LAKE ST. CATHERINE
2025 AQUATIC PLANT SURVEY REPORT

PREPARED FOR THE LAKE ST. CATHERINE ASSOCIATION

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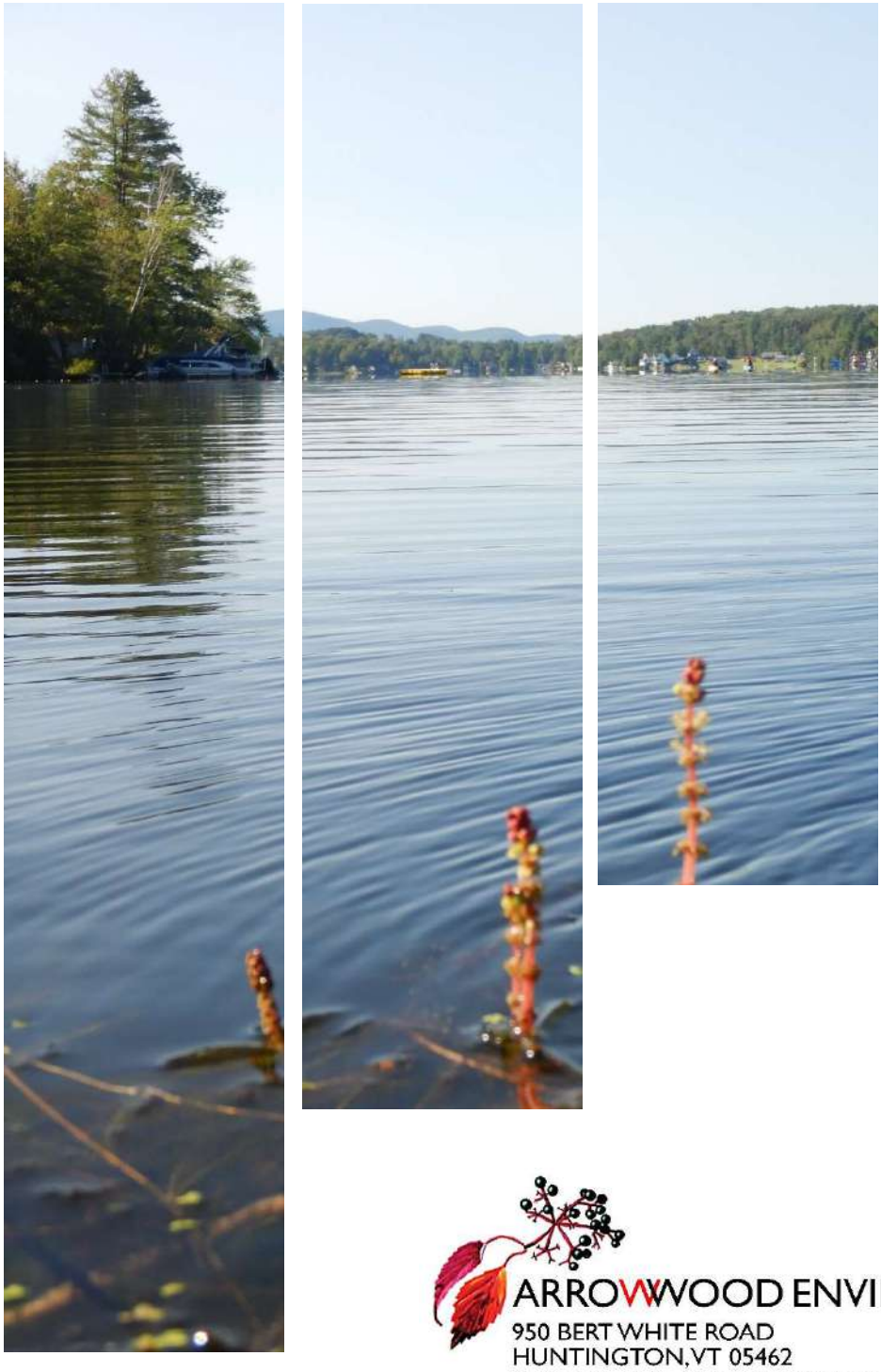

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1. Introduction

Arrowwood Environmental (AE) was retained by the Lake St. Catherine Association (LSCA) to conduct an inventory of aquatic macrophytes in Lake St. Catherine in Poultney and Wells, Vermont. The inventory is part of an ongoing effort to control Eurasian watermilfoil (*Myriophyllum spicatum*, EWM) in the lake.

The Lake St. Catherine system consists of Little Lake (or Little Pond), Lake St. Catherine, and Lily Pond. Little Lake is the southernmost waterbody and comprises 181 acres. It is a shallow waterbody with an average depth of 4 feet, mucky substrates, and dense aquatic plant growth. It is connected to Lake St. Catherine-proper by a narrow channel. Lake St. Catherine-proper is the largest waterbody in the system; it comprises 885 acres, has a maximum depth of 68 feet, and contains a diverse array of substrates and habitats. At the north end of Lake St. Catherine, a narrow channel connects it to Lily Pond, which is 20 acres in size. Like Little Lake, Lily Pond is a shallow pond characterized by mucky substrates and abundant aquatic plant growth.

Flow in the lake system is from north to south. Along the eastern shore of the channel between Lily Pond and Lake St. Catherine, there is an inlet of an unnamed brook which flows through a large wetland complex. Endless Brook flows into the eastern side of Lake St. Catherine near the northern end. This brook contains most of the flow from the watershed east of the lake, with the exception of two small unnamed tributaries which flow directly into the lake further to the south. The uplands on the western side of Lake St. Catherine drain into the lake via four small unnamed streams. Along the channel separating Lake St. Catherine and Little Lake, there is an inlet on the eastern side which

enters in a large wetland. The entire lake system flows out the southern end of Little Lake into Mill Brook, which is a tributary of the Wells Brook.

The Lake St. Catherine system is underlain by phyllites and limestones from the Bull Mountain Formation. The underlying bedrock can impact the chemistry of the water, in this case resulting in a moderately alkaline lake. Chemistry and nutrient content of the water is also highly influenced by the nature of the surface water inputs.

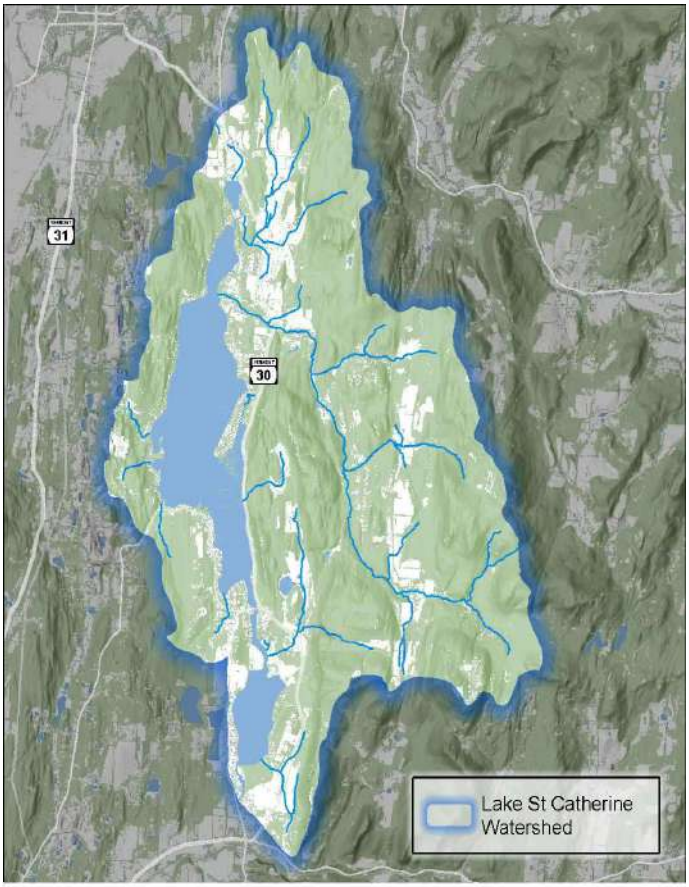

Figure 1. Lake St. Catherine watershed

Landuse in the watershed can also have a large impact of water quality in the lake. Landuse in the Lake St. Catherine watershed is a mixture of forested lands, agricultural fields, and rural residential development. In their analysis of watershed landuse, Vermont Department of Environmental Conservation considers the Lake St. Catherine watershed to be "moderately disturbed." This is based on the amount of landuse under development or agricultural use within the watershed that may have an impact on water quality in the lake (Vermont Lake Scorecard).

