Lake Pleasant - Sacandaga Lake Management Plan

June 2025

LAKE CHAMPLAIN–LAKE GEORGE REGIONAL PLANNING

Lake Pleasant Sacandaga Association

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Photos provided by Tom Rippere and the LPSA

This plan was prepared in part by the Lake Champlain Lake George Regional Planning Board for the Lake Pleasant-Sacandaga Lake Association with funding provided by the New York State Department of Environmental Conservation through the Environmental Protection Fund.

Executive Summary

In 2023, the Lake Pleasant-Sacandaga Association initiated the development of a Lake Management Plan to guide the long-term protection and stewardship of Lake Pleasant and Sacandaga Lake. This strategic effort was launched with three primary objectives:

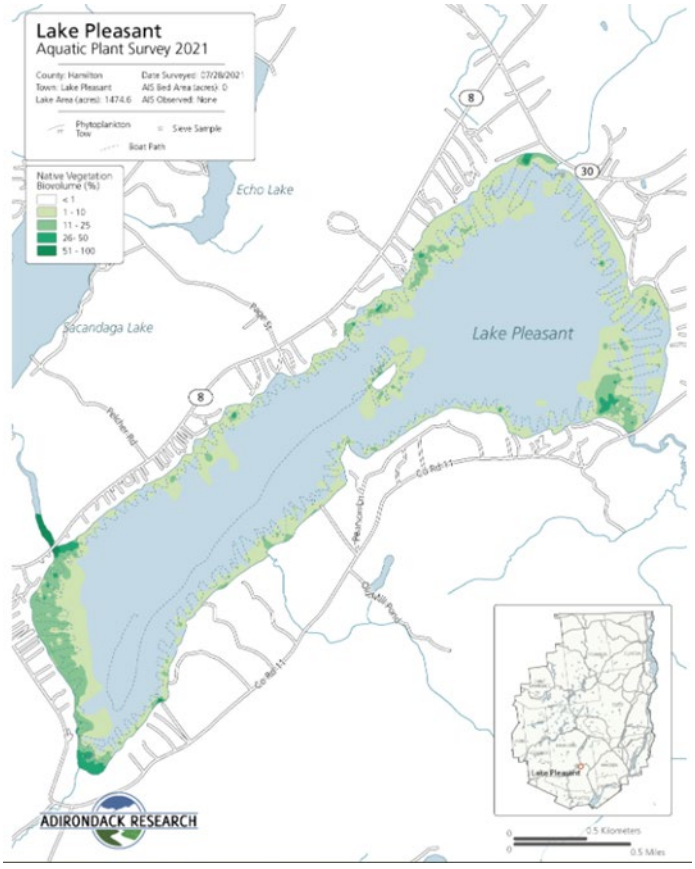
1. Consolidate the significant technical assessment data, trends and analysis for our lakes, so our broad member base and other constituencies can understand what is happening in our lakes.
2. To identify and benchmark current and emerging threats to lake health, and to establish a fact-based foundation for pursuing grant funding, which often requires a formalized management plan.
3. Develop action plans to address our most serious risks that can help us respond in a safe and timely manner.

LPSA formed a core planning team consisting of dedicated members and used technical assistance provided by the Champlain–Lake George Regional Planning Board. The process began with a comprehensive survey of members and lake users. Insights from the survey, which garnered over 240 responses, revealed that 92% of participants rated water quality as “Good” or “Excellent,” with no respondents describing it as poor. The top concerns cited were the threat of invasive species, algae and aquatic vegetation, and failing or unmaintained septic systems. From a technical standpoint, assessments indicate that the lakes are generally in good condition, with no known aquatic invasive plants currently present.

According to the NYSDEC assessment, the use of both Lake Pleasant and Sacandaga Lake as water supplies is classified as “stressed” due to chloride and phosphorus contamination. Additionally, fishing in Sacandaga Lake is classified as “impaired” due to elevated mercury levels, which is likely a legacy issue that historically impacted all Adirondack lakes.

A qualitative risk assessment conducted as part of the planning process identified three key threats that can be actively managed:

1. Invasive plants
2. Shoreline erosion that results in added nutrients
3. Nutrient loading from lawn runoff and septic system loading



The latter two are of particular concern, given their observed impact on aquatic weed and algae growth in Lake Pleasant, trends that may be exacerbated by warming water temperatures. In response, the plan outlines several strategic actions:

- Continued boat launch monitoring to prevent invasive introductions
- Community education and awareness about sources of nutrient loading and the effects on the lakes
- Increased monitoring including updating the 2021 Aquatic Plant survey looking for rates of change.
- A rapid response plan to quickly address the introduction of a new Aquatic Invasive Species such as Eurasian Milfoil

Recognizing that a Lake Management Plan is a "living document," LPSA has committed to periodic updates as new information and conditions emerge.

Lake Pleasant - Sacandaga Lake At A Glance

Town of Lake Pleasant, Hamilton County New York

Lake Characteristics	Lake Pleasant	Sacandaga Lake
Surface Area	1440 Acres	1593 Acres
Mean Depth	29 feet	28 feet

Lake Designations	Lake Pleasant	Sacandaga Lake
Tropic State	Mesotrophic	Mesotrophic
NYSDEC Classification	AA	AA
PWL Assessment	Verification needed	Impaired
HABs Susceptibility	Low Susceptibility – no reported blooms	Low Susceptibility – no reported blooms

1.1 Introduction and LPSA Background

This watershed management plan addresses the four primary lakes located within the purview of the Lake Pleasant - Sacandaga Association (LPSA). These lakes have contiguous watersheds and include Lake Pleasant, Sacandaga Lake, Oxbow Lake, and Echo Lake. A fifth lake, Fawn Lake, is located in a pristine watershed and is included as a reference. Each of the five lakes, to be referred to herein as the "LPSA lakes", is located in the Town of Lake Pleasant, Hamilton County. A small portion of Oxbow Lake also extends southwestward into the Town of Arietta. The Town of Lake Pleasant, including the Village of Speculator, has a combined year-round population of just under 1,000 permanent residents, which grows significantly in the summer due to seasonal residents and tourism.

Sacandaga Lake

The LPSA Lake Management Plan was prepared as a joint effort by the Lake Champlain – Lake George Regional Planning Board (LCLGRPB) and the LPSA to provide a working document that will help to advance the LPSA's mission. The conclusions and recommendations in this management plan are based on the analysis of long-term water quality data and other resources from the Hamilton County Soil and Water Conservation District (HCSWCD) and Citizens Statewide Lake Assessment Program (CSLAP).

