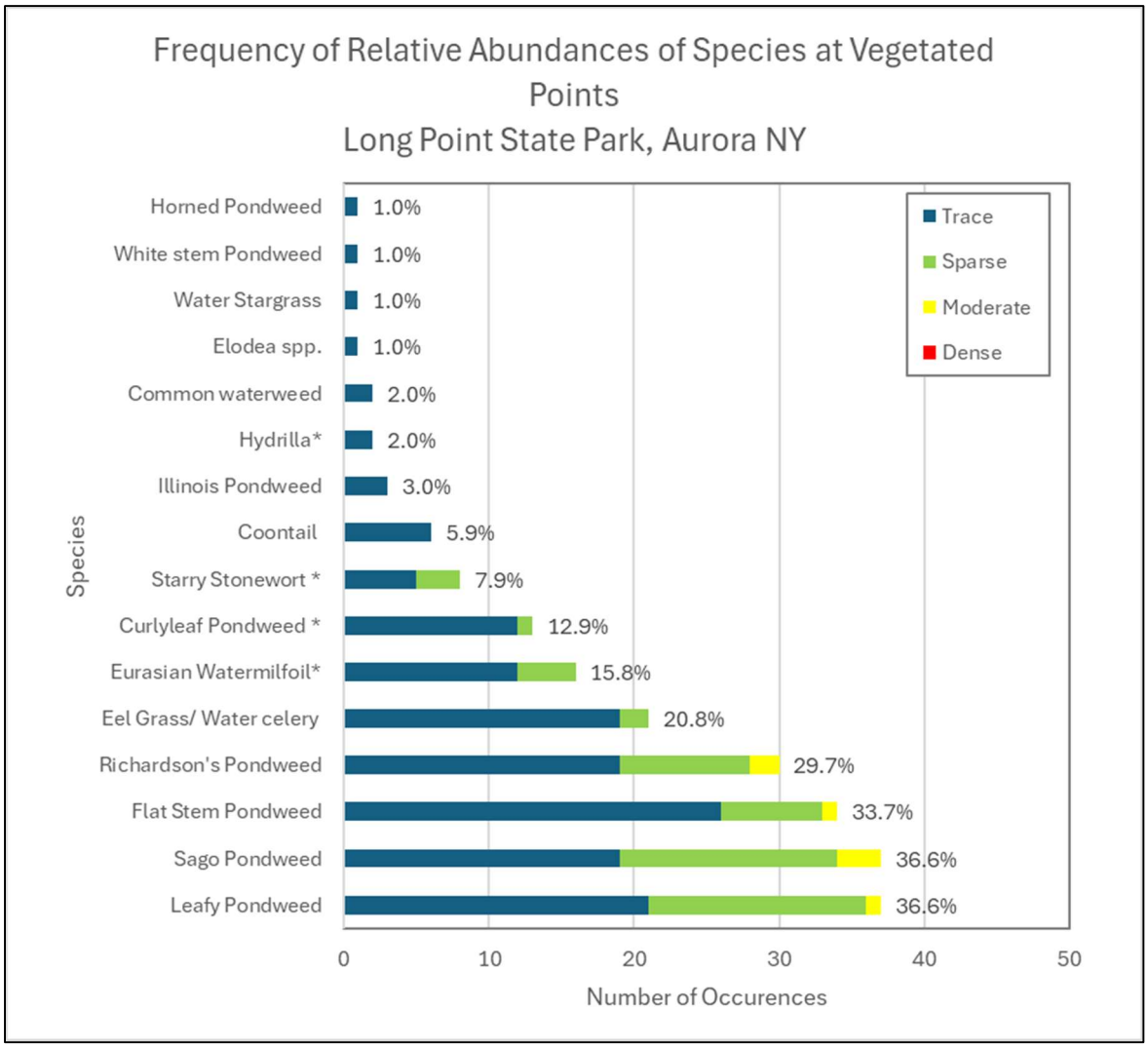

Figure B 3. Frequency of relative abundance of species at vegetated points at Long Point State Park. Percentage represents the frequency that each species was observed on a vegetated rake toss.

**Indicates Invasive Species*

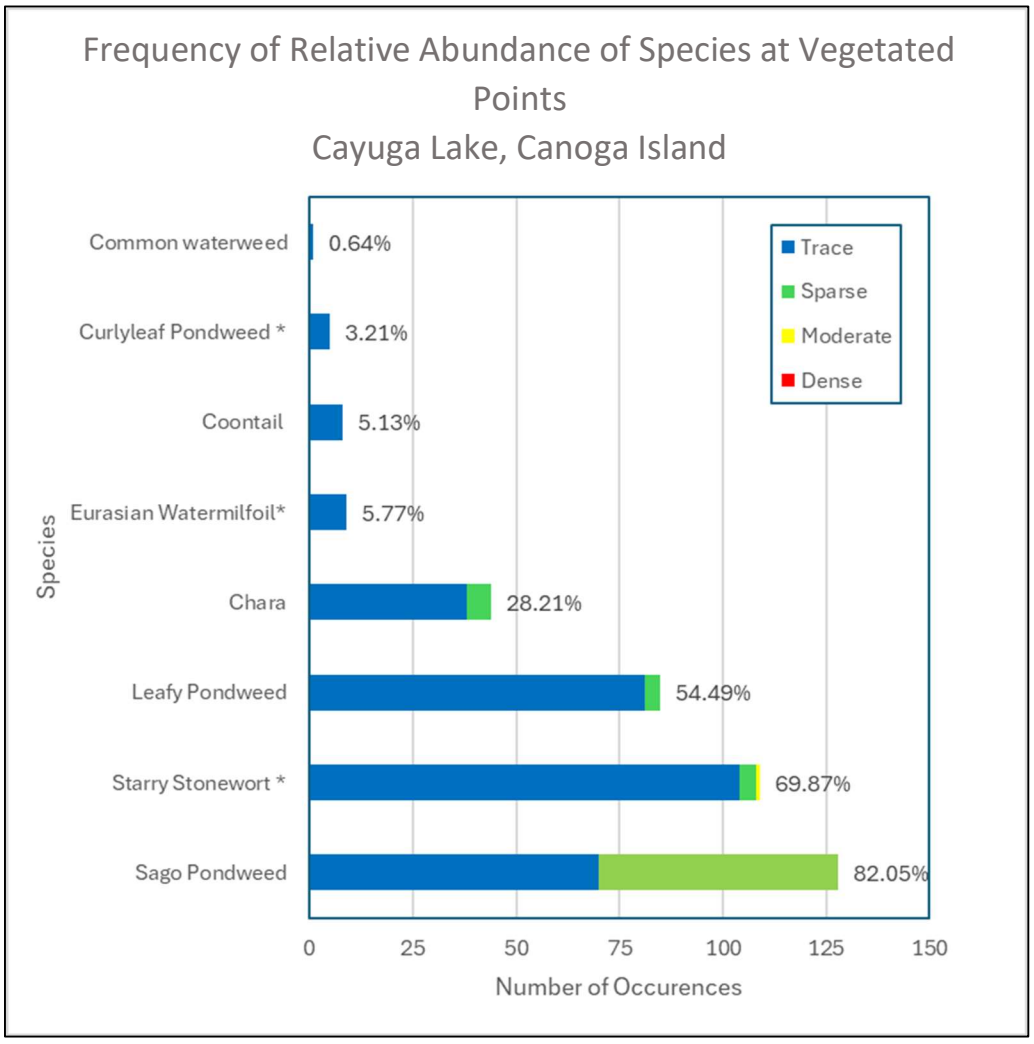

Figure B 4 Frequency of relative abundance of species at vegetated points at Canoga Island. Percentage represents the frequency that each species was observed on a vegetated rake toss. NOTE – Vegetation monitoring occurred in early June, when many submerged vegetation species have yet to emerge.