Lakes are typically classified based on physical parameters such as size, depth, trophic status and alkalinity. Trophic status is a way to categorize different lakes based on the amount of biologically useful nutrients in the water (mainly phosphorus and nitrogen). Oligotrophic lakes are lakes with very low nutrients available for plant (including algae) growth. Because of this low amount of growth, plant and algae productivity is low and water clarity can be quite high. Mesotrophic lakes have a moderate degree of nutrients available for plant growth and eutrophic lakes are those with a large amount of nutrients. Eutrophic lakes can have low water clarity because of the higher degree of algae growth that is possible when nutrients such as phosphorus are plentiful.

Since phosphorus is typically the limiting nutrient for aquatic plant growth, a common measurement to determine trophic status is to measure the phosphorus content of the lake during spring turn-over. This is the phosphorus that will be available for plant and algae growth during the growing season. Based on these spring phosphorus measurements, the Lake St. Catherine system is considered a mesotrophic lake. Other measures of trophic status such as the measure of algae growth (chlorophyll a) also indicate that the lake is in the mesotrophic category(Vermont Department of Environmental Conservation 2025). Because of their pond-like character, both Lily Pond and Little Lake have lower water clarity than Lake St. Catherine proper, as measured by secchi depth (Vermont Department of Environmental Conservation 2025).

2. Methods

The study area for the aquatic plant inventory consisted of the entirety of Lake St. Catherine, Little Lake and Lily Pond with the shoreline boundaries derived from the Vermont Hydrography Dataset (VHD). Only aquatic species and emergent species that typically occur within aquatic plant communities were included in this inventory. This includes aquatic vascular plants as well as macroalgae, together considered aquatic "macrophytes."

Field work on Lake St. Catherine system was conducted by Arrowwood personnel on August 21, 25, 29 and September 2, 2025. During the field work, the lake was circumnavigated with a motorboat. The motorboat was used for the majority of the inventory while a kayak was used to inventory shallow areas.

Two different methods were used to inventory aquatic macrophytes in Lake St. Catherine: Grid Point Sampling, and Visual Littoral Surveys. The methodology used for each of these survey types is outlined below.

A. Grid Point Sampling

The Grid Point Sampling method provides a systematic and standardized procedure for sampling aquatic vegetation in lakes and lakes (Hauxwell et al. 2010). A total of 199 grid points were located throughout the littoral zone of the Lake St. Catherine system as shown in the map in Appendix 2a.

Table 1. Aquatic sampling rake data collected at each grid point

METRIC	Description and categories	
RAKE FULLNESS	*Amount of aquatic vegetation on the sampling rake*	
	None	No plants present on rake
	Single	A single plant present on rake
	Low	Sparse vegetation present on rake
	Medium	Moderate amount of vegetation on rake, typically enough to cover center of the rake but not the tines
	High	Large amount of vegetation on rake, typically enough to cover the rake tines, difficult to bring into the boat
SPECIES ABUNDANCE	*Ranking of abundance of each species on sampling rake*	
	Single	A single plant present on rake
	Low	Species was sparse on rake
	Medium	Species was moderately abundant on rake
	High	Species was abundant on rake

The lake boundary and predetermined grid point locations were uploaded to an iPhone or iPad data collector, running ArcGIS Collector and Survey123 field data collection applications. An ortho-photo basemap project was created on the iPhone/iPad with the grid point locations for use during the fieldwork. This system was used to navigate to each grid point using a boat. All data was recorded using a digital data form on the data collection unit. Tables 1 and 2 list the data and categories of data that were collected at each grid point.

Table 2. Vegetation abundance and site data collected at each grid point

METRIC	Description and categories	
BIOMASS	*Amount of plant growth vertically in the water column*	
	None	No aquatic plants present
	Low	Plants growing only as a low layer above the sediment
	Moderate	Plants growing well into the water column but generally not reaching the water surface
	High	Plants filling the water column and/or surfacing enough to be a possible recreational nuisance
	Very High	Plants filling the water column and completely covering the surface; obvious nuisance conditions
PERCENT COVER SUBMERGED	A record of the percentage of the lake bottom covered by submerged aquatic plants using the following cover categories: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%	
PERCENT COVER FLOATING	A record of the percentage of the lake surface covered by floating aquatic plants using the following cover categories: 1-5%; 5-25%; 25-50%; 50-75%; 75-100%	
NONNATIVE INVASIVE SPECIES (NNIS)	Presence of invasive species with species name and number of plants or percent cover of NNIS plants using the following cover categories: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%	
SEDIMENT TYPE	Type of sediment present using the following categories: Bedrock; Boulder; Cobble; Gravel; Sand; Silt; Clay; Muck	
WATER DEPTH	Depth of water taken using sonar (from motorboat) or kayak paddle (from kayak).	
AQUATIC NATURAL COMMUNITY	Type of aquatic natural community present at grid point	

An aquatic survey rake was used to gather the vegetation data at each point location. In waters shallower than 8', a rake on a pole was used to sample vegetation. In waters deeper than 8', a survey rake attached to a rope was used to sample vegetation. Rake fullness, as outlined in Table 1, was recorded for each sample to obtain information about vegetation density (Hauxwell et al. 2010;

Madsen et al. 1996). Each aquatic plant on the rake was identified to species, if possible. Specimens that were difficult to identify in the field were collected and examined under a dissecting scope. Voucher specimens of many species recorded in the lake were collected and stored at either the Arrowwood Herbarium or at the Pringle Herbarium at the University of Vermont. The abundance of each species on the rake was recorded using the categories outlined in Table 1.

In addition to rake data, vegetation abundance and general site data (described in Table 2) was collected at each grid point.

Overall plant biomass data is used to understand the potential for aquatic plants growing at levels high enough to reach nuisance conditions. The categories for this metric are shown in Table 2. Since this metric measures potential nuisance conditions, it is largely dependent upon water depth in addition to plant growth. Dense plant growth in the water column, for example, does not generally present nuisance conditions if it is well below the surface of the lake. The same amount of growth, however, in very shallow water would potentially create nuisance conditions.

Percent cover of both submerged and floating aquatic plants was recorded at each grid point using the categories shown in Table 2. Recording percent cover of aquatic plants is a similar metric as the biomass but not dependent on water depth. If submerged vegetation was growing dense enough that it was laying on the surface of the water, it was considered a floating aquatic plant for this metric.

Presence or absence of non-native invasive species was evaluated in an approximately 500 square foot area at each grid sampling point. Data on either

Figure 2. Aquatic Sampling Rake

the number of plants or the percent cover that the plants occupy was recorded as outlined in Table 2. If an NNIS infestation was widespread, "off-grid" sampling points were used to determine the boundaries of the infestation (see Visual Littoral Survey methods below).

Water depth and sediment type data were collected at each grid point as outlined in Table 2. For each grid point where the aquatic natural community was known, data was collected on the presence of this type.