LPSA Background:

"To conserve and protect the purity of lakes in the Town of Lake Pleasant, protect the environment, and conserve the scenic and natural beauty of the area." - LPSA Mission

The LPSA manages several programs and activities to achieve our mission of protecting the health of Lake Pleasant, Sacandaga Lake, Oxbow Lake, Echo Lake, and other smaller lakes. One of the organization's main concerns is to keep invasive species from entering our lakes. After an invasive species becomes established in a lake, it is difficult or impossible to completely remove it. The purpose of this management plan is to provide information to all stakeholders on what actions can be taken to protect our lakes from the threats identified in this plan including invasive species and sources of point and nonpoint source pollution. The LPSA was founded in 1953 with three primary purposes:

- To protect the environment, primarily the lakes and waterways in the Town of Lake Pleasant
- To represent its membership in civic and community affairs.
- To provide programs that spread information to raise awareness of the threats of invasive species in our area

With a history spanning over 90 years, the LPSA stands as one of the oldest and most active lake associations in New York State. Long before many initiatives became formalized at the state level, LPSA was already implementing programs and activities aimed at protecting our lakes and educating the public. The association has been a pioneer in numerous efforts, including:

- Lake shore monitoring for aquatic invasive species
- Lake water monitoring, testing, and data collection
- Boat ramp monitoring by trained paid lake stewards
- Public education programs for adults and schoolchildren
- Initiating the process for the Town of Lake Pleasant to pass one of the first local laws in New York State against the introduction of aquatic invasive species

Lake User Survey:

In the Winter of 2023/2024, a survey was distributed to the LPSA membership and the wider Lake Pleasant and Speculator community. This survey was used to better understand how lake users and the community perceived the lakes, how they use it, and what they felt were the major issues in regard to the water quality and threats to the lakes. The survey received over 240 responses, a summary of the results are below:

- The top three lake uses are Swimming, Paddling, and Aesthetic Enjoyment
- 92% describe water quality as Good or Excellent, none described it as poor.
- Most respondents are concerned about the future of the lake's water quality.
- The top three biggest threats to water quality are Invasive Species, Algae/aquatic vegetation, and falling or unmaintained septic systems.
- In response to an open-ended question regarding the priorities of this plan, most comments focused on keeping out invasive species and continued water quality monitoring of each lake.
- Approximately 75% of respondents were seasonal residents, consistent with the community demographics

1.2 Watershed Setting

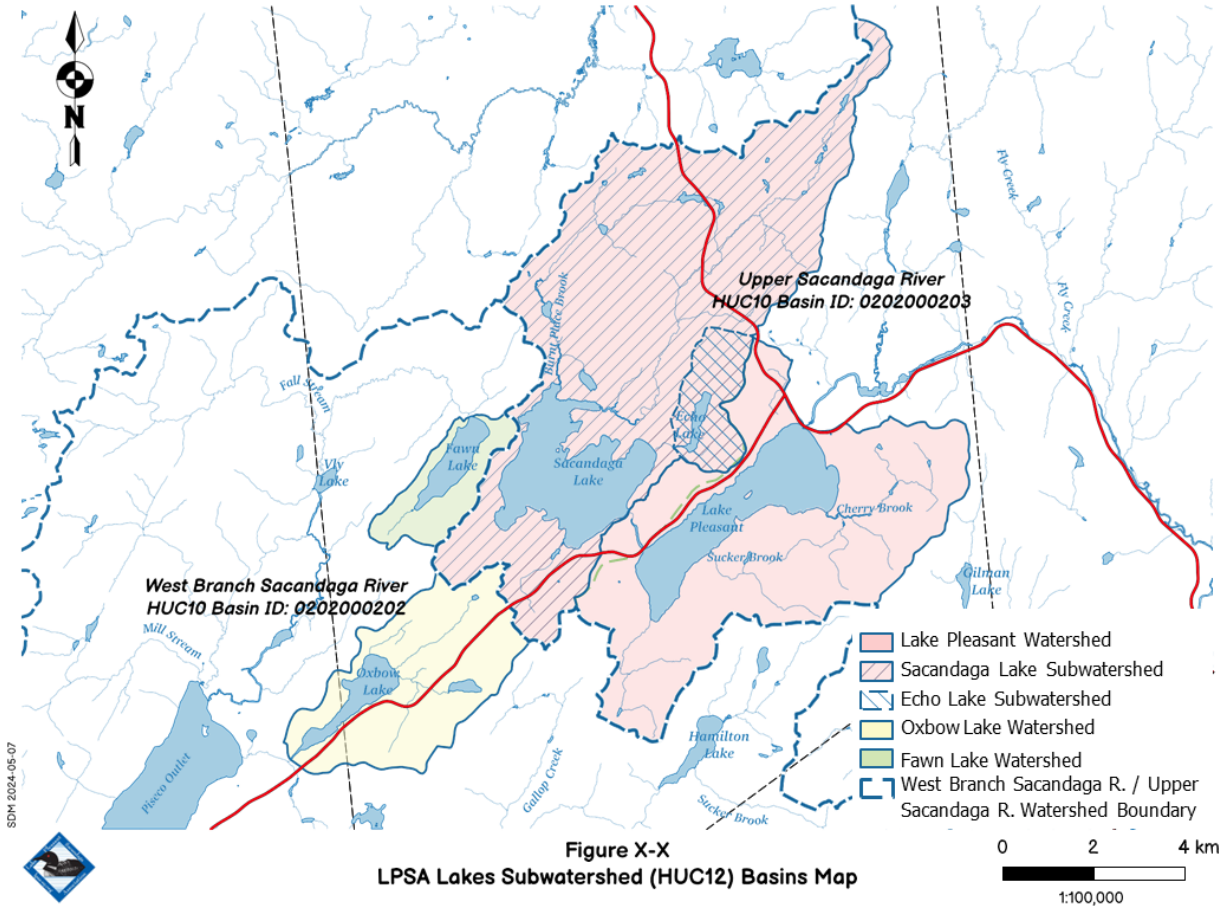


Figure 1: Lake Pleasant and Sacandaga Lake HUC-12 Watersheds

Lake Pleasant and Sacandaga Lake are located in central Hamilton County. In the United States, there is a hierarchy of hydrological unit codes (HUCs) that divide the country into regions, subregions, basins, subbasins, watersheds, and subwatersheds. The number of HUC digits increases as the areas they represent get smaller. The New York State Department of Environmental Conservation (NYSDEC) uses the HUC-10 subwatershed unit for the purposes of collecting water quality data and assigning potential impairments. Lake Pleasant and Sacandaga Lake both reside within the Upper Sacandaga River HUC-10, which also includes Lake Algonquin and a number of smaller lakes, rivers, and ponds.

Figure 1 represents the lakes in their smaller HUC-12 watersheds, which were used to gather the land use data. Lake Pleasant is a part of the Cherry Brook – Sacandaga River HUC 12, while Sacandaga Lake is within the Hatchery Brook – Sacandaga River HUC-12. Both lakes are connected to each other, with Sacandaga Lake flowing into Lake Pleasant through a short unnamed stream. The combined watershed area of the two lakes is 7,911 acres and spans two municipalities, the Town of Lake Pleasant, and the Village of Speculator.

Lake Pleasant is 1,475 acres with a nine-mile shoreline and an average depth of 29 feet and is considered as the source of the main Sacandaga River. Sacandaga Lake is slightly larger at 1,589 acres with an average depth of 28 feet.

