NEW YORK STATE | Adirondack Park Agency

KATHY HOCHUL
Governor

BARBARA RICE
Executive Director

Town of Caroga

P2024-0040

May 16, 2024

Presentation Overview

- Jurisdiction
- Conclusions of Law
- Project Location
- Eurasian Watermilfoil Overview
- Management History in East and West Caroga Lakes
- ProcellaCor EC Overview
- Proposed Project
- Public Comment & Review by Others
- Staff Recommendation
- Q & A

Jurisdiction

9 NYCRR Section 578.3(n)(2)(i)

- Regulated Wetland Activity
  - Application of Herbicides in Wetlands

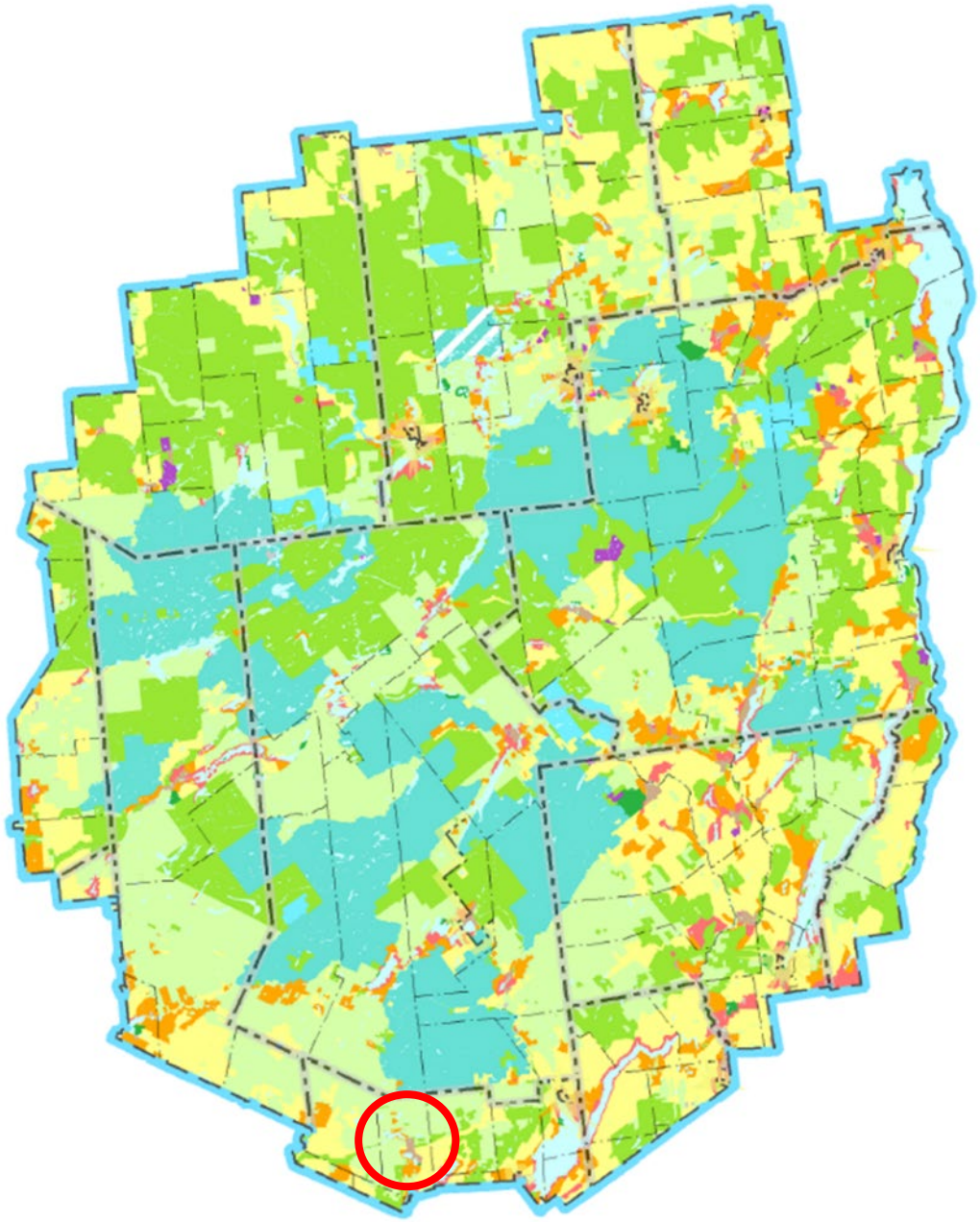
Conclusions of Law

a. that the project authorized as conditioned herein will be consistent with the Adirondack Park land use and development plan; and

b. that the project authorized as conditioned herein will not have an undue adverse impact upon the natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources of the Park, taking into account the economic and social or other benefits to be derived from the activity; and

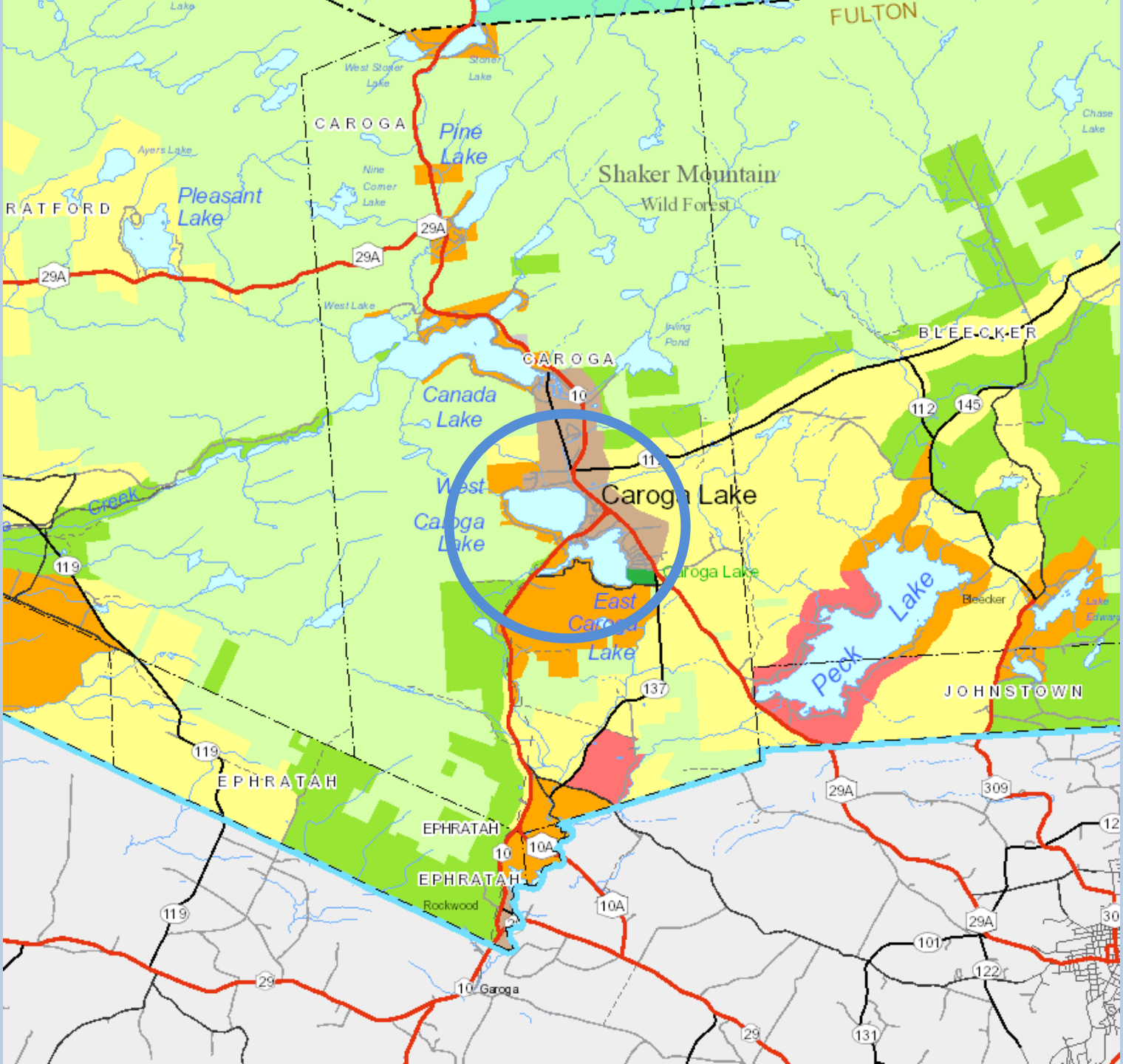
c. the economic, social and other benefits to be derived from the activity proposed and as conditioned herein compel a departure from the guidelines of 9 NYCRR Part 578.10(a)(1), in order to secure the natural benefits of wetlands associated with the project, consistent with the general welfare and beneficial economic, social, and agricultural development of the state