B. Visual Littoral Survey

The grid point sampling provides a systematic and repeatable method for sampling aquatic vegetation; however, it does not provide information about the nature of aquatic vegetation in between the grid points. Relying solely on this method, therefore, has the potential to leave significant gaps in the knowledge of aquatic vegetation in the overall lake. The visual littoral survey method was employed to fill in these gaps and provide a more complete picture of aquatic vegetation presence and distribution. This survey methodology is based on methods from the Vermont Agency of Natural Resources Department of Environmental Conservation (2006) field manual.

When navigating in between grid point locations, aquatic vegetation was viewed from the boat. An "off-grid" data point was taken to document invasive species, record information about aquatic natural communities, record areas of high biomass, document rare species or record other features of interest. Data was recorded on the digital data collection form at these "off-grid" points. Only a

subset of the data presented in Tables 1 and 2 was collected at these points related to the specific feature being documented. In some cases, a field sketch map of a particular feature (typically an EWM infestation or natural community) was used to document the extent of the feature. This was conducted on the iPhone/iPad using a basic line feature class.

Mapping the distribution and abundance of EWM was a major focus of the visual littoral survey. Dedicated visual littoral surveys were conducted to map EWM throughout the entire littoral zone. Sub-meter capable GPS systems and specific EWM data mapping protocol using ArcGIS Quick Capture were used for efficient data collection of EWM infestations. This methodology allows for the rapid collection of percent cover data, plant count data and infestation boundary data.

C. Creating maps of EWM and Natural Communities

Once field work was complete, the spatial data was analyzed in ArcGIS. In order to create a complete map of aquatic vegetation in the lake, the grid points and off-grid points were used to create a polygon layer of vegetation. Using ortho-photo interpretation, bathymetric maps of the lake and the field data, a polygon feature class was created of the different aquatic natural communities. This map provides the extent of the aquatic vegetation in the lake at the time of the survey (the littoral zone). This map was submitted during the 2023 project report (Arrowwood Environmental 2023).

Table 3. Cover categories for EWM

Percent Cover	Density Description
0	None
1-5%	Trace
5-25%	Sparse
25-50%	Moderate
50-75%	Moderate-Dense
75-100%	Dense

Using the littoral zone as a baseline, the EWM point data was used to create a map of EWM infestations. Different polygons of EWM were created for each of the different density categories shown in Table 3. In some cases, the transition between the different density categories in the lake was gradual; the boundaries shown on the final map are therefore considered approximate.

The map of EWM presence in the Lake system should be viewed in conjunction with ongoing EWM control activities. The presence and density of EWM surveyed are, in many cases, dependent on and determined by EWM control efforts.

3. Results

The results of the aquatic plant inventory for Lake St. Catherine are presented in two sections below: A) Native Aquatic Vegetation; B) Non-native Invasive Species.

A. Native Aquatic Vegetation

Grid Point Sampling Data Analysis

Analysis of the grid sampling survey data is presented in summary form in Tables 4- 6. The dataset allows for analysis of the most abundant species that occur on the rake samples shown as the Frequency of Occurrence (FOO). Full results of the rake samples are included in the tables in Appendix 1. The FOO

data for Lily Pond is shown in Table 4; Lake St. Catherine data in Table 5: and Little Lake data in Table 6.

The list of species in these tables is arranged from most abundant to least abundant species encountered during the 2025 rake sampling.

Table 4. Frequency of occurrence (FOO) data for Lily Pond

Latin Name	Common Name	FOO 2023	FOO 2024	FOO 2025
Potamogeton robbinsii	Robbins' pondweed	100%	95%	86%
Ceratophyllum demersum	coontail	7%	48%	57%
Elodea canadensis	water-weed	33%	52%	52%
Utricularia macrorrhiza	common bladderwort	53%	29%	38%
Utricularia geminiscapa	hidden-flowered bladderwort	NA	NA	24%
Nymphaea odorata	waterlily	NA	14%	19%
Potamogeton illinoensis	Illinois pondweed	27%	14%	14%
Potamogeton zosteriformis	zigzag pondweed	NA	NA	14%
Ceratophyllum echinatum	hornwort	7%	NA	10%
Utricularia gibba	humped bladderwort	NA	24%	10%
Heteranthera dubia	water star-grass	27%	10%	5%
Myriophyllum spicatum	Eurasian water-milfoil	NA	10%	5%
Nitella spp.	Stonewort	NA	NA	5%

The most common species documented on the rake samples in Lily Pond remained relatively consisted from 2023-2025. The most common species in all three years include Robbins' pondweed, coontail, water-weed and common bladderwort.

Table 5. Frequency of occurrence (FOO) data for Lake St. Catherine

Latin Name	Common Name	FOO 2023	FOO 2024	FOO 2025
Potamogeton robbinsii	Robbins' pondweed	62%	46%	33%
Elodea canadensis	water-weed	57%	30%	24%
Potamogeton illinoensis	Illinois pondweed	41%	33%	16%
<Null>		6%	24%	15%
Vallisneria americana	eel-grass	22%	25%	15%
Najas flexilis	common naiad	23%	25%	10%
Potamogeton strictifolius	wire-stemmed pondweed	11%	5%	8%
Heteranthera dubia	water star-grass	16%	10%	7%
Potamogeton amplifolius	broad-leaved pondweed	6%	9%	6%
Potamogeton zosteriformis	zigzag pondweed	5%	8%	6%
Potamogeton gramineus	grass-leaved pondweed	4%	5%	4%
Myriophyllum spicatum	Eurasian water-milfoil	24%	9%	4%
Nitella spp.	stonewort	9%	6%	4%
Sagittaria cuneata	northern arum-leaved arrowhead	NA	NA	3%
Ceratophyllum demersum	coontail	2%	5%	2%
Eleocharis robbinsii	Robbins' spike-rush	NA	NA	1%
Najas minor	least naiad	NA	NA	1%
Nymphaea odorata	waterlily	NA	2%	1%
Brasenia schreberi	water shield	NA	NA	1%
Eleocharis acicularis	needle spike-rush	1%	2%	1%
Fontinalis sp.	moss	NA	NA	1%
Myriophyllum tenellum	leafless water-milfoil	NA	NA	1%
Nuphar variegata	common yellow pond-lily	NA	NA	1%

In Lake St. Catherine, the dominant species remained relatively consistent from 2023-2025. The most common species in all three years include Robbin's pondweed water-weed, Illinois pondweed, and eel-grass. The null values represent areas of Lake St. Catherine that are unvegetated.

Table 6. Frequency of occurrence (FOO) data for Little Lake

Latin Name	Common Name	FOO 2023	FOO 2024	FOO 2025
Potamogeton robbinsii	Robbins' pondweed	80%	78%	100%
Elodea canadensis	water-weed	52%	38%	74%
Potamogeton illinoensis	Illinois pondweed	52%	43%	55%
Vallisneria americana	eel-grass	40%	49%	29%
Myriophyllum spicatum	Eurasian water-milfoil	8%	11%	13%
Utricularia gibba	humped bladderwort	NA	11%	13%
<Null>	NA	16%	3%	6%
Heteranthera dubia	water star-grass	4%	11%	6%
Najas flexilis	common naiad	NA	5%	6%
Nymphaea odorata	waterlily	4%	22%	6%
Ceratophyllum demersum	coontail	NA	5%	3%
Eleocharis robbinsii	Robbins' spike-rush	NA	NA	3%
Potamogeton amplifolius	broad-leaved pondweed	4%	8%	3%
Potamogeton epihydrus	ribbon-leaved pondweed	NA	8%	3%
Potamogeton obtusifolius	blunt-leaved pondweed	NA	NA	3%

In Little Lake, the dominant species remained relatively consistent from 2023-2025. The most common species in all three years include Robbin's pondweed water-weed, Illinois pondweed, and eel-grass.