1.3 Land Use:

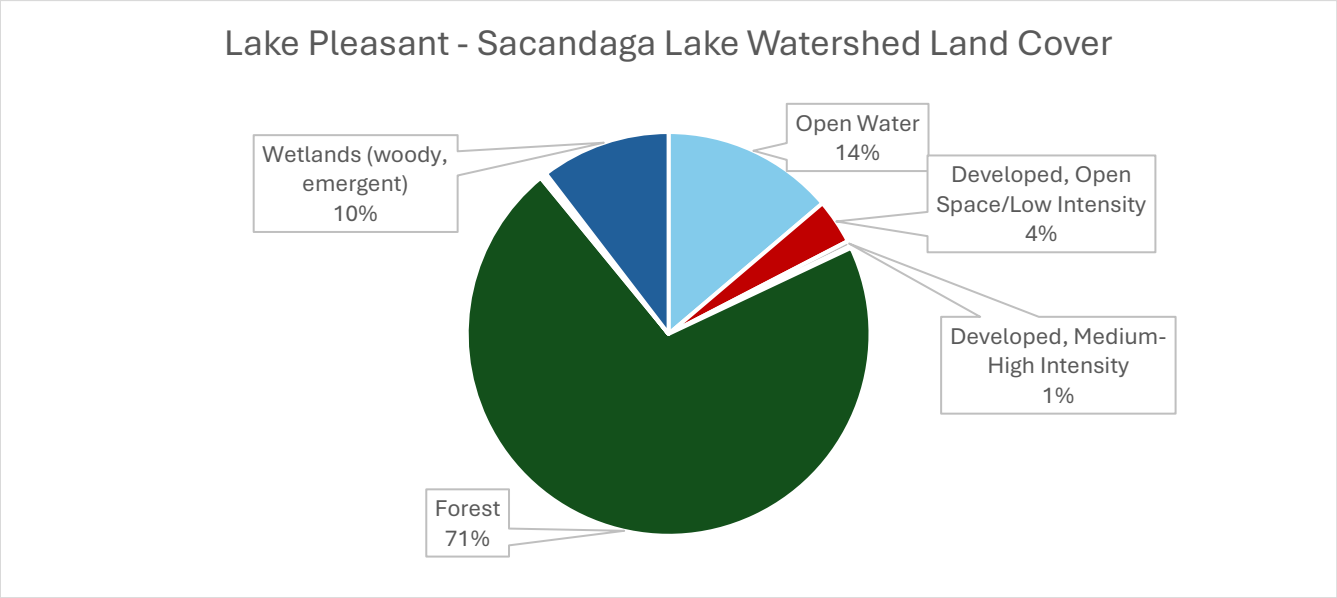


Figure 2: Land Cover Type by Percentage Source: NLCD, 2011

The watershed is sparsely developed and primarily consists of forested lands (71% total area). Watersheds containing mostly forested land typically have the lowest rates of nutrient loading. The rest of the watershed consists of open water (14%) and wetlands (10%). Developed, Open Space/ low intensity is the largest designation within the developed land category (4%) (Figure 2). Land classified as Developed Open Space is characterized by a mix of constructed materials (asphalt, concrete, buildings) with less than 20% impervious surfaces. In the watershed area this open space most commonly includes large single-family housing lots, parks, and vegetation planted for aesthetic purposes.

Both lakes have transportation corridors running adjacent to or near the shoreline. This includes major roadways State Route 8 and County Route 11, as well as smaller town or private roads.

2.1 Technical assessment:

Understanding the current conditions of Lake Pleasant and Sacandaga Lake is an important step in lake management planning. This understanding helps to guide future recommendations for how the LPSA and surrounding municipalities can work toward water quality improvement. Throughout the presented data, the LPSA chose to use Fawn Lake as a control lake to compare their water quality data. This was primarily due to its location, lack of external pressures, and proximity to Lake Pleasant and Sacandaga Lake.

The Hamilton County Soil and Water Conservation District monitors Lake Pleasant, Sacandaga Lake, and Fawn Lake along with 18 other lakes throughout Hamilton County as part of its Comprehensive Lake Monitoring Program. Lake Pleasant, Sacandaga Lake, and Oxbow Lake have been a part of this program since 1993, with Fawn Lake being added in 1998, resulting in over 30 years of water quality data. Testing prior to 1997 to 2012, dependent on the analyte, were performed using non-standard methods and have been excluded from this assessment. Additionally, the LPSA has also collected water quality data as a part of CSLAP, for which training, testing and administration is funded by NYSDEC. Lake monitoring for both programs generally occurs throughout the summer months and collected water samples are sent to New York Certified labs for the testing of various water quality indicators. CSLAP data is available from Sacandaga Lake starting in 1987, while Lake Pleasant was added to the program in 2014.

NYSDEC Lake Classifications:

NYSDEC gives waterbodies throughout the state classifications that identify their best uses. These classifications are based on water samples taken and tested by NYSDEC. There are five different classifications ranging from the highest AA to the lowest D. Each classification has different associated best uses, for example, Class AA waters are best suited for drinking water, primary contact recreation, and swimming. During the evaluation process, the NYSDEC assigns levels of impact severity to waterbodies based on their ability to support their designated best uses. These impact levels are categorized as precluded, impaired, stressed, and threatened. Descriptions of the classification can be found in Appendix B. Each assessment provides valuable insights into issues and impairments affecting a lake's water quality, such as sedimentation or excessive nutrient loading.

Both Lake Pleasant and Sacandaga Lake are classified as AA and are suitable for use as a public drinking water supply, although there are no public water supplies that currently draw from either lake. The loss of an AA classification would remove the lakes from potentially providing drinking water to the community but would also show the degradation impacting the ecological and community services they provide.

Lake Name	Classification	Assessment	Best use Impairments
Lake Pleasant	AA	Needs verification	Source Water Supply (Stressed)
Sacandaga Lake	AA	Impaired	Fishing (Impaired), Source Water Supply (Stressed)
Oxbow Lake	Unassessed		
Fawn Lake	Unassessed		
Echo Lake	Unassessed		

Table 1: Lake Classifications Source: NYSDEC WI/PWL

According to the NYSDEC assessment (Table 1), the use of both Lake Pleasant and Sacandaga Lake as water supplies is classified as stressed due to chloride and phosphorus contamination. Additionally, fishing in Sacandaga Lake is classified as impaired due to elevated mercury levels, which is likely a legacy issue potential resulting from acid rain and other coal combustion deposition that historically impacted all Adirondack lakes.

Trophic State

The level of productivity of a lake (trophic state) is defined by three parameters: total phosphorus concentration, transparency, and chlorophyll-a concentration (an indicator of algal abundance). Nutrients are chemical compounds that support the growth of microscopic organisms and plants, that in turn support the rest of the lake's food web. The main nutrients in lakes are nitrogen and phosphorus. These occur naturally but can also be increased by human activities, e.g., fertilizers or septic drainage.