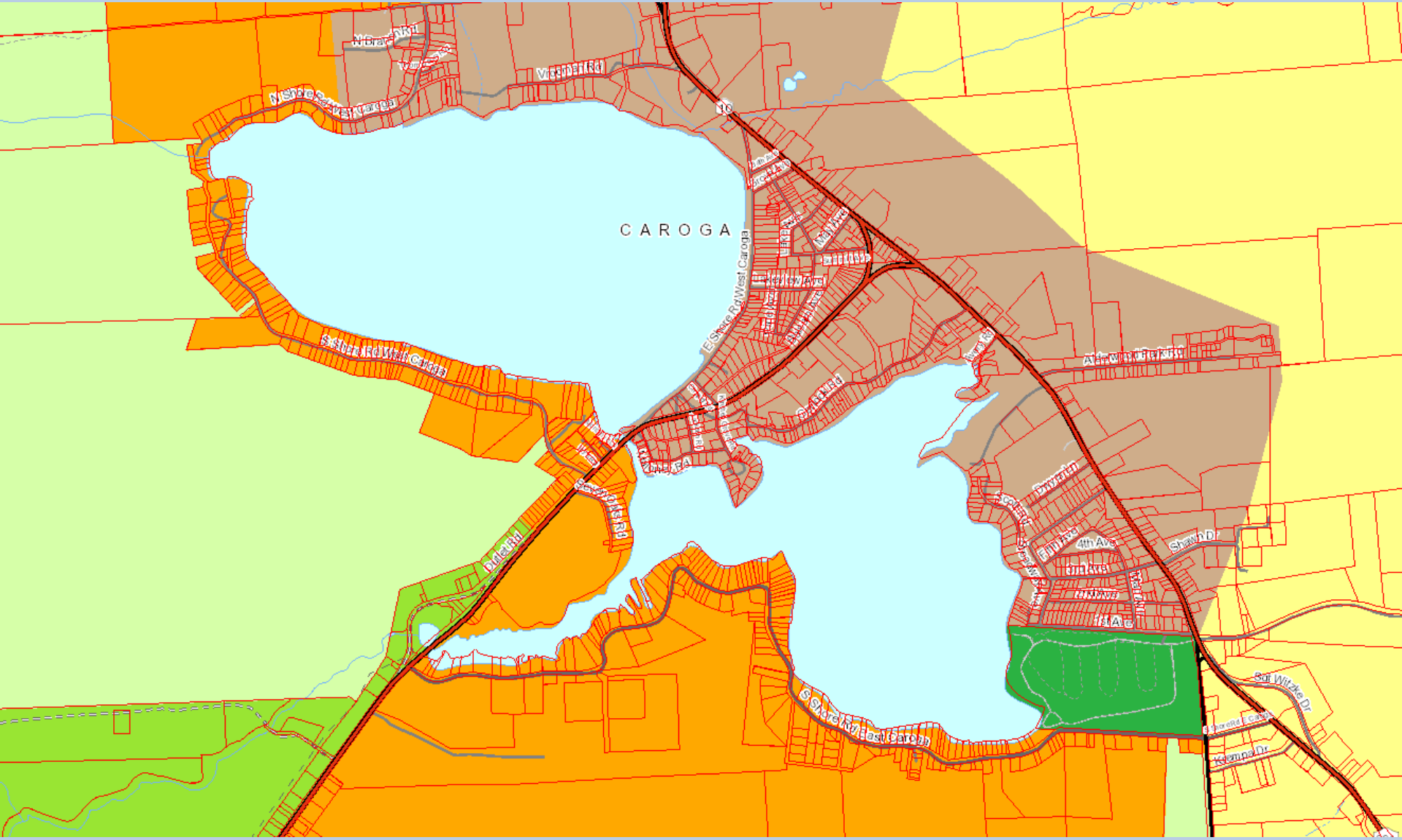
Project Location



Project Location

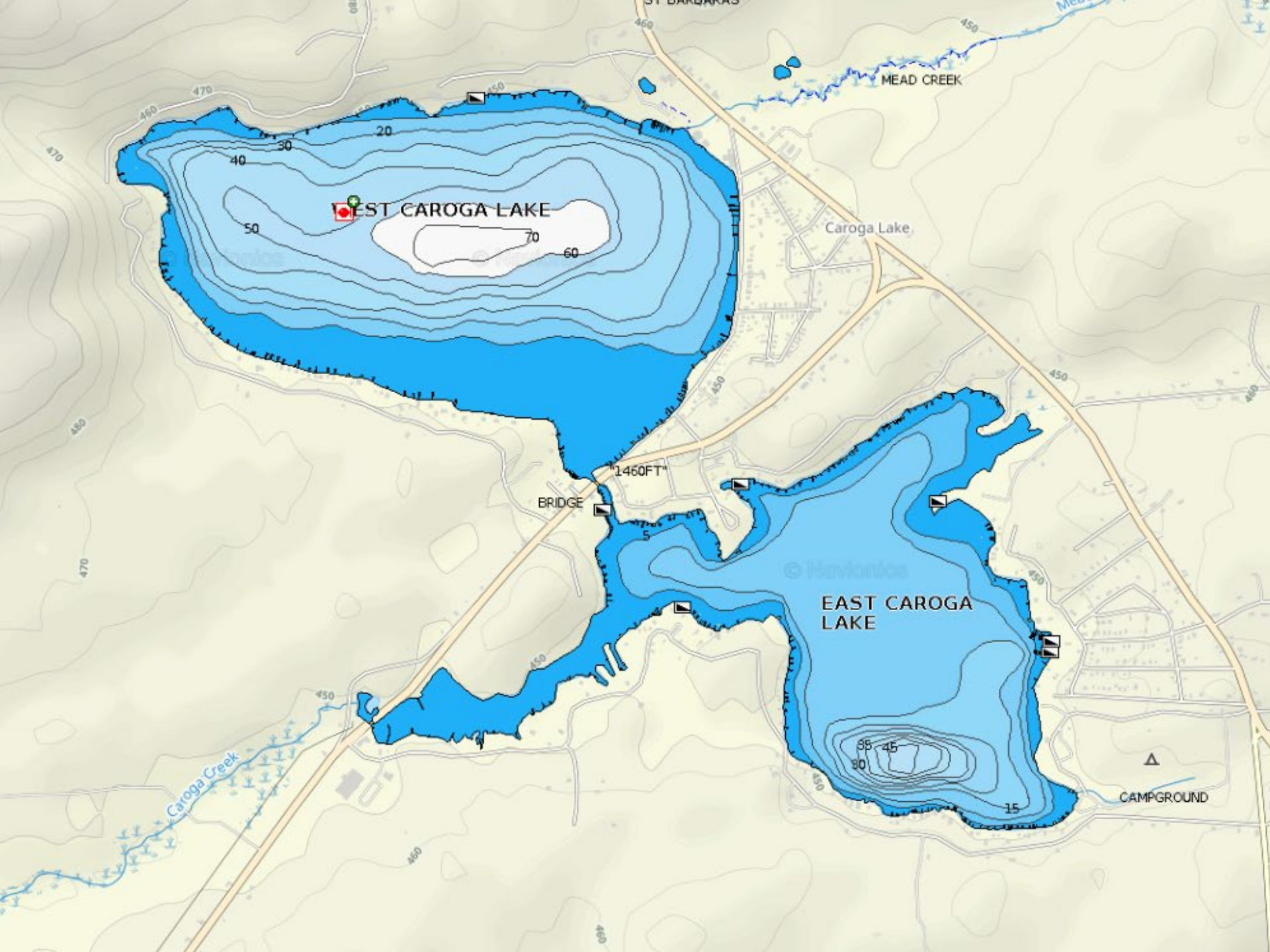
Town of Caroga, Fulton County


FULTON
CAROGA
Pine Lake
Shaker Mountain
Wild Forest
RATFORD
Pleasant Lake
29A
CAROGA
Canada Lake
BLEECKER
West Caroga Lake
Caroga Lake
East Caroga Lake
Peck Lake
JOHNSTOWN
119
EPHRATAH
10A
Rockwood
Garoga
309
101
122
131


CAROGA
N Shore Rd West Caroga
Victory Hwy
E Shore Rd West Caroga
S Shore Rd West Caroga
Ridge Rd
4th Ave
Shawh Dr
Sol Wilcke Dr

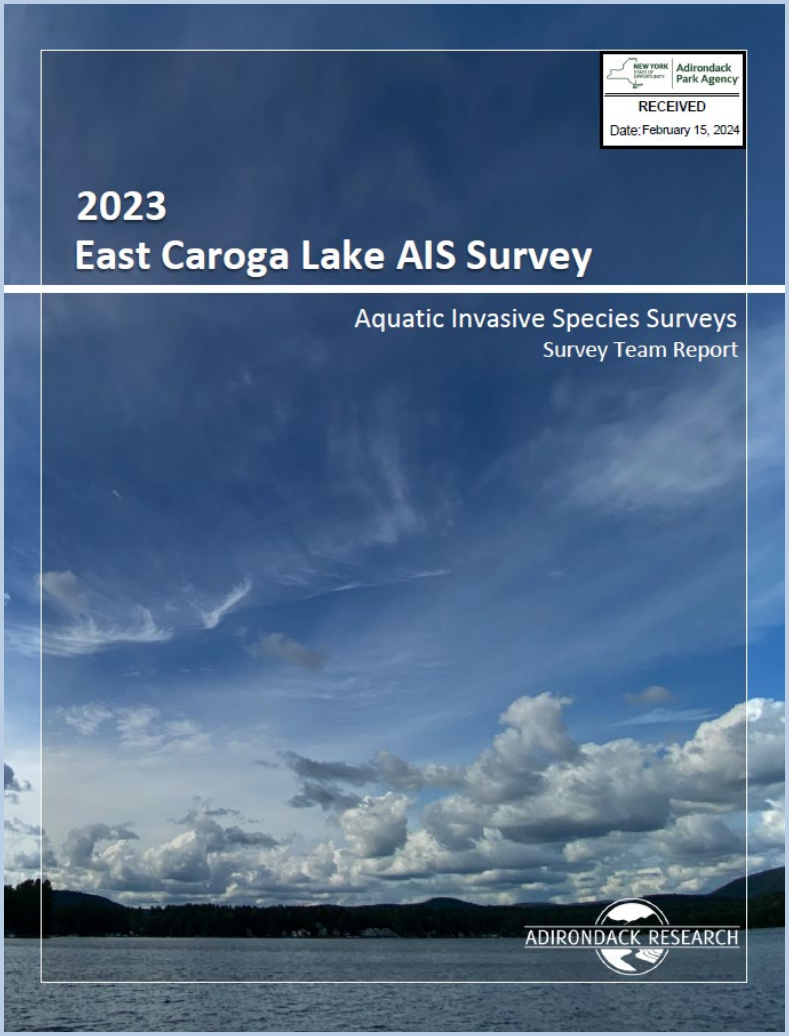

Golf Course
1800 ft
Ridge Rd
111
State Highway 10
1600 ft
County Highway 112
112
Meade Creek
Meade Creek
1800 ft
1600 ft
10
Caroga Lake
Caroga Lake
S Shore West Caroga Rd
E Shore Rd West Caroga
Garlock Rd
1600 ft
Fisher Rd
29A
1639 ft
S Shore East Caroga Lake Rd
Caroga Creek
Caroga Creek
10
Beech Ridge Rd
State Highway 29A
137
1908 ft
1800 ft
Hilley Rd

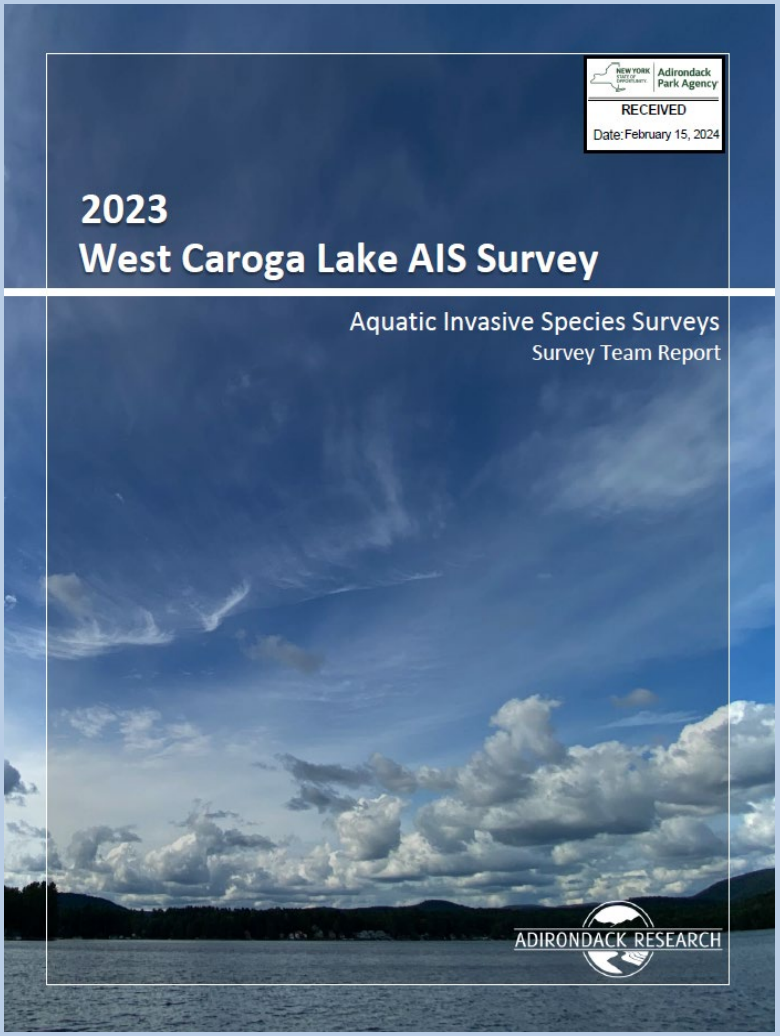

West
Caroga
Lake
Caroga Lake
East
Caroga
Lake
Caroga Creek


MEAD CREEK
WEST CAROGA LAKE
20
30
40
50
70
60
Caroga Lake
"1460FT"
BRIDGE
EAST CAROGA LAKE
35
45
30
15
CAMPGROUND
Caroga Creek