**Indicates Invasive Species*

Appendix C: Hydrilla Control Sites

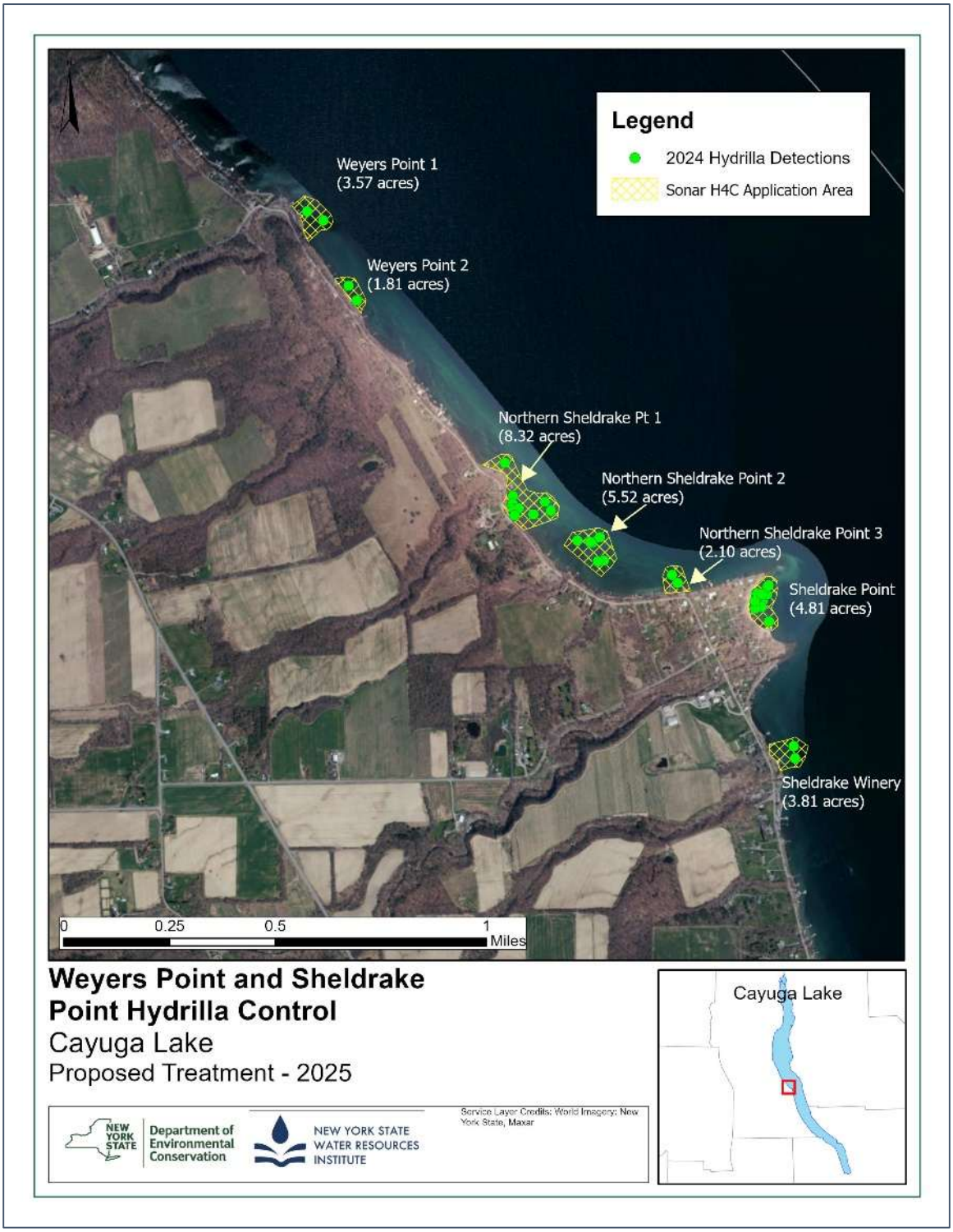

Figure C 1. Map of Sonar H4C Application sites at Sheldrake Point. Application areas were determined by 2024 vegetation monitoring results.

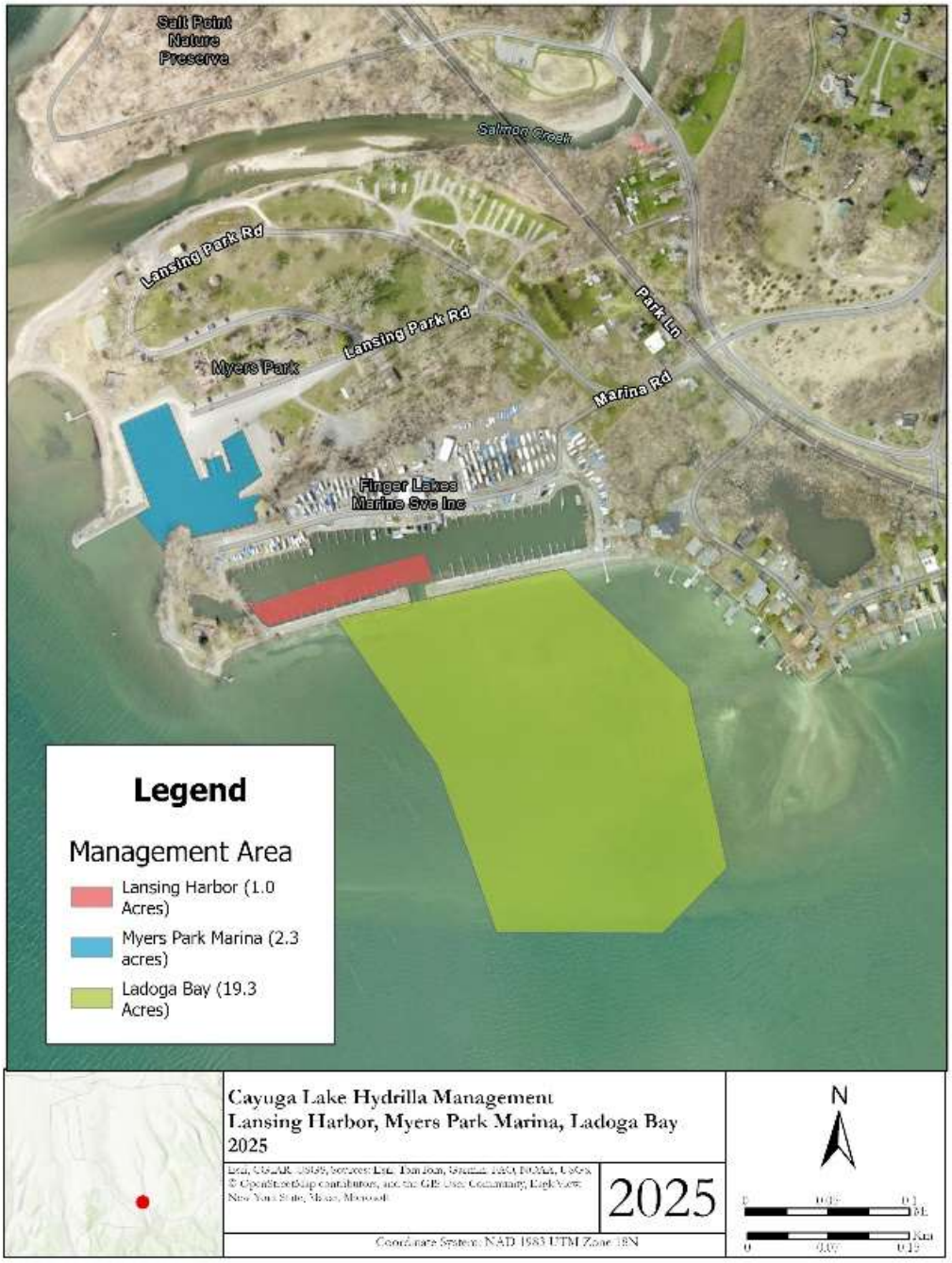

Figure C 2. Map of Sonar H4C Application areas at Myers Park Marina, Lansing Harbor, and Ladoga Bay.

Figure C 3. Map of Harpoon granular application sites. Harpoon granular was applied in locations where hydrilla was detected during 2025 monitoring events.

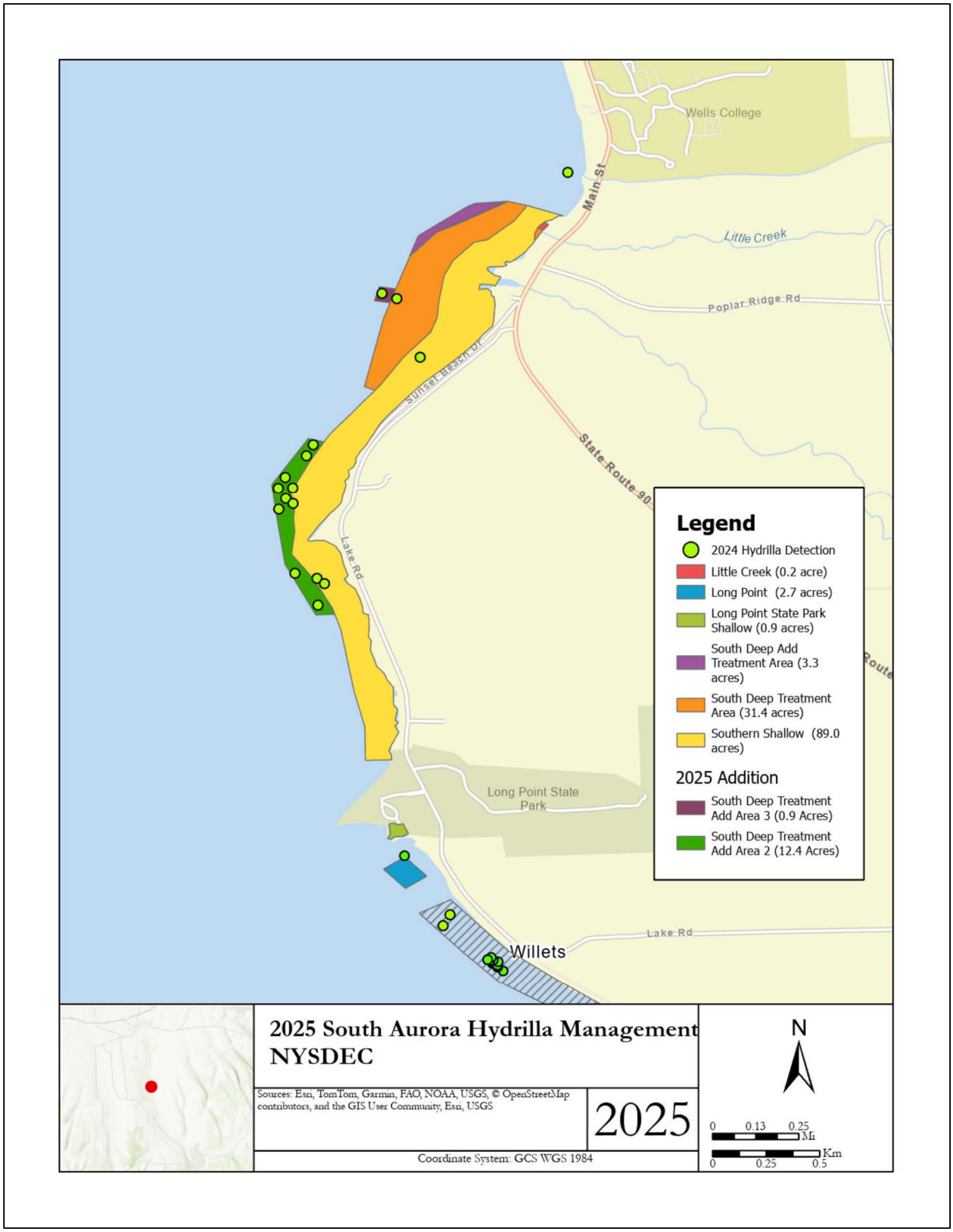

Figure C 4. Map of South Aurora Sonar H4C Application Areas.