The trophic conditions in a lake can be classified as oligotrophic (nutrient levels very low, abundant oxygen in deep water), mesotrophic (nutrient levels moderate) or eutrophic (rich in nutrients, low oxygen common. It is the changes in these conditions that can help determine whether action needs to be taken to maintain a healthy lake. Based on these overall parameters Lake Pleasant and Sacandaga Lake are both classified as Mesotrophic. Mesotrophic lakes contain moderate amounts of nutrients and contain healthy, diverse populations of aquatic plants, algae, and fish. Occasional algae blooms may occur if the nutrient levels get to high. The thermal stratification of lakes can play a role in the availability of nutrients and refers to a change in the temperature at different depths. When the lake is deep enough to stratify into these layers, cold water sinks to the bottom while warm water stays on top. The hypolimnion (lower layer) often becomes low in oxygen by the end of summer and may result in some phosphorus release from the sediments. Phosphorous, also known as a limiting nutrient, can then be used by microorganism processes in the hypolimnion that depletes oxygen in the water, in turn causing other changes in the lake that can affect lake animals and plants.

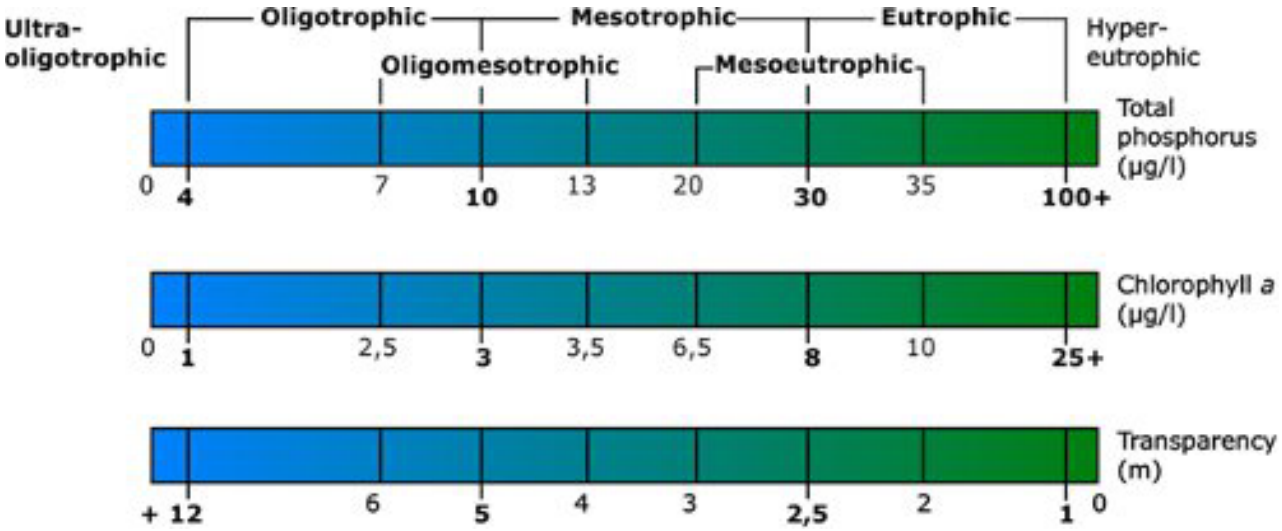


Figure 3: Trophic State Classifications Source: Quebec Volunteer Lake Monitoring Program

Water retention time

Water retention time (also known as the residence time) is the average time that water remains in the lake before being flushed out by water flowing into the lake. Water retention time is important when considering how long it takes for pollutants, e.g., road salt, to be flushed from a lake.

The retention times have been estimated by the LPSA by dividing the volume of water in the lake by the volume of water that flows through the lake per year expressed as a 30-year average. This provides an approximate, lake-wide average that is adequate to make comparisons of various lakes. This estimated retention time does not account for localized mixing variations that may occur in different lake areas and/or depths.

The Lake Pleasant retention time is estimated to be approximately 0.7 years. By contrast, Sacandaga Lake has a retention time that is nearly twice as long at 1.3 years. This comparison is logical given the fact that each lake has a very similar volume to one another, but the watershed area of Lake Pleasant is about twice as large resulting in twice as much water flowing through the system that results in a shorter retention time.

The retention time for Oxbow Lake is estimated to be quite short, at 0.3 years, which is not dissimilar to prior estimates. A short retention time relative to the larger LPSA lakes is expected given the relatively shallow depth of Oxbow resulting in a small volume compared to the other lakes.

2.2 Water Quality Indicators

Transparency

Lake Pleasant, Oxbow Lake, and Sacandaga Lake have each seen reductions in water transparency over the last 30 years (down 1.8m and .5m respectively) (Figure 4) although they remain at levels which are consistent with other mesotrophic lakes, while Fawn Lake's transparency has remained more constant at 4.15 m in 2021. The reduction in water transparency may be due to increases in algae growth. However, the reduction in transparency of the two lakes is more likely due to an increase in color in a phenomenon known as "browning". Browning represents the release of natural organic acids, e.g., tannins, matter from decomposing matter from watersheds may be due to increased ecosystem productivity and soils that have reduced capacity to absorb weak acids as a result of historic acidic precipitation. Warming lake temperatures may be a contributing factor as increased growing season duration may result in additional runoff of organic matter into lakes. Finally, browner water results in increased shallow water temperature as the darker color absorbs more solar energy[i].

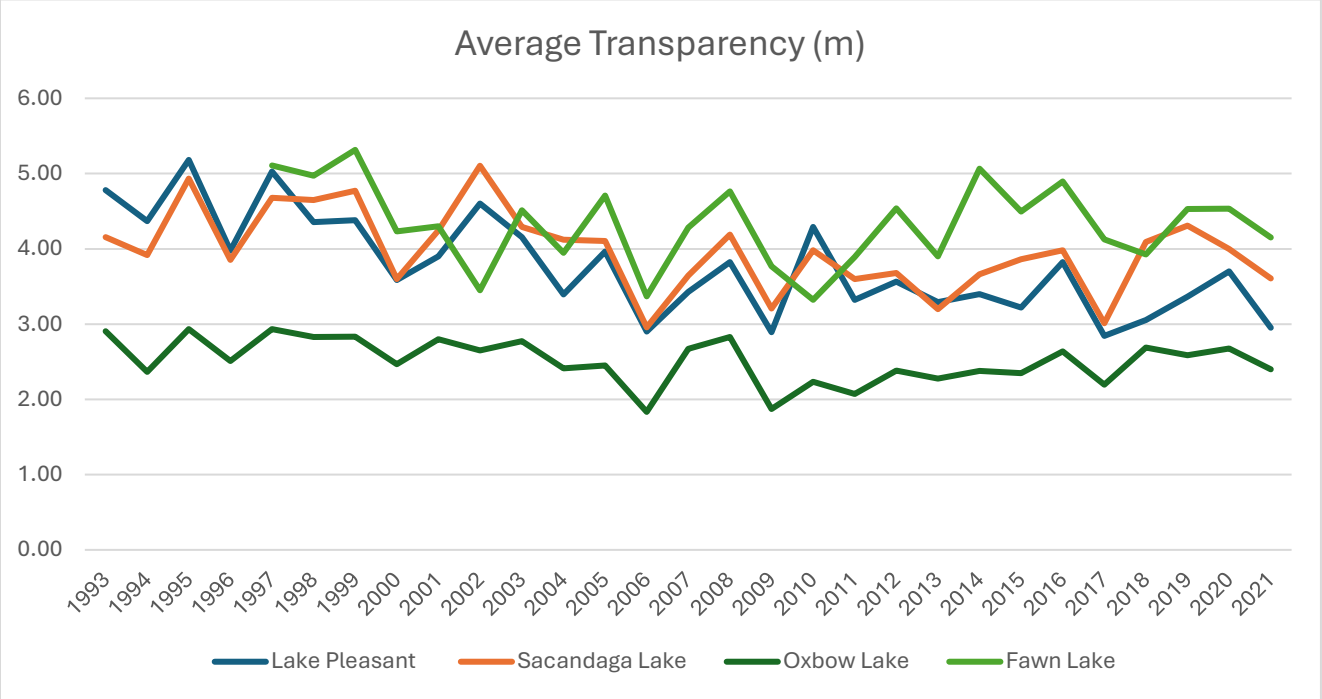


Figure 4: Average Transparency Source: Hamilton County SWCD

Total Phosphorus:

Total phosphorus (TP) measures both ortho-phosphate and the phosphorus in plant and animal fragments. TP levels are more stable than other measurements of phosphorus, and an annual measurement can tell us about the lake's water quality and trophic state.

Phosphorus is an essential but limiting nutrient in freshwater systems. This means that it comes from very few sources within the environment and therefore, the availability within a freshwater system is naturally low. Because phosphorus is necessary for plant growth, an increase in its concentrations can cause an overgrowth of aquatic vegetation. Excess phosphorus loading is usually a result of human activity within a watershed. Major sources include human and animal wastes, soil erosion, detergents, septic system leakage, and runoff from fertilized lawns.

Lake Pleasant and Sacandaga Lake TP levels during the 2021 sampling season are comparable with other Hamilton County lakes with averages of 5.7 ug/l and 5.3 ug/l in 2021 (Figure 5). According to the long-term trends, all three lakes have remained at almost constant TP levels. Severe storms or abnormally rainy months during the sampling timeframe in 2009 and 2011 could be the cause of the significant upticks in total phosphorus levels in all three lakes, which all returned to normal levels in the following years.

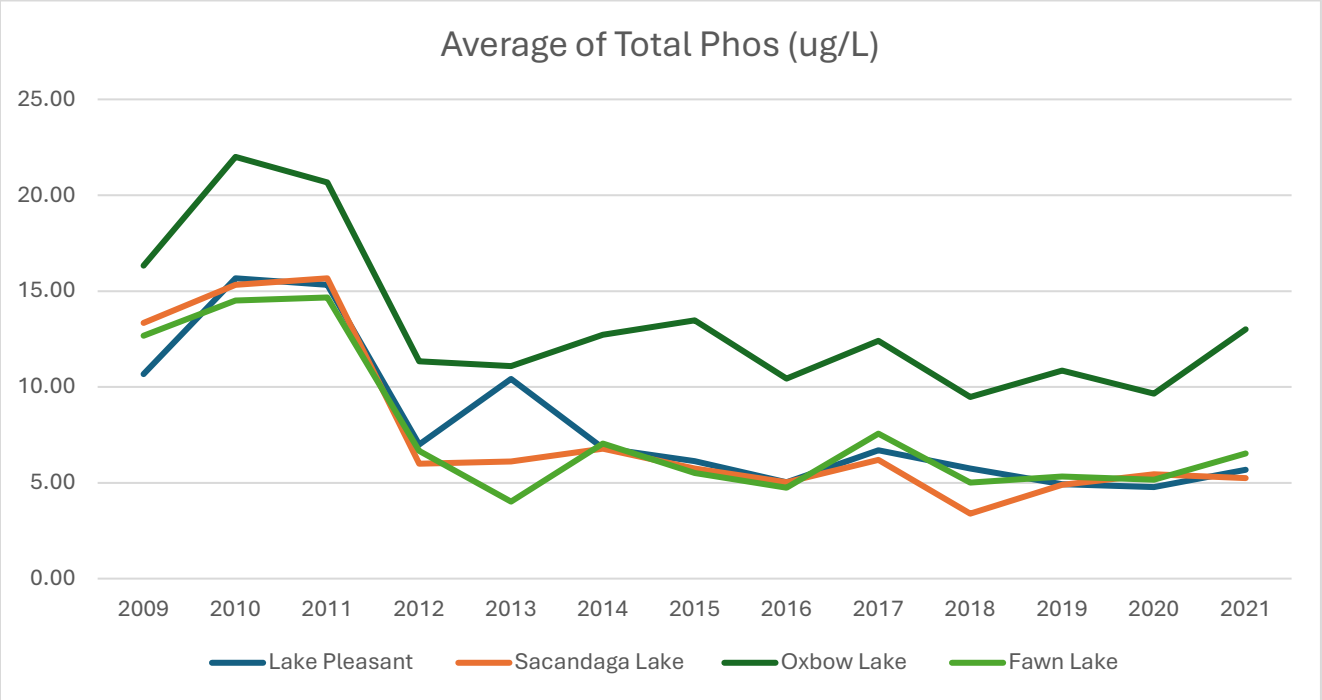


Figure 5: Average of Total Phosphorus - Source: Hamilton County SWCD

Chlorophyll-a:

Chlorophyll-a is used as an indicator of algae levels that are present in a lake. Naturally, algae is present in all freshwater ecosystems, and is often a food source to sustain an abundance of aquatic activity. However, too much algae can cause aesthetic problems such as green scums and bad odors, and can result in decreased levels of dissolved oxygen essential for healthy aquatic life, including fish. Seasonally, chlorophyll-a abundance can vary, which results from many environmental factors such as temperature and light. Excess algae is often caused by nutrient loading from runoff and other sources mentioned previously and can result in aesthetic, ecosystem, and public health affects.

All three lakes have Chlorophyll-a levels that are consistent with mesotrophic lakes, with averages between 2.3-2.7 ug/L in 2021 (Figure 6). No lake has seen any increasing trends of chlorophyll-a levels, although there have been year to year changes in concentration levels.