Town of Caroga, New York
Lakes Management Plan
February, 2019

This plan was developed by the Town of Caroga's Lakes Management Committee:
Marcus Harazin
Mike Durkee
James Long
Gene Centi
John Glenn


Adirondack Park Agency
RECEIVED
Date: February 15, 2024
2023
East Caroga Lake AIS Survey
Aquatic Invasive Species Surveys
Survey Team Report
ADIRONDACK RESEARCH


Adirondack Park Agency
RECEIVED
Date: February 15, 2024
2023
West Caroga Lake AIS Survey
Aquatic Invasive Species Surveys
Survey Team Report
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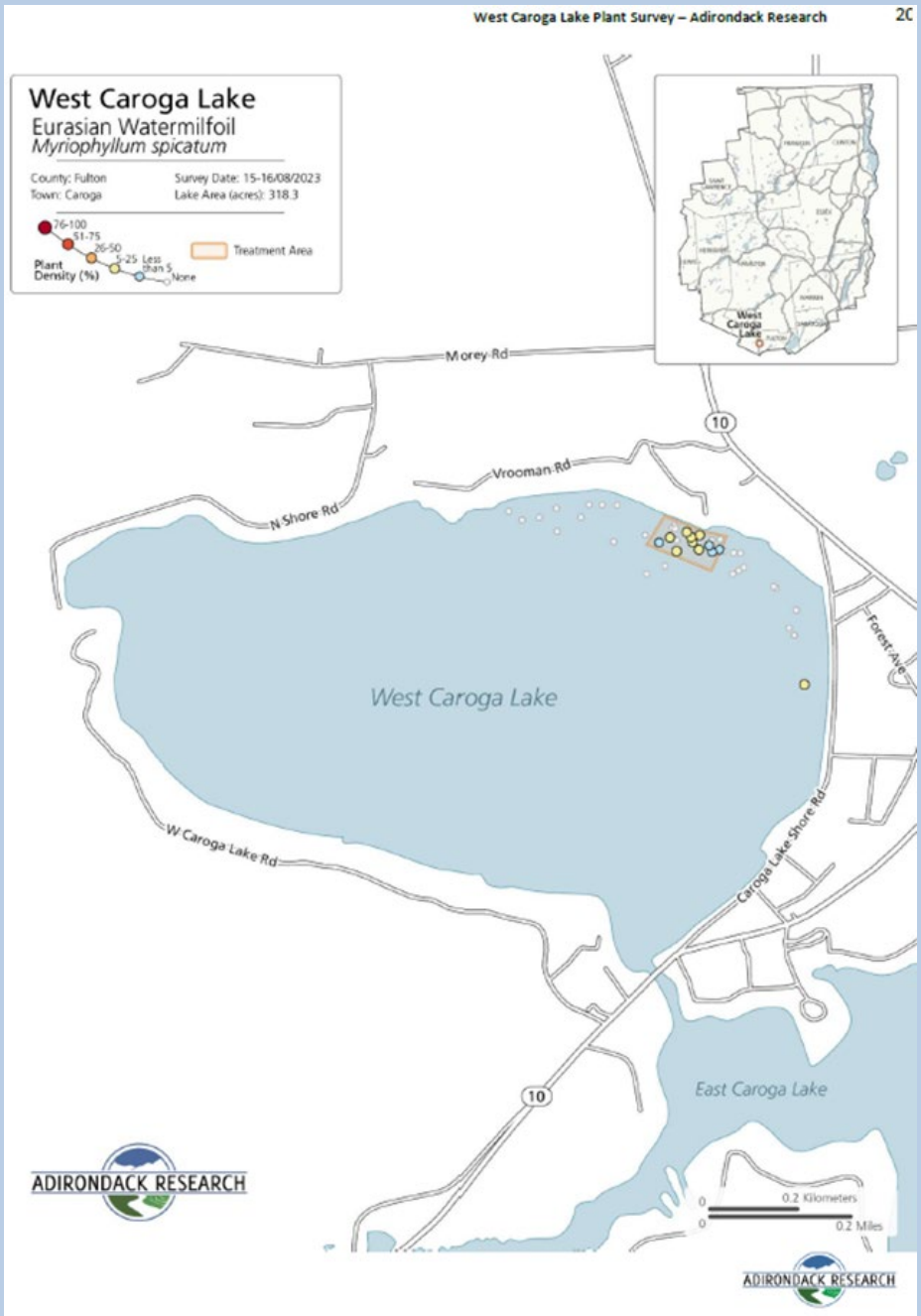
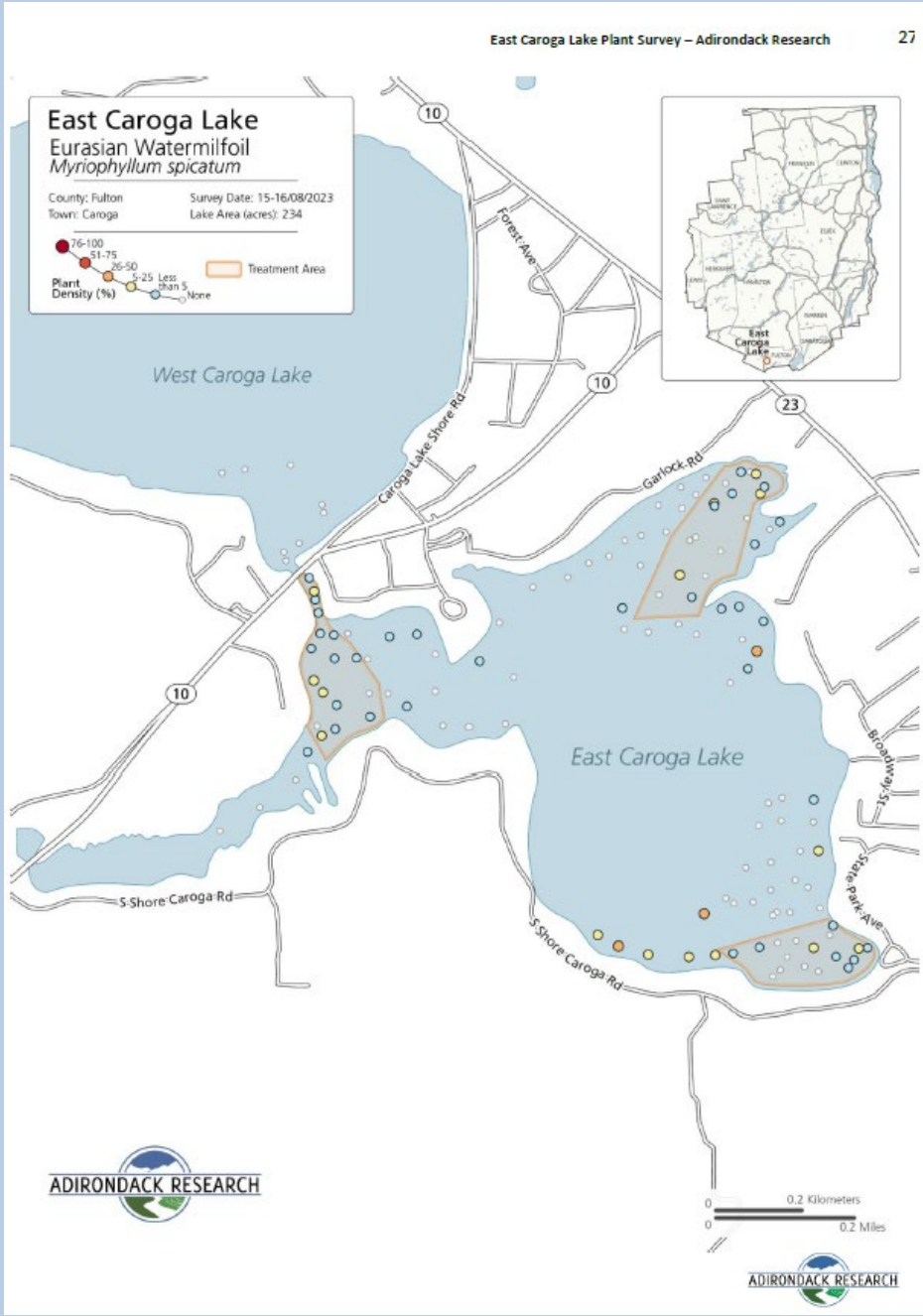
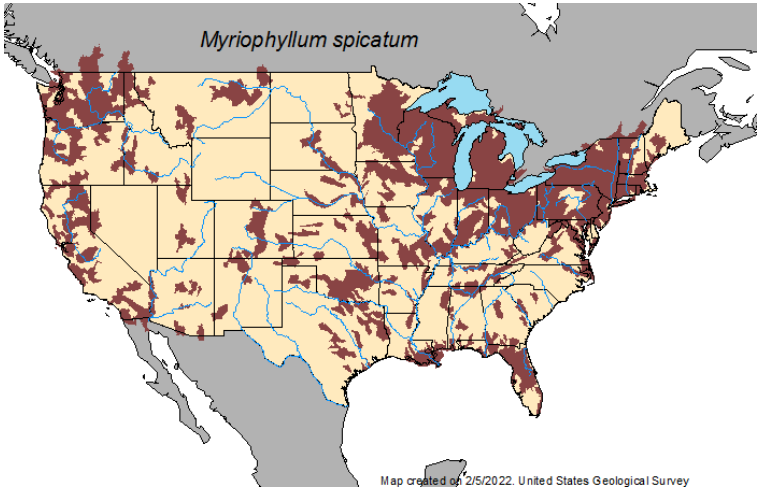

West Caroga Lake
Eurasian Watermilfoil
Myriophyllum spicatum
County: Fulton
Town: Caroga
Survey Date: 15-16/08/2023
Lake Area (acres): 318.3
76-100
51-75
26-50
5-25
Less than 5
None
Plant Density (%)
Treatment Area
Morey Rd
Vrooman Rd
N Shore Rd
10
Forest Ave
West Caroga Lake
W Caroga Lake Rd
Caroga Lake Shore Rd
East Caroga Lake
0.2 Kilometers
0.2 Miles
ADIRONDACK RESEARCH