B. Non-Native Aquatic Species

EWM was the only aquatic invasive species documented in the Lake St. Catherine system during the current inventory. Curly-leaf pondweed is often noted by others in the Channel and Little Lake. However, this species is an early-season species which typically dies back by late-August and mid-September and was not seen during this inventory.

Summary data on EWM abundance in the three lakes is shown in Table 7 and illustrated on the map in Appendix 2.

Table 7. Summary data on EWM abundance in the three lakes

	EWM Category	2023 Acreage	2024 Acreage	2025 Acreage	Change 2024-2025
Lily Pond	None			13.33	+13.33
	Trace	20.42	18.65	5.29	-13.36
	Sparse		0.35	0.11	-0.23
	Moderate		0.18	0.34	+0.16
	Moderate-Dense			0.08	+0.08
	Dense			0.02	+0.02
Lake St. Catherine	None		70.02	53.40	-16.62
	Trace	116.96	117.08	126.36	+9.28
	Sparse	72.47	13.41	17.09	+3.68
	Moderate	8.03	4.85	6.91	+2.06
	Moderate-Dense	9.63	2.33	2.45	+0.12
	Dense	1.83	1.28	3.66	+2.38
Little Lake	None		1.09		-1.09
	Trace	121.84	148.24	139.92	-8.31
	Sparse	28.44	2.57	8.98	+6.41
	Moderate	1.33	1.09	2.87	+1.78
	Moderate-Dense	4.10	2.77	2.71	-0.06
	Dense			1.27	+1.27

The data in Table 7 shows that the EWM abundance in Lily Pond has mostly remained the same from 2024 to 2025. The biggest change was that in 2024 a large area was mapped with Trace amounts of EWM but in 2025, no EWM was

found in many of these areas. While the change shown in this table, around 13 acres, is a large area, the amount of change in actual EWM plants is minimal.

Lake St. Catherine showed an increase in EWM in all density categories except the None-category. The most concerning increase is the 2.38 additional acres of EWM in the Dense category and 2.06 additional Moderate EWM acres.

EWM in Little Lake showed a mixed trend from 2024 to 2025. There were 1.27 more acres of Dense EWM and 1.78 acres more Moderate EWM, but the acreage of Moderate-Dense EWM was essentially level. A decrease in the Trace EWM acreage and an increase in Sparse acreage was also seen. Much of the variability of EWM in Little Lake, however, is dependent on the mechanical harvesting that occurs there.

Table 8 shows the changes in EWM abundance in the different sites throughout the Lake St. Catherine system. Specific notes about EWM at each site are also presented below.

Atwater Bay. In 2024, a Dense infestation of EWM was documented along the shore in this Bay. This infestation persisted in 2025 and expanded 0.7 acres north towards the shallow shoal.

Cones Point. The large acreage changes in the None and Trace categories in Cones Point only indicate that a few scattered plants were documented in 2024 that were not seen in 2025. In both years, there was a patch of Sparse EWM abundance just west of the point. A small Moderate abundance EWM infestation also developed southeast of the point in 2025.

Table 8. Change in EWM abundance by site in the Lake St. Catherine System

Site Name	Change in Acreage from 2024 to 2025					
	None	Trace	Sparse	Moderate	Moderate-Dense	Dense
Atwater Bay	5.3	-4.8	0.1	-0.4	0.0	0.7
Cones Point	8.1	-7.7	-0.7	0.3	0.0	0.0
Forest House Bay	2.8	-5.9	1.2	1.2	0.7	0.0
Halls Bay	2.2	-4.0	1.4	0.4	0.0	0.0
Horseshoe Bay	-4.7	4.7	0.0	0.0	0.0	0.0
Idlewild Bay	1.1	-2.5	0.7	0.8	-0.1	0.0
Lily Pond	13.3	-13.4	-0.2	0.2	0.1	0.0
Little Lake	-1.1	-8.3	6.4	1.8	-0.1	1.3
North Bay	-9.1	8.1	0.5	0.6	0.0	0.0
Oxbow Bay	-11.8	11.8	0.0	0.0	0.0	0.0
Pine Point	-1.6	1.6	0.0	0.0	0.0	0.0
Sandy Bay	7.2	-6.6	-0.6	0.0	0.0	0.0
State Park Beach	-0.1	0.6	-0.4	0.0	0.0	0.0
Stonehenge	-0.3	0.3	0.0	0.0	0.0	0.0
Sunken Island	0.6	-0.5	0.0	-1.1	-0.5	1.6
The Channel	-16.2	14.3	1.6	0.3	0.0	0.0
Total Acreage	-4.4	-12.4	9.9	4.0	0.1	3.7

Forest House Bay. In 2024 EWM in this bay consisted of Trace abundance with one 3.0 acre area of Sparse abundance. In 2025, EWM increased substantially with 4.2 acres of Sparse abundance as well as 1.2 acres of Moderate and 0.7 acres of Moderate-Dense infestations.

Halls Bay. In both 2024 and 2025, most of Halls Bay had only a Sparse abundance of EWM. The shoal just south of the bay had a Sparse infestation in both years, but in 2025, a 0.4 acre area of Moderate infestation also developed.

Horseshoe Bay. EWM in Horseshoe Bay has remained at very low abundance. No plants were found in most of the bay in 2024 and only a few scattered individuals were found in 2025.

Idlewild Bay. EWM in this bay continues to be present at low to moderate amounts. While the Moderate-Dense infestation areas decreased slightly, the area of Moderate abundance increased by 0.8 acres.

Lily Pond. Most of Lily Pond has remained free of EWM or contain only scattered individuals. A few small areas of Moderate to Dense infestations have been present in both 2024 and 2025 in the southern half of this pond.

Little Lake. Most of Little Lake harbors only scattered individuals of EWM and is mapped with Sparse abundance. However, the western shore contains numerous areas of denser EWM. Since aquatic vegetation is actively managed with a mechanical harvester, EWM distribution and abundance is largely determined by this management.

North Bay. North Bay is a shallow, well-vegetated bay with moderate-high biomass of submerged vegetation. In 2024, only a few EWM plants were found in this bay. In 2025, some areas of Sparse and Moderate EWM abundance were mapped on the northern and western shores.

Oxbow Bay. EWM abundance in this bay remains low. In 2024 no plants were documented here, while in 2025, only a few plants were found.

Pine Point. EWM along the Pine Point shoreline remains unchanged from 2024-2025, with only a few scattered EWM individuals present.

Sandy Bay. The EWM abundance along this shore remains low, with only a few scattered plants found in both 2024 and 2025.

State Park Beach. Most of this area has only trace amounts of EWM. In 2024, a 0.4 acre area of Sparse abundance was mapped; this infestation was not present in 2025.

Stonehenge. This area continues to be largely EWM-free, with only a few scattered plants documented in 2025.

Sunken Island. The EWM in the Sunken Island area was abundant in 2024 and remained abundant in 2025. This area has the largest EWM infestations of moderate to dense abundance in Lake St. Catherine proper. This includes nearly 3 acres of Moderate-Dense and Dense infestations.

The Channel. While no dense EWM infestations were documented in the Channel, numerous Sparse and Moderate infestations were seen in 2025, especially on the northern end. South of the boat launch, EWM is mostly in Trace abundance.