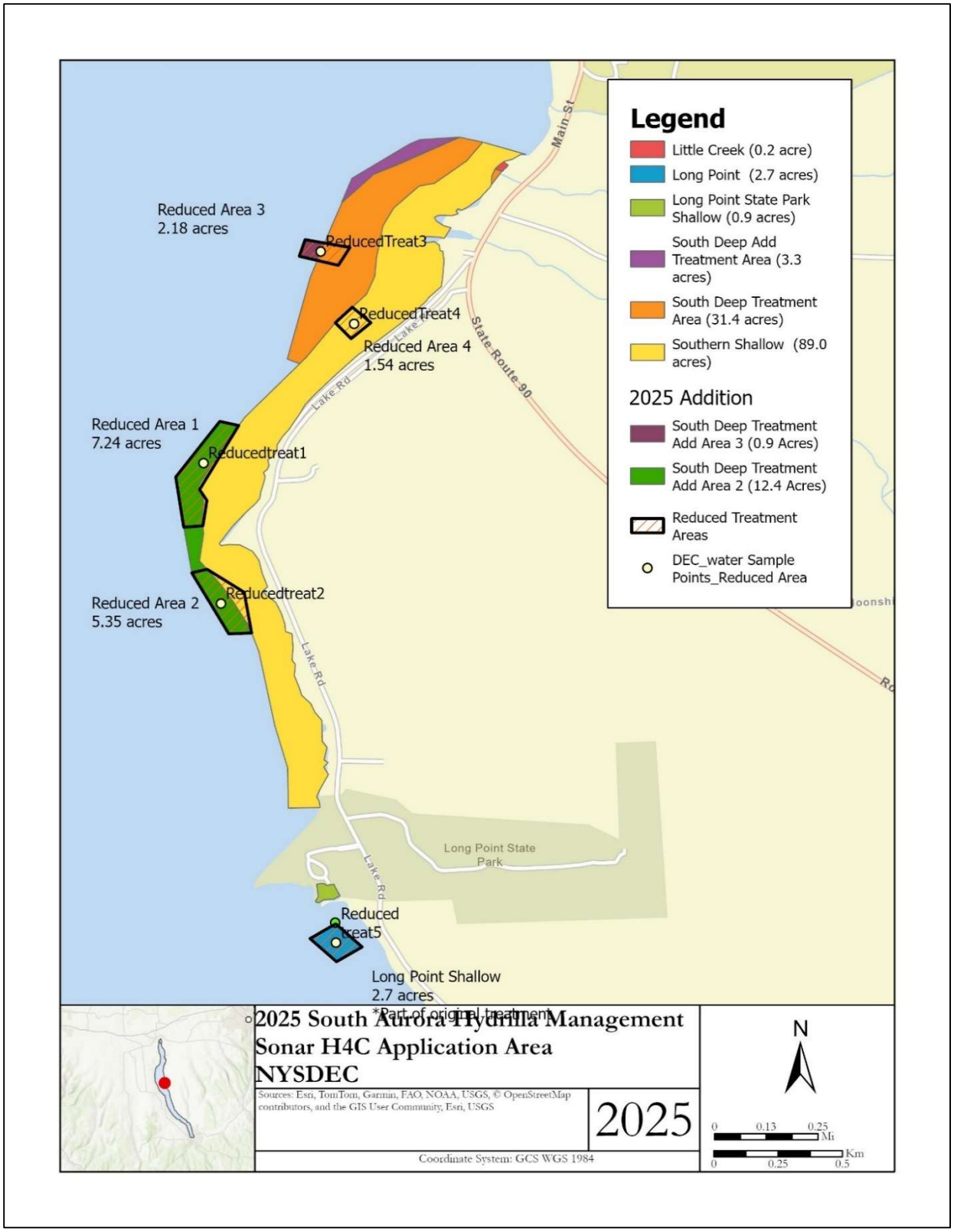

Figure C 5. Map of South Aurora Sonar H4C reduced treatment areas. Treatment areas had to be reduced due to issues with herbicide acquisition early in the application season. Reduced treatment areas targeted known hydrilla detections from 2024.

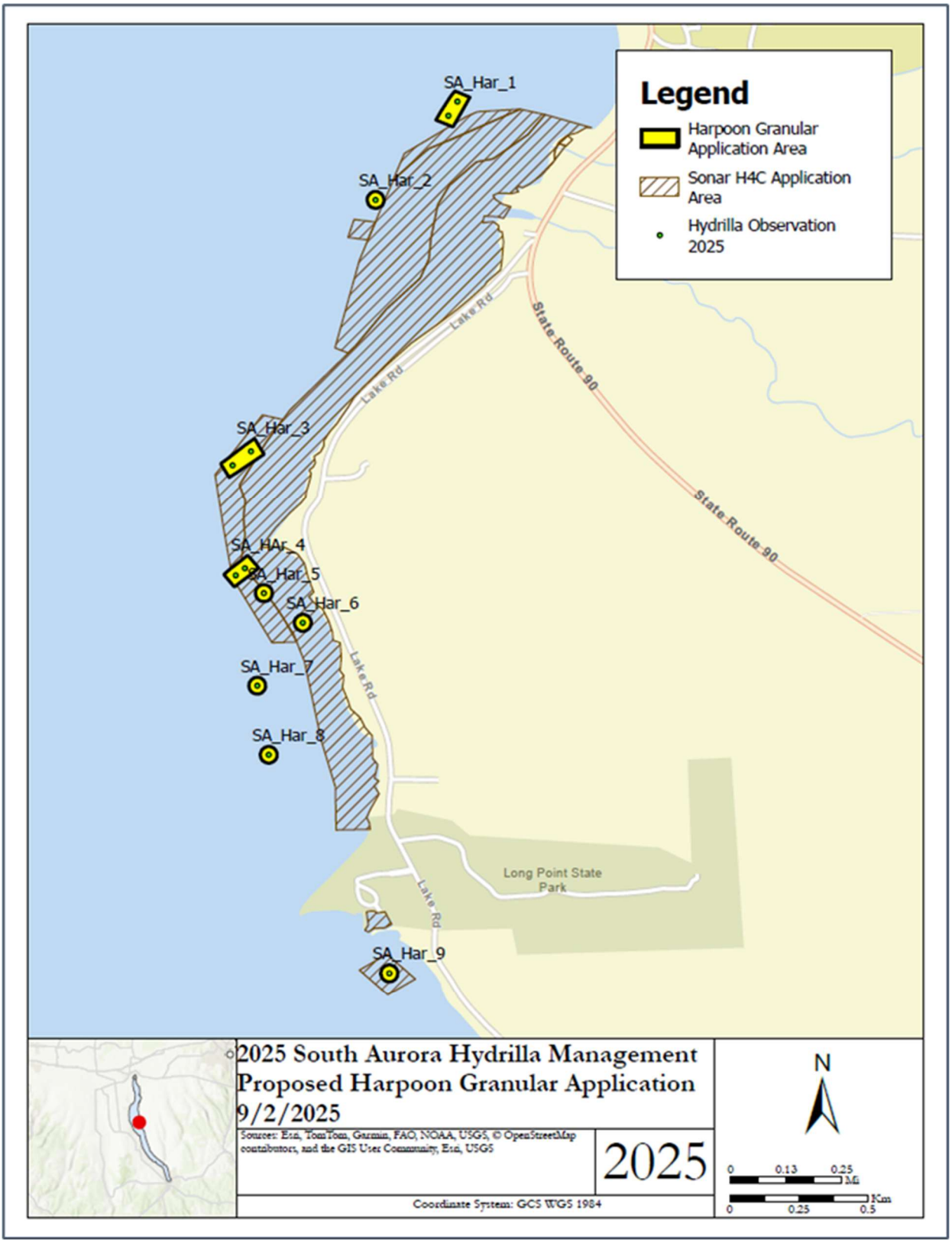

Figure C 6. Harpoon granular application sites in South Aurora. Harpoon was applied as a spot treatment for hydrilla detections outside of the Sonar H4C treatment area.