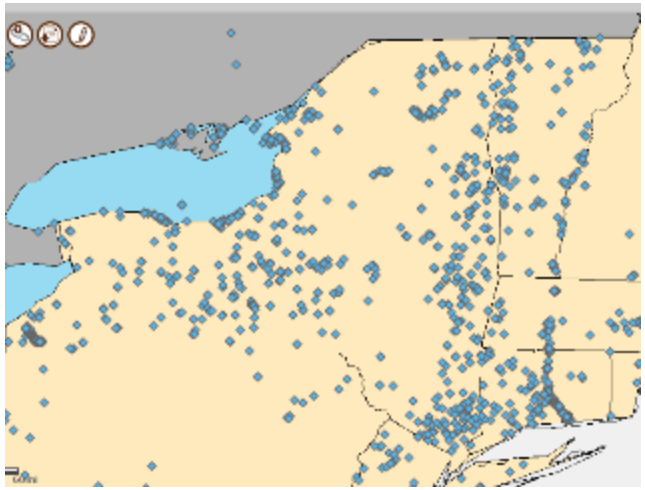

East Caroga Lake
Eurasian Watermilfoil
Myriophyllum spicatum
County: Fulton
Town: Caroga
Survey Date: 15-16/08/2023
Lake Area (acres): 234
76-100
51-75
26-50
5-25
Less than 5
None
Plant Density (%)
Treatment Area
West Caroga Lake
Forest Ave
10
23
Caroga Lake Shore Rd
Garlock Rd
East Caroga Lake
Broadway St
State Park Ave
S Shore Caroga Rd
0.2 Kilometers
0.2 Miles
ADIRONDACK RESEARCH

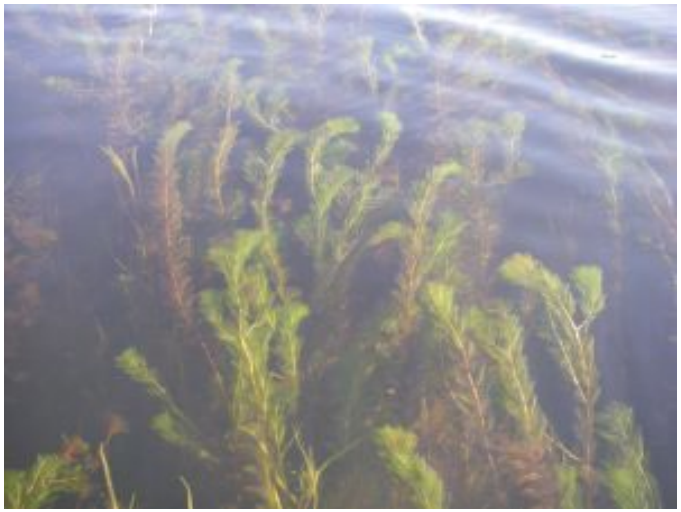
Eurasian Watermilfoil (EWM)

- Nonnative aquatic invasive plant
- Economic and environmental harm:
  - Impairs recreational use of waterways;
  - Degrades native habitat of fish and other wildlife.
- No native predators
- Can form dense beds

Once established, difficult if not impossible to eradicate.







Grows well in disturbed areas

Each plant can produce 100 seeds per season, but much more successful at vegetative reproduction via fragments and runners.

After flowering, this species can undergo auto-fragmentation; fragments are then transported via wind, waves, or human activity.

5/15/2024

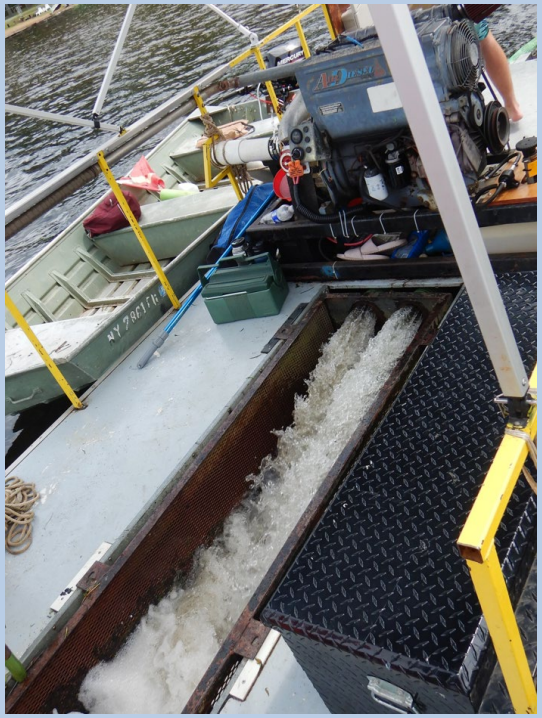
EWM Management in East and West Caroga Lakes

Timeline

- Identified in 1980's (East Caroga)
- 1990 – Present → DASH (E Caroga)
- 1994 – Present → DASH (W Caroga)
- APA Permits: P90-295; P92-51; P94-371; P95-30; P2004-0285(A); P2016-0141 (GP)
- 33 Years of Management Activity

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Bushels	3524	1556	4489	6964	4398	3112	2613	2149	1436
Cost					$74,618	$74,954	$74,534	$96,328	

Diver Assisted Suction Harvesting



Boat Launch Stewards

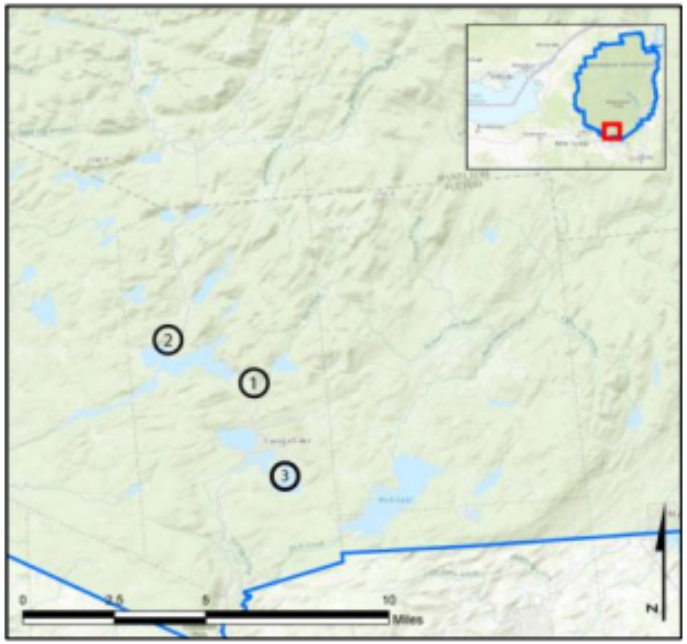
AWI Partner Program Reports

Canada Lake, East Caroga Lake & Caroga Decontamination Station

AIS intercepted: 5
Boats inspected: 2,866
Number of visitors: 4,875
Boats failing inspection: 0.7%
Decontaminations performed: 255

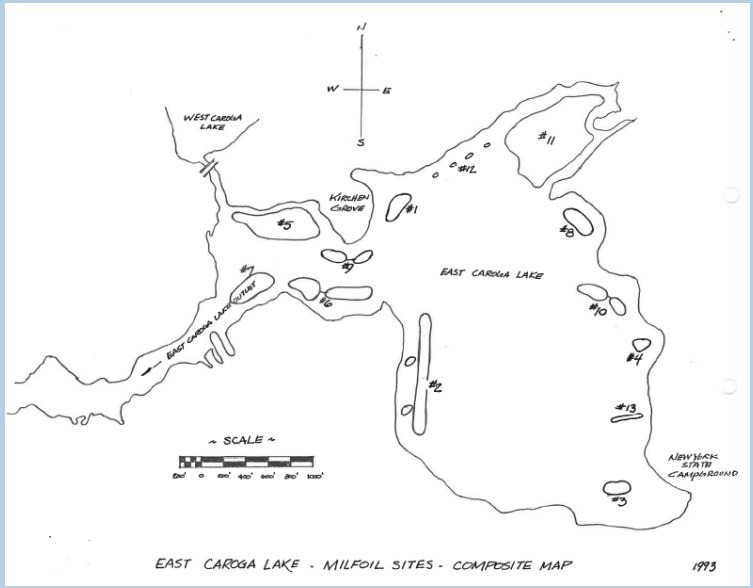
Dates of operation: May 26 – October 9
Visitors showing spread prevention awareness: 97%
Number of previously visited waterways: West Lake 50, East Caroga 9, Caroga Decon 43

AIS Present in Waterbody: Eurasian watermilfoil
Partnerships: Town of Caroga, Canada Lakes Conservation and E/W Caroga Lake Association
Notes: AWI provided support through WISPA data management.