4. Conclusion

An inventory was conducted of native and non-native aquatic vegetation in the Lily Pond, Lake St. Catherine and Little Lake. Data on native and non-native aquatic vegetation in the lake was collected using grid-point sampling and visual littoral surveys. EWM in Lily Pond remained fairly constant from 2024 to

2025. In Lake St. Catherine EWM generally increased, including 2.38 acres of additional dense EWM which occurred mostly in the Atwater Bay and Sunken Island areas. The aquatic vegetation in Little Lake is impacted by mechanical harvesting and EWM showed a variable change from 2024 to 2025. Data on the distribution and abundance of EWM throughout the Lake St. Catherine system will help to guide management of EWM in 2026.

5. Literature Cited

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Appendix 1a: Lily Pond Aquatic Sampling Rake Data

1=Single 2=Low 4=Moderate 4=High
** Points with no plants on rake are not shown*

Row Labels	Ceratophyllum demersum	Ceratophyllum echinatum	Elodea canadensis	Heteranthera dubia	Myriophyllum spicatum	Nitella spp.	Nymphaea odorata	Potamogeton illinoensis	Potamogeton robbinsii	Potamogeton zosteriformis	Utricularia geminiscapa	Utricularia gibba	Utricularia macrorrhiza
48		2							2				2
51	2		2						4	2			
52	2					2		2	4				2
54	4		2						4				
55			4						3				2
56									4				2
57							3		2			2	
58	2								4				2
59	4		2					2	3	2			
60	3								3			2	
61	3		2						3				
62	2						2	2			2		2
63	3		2		2				4				
64			2						4		2		
65			2						4		2		
66									3				
67	3		3	2					4				
68			2						4		2		2
69	2		3				2		4	2	2		2
71	4	2					2						

Appendix 1b: Lake St. Catherine Aquatic Sampling Rake Data

1=Single 2=Low 4=Moderate 4=High
** Points with no plants on rake are not shown*

Row Labels	Brasenia schreberi	Ceratophyllum demersum	Eleocharis acicularis	Eleocharis robbinsii	Elodea canadensis	Fontinalis sp.	Heteranthera dubia	Myriophyllum spicatum	Myriophyllum tenellum	Najas flexilis	Najas minor	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Sagittaria cuneata	Vallisneria americana
20																	2	2				
23																						2
24																		1				
25					2					2										2		
26									2			2						4		2		2
28					2		2			2		2						2			2	
31					2													4				
32	2					2		1						2				2				
33															2			2				
34													2	3								
35					2													3				
36					2													2				
37					2					2					2			2	2			
38					2										3		2	3				
39					2													2				
40					2													2				
41					2												2					
42																	2	2				
43					2												2					2
44					2										2			4				
45		2			2													3		2		2
46					0												3	3				
47		2																				
73					2													4				3
74					0											2		2				2
76							2											2				2
77					2		2	1								2						2
78																		3				1
79																		2				2
80					2		2											2				
81					2		2										2					2
82										2							2					

Row Labels	Brasenia schreberi	Ceratophyllum demersum	Eleocharis acicularis	Eleocharis robbinsii	Elodea canadensis	Fontinalis sp.	Heteranthera dubia	Myriophyllum spicatum	Myriophyllum tenellum	Najas flexilis	Najas minor	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Sagittaria cuneata	Vallisneria americana
83										2						2						2
84					2													3		2		
85					2																	2
87					1																	
89																		2				2
90																		2				
92																		2				
93			0	2						2											2	
95							1			2		2										
96																			2			
97																1			1			
98					2										2		2	4		2		
100										2						1						
101										2							3					2
102																		2				2
103																		2				2
104							2	2				0							1			
105																		2				
106					1													1				
107					2					2									2			
108										2									2		1	
109																		1				
110					2			1		2						2		2	2		1	2
112										2												

Row Labels	Brasenia schreberi	Ceratophyllum demersum	Eleocharis acicularis	Eleocharis robbinsii	Elodea canadensis	Fontinalis sp.	Heteranthera dubia	Myriophyllum spicatum	Myriophyllum tenellum	Najas flexilis	Najas minor	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Sagittaria cuneata	Vallisneria americana
113																		2				2
115															2		2	3				2
116																	2	2				
117					2													2				
118															2			2				
119					2		2			2							2		3			
120					2												2					
122							2			2		0				2		2	2			2
123																	2	2				
125					2												2	3		2		
126															2			2				2
127					2			2										2				
128																	2	4				2
129					2												2	3		2		
130																		3				
133																						1
135					2		2										2	2				
137																	2			2		
139																						1

Row Labels	Brasenia schreberi	Ceratophyllum demersum	Eleocharis acicularis	Eleocharis robbinsii	Elodea canadensis	Fontinalis sp.	Heteranthera dubia	Myriophyllum spicatum	Myriophyllum tenellum	Najas flexilis	Najas minor	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Sagittaria cuneata	Vallisneria americana
143					2		2										2					
144								2									2					2
147					2													2				
148																		2		2		
150												2										
151																			0			
152					2												2					
153					3													2		2		2
155					3										2			2				
156												2										
157					2													2	2			
158					2											2	2					
161					2					2							2	2				
162					2												2	2				
163					1												2	1				1
164																		2	1			
165					2										2		2	0				
166					2			2										2	2	2		2
168					2		2								2				2			

Row Labels	Brasenia schreberi	Ceratophyllum demersum	Eleocharis acicularis	Eleocharis robbinsii	Elodea canadensis	Fontinalis sp.	Heteranthera dubia	Myriophyllum spicatum	Myriophyllum tenellum	Najas flexilis	Najas minor	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Sagittaria cuneata	Vallisneria americana
169							1			1												
170		2								2								2				
171					2						2						2	2				
172																	2	2			1	
173										2	2							2	2		2	
174																	2	2				
175				2																		2

Appendix 1c: Little Lake Aquatic Sampling Rake Data

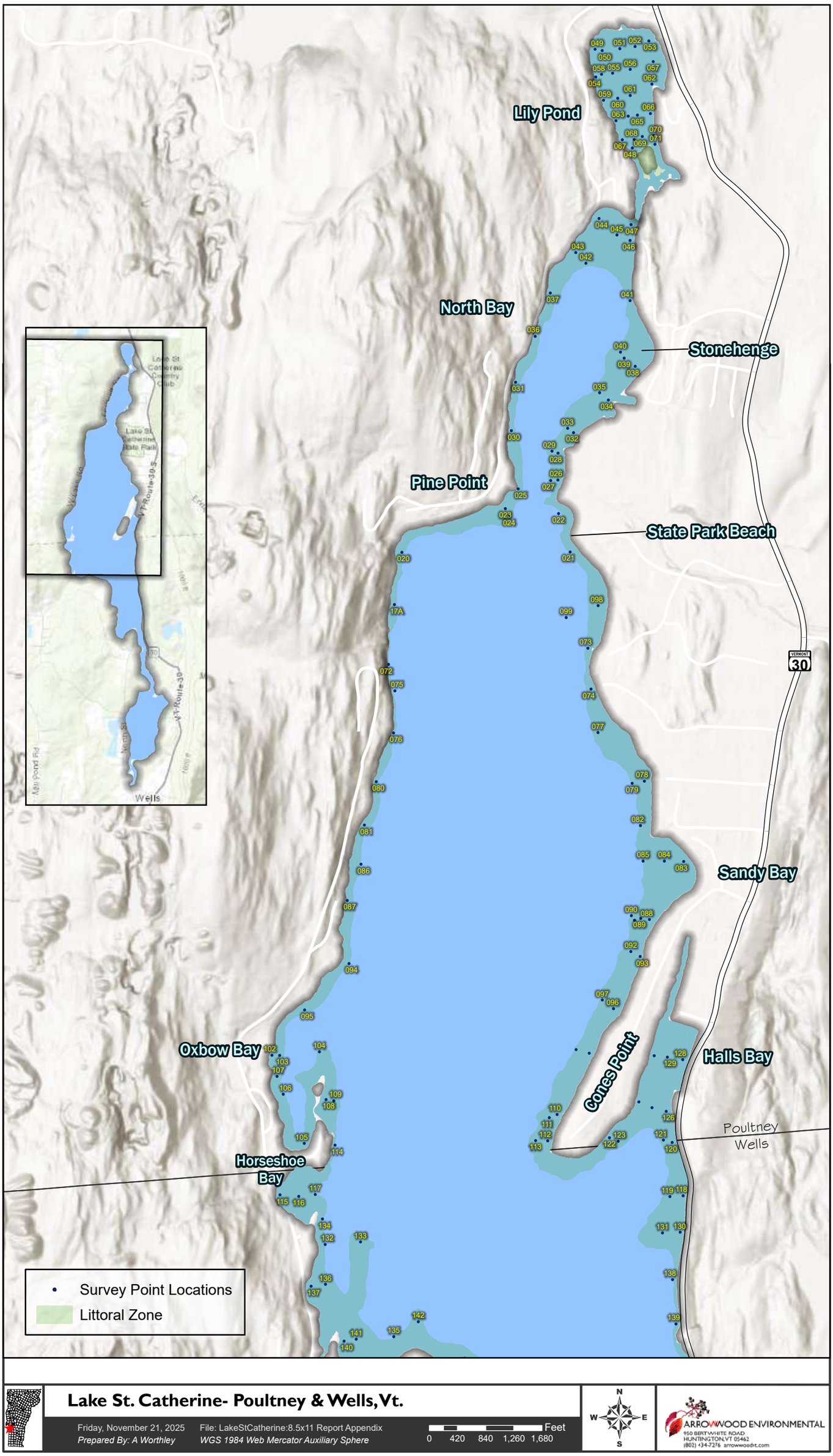
1=Single 2=Low 4=Moderate 4=High
** Points with no plants on rake are not shown*