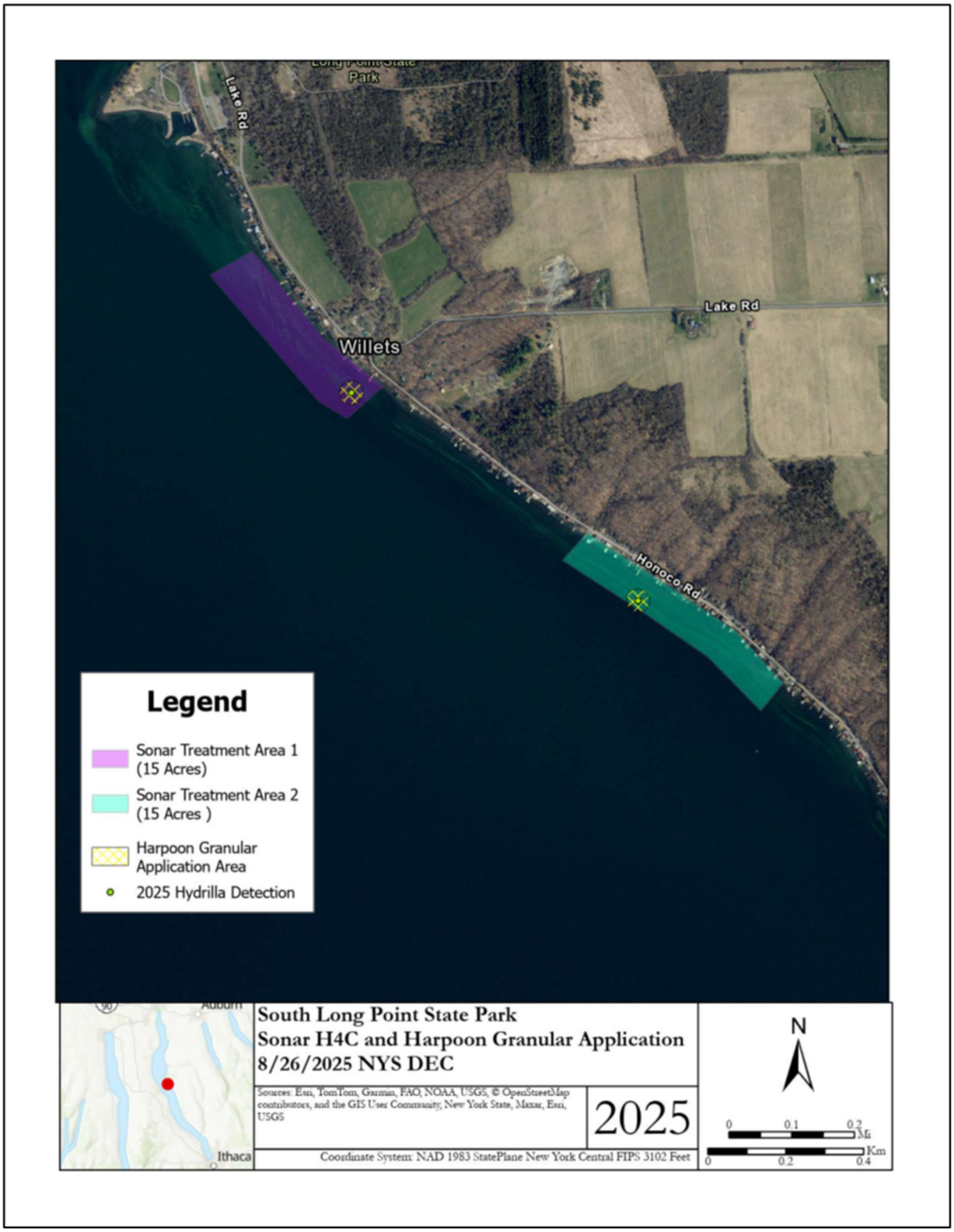

Figure C 7, Map of Long Point Sonar H4C and Harpoon granular application areas. Harpoon granular was applied to hydrilla that was located during August monitoring events with USACE. Applications in this area occurred during weeks 3-10 of the application schedule with a reduced schedule during weeks 1&2.

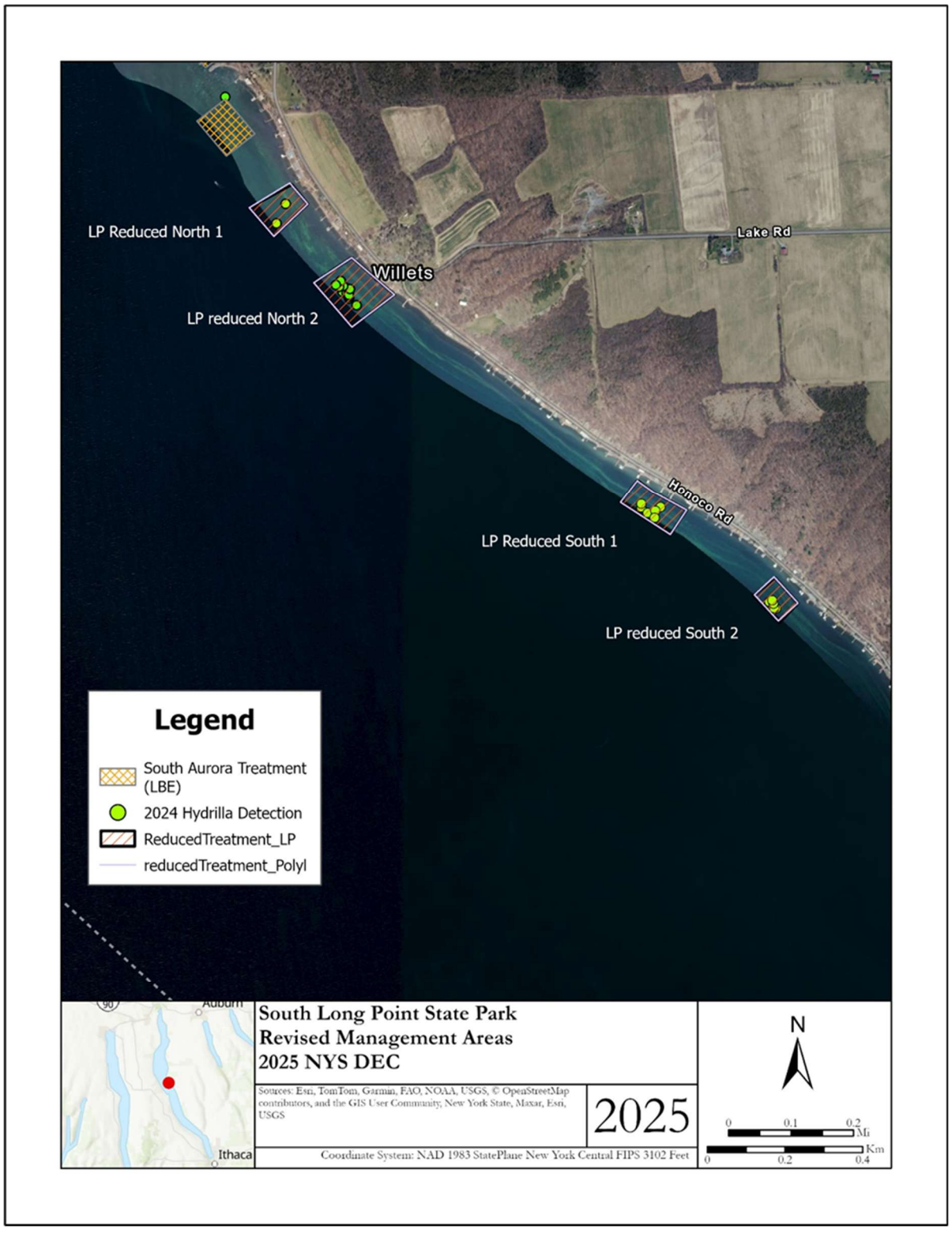

Figure C 8. Map of reduced Sonar H4C Treatment areas. Application areas had to be reduced due to problems with herbicide acquisition. Reduced areas targeted known hydrilla detections. Herbicide applications occurred in the reduced area for the first 2 weeks with the full-scale applications occurring at weeks 3-10.