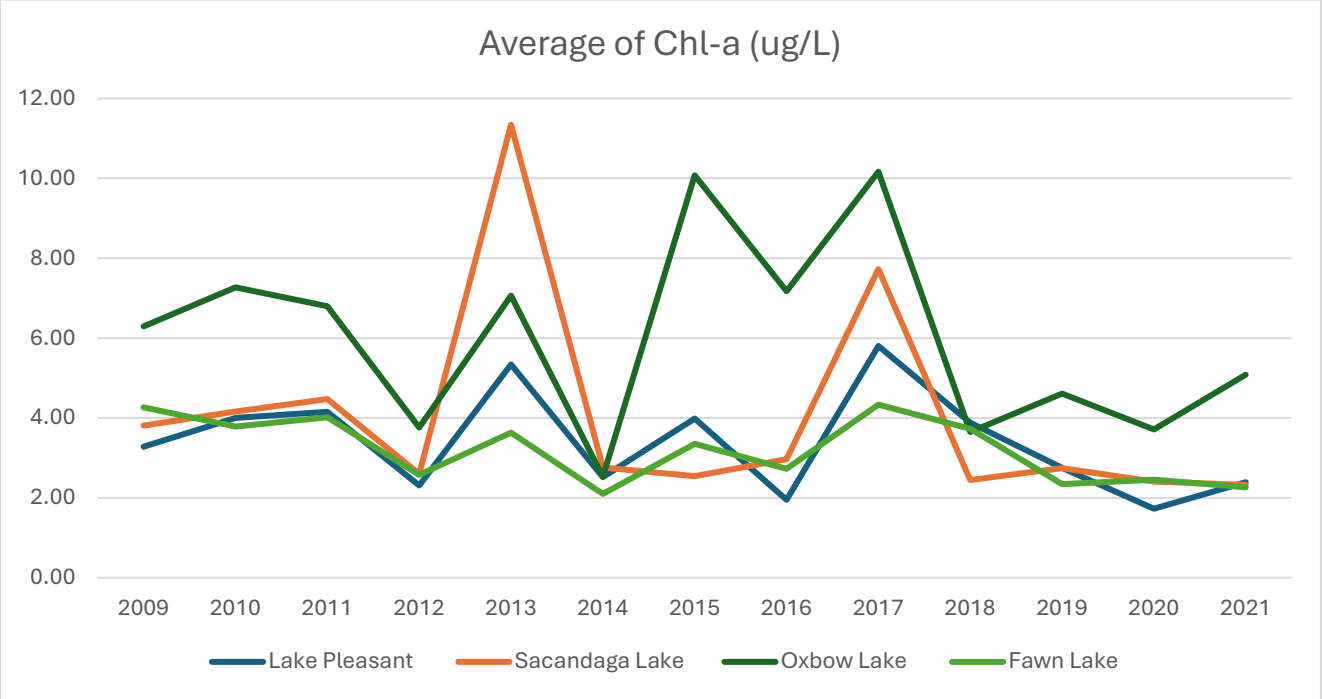


Figure 6: Average of Chlorophyll-a - Source: Hamilton County SWCD

Alkalinity:

Alkalinity is the measurement of a lake's acid neutralizing capability and is a function of the amount of calcium carbonate in the water, which acts as a buffer that prevents drastic changes in pH. Higher alkalinity suggests that a waterbody has better capability of withstanding water chemistry changes due to acidic deposition (acid rain, snow melt). Maintaining a stable pH in freshwater systems creates an overall healthier lake ecosystem necessary for aquatic plant and animal life to thrive.

Adirondack Lakes generally have low alkalinity due to a low calcium carbonate geology. Increases in alkalinity could be due to runoff from lawns where limestone fertilizer has been applied, bicarbonate contamination (including untreated wastewater), and a decrease in acidic inputs. All three lakes have had increasing alkalinity and now average between 10.8 – 11.4 mg/L (Figure 7).

Alkalinity levels suggest that both Lake Pleasant and Sacandaga Lake have low sensitivity to acidic change and are less likely to experience negative effects from acid rain. The increased alkalinity over time could also suggest that the lakes are being impacted by increased stormwater runoff from developed land in the watershed.

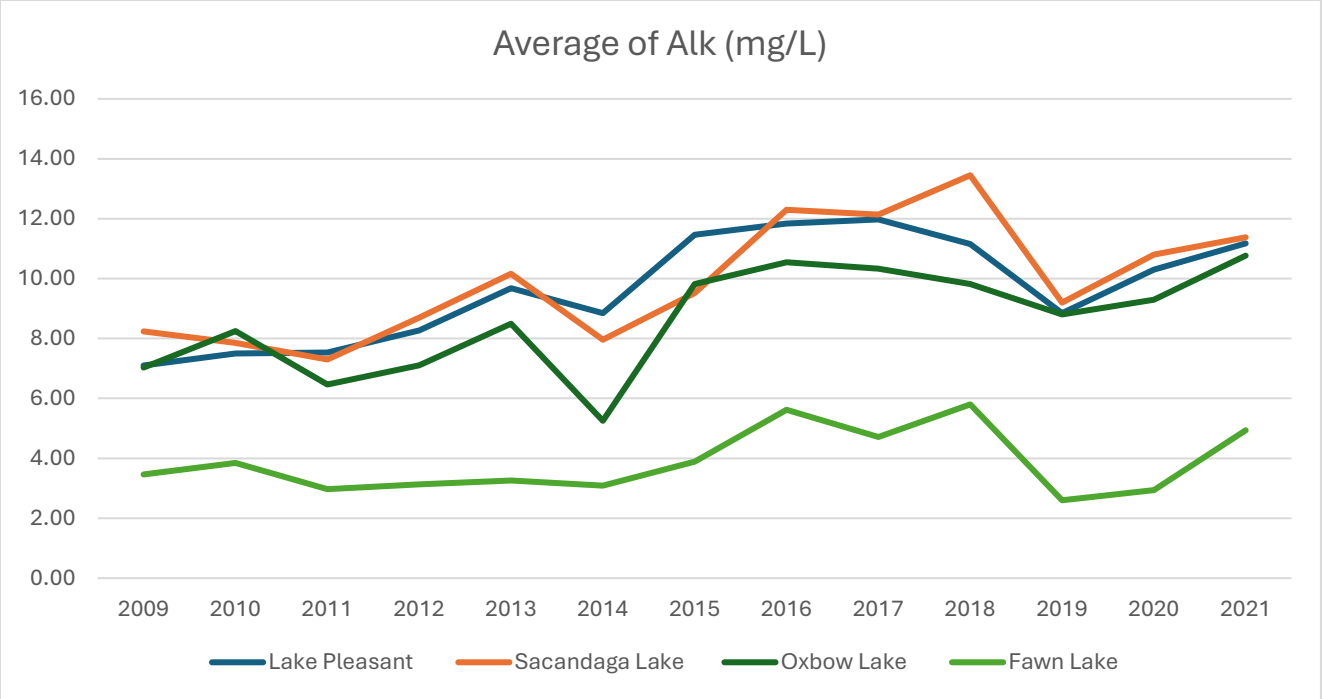


Figure 7: Average of Alkalinity - Source: Hamilton County SWCD

Sodium and Chloride:

Adirondack lakes have naturally low concentrations of both Sodium and Chloride, normally around 0.3-0.5 mg/L. The recorded increase in these concentrations (Figure 8) indicates that road salt application is influencing the chemistry of the lakes. Elevated chloride levels are toxic to fish, aquatic plants, and algae, and can also interfere with a lake's turnover ability in the spring and fall. If road salt concentrations reach sustained elevated levels, many freshwater organisms will be unable to survive in that waterbody. The water flea (Daphnia) is one of the most sensitive aquatic creatures, with a chronic level threshold of about 370 mg/L. For humans, it's about 250 mg/L. Recent CSLAP data for Sacandaga Lake is about 9 mg/L, which is low, and similar to Lake Pleasant.

Both Lake Pleasant and Sacandaga Lake have sodium and chloride concentrations that suggest their water chemistry is being moderately impacted by road salt application. Due to Fawn Lake's remote location and lack of roadways near the waterbody, sodium and chloride concentrations have remained near natural levels and are the lowest in Hamilton County.