Row Labels	Ceratophyllum demersum	Eleocharis robbinsii	Elodea canadensis	Heteranthera dubia	Myriophyllum spicatum	Najas flexilis	Nymphaea odorata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton illinoensis	Potamogeton obtusifolius	Potamogeton robbinsii	Utricularia gibba	Vallisneria americana
176		2	2											2
177			2									2		3
178			2									2		
179			2									4		
184			2									2		
188			2							4		3	2	
191								2				3	2	2
192			2									4		
193			2							4		4		
194			2							2		3	2	
195			2							2	2	2		
197			2							2		2		3
198				4								3		
199												4		
200										2		2		
201			2							1		2		
202			2							2		2		
203			2							3		4		
204	2									4		3		
205			2	2						2		3		2
206			2							2		2		
207			2		2							4		
208			2			2						3		2
209			2							3		2		2
210			2							2		2		
211												2		1
212			2							2		3		2
213					2							4		
214			2		2							3		
215					2		2		2			3		
216						2	2			2				

Appendix 2a: Lake St. Catherine System Grid Point Location Map

Appendix 2b: Lake St. Catherine System 2025 Eurasian Watermilfoil Map

Appendix 2c: Lake St. Catherine System Change in Eurasian Watermilfoil Map 2024-2025



Lake St. Catherine- Poultney & Wells, Vt.

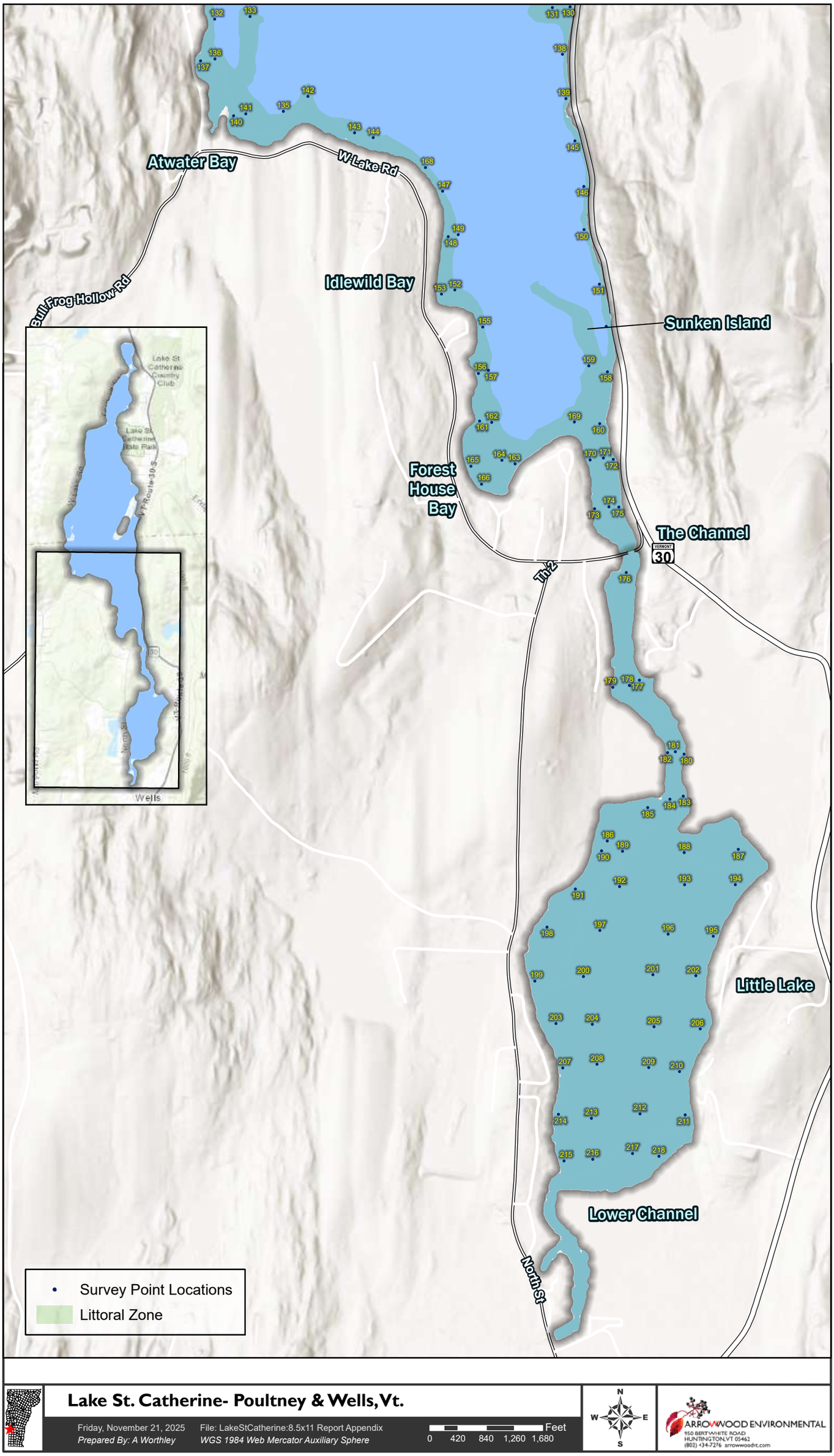
Friday, November 21, 2025 — File: LakeStCatherine:8.5x11 Report Appendix

Prepared By: A Worthley — *WGS 1984 Web Mercator Auxiliary Sphere*

Feet
0 420 840 1,260 1,680

N W E S

ARROWWOOD ENVIRONMENTAL
950 BERTWHITE ROAD
HUNTINGTON,VT 05462
(802) 434-7276 arrowwoodvt.com