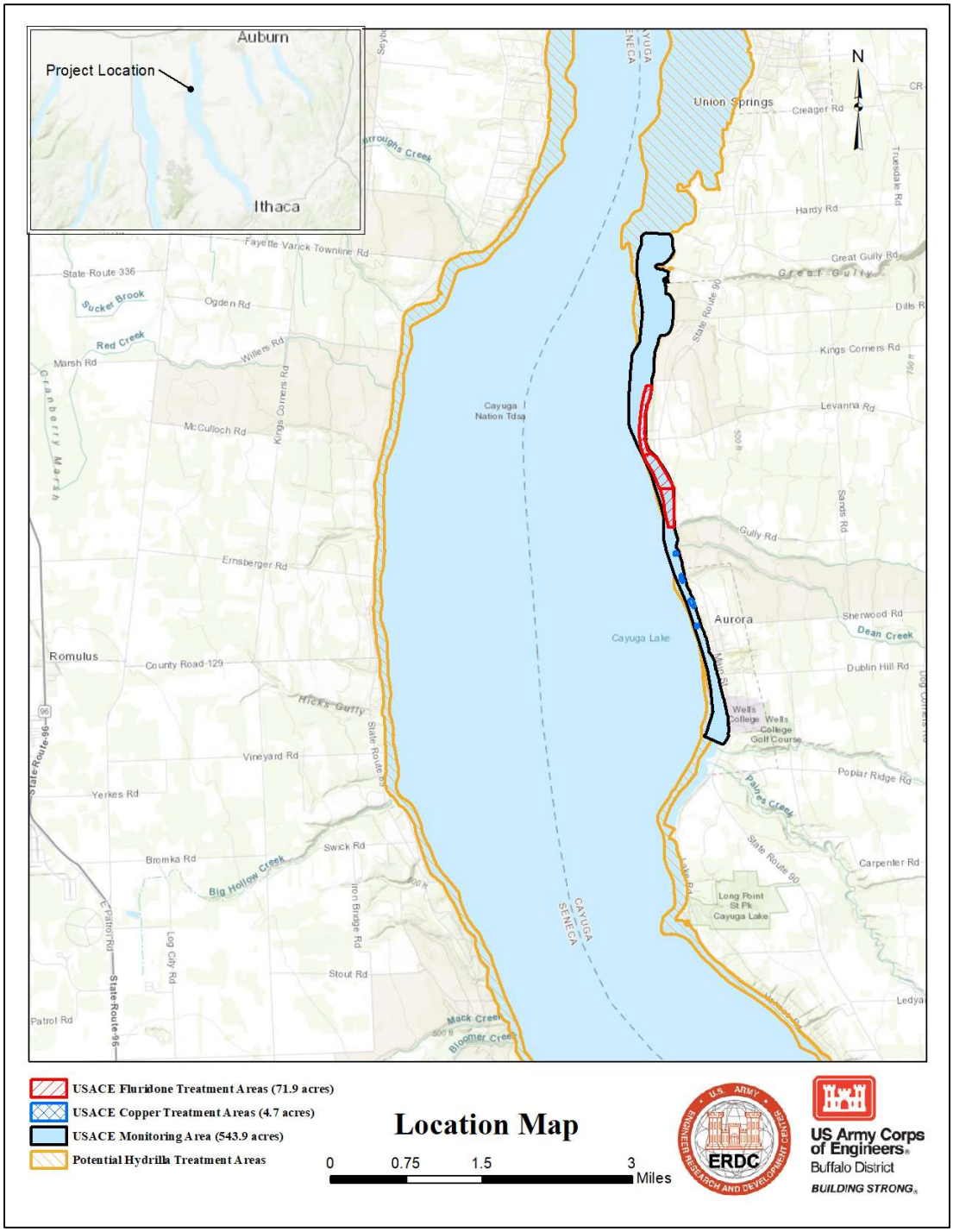

Figure C 9. US Army Corps of Engineers North Aurora Treatment Areas.

Figure C 9. US Army Corps of Engineers Cayuga Inlet and Fall Creek treatment areas.

Appendix D: Fluridone sample maps and results

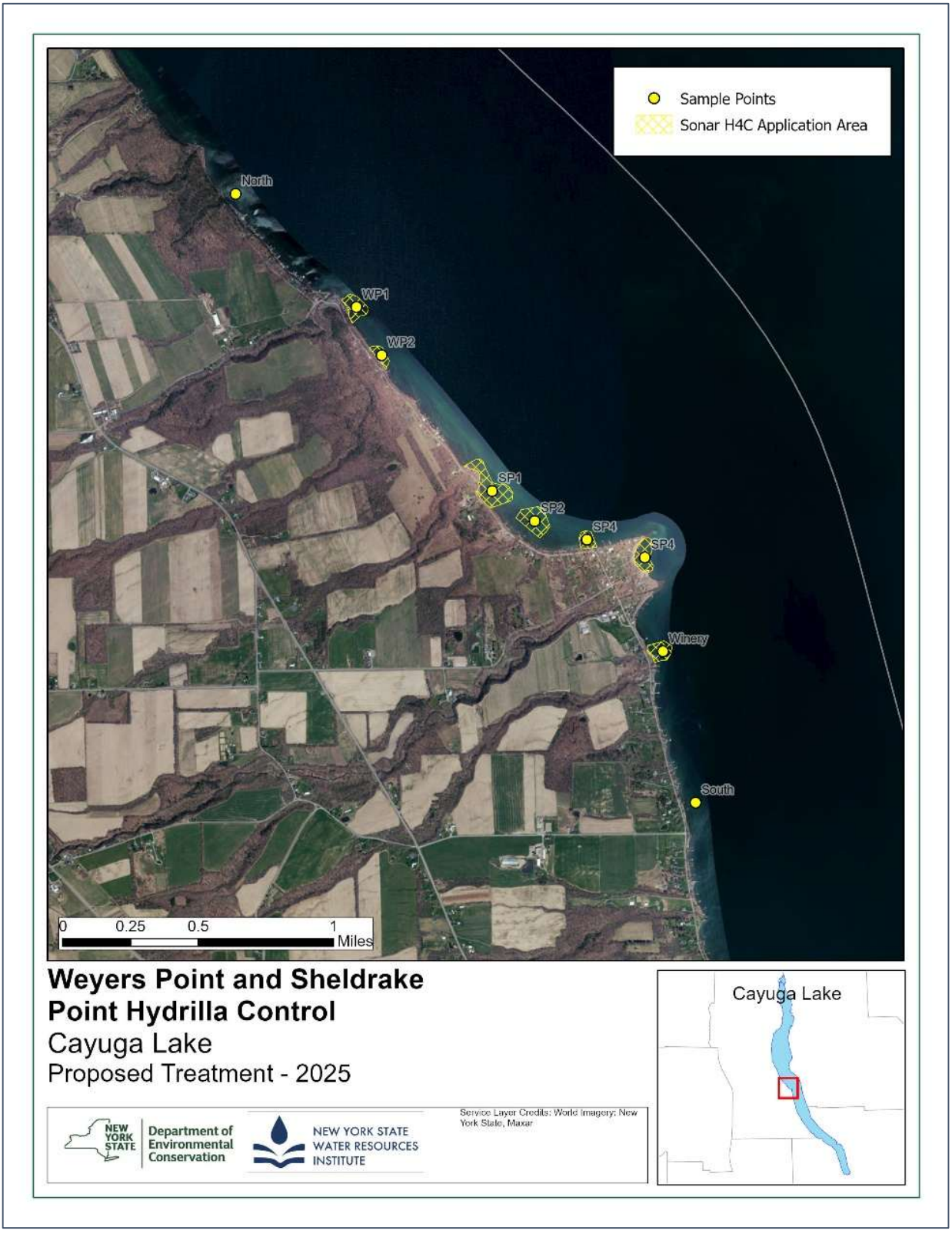

Figure D 1. Water sample points collected at Sheldrake Point

Sheldrake (Ovid, NY)													
Sample Date		8/1/2025		8/8/2025		8/15/2025		8/20/2025		8/22/2025		8/29/2025	
Location	Code	Depth (ft)	Fluridone ppb	Depth (ft)	Fluridone ppb	Depth (ft)	Fluridone ppb	Depth (ft)	Fluridone ppb	Depth (ft)	Fluridone ppb	Depth (ft)	Fluridone ppb
0.5 Miles North	0.5 Mi N	8.5	<0.5	8.5	<0.5	7.0	<0.5				<0.5		<0.5
Wyers Point 1	WP 1	9.7	2.3	8.0	2.4	8.0	4.1				<0.5		2.2
Wyers Point 2	WP2	6.5	5.6	6.2	0.8	6.5	3.9				1		3.5
Sheldrake Point 1	SP1	3.9	2.4	5.0	0.6	4.0	2.3				0.6		2.7
Sheldrake Point 2	SP2	9.4	2.6	8.7	11.8	12.0	1.3				2.9		1.4
Sheldrake Point 3	SP3	8.1	2.6	8.2	14.6	9.8	4.6				0.5		1.1
Sheldrake Point 4	SP4	5.1	2.7	5.5	1.5	6.3	<0.5				<0.5		3.8
Sheldrake Winery	Winery	12.2	2.4	12.0	<0.5	11.0	0.6				0.9		4.5
05. Miles South	0.5 Mi S	9.3	<0.5	8.0	<0.5	7.5	1	8.5	<0.5		<0.5		<0.5

Sheldrake (Ovid, NY)													
Sample Date		9/9/2025		9/5/2025		9/17/2025		9/23/2025		9/30/2025		10/9/2025	
Location	Code	Depth	Fluridone ppb	Depth	Fluridone ppb	Depth (ft)	Fluridone ppb	Depth (ft)	Fluridone ppb	Depth (ft)	Fluridone ppb	Depth (ft)	Fluridone ppb
0.5 Miles North	0.5 Mi N	7.9	<0.5	8.5	<0.5	8.5	<0.5	8.5	<0.5	7.0	<0.5	8.0	<0.5
Wyers Point 1	WP 1	8.2	0.8	8.0	<0.5	9.7	0.5	8.0	0.5	8.0	0.8	9.1	<0.5
Wyers Point 2	WP2	7.1	<0.5	6.3	<0.5	6.5	0.5	6.2	1.3	6.5	1	6.4	0.6
Sheldrake Point 1	SP1	5.6	1.6	5.5	0.7	3.9	1.1	5.0	1	4.0	3.3	4.5	0.6
Sheldrake Point 2	SP2	10.1	<0.5	10.0	0.6	9.4	<0.5	8.7	1.7	12.0	2.1	11.0	<0.5
Sheldrake Point 3	SP3	8.9	2.7	9.0	<0.5	8.1	<0.5	8.2	0.6	9.8	0.7	9.0	<0.5
Sheldrake Point 4	SP4	6.1	1.6	6.0	<0.5	5.1	1.9	5.5	1.2	6.3	3.4	5.8	<0.5
Sheldrake Winery	Winery	11.8	<0.5	11.5	<0.5	12.2	<0.5	12.0	<0.5	11.0	<0.5	11.5	<0.5
05. Miles South	0.5 Mi S	7.6	<0.5	8.0	<0.5	9.3	<0.5	8.0	<0.5	7.5	<0.5	8.0	<0.5

Table D 1. Fluridone sample results collected at Sheldrake Point. Samples collected in this area (NYSDEC Region 8) were required to have water samples collected 1 foot from the bottom of the lakebed. Additional fluridone sample was collected at the 0.5 Mile South on 8/20 in response to the 1.0 ppb sample collected on 8/15. Samples collected on 8/22 and 8/29 did not have depth recorded.