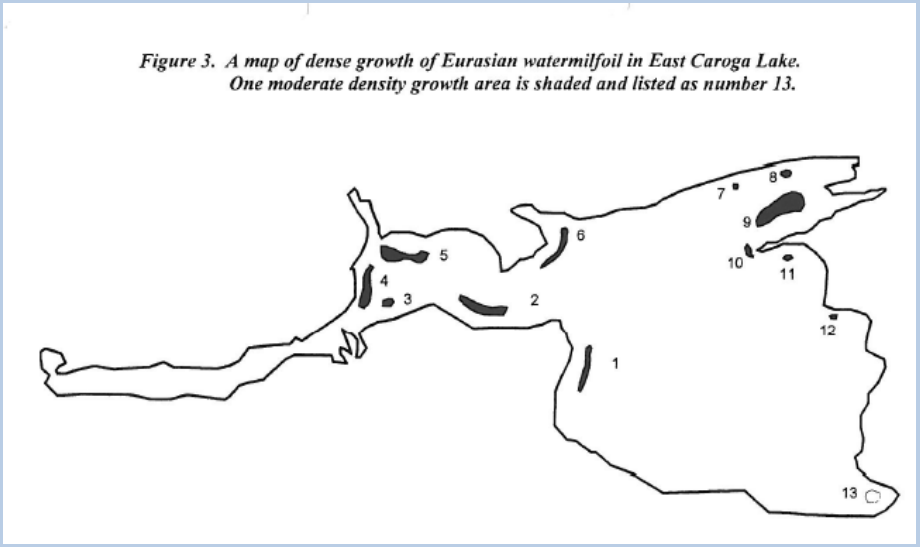


1–Caroga Decon; 2–Canada Lake; 3-East Caroga Lake

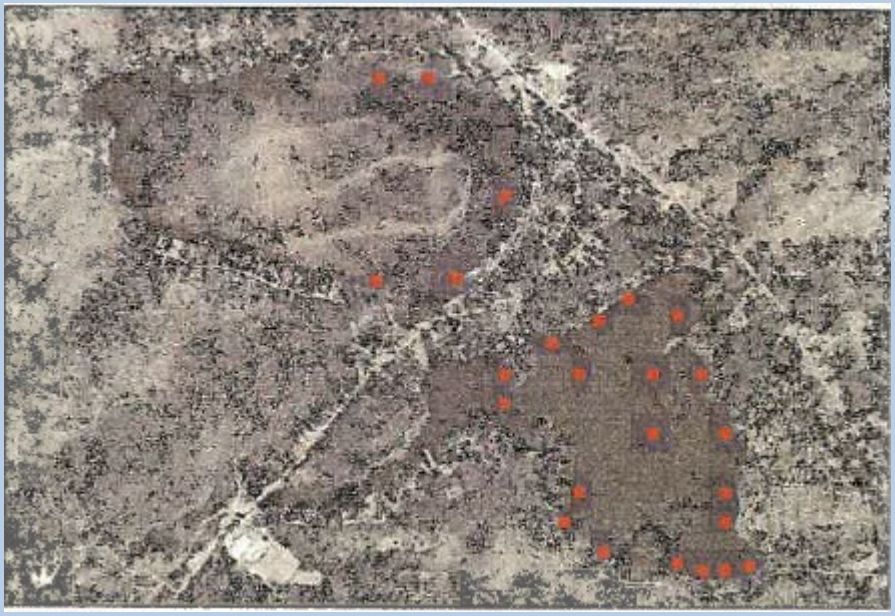
Surveys



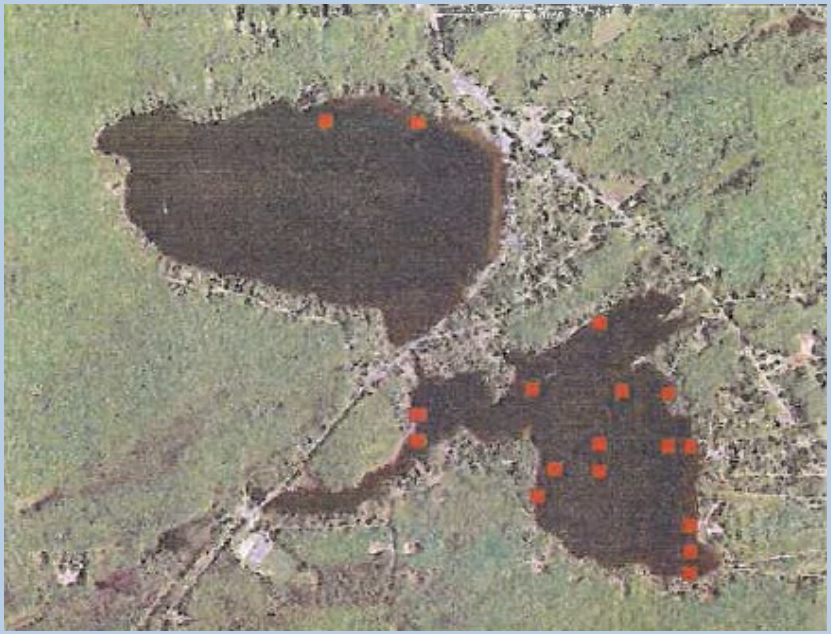
1993



2000

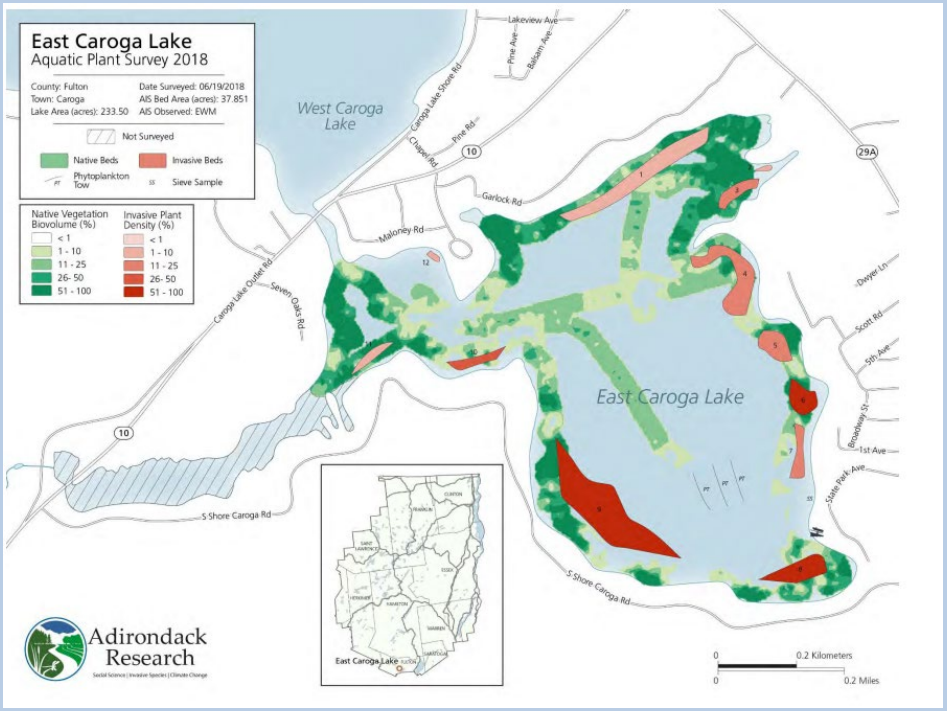


2004

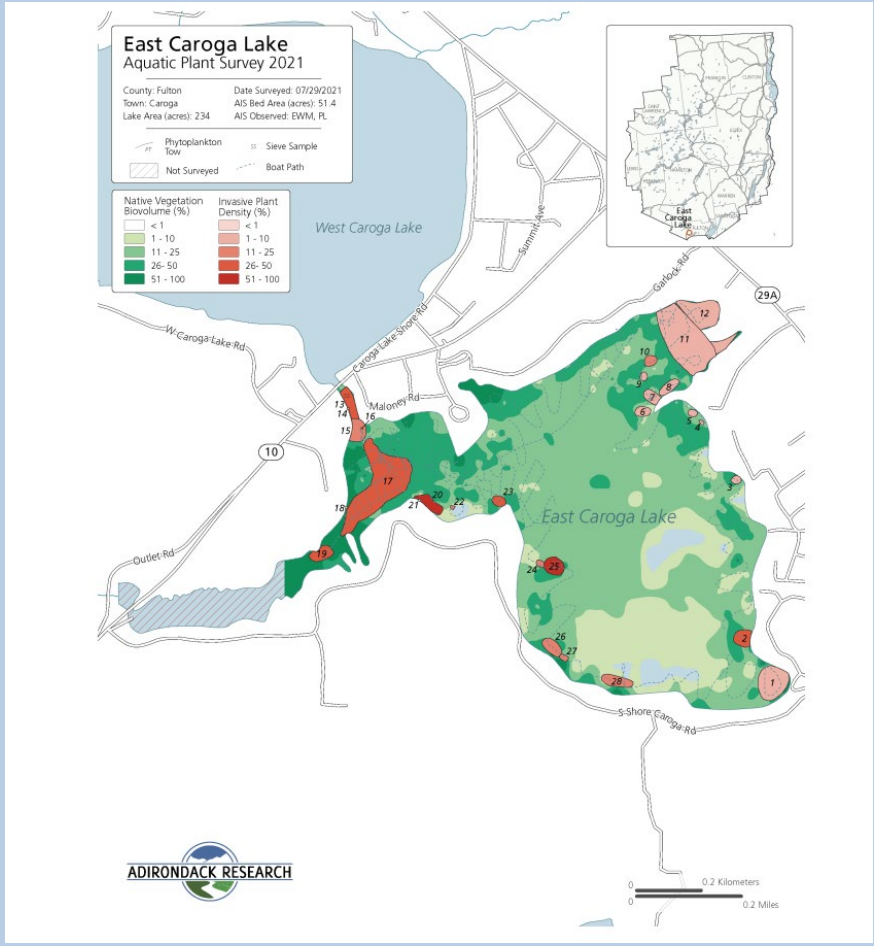


2010

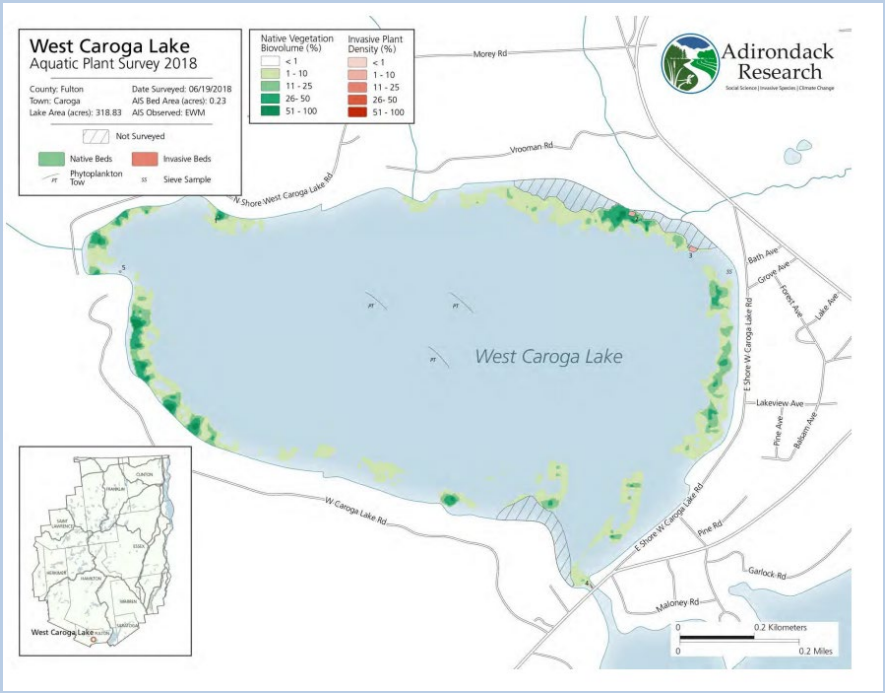
5/15/2024



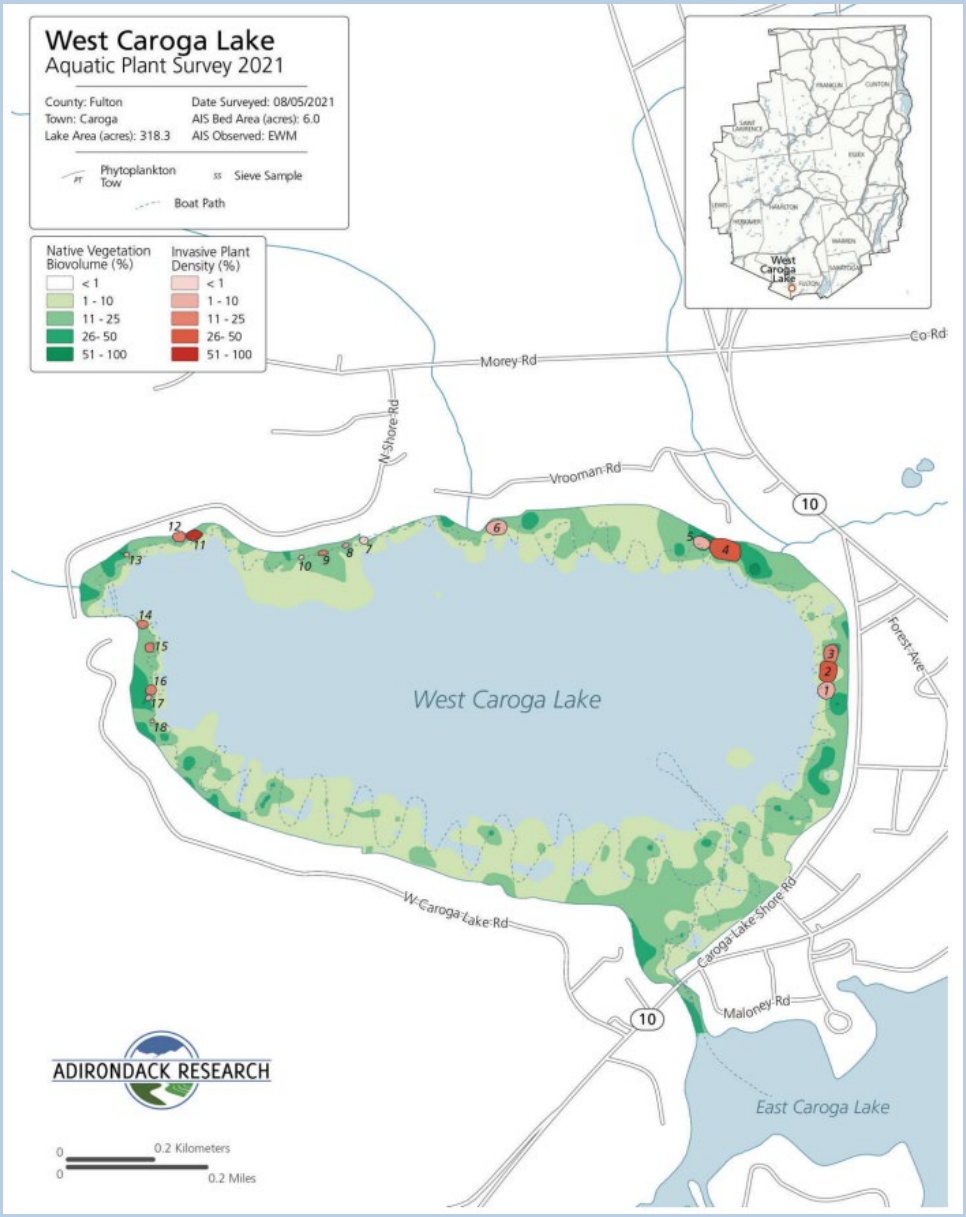
2018



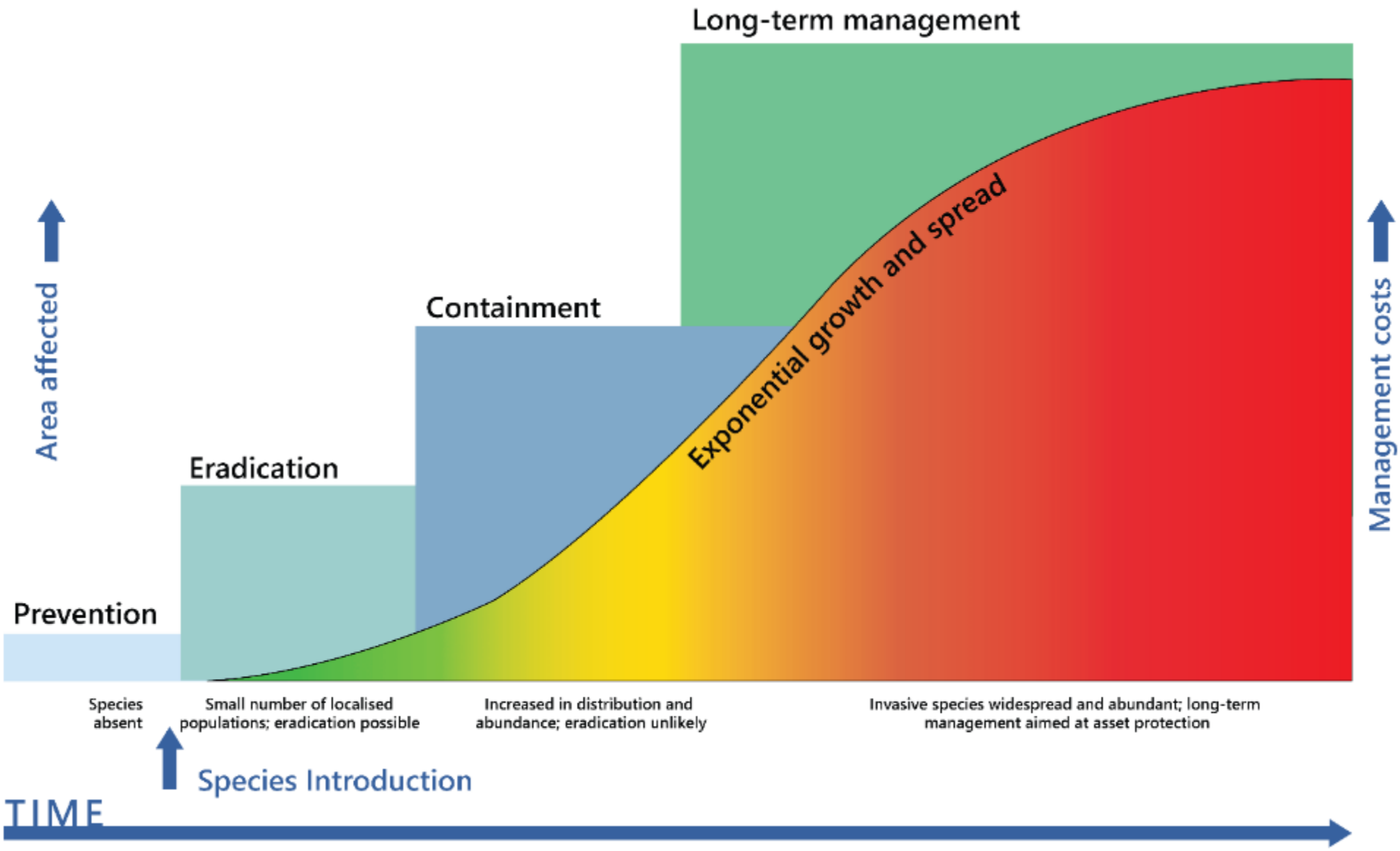
2021


West Caroga Lake
Aquatic Plant Survey 2018
County: Fulton
Town: Caroga
Lake Area (acres): 318.83
Date Surveyed: 06/19/2018
AIS Bed Area (acres): 0.23
AIS Observed: EWM
Not Surveyed
Native Beds
Invasive Beds
Phytoplankton Tow
Sieve Sample
Native Vegetation Biovolume (%)
Invasive Plant Density (%)
< 1
1 - 10
11 - 25
26- 50
51 - 100
Adirondack Research
Morey Rd
Vrooman Rd
N Shore West Caroga Lake Rd
West Caroga Lake
Bath Ave
Grove Ave
Forest Ave
Lake Ave
E Shore W Caroga Lake Rd
Lakeview Ave
Pine Ave
Balsam Ave
W Caroga Lake Rd
Pine Rd
Garlock Rd
Maloney Rd
0.2 Kilometers
0.2 Miles

2018


West Caroga Lake
Aquatic Plant Survey 2021
County: Fulton
Town: Caroga
Lake Area (acres): 318.3
Date Surveyed: 08/05/2021
AIS Bed Area (acres): 6.0
AIS Observed: EWM
Phytoplankton Tow
Sieve Sample
Boat Path
Native Vegetation Biovolume (%)
Invasive Plant Density (%)
< 1
1 - 10
11 - 25
26- 50
51 - 100
Co Rd
Morey Rd
N Shore Rd
Vrooman Rd
10
Forest Ave
West Caroga Lake
W Caroga Lake Rd
Caroga Lake Shore Rd
Maloney Rd
East Caroga Lake
ADIRONDACK RESEARCH
0.2 Kilometers
0.2 Miles

2021


Long-term management
Containment
Eradication
Prevention
Exponential growth and spread
Area affected
Management costs
Species absent
Small number of localised populations; eradication possible
Increased in distribution and abundance; eradication unlikely
Invasive species widespread and abundant; long-term management aimed at asset protection
Species Introduction
TIME

Aquatic Herbicide ProcellaCOR EC

ProcellaCOR EC (*florpyrauxifen-benzyl)*

- **Registration approved by:**
  - **USEPA in 2018**