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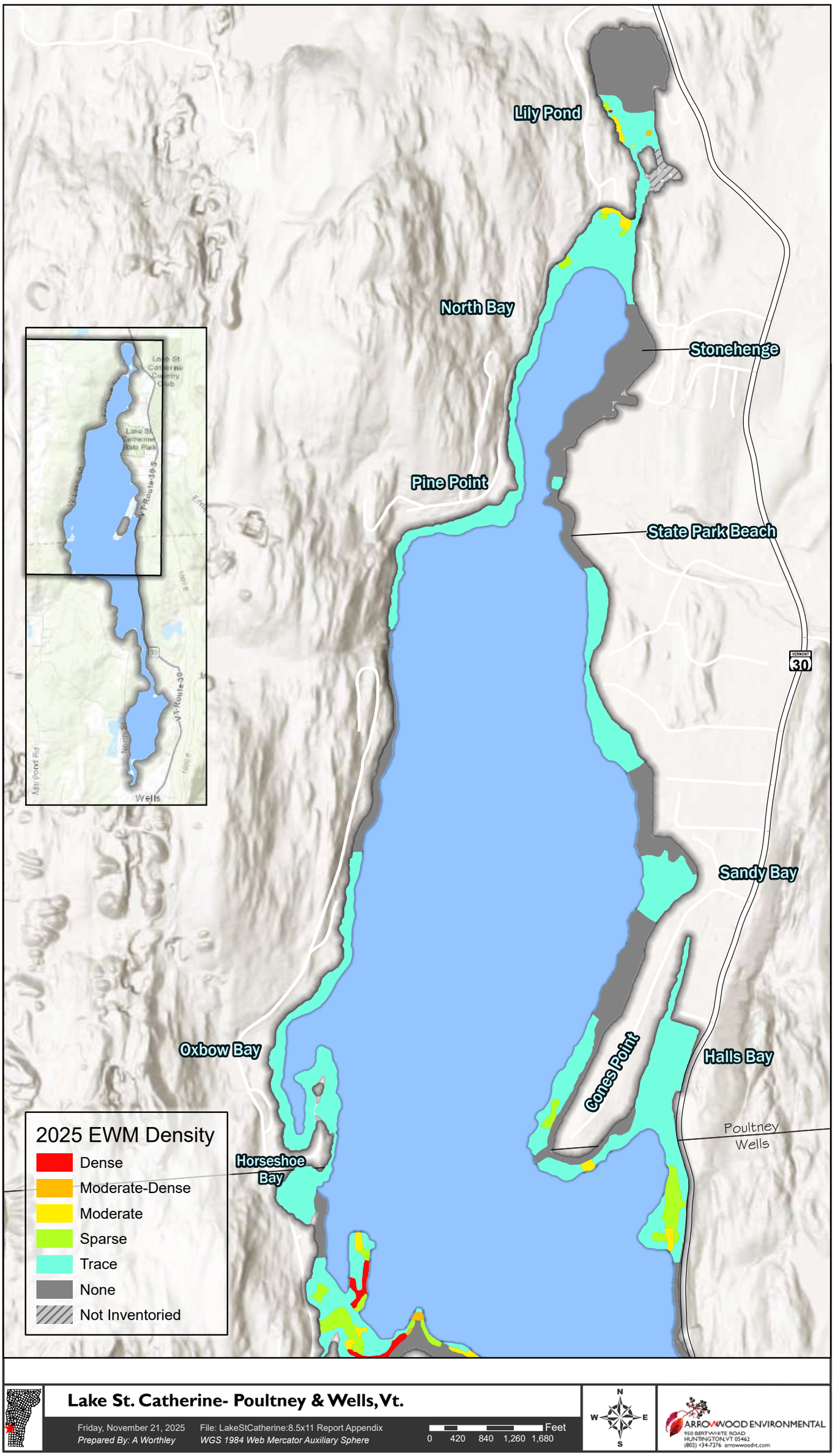

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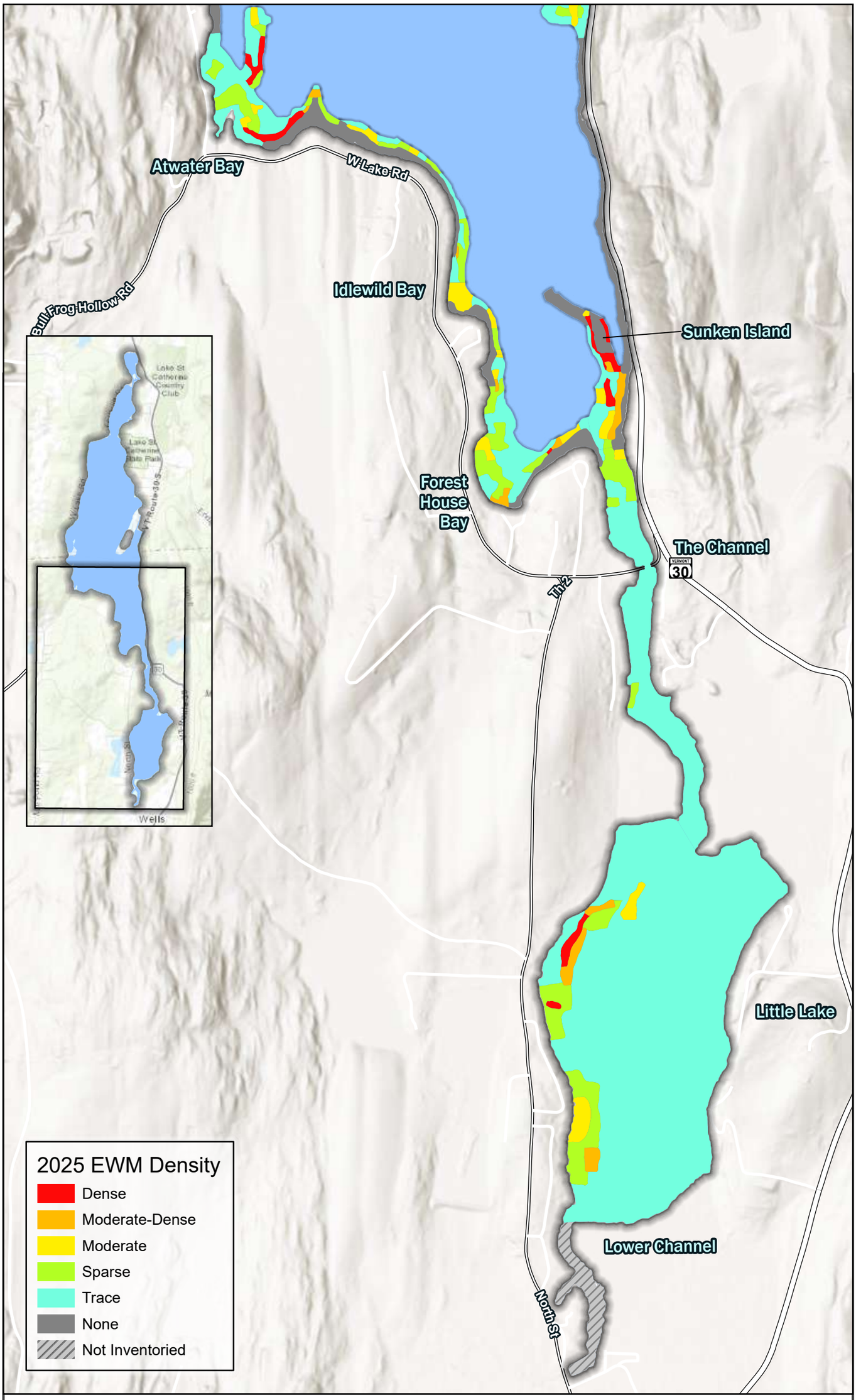