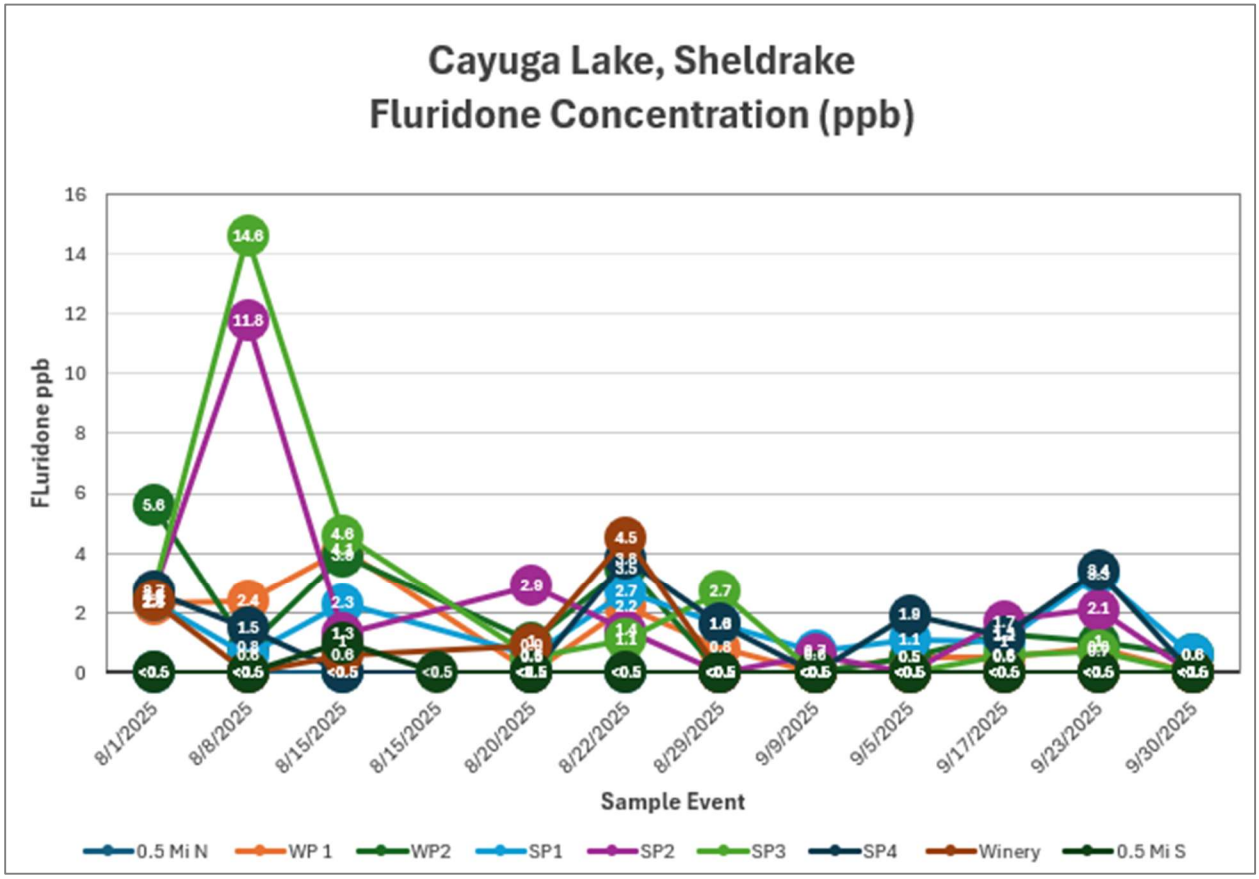

Figure D 2. Graph of fluridone sample results collected at the Sheldrake application areas.

Figure D 3. Water sample points at Myers Park Marina, Lansing Harbor, and Ladoga Bay. An additional water sample was taken from the office tap at Finger Lakes Marine Service.

Lansing NY (Ladoga Bay, Myers Park, Lansing Harbor)

		6/26/2025	7/2/2025	7/9/2025	7/16/2025	7/24/2025
Location	Code	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb
0.5 Miles South	0.5 Mi South	3.8	<0.5	<0.5	<0.5	<0.5
Ladoga Bay 2	LAD2	<0.5	0.6	<0.5	<0.5	<0.5
Ladoga Bay 1	LAD1	<0.5	1.6	<0.5	<0.5	1.1
Finger Lakes Marine Service office (TAP)	FLMS	<0.5	<0.5	<0.5	<0.5	<0.5
Lansing Harbor	LH 1	<0.5	1.2	1.5	2.4	2.5
Myers Park Marina	MP1	<0.5	<0.5	0.7	2.6	4.6
05. Miles North	0.5 Mi North	<0.5	<0.5	<0.5	<0.5	<0.5

Lansing NY (Ladoga Bay, Myers Park, Lansing Harbor)

		7/30/2025	8/6/2025	8/13/2025	8/20/2025	8/27/2025
Location	Code	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb
0.5 Miles South	0.5 Mi South	<0.5	<0.5	<0.5	<0.5	<0.5
Ladoga Bay 2	LAD2	<0.5	1.2	<0.5	<0.5	1.0
Ladoga Bay 1	LAD1	<0.5	3.9	1.8	<0.5	1.9
Finger Lakes Marine Service office (TAP)	FLMS	<0.5	<0.5	<0.5	<0.5	<0.5
Lansing Harbor	LH 1	2.9	2.8	3.2	3.4	3.3
Myers Park Marina	MP1	2.0	6.4	2.5	6.4	4.6
05. Miles North	0.5 Mi North	<0.5	<0.5	<0.5	<0.5	<0.5

Lansing NY (Ladoga Bay, Myers Park, Lansing Harbor)

		9/3/2025	9/11/2025	9/17/2025	9/23/2025	10/15/2025
Location	Code	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb
0.5 Miles South	0.5 Mi South	<0.5				
Ladoga Bay 2	LAD2	<0.5				
Ladoga Bay 1	LAD1	<0.5				
Finger Lakes Marine Service office (TAP)	FLMS	<0.5				
Lansing Harbor	LH 1	1.6	0.7			
Myers Park Marina	MP1	4.9	2.3	1.7	1.9	0.5
05. Miles North	0.5 Mi North	<0.5				

Table D 2. Fluridone sample results for Myers Park Marina, Lansing Harbor, and Ladoga Bay. 0.5 Mi South Sample Point collected on 6/26/25 came back above the 1.0 ppb threshold due to assumed contamination, as the same boat used to collect samples was the boat used for herbicide application.

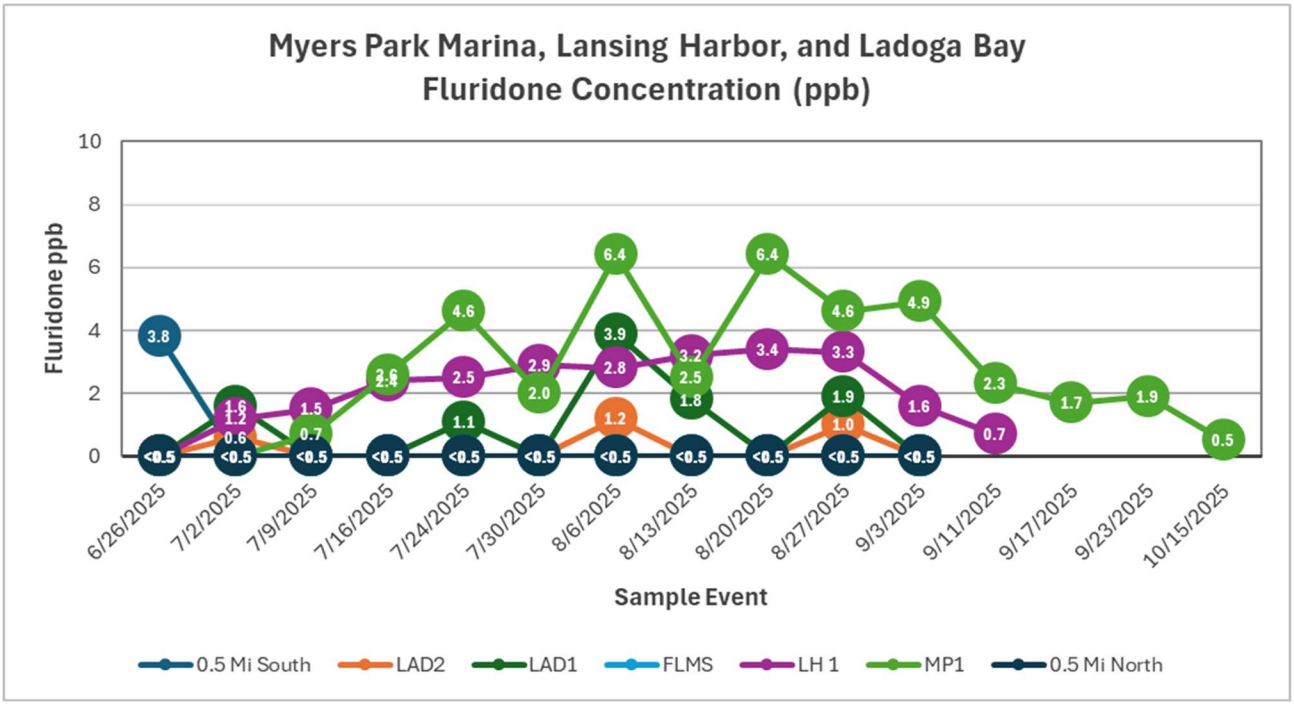

Figure D 1. Graph of fluridone concentrations over time collected from Myers Park Marina, Lansing Harbor, and Ladoga Bay areas.