  - **NYSDEC in 2019 (NYSDOH, Division of Fish and Wildlife)**

"The product application was fully reviewed regarding human health as well as ecosystem health. There were no objections to the registration of this product in New York State"

  - **Health Canada Pest Management Regulatory Agency in 2022**

"When used according to label directions, florpyrauxifen-benzyl and its transformation products do not pose a risk to wild mammals, birds, beneficial invertebrates, earthworms, bees, aquatic invertebrates, fish, amphibians, or algae."

ProcellaCOR EC
A Selective Systemic Herbicide

- Limited non-target impacts

- Rapid plant uptake (2-6 hours)

- Low dosage (<8 parts per billion)
  1 ppb = 3 seconds in a century
  = 1¢ in $10,000,000
  = 1 water drop in 10,000 gallon pool

- Fast degradation (Photolysis)

Auxin Mimic

Active Ingredient Florpyrauxifen-benzyl

Mimics plant growth hormone - causes uncontrolled rapid growth that ultimately kills the plant

- Leaves grow larger and become twisted,
- Stems lengthen,
- Leaf and shoot tissue becomes fragile
- Initial symptoms in hours to days
- Plant death and decomposition within 2-3 weeks.

<u>Plant fragments are not viable.</u>

Applied while plants are growing for efficient product uptake.

Half Life of ProcellaCOR EC		
Aquatic	Aerobic	4 to 6 Days
	Anaerobic	2 Days
Sediment	Aerobic	8 Days
	Anaerobic	3 Days
Metabolites in Sediment	Aerobic	21.5 Days
	Anaerobic	28.9 Days

Toxicity	
Fish	Practically NonToxic (Lowest Value Assigned by EPA)
Invertebrates	Slightly Toxic (Second Lowest Value Assigned by EPA)
Birds, Mammals, Amphibians, Reptiles	Practically NonToxic (Lowest Value Assigned by EPA)

ProcellaCOR EC

Maximum Treatment Concentration Allowed by Label for Controlling EWM is 7.72 parts per billion (ppb)

NYSDEC Use Restrictions:

- Drinking Water: No restrictions under 50 ppb. Can and has been used in public drinking supplies
- Swimming / Fishing : No restrictions
- Irrigation & Livestock Watering: Restriction until concentration is <1 ppb