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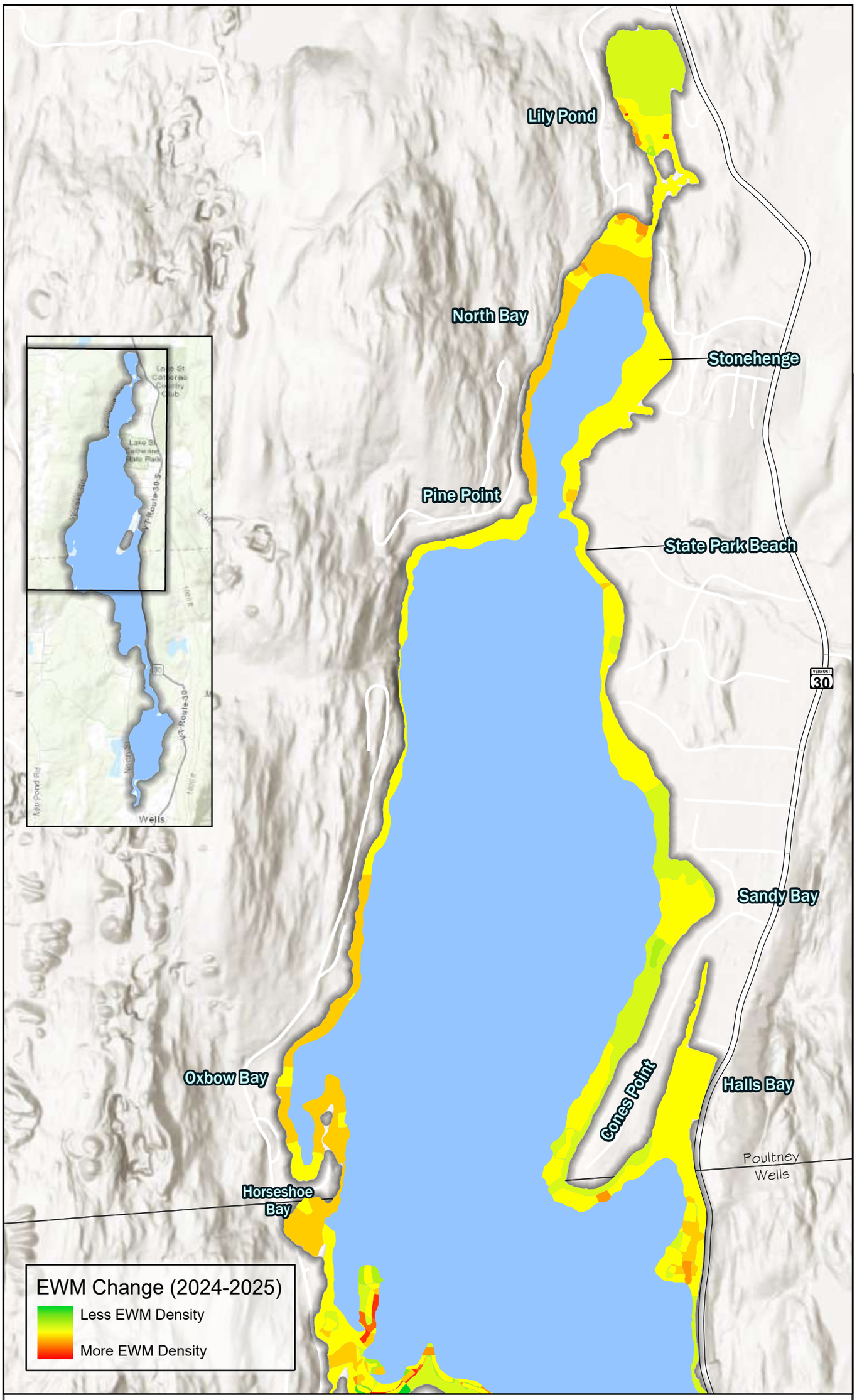

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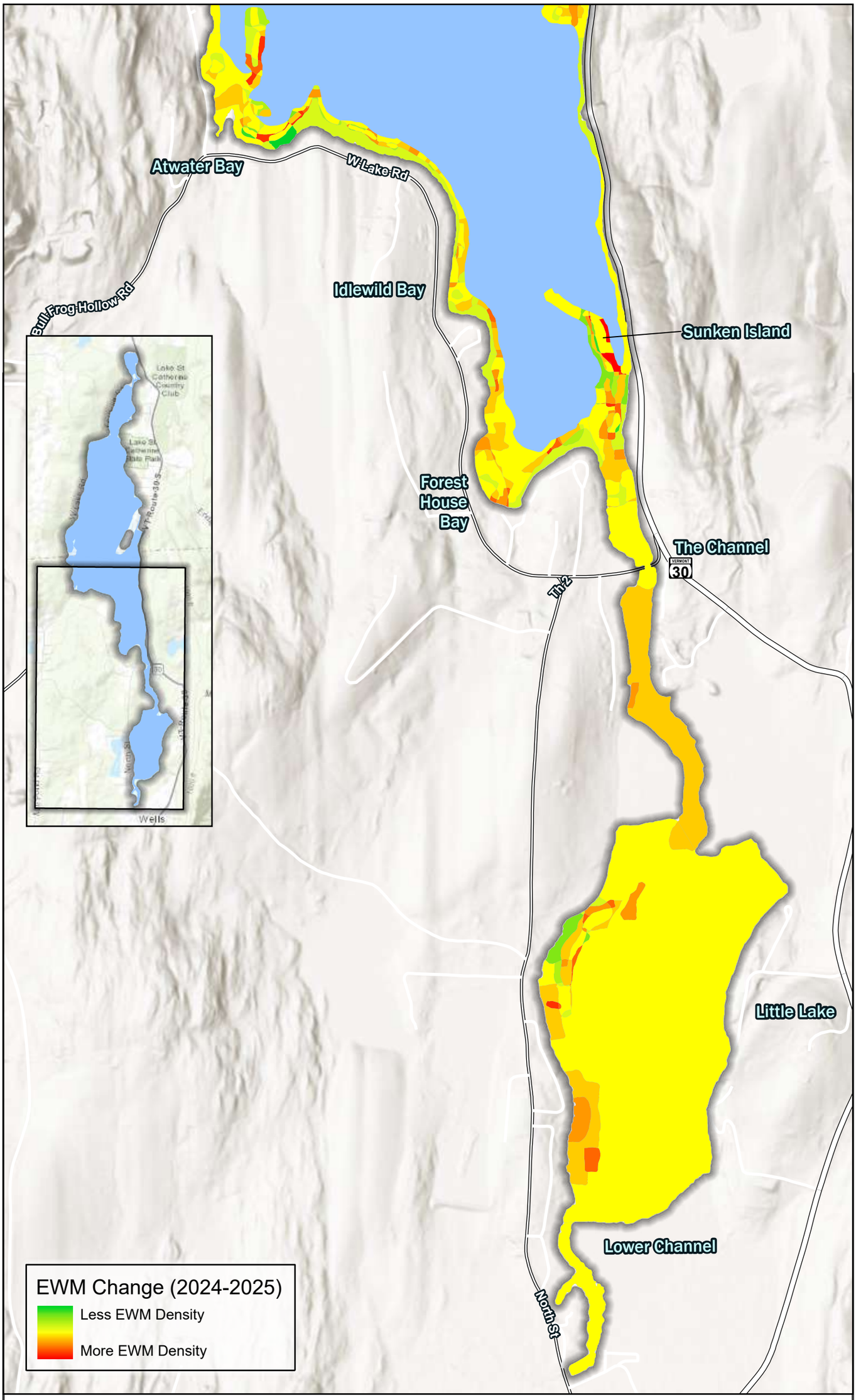

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