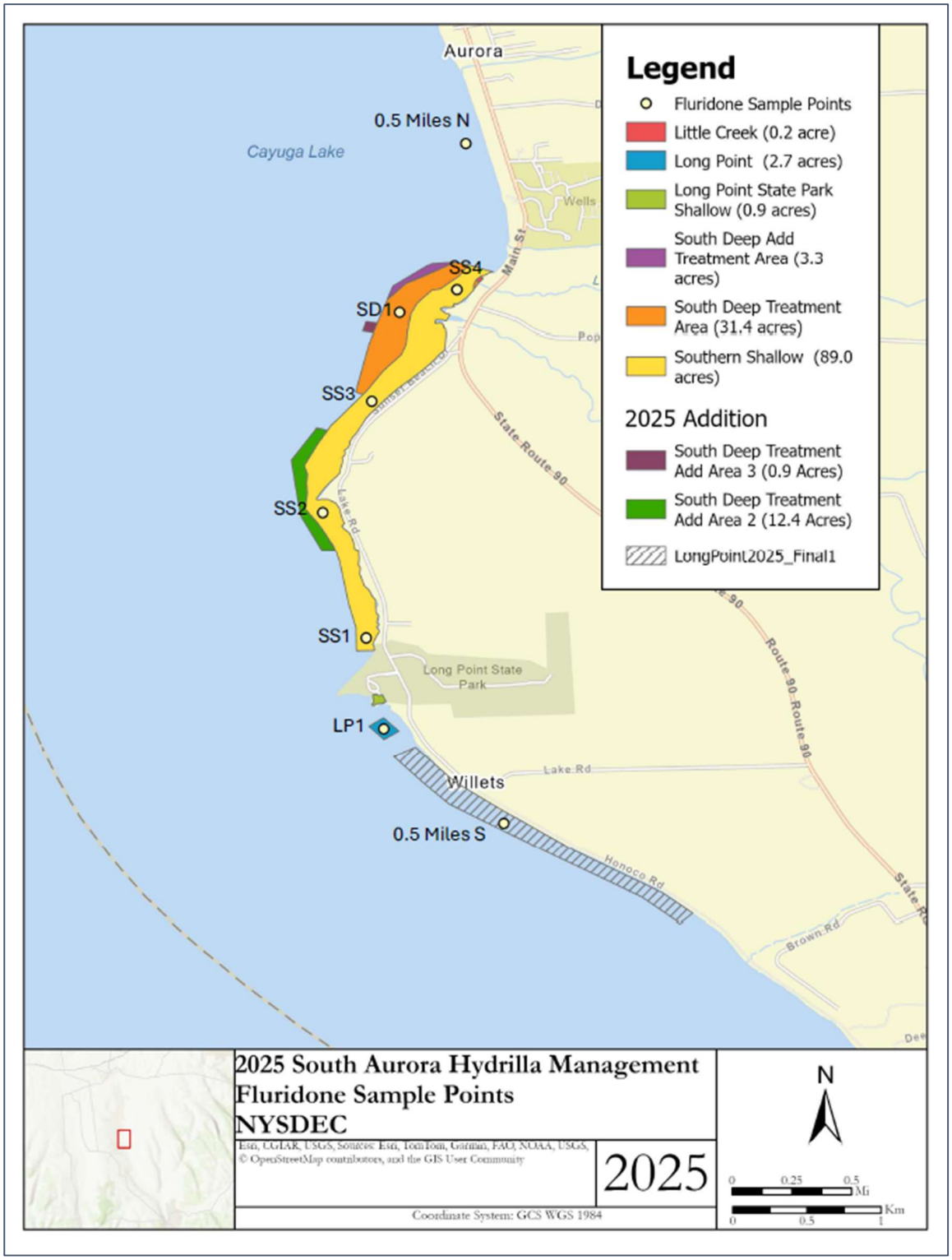

Figure D 5. Map of water sample points collected in the South Aurora area. Water sample results for the reduced South Aurora are depicted in Figure C5.

South Aurora (Reduced Area)			
		6/26/2025	7/2/2025
Location	Code	Fluridone ppb	Fluridone ppb
Reducedtreat1Sample	RT1	<0.5	<0.5
Reducedtreat2Sample	RT2	<0.5	<0.5
Reducedtreat3Sample	RT3	<0.5	<0.5
Reducedtreat4Sample	RT4	<0.5	<0.5
Reducedtreat5Sample	RT5	<0.5	<0.5
0.5 Miles North	0.5 Mi North	<0.5	<0.5

South Aurora						
		7/10/2025	7/16/2025	7/23/2025	7/30/2025	8/6/2025
Location	Code	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb
0.5 Miles North	0.5 Miles N	0.7	<0.5	<0.5	<0.5	<0.5
SS4	SS4	<0.5	**0.5**	**2.1**	<0.5	<0.5
SD1	SD1	<0.5	<0.5	<0.5	<0.5	<0.5
SS3	SS3	<0.5	**2.4**	**1.4**	<0.5	**1.8**
SS2	SS2	<0.5	<0.5	**4.3**	<0.5	**1.7**
SS1	SS1	<0.5	**6.1**	<0.5	**1.8**	0.9
LP1	LP1	<0.5	**3.7**	0.9	<0.5	**2.7**
05. Miles South	0.5 Miles S	<0.5	<0.5	<0.5	0.6	**2.8**

South Aurora						
		8/13/2025	8/21/2025	8/27/2025	9/3/2025	9/10/2025
Location	Code	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb
0.5 Miles North	0.5 Miles N	<0.5	<0.5	<0.5	<0.5	2.0
SS4	SS4	<0.5	<0.5	<0.5	<0.5	<0.5
SD1	SD1	<0.5	<0.5	<0.5	<0.5	<0.5
SS3	SS3	**4.3**	<0.5	0.6	<0.5	**1.1**
SS2	SS2	**3.5**	**2.4**	**1.2**	<0.5	0.9
SS1	SS1	0.6	0.6	**2.0**	<0.5	<0.5
LP1	LP1	0.7	<0.5	**1.1**	<0.5	<0.5
05. Miles South	0.5 Miles S	0.8	<0.5	<0.5	<0.5	<0.5

South Aurora						
		9/17/2025				
Location	Code	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb	Fluridone ppb
0.5 Miles North	0.5 Miles N	<0.5				
SS4	SS4					
SD1	SD1					
SS3	SS3	<0.5				
SS2	SS2					
SS1	SS1					
LP1	LP1					
05. Miles South	0.5 Miles S					

Table D3. South Aurora fluridone sample results. Samples were collected by Contractor, Little Bear Environmental