Overview of Regional ProCellaCor EC Treatments

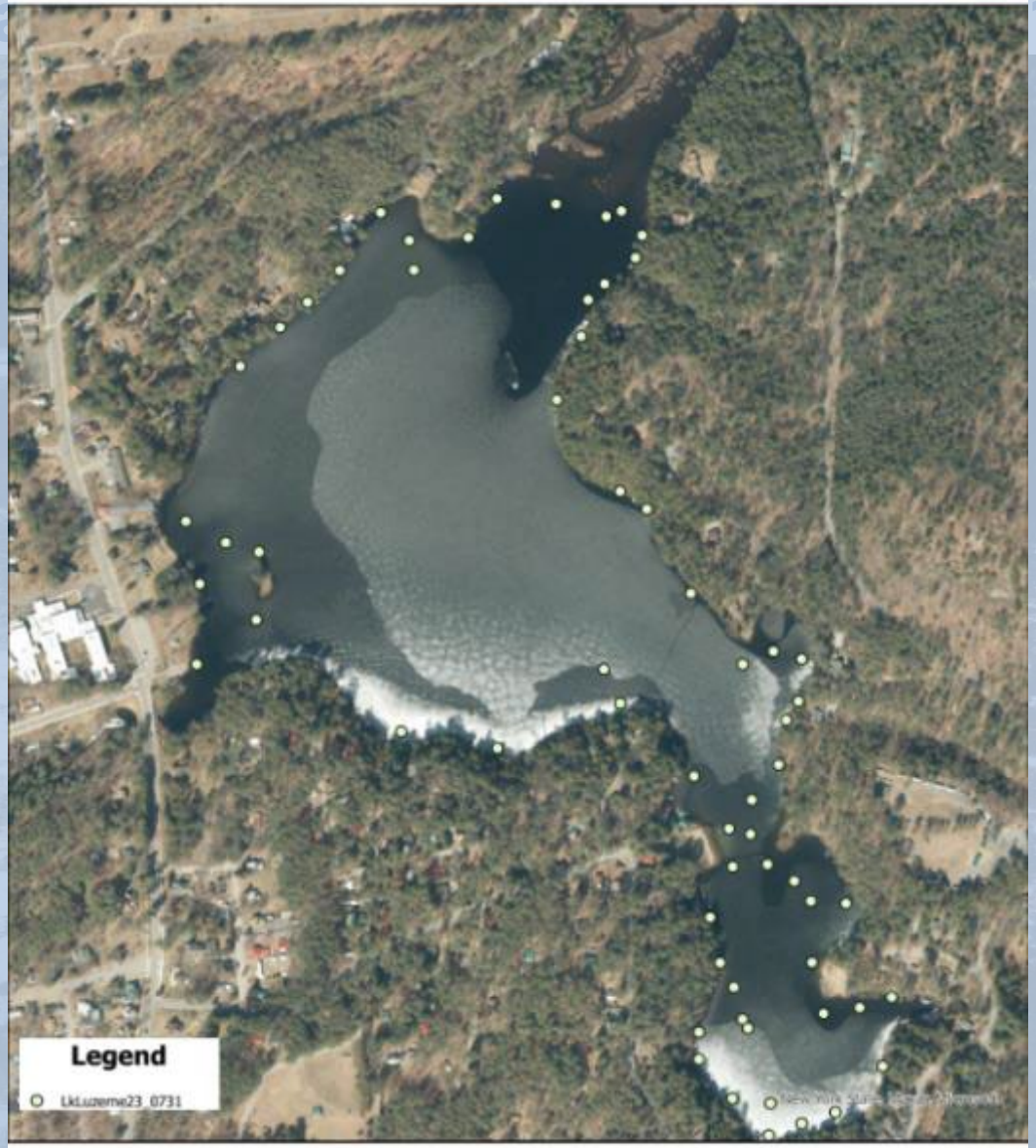
	Number of Treatments	Total Treatment Area	Range of Treatment Area
New York	NYS: ≈ 30 5’ in Region 5 2 in Adirondack Park	NYS: Undocumented ADK’s: 41 ac	NYS: Undocumented ADK’s: 41 ac
Vermont	18 Undertaken	480 ac	4 to 70 ac
New Hampshire	43 Undertaken	990 ac	0.75 to 78

Table 2: 4 Year Change in common species abundance from 2019-2023.

COMMON NAME	SCIENTIFIC NAME	2019	2020	2021	2022	2023	CHANGE
Eurasian watermilfoil	*Myriophyllum spicatum*	66%	0%	0%	2%	1%	Decrease
Common waterweed	*Elodea spp.*	60%	63%	74%	71%	24%	Decrease
Flat-stem pondweed	*Potamogeton zosteriformis*	50%	54%	59%	65%	48%	Decrease
Southern naiad	*Najas guadalupensis*	41%	60%	10%	68%	46%	Decrease
Macroalgae	*Chara/Nitella spp.*	38%	48%	23%	24%	16%	Decrease
Thin-leaf pondweed	*Potamogeton pusillus*	44%	21%	33%	16%	13%	Decrease
Watershield	*Brasenia schreberi*	37%	26%	20%	21%	11%	Decrease
Bassweed/Large-leaf pondweed	*Potamogeton amplifolius*	30%	37%	52%	43%	34%	Decrease
Ribbon-leaf pondweed	*Potamogeton epihydrus*	18%	34%	28%	7%	16%	Increase
Northern naiad (2019) Slender naiad (2020, 2021)	*Najas gracillima*	17%	9%	2%	0%	0%	No change
Slender naiad (2019) Nodding naiad (2020, 2021)	*Najas flexilis*	16%	35%	82%	43%	16%	Decrease

GPS Points Collected
July 31, 2023

SOLITUDE
LAKE MANAGEMENT
888.480.5253
solitudelakemanagement.com



Lake Luzerne
Luzerne, NY

Lake Luzerne

0 160 320 640
Feet

N

Map Date: 8/10/2023
File: LkLuzerne23_0731
Prepared by: KV
Office: Shrewsbury, MA

Proposed Project

Stated Goals

With the major concentrations [of EWM] in East Caroga Lake, 80% of the DASH program had to be directed there and fortunately West Caroga Lake was not seeing any major increase in growth.

In 2020 we began to see changes and at the end of 2021 several new and large areas of Milfoil were appearing along the east shore.

Covering both lakes with our existing team [has become] problematic and the Lake Management Team felt the need to look for a process to supplement the DASH program.

The search led us to ProcellaCOR because of its success in several lakes we were familiar with and felt a Pilot program in several heavy infested areas of both lakes using the Herbicide would be the best approach.

…we plan to expand its use while at the same time continuing the DASH program in the hope we can reduce manpower and associated costs which are approaching $100,000 per year, and finally [make] a substantial reduction in Milfoil growth.

Treatment

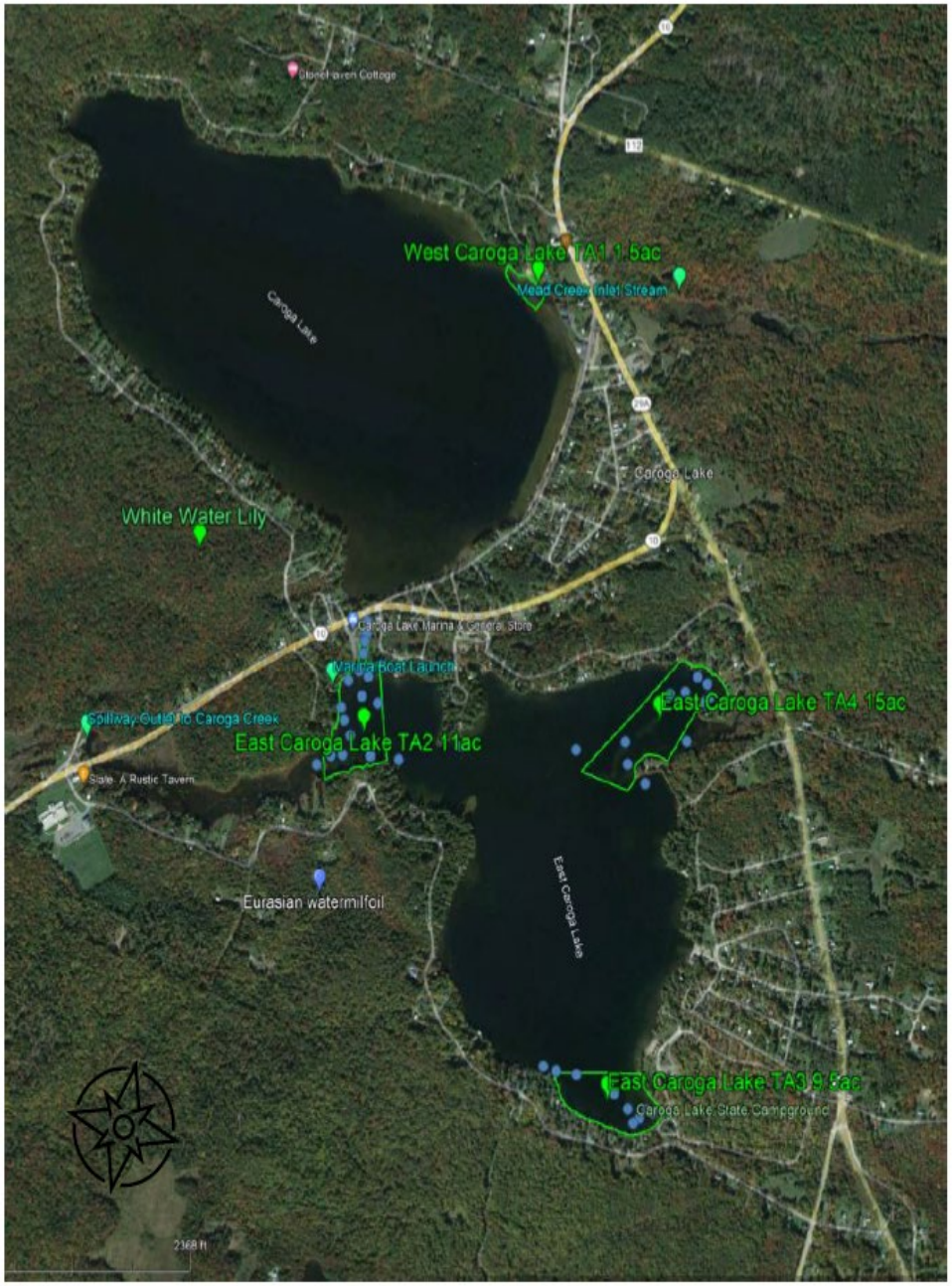
Treat 37 acres within four treatment areas in West and East Caroga Lakes with ProcellaCor EC.

<u>Concentration</u>: 3.86 – 5.79ppb
9.8 Total Gallons of Product

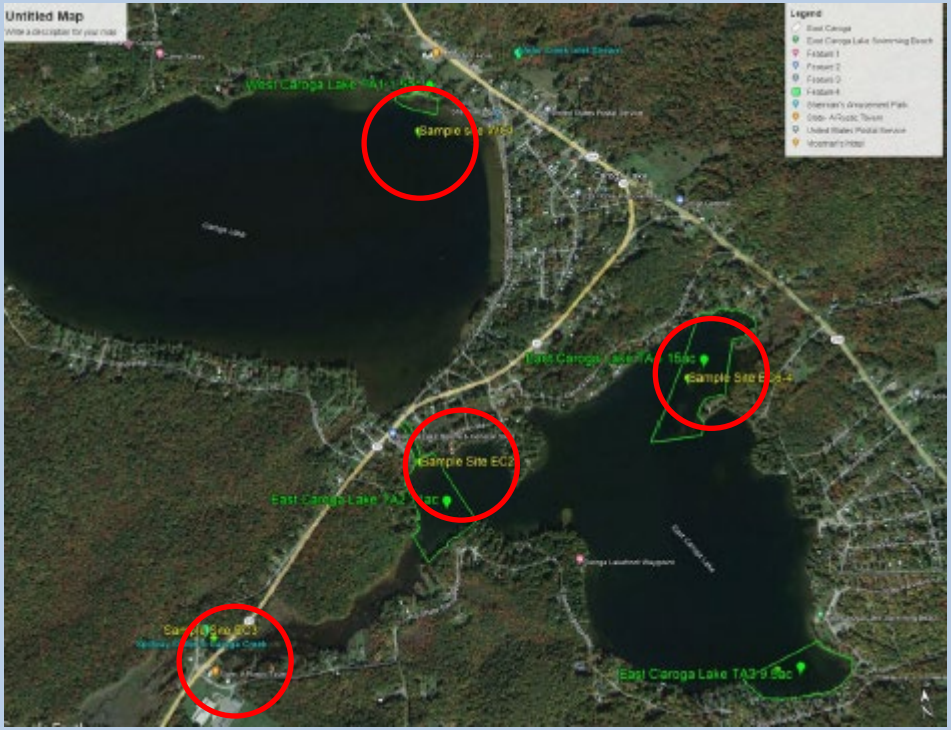
Water Quality Measurements Collected at Treatment Sites

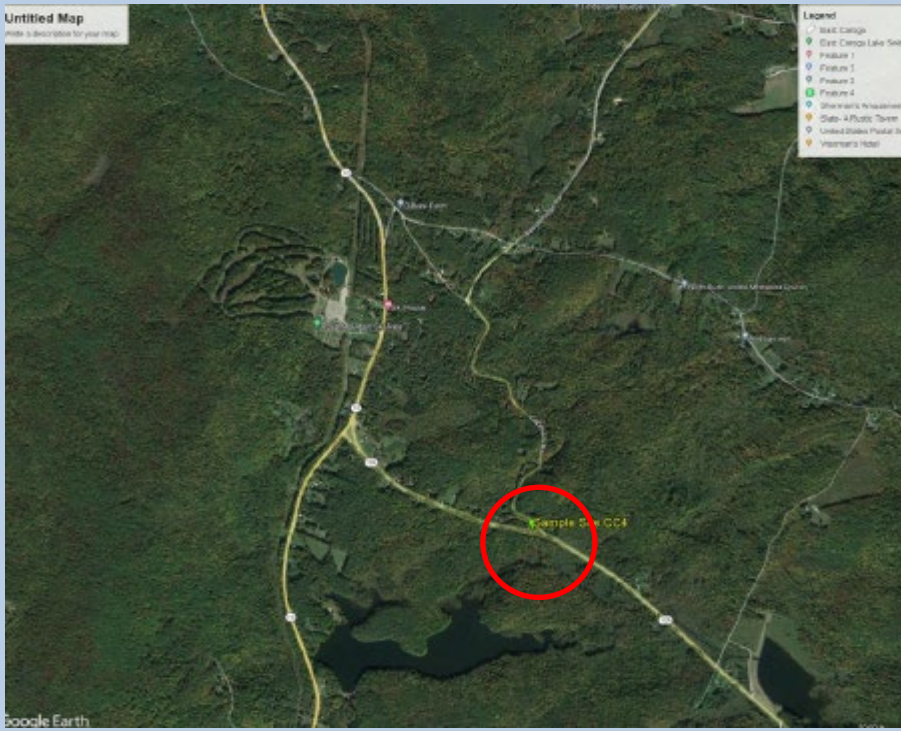
- Secchi Depth (Measure of Photic Zone)
- Temperature

East and West Caroga Lakes - 2024 ProcellaCOR EC Treatment Areas



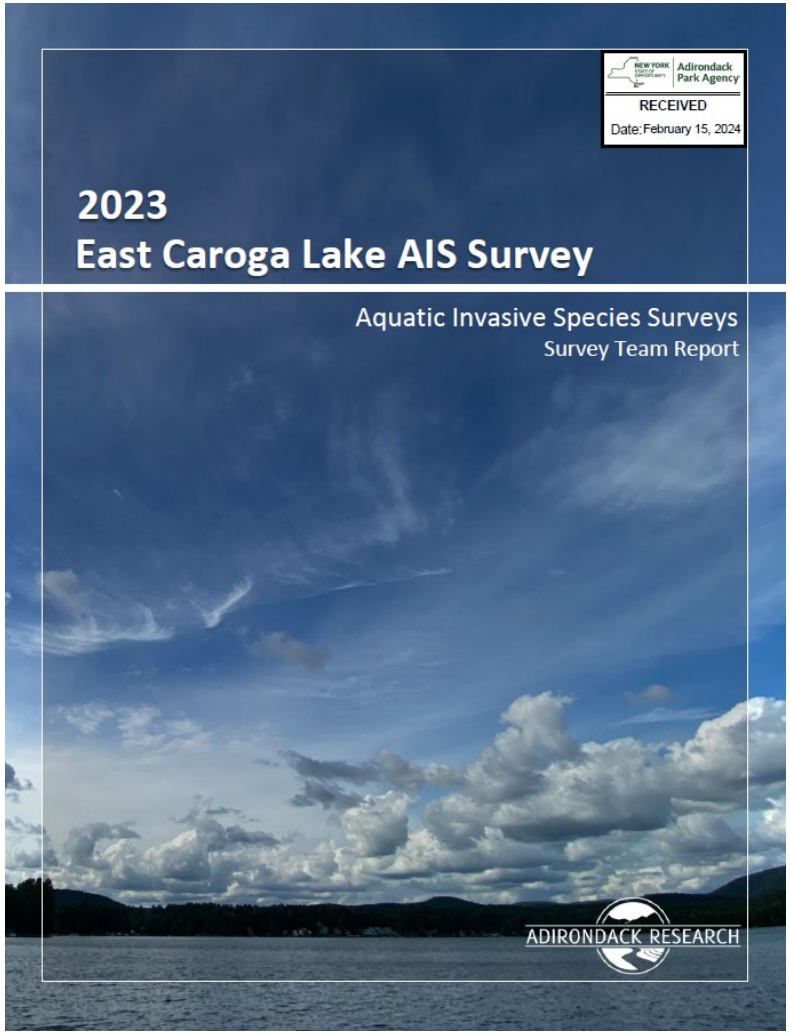
Residual Concentration Monitoring





Post Treatment Samples collected until herbicide concentration is below 1 ppb in all samples.	1 to 3 Hours 10 to 12 Hours 24 Hours 3 Days 7 Days 7-14 Days thereafter

Post Treatment Plant Survey



Adirondack Research

Management and Monitoring

- Informal survey (conducted by the applicator) about 6 weeks post-treatment
- Formal survey conducted in August/September for submission to APA
- 2024 and 2025: Operation of Regular DASH Hand Harvesting Program with attention increased to new infestation areas
- 2024 and 2025: Visual observations of initial treatment areas by DASH crew to note absence/presence of regrowth
- 2025: Treatment Area 4

Table 2. Summary of Aquatic Vegetation Occurrences and Frequency – East Caroga Lake 2023

Lake	Common Name	Latin Name	# of Stations	% Occurrence
East Caroga	Bladderwort	*Utricularia spp.*	22	16.67
East Caroga	Clasping-leaf pondweed	*Potamogeton perfoliatus*	1	0.76
East Caroga	Eel grass	*Vallisneria americana*	8	6.06
East Caroga	Eurasian watermilfoil	*Myriophyllum spicatum*	54	40.91
East Caroga	Floating-leaf pondweed	*Potamogeton natans*	4	3.03
East Caroga	Horsetail	*Equisetum spp.*	1	0.76
East Caroga	Large-leaf pondweed	*Potamogeton amplifolius*	21	15.91
East Caroga	Little floating heart	*Nymphoides cordata*	11	8.33
East Caroga	Muskgrass	*Chara spp.*	2	1.52
East Caroga	Naiad	Naiad sp.	2	1.52
East Caroga	Nitella	Nitella sp.	23	17.42
East Caroga	Northern milfoil	*Myriophyllum sibiricum*	8	6.06
East Caroga	Pickerelweed	*Pontederia cordata*	5	3.79
East Caroga	Pipewort	*Eriocaulon aquaticum*	1	0.76
East Caroga	Quillwort sp.	*Isoetes spp.*	1	0.76
East Caroga	Robbins pondweed	*Potamogeton robbinsii*	35	26.52
East Caroga	Slender naiad	*Najas flexilis*	15	11.36
East Caroga	Slender-leaf pondweed	*Potamogeton pusillus*	27	20.45
East Caroga	Variable-leaf pondweed	*Potamogeton gramineus*	41	31.06
East Caroga	Water bulrush	*Schoenoplectus acutus*	14	10.61
East Caroga	Watershield	*Brasenia schreberi*	23	17.42
East Caroga	White-stemmed pondweed	*Potamogeton praelongus*	22	16.67
East Caroga	White waterlily	*Nymphaea odorata*	10	7.58

Table 2. Summary of Aquatic Vegetation Occurrences and Frequency – W. Caroga Lake 2023

Lake	Common Name	*Latin Name*	# of Stations	% Occurrence
West Caroga	Common elodea	*Elodea canadensis*	1	2.33
West Caroga	Eel grass	*Vallisneria americana*	10	23.26
West Caroga	Eurasian watermilfoil	*Myriophyllum spicatum*	12	27.91
West Caroga	Large-leaf pondweed	*Potamogeton amplifolius*	14	32.56
West Caroga	Little floating heart	*Nymphoides cordata*	5	11.63
West Caroga	Muskgrass	*Chara sp.*	1	2.33
West Caroga	Nitella	Nitella sp.	7	16.28
West Caroga	Slender naiad	*Najas flexilis*	3	6.98
West Caroga	Small pondweed	*Potamogeton berchtoldii*	1	2.33
West Caroga	Variable-leaf pondweed	*Potamogeton gramineus*	4	9.30
West Caroga	Water nymph	*Najas spp.*	3	6.98
West Caroga	White-stemmed pondweed	*Potamogeton praelongus*	8	18.60

Milfoil Species in East Caroga Lake

Plant Species	Native	Protected
Eurasian watermilfoil *Myriophyllum spicatum*	No (Target Species)	No
Northern watermilfoil *Myriophyllum sibiricum*	Yes	No

Susceptibility: Other Species in Caroga Lakes

Plant Species	Susceptibility
Watershield	Moderate - High
White waterlily	Moderate
Pickerelweed	Low - Moderate
All others (N= 19)	Low

Sources: Selective Control of Invasive Watermilfoils with ProcellaCOR® Aquatic Herbicide and Response of Native Aquatic Plants. January 28, 2019 Mark Heilman, Ph.D., Jon Gosselin, SePRO Technical Specialist, Pers.Communication

Public Comment and Review by Others

Public Comment

- Public Notice
  - Shoreline owners notified when application was received, also when application was completed (357 Recipients)
  - Environmental Notice Bulletin: Comment Period Ended April 11, 2024
  - 12 comment letters received, representing 19 people
  - Opposed→ 5 Letters (6 people)
  - Supportive → 7 Letters (13 people)

Public Comment - Opposed

- General opposition to any chemical management
- Human health safety concerns
- Fisheries and fish stocking concerns
- Concerns about product dissipation

Public Comment - Supportive

- Comments of general support
- Concern that the treatment areas aren't big enough
- Benefits are self-evident
- Suction harvesting is not the complete answer

Review by Others

- NYS Department of Environmental Conservation
  - Pesticides Permits issued April 5, 2024
    - Permit AV-5-24-4 (East Caroga Lake)
    - Permit AV-5-24-5 (West Caroga Lake)

Draft Permit Conditions

- Undertake project as proposed
- Adherence to Clean Drain Dry Standards for all equipment used
- Post-treatment concentration monitoring report
- Post treatment aquatic plant survey

Conclusions of Law

a. that the project authorized as conditioned herein will be consistent with the Adirondack Park land use and development plan; and

b. that the project authorized as conditioned herein will not have an undue adverse impact upon the natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources of the Park, taking into account the economic and social or other benefits to be derived from the activity; and

c. the economic, social and other benefits to be derived from the activity proposed and as conditioned herein compel a departure from the guidelines of 9 NYCRR Part 578.10(a)(1), in order to secure the natural benefits of wetlands associated with the project, consistent with the general welfare and beneficial economic, social, and agricultural development of the state

Staff Recommendation: Approve with Conditions