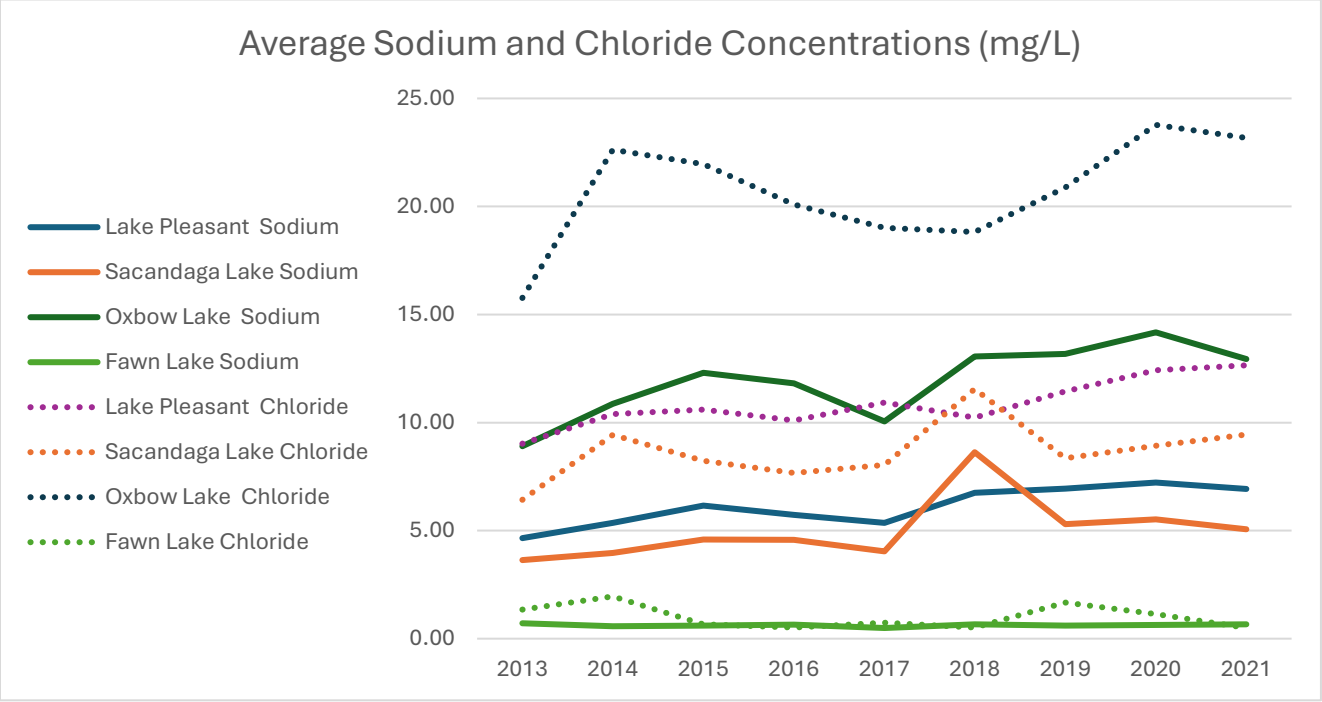


Figure 8: Average Sodium and Chloride Concentrations - Source: Hamilton County SWCD

Hamilton County Lake Monitoring Program 2021 Averages

	Average of Transparency (m)	Average of Chl-a (ug/L)	Average of Total Phos (ug/L)	Average of Alk (mg/L)	Average of Sodium (mg/L)	Average of Chloride (mg/L)
Blue Mountain Lake	6.8	1.3	3.6	7.9	13.3	22.2
Eight Lake	4.4	1.8	7.0	15.5	13.3	21.8
Fawn Lake	4.2	2.3	6.5	4.9	0.7	0.5
Fifth Lake	3.6	2.6	5.9	12.8	8.3	13.6
Forth Lake	3.9	3.2	4.9	13.2	7.6	12.6
Indian Lake	3.2	3.4	5.6	5.5	3.4	3.8
Lake Abanakee	2.8	2.9	7.8	7.5	3.0	4.6
Lake Adirondack	2.7	4.7	11.0	30.2	7.5	13.3
Lake Algonquin	2.3	2.3	9.1	13.2	4.6	7.3
Lake Eaton	5.6	1.2	3.7	6.0	9.2	15.3
Lake Pleasant	3.0	2.4	5.7	11.2	6.9	12.7
Limekiln Lake	4.4	2.2	4.2	3.6	1.2	1.5
Long Lake	2.7	3.5	5.4	5.4	3.5	5.1
Oxbow Lake	2.4	5.1	13.0	10.8	12.9	23.2
Piseco Lake	3.1	2.7	5.6	6.7	3.5	5.4
Raquette Lake	3.1	3.4	5.7	5.1	3.6	5.0
Sacandaga Lake	3.6	2.3	5.3	11.4	5.1	9.5
Seventh Lake	4.2	1.8	4.7	10.7	7.2	11.3
Sixth Lake	3.8	2.0	4.3	11.5	7.6	12.1
Spy Lake	3.4	3.0	6.4	4.9	9.8	17.0

Table 2: 2021 Averages from Hamilton County Lake Monitoring Program Source: Hamilton County SWCD

Lake Water Testing Results

Results from CSLAP are published in annual reports that summarize water quality conditions in various formats, including a "Lake Scorecard".

Lake Pleasant

Lake Pleasant's most recent report is from 2022. Lake Pleasant has been a participating lake in CSLAP since 2012. According to long term trends, both clarity and deep sample temperature have been trending downward. Lake Pleasant has also not experienced any harmful algae blooms and is rated as having a low susceptibility. The complete lake scorecard can be found in Figure 10.

Water Quality Indicators	Average Year	2022
Phosphorus	Oligotrophic	Oligotrophic
Chlorophyll A	Mesotrophic	Oligotrophic
Secchi (Transparency)	Mesotrophic	Mesotrophic
Lake Perception	Good	Good
Harmful Algal Blooms	Good	Good
Open Water Algal Levels	Not Available	
Aquatic Invasive Species	• Branded Mystery Snail • Spiny Water Flea	

Table 3: Lake Pleasant 2022 Lake Scorecard Source: CSLAP

Sacandaga Lake

The most recent Sacandaga Lake report is from 2019.

Water Quality Indicators	Average Year	2019
Phosphorus	Oligotrophic	Not Available
Chlorophyll A	Mesotrophic	Mesotrophic
Secchi (Transparency)	Mesotrophic	Mesotrophic
Lake Perception	Good	Good
Harmful Algal Blooms	Good	Good
Open Water Algal Levels	Good	Fair
Aquatic Invasive Species	Spiny Water Flea	

Table 4: Sacandaga Lake 2019 Lake Scorecard Source: CSLAP

Oxbow Lake

The most recent Oxbow Lake report is from 2019.

Water Quality Indicators	Average Year	2019
Phosphorus	Oligotrophic	Not Available
Chlorophyll A	Mesotrophic	Mesotrophic
Secchi (Transparency)	Mesotrophic	Mesotrophic
Lake Perception	Good	Good
Harmful Algal Blooms	Good	Good
Open Water Algal Levels	Good	Fair
Aquatic Invasive Species	Branded Mystery Snail	

Table 5: Oxbow Lake 2019 Scorecard Source: CSLAP

Fishing and Other Notable Lake Activity

Recreational fishing has a long-time heritage with the waterbodies in Lake Pleasant. Common Species include Bass (Small Mouth, Large Mouth and Rock), Pickerel, Perch, Pan Fish, Cat Fish, Trout (Brown/Lake, Rainbow, Brook), and Walleye.

The high fishing demands along with the warming lake temperatures have caused many of the traditional "cold water" fish such as Trout and Walleye to struggle. NYSDEC operates a long-term stocking program in both lakes. Shown in Figure 9 is a 2023 extract from the NYSDEC depicting the type of stocking taking place:

Year	County	Waterbody	Town	Month	Number	Species	Size (Inches)
2023	Hamilton	Jessup River	Lake Pleasant	May	790	Brook Trout	9
2023	Hamilton	Jessup River	Lake Pleasant	May	350	Brown Trout	9.5
2023	Hamilton	Jessup River	Lake Pleasant	May	76	Brown Trout	14
2023	Hamilton	Jessup River	Lake Pleasant	November	1,000	Landlocked Salmon	0.4
2023	Hamilton	Sacandaga Lake	Lake Pleasant	May	1,280	Brown Trout	9.5
2023	Hamilton	Wakely Pond	Lake Pleasant	May	170	Brown Trout	8.5
2023	Hamilton	Gilman Lake	Lk Pleasant	May	800	Rainbow Trout	9.3
2023	Hamilton	Lake Pleasant	Lk Pleasant	May	1,360	Brown Trout	9.5

Figure 9: Fish found in Lake Pleasant and Sacandaga Lake Source: NYSDEC

Ducks, Canadian Geese, Loons, and Osprey are common sightings and sounds on all lakes and surrounding areas. Bald Eagles have made a notable comeback in recent years. The Beaver and muskrat populations in the tributaries are obvious and are seemingly increasing. Otters, minks, and ermines are occasional sightings during the quieter times.

During the winter months when the lakes freeze (~2 feet is normal mid-January-March), snowmobiles are often in use along with ice fishing, snow shoeing and cross-country skiing. When out on the ice, tracks from white tail deer, fox and coyotes are often seen and when there is a carcass the eagles and other scavenger birds can be seen in significant quantities.

3.1 Threat Assessment

Many factors threaten the health and beauty of lakes in the Adirondacks. The lakes covered by this Lake Management Plan face the same threats as most other lakes in the Adirondacks. The most significant threat is probably that of aquatic invasive species, but there are a variety of other threats including shoreline erosion and other nutrient additions. Figure 10 was developed by the LPSA to illustrate the major threats to the Lakes, detailing both the consequences of these threats and their sources and emphasizes the areas that the LPSA believes should be prioritized for action at this time.

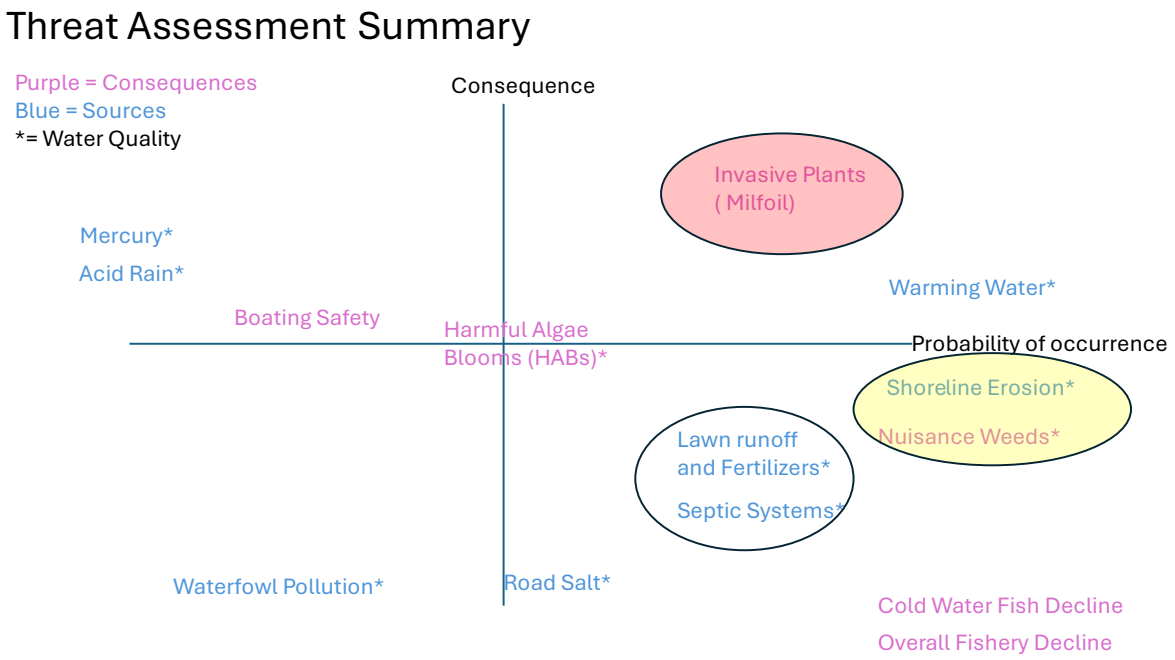


Figure 10: LPSA Threat Assessment

3.2 Identified Issues

Aquatic Invasive Species (AIS)

Non-native and invasive species are species or organisms that are introduced beyond the borders of their historic range, reproduce rapidly, and displace native species. Invasive species are considered one of the greatest threats to global biodiversity, second only to habitat loss. They can affect both Lake Pleasant and Sacandaga Lake and their watersheds by inhibiting recreation, degrading fisheries, contaminating drinking water, decreasing property values, degrading wildlife habitat, displacing native species, altering food webs, and reducing biodiversity.

The threat of invasive species in these lakes is heightened because they are interconnected, providing a pathway for species to spread between otherwise uninfected waters. The Spiny Waterflea, a tiny insect that disrupts native fish food sources and can significantly alter the aquatic food chain, has been present in Lake Pleasant and Sacandaga Lake since 2022. Another invasive species, the Branded Mystery Snail, is found in Lake Pleasant and Oxbow Lake. These small snails (up to 1.5 inches) graze on dead organic matter along the lakebed. They are known for occasional large die-offs, which can create unpleasant conditions on lake shores, and they may host parasites that can infect fish and other wildlife. As of 2024, populations of these invasive species have remained stable and have not experienced significant growth within the lakes.

Aquatic invasive plants have not been found in either lake. However, due to the popularity and convenient boat access on each lake, the threat of further invasive introduction, such as Eurasian Milfoil is high.

Together the two lakes have a total of four public boat launches, three of which are actively stewarded by the Adirondack Watershed Institute (AWI) and NYSDEC. Each year AWI releases reports on their stewarding activities at monitored boat launches. This includes data on the number of watercraft inspected, watercraft types, types of organisms found (invasive, noninvasive), and previous watercraft use locations (where it was last launched). Boat launches are manned by AWI stewards for most of the summer season, normally from May through September.

Comprehensive visual