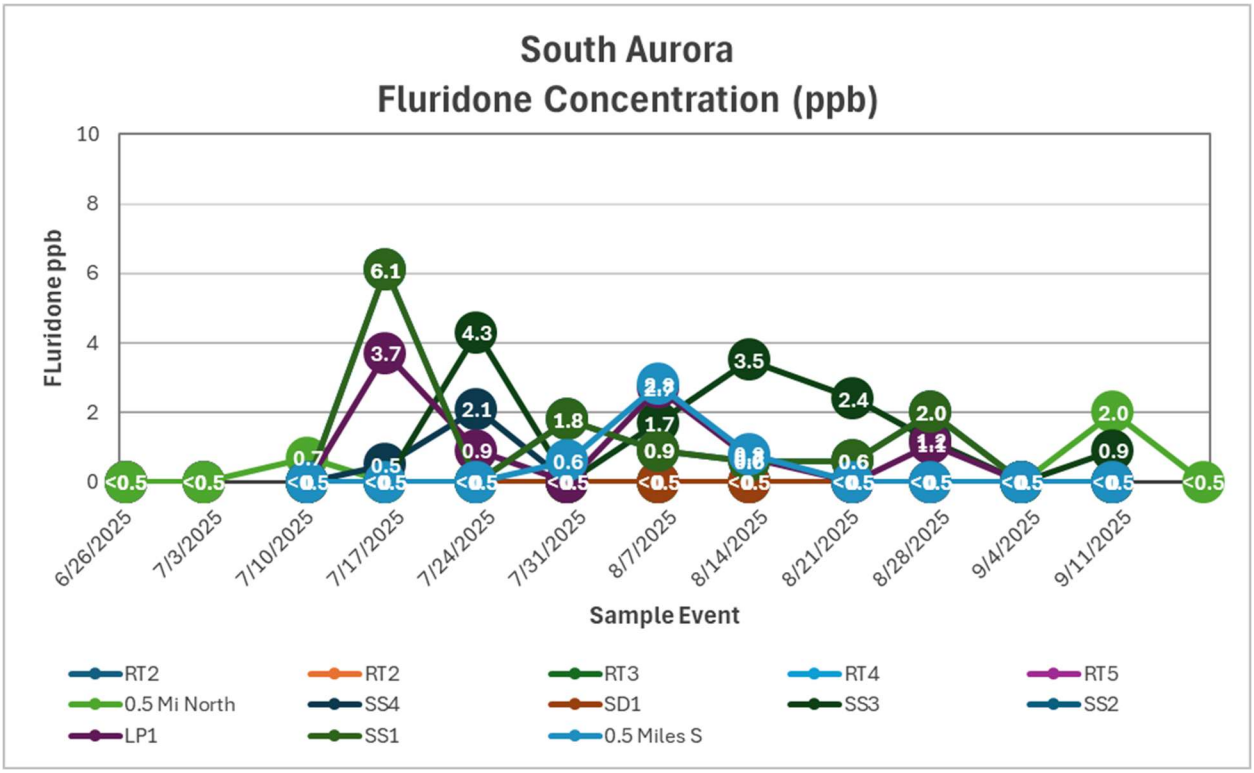

Figure D 6. Graph of fluridone samples at the South Aurora Area.

Figure D 7. (Left) Map of samples points for the Long Point reduced area Sonar H4C application areas.

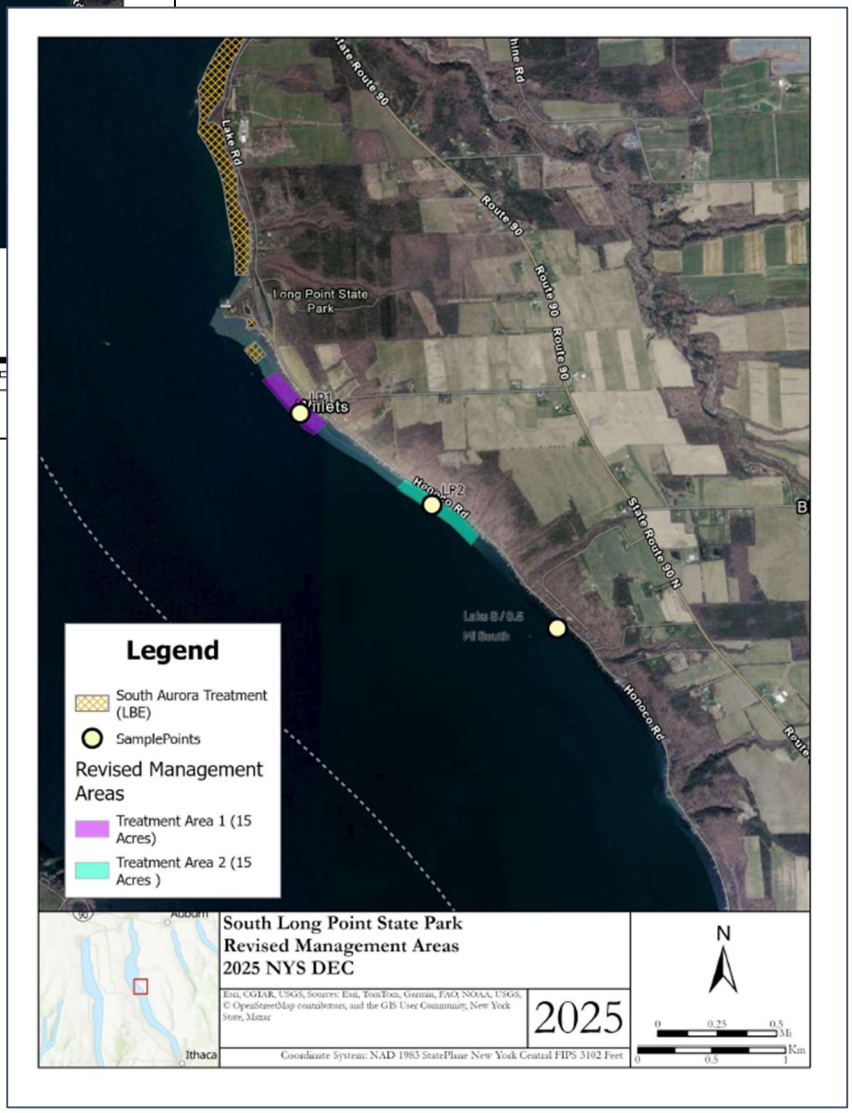

Figure D 8. (right) Map of sample points for the Long Point Sonar H4C treatment areas.

Long Point Reduced Treatment			
		Sample Date	
		6/26/2025	7/2/2025
Location	**Code**	**Fluridone ppb**	**Fluridone ppb**
LP South	LPS	<0.5	<0.5 *
LPReduced4	LPR4	<0.5	<0.5
LPReduced3	LPR3	<0.5	<0.5
LPReduced2	LPR2	<0.5	<0.5
LP Reduced1	LPR1	<0.5	<0.5

*Sample collected by USACE Contractor

Long Point						
		Sample Date				
		7/9/2025	7/16/2025	7/24/2025	7/30/2025	8/6/2025
Location	**Code**	**Fluridone ppb**	**Fluridone ppb**	**Fluridone ppb**	**Fluridone ppb**	**Fluridone ppb**
Long Point 1	LP1	<0.5	**5.6**	<0.5	<0.5	<0.5
Long Point 2	LP2	<0.5	**1.5**	0.6	**2.2**	**2.7**
0.5 Mi South	LakeS	**0.5**	<0.5 *	<0.5 *	<0.5 *	<0.5 *

*Sample collected by USACE Contractor

Long Point					
		Sample Date			
		8/13/2025	8/20/2025	8/27/2025	9/3/2025
Location	**Code**	**Fluridone ppb**	**Fluridone ppb**	**Fluridone ppb**	**Fluridone ppb**
Long Point 1	LP1	**1.1**	<0.5	1.2	<0.5
Long Point 2	LP2	**2.5**	<0.5	<0.5	<0.5
0.5 Mi South	LakeS	<0.5 *	<0.5 *	<0.5 *	

*Sample collected by USACE Contractor

Table D 4. fluridone sample results collected at the Long Point application areas.

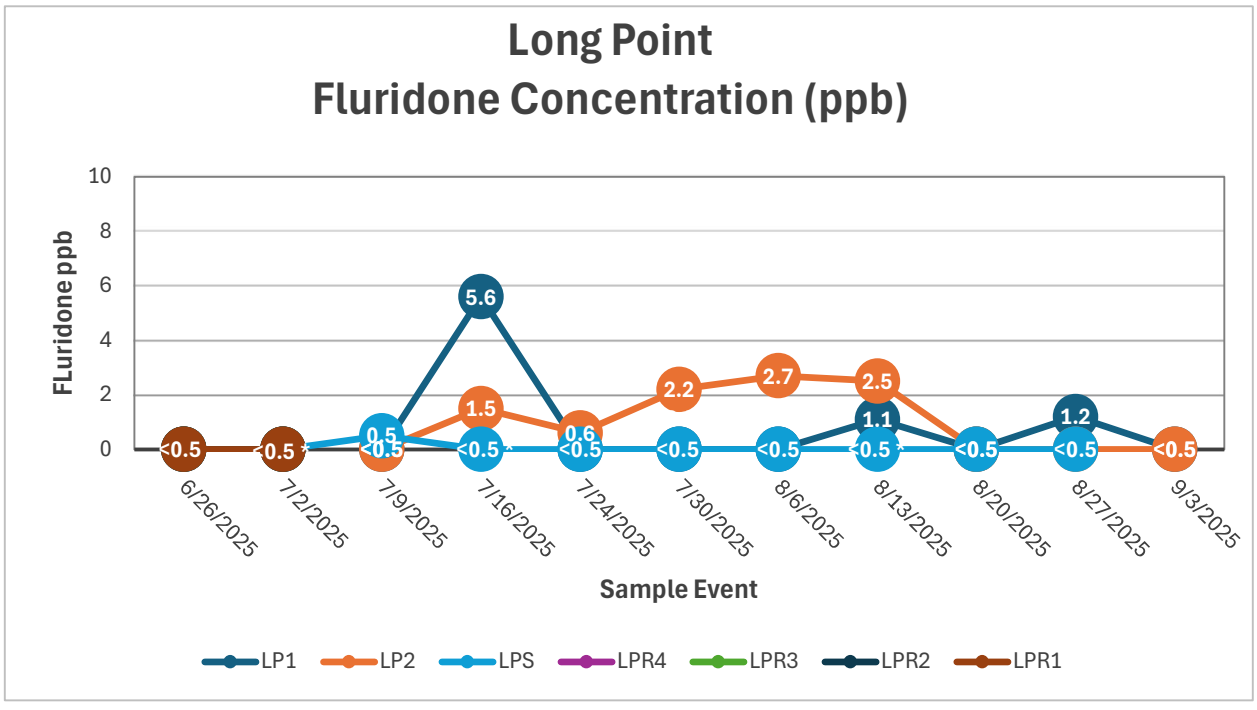

Figure D 3. Graph of fluridone samples at the Long Point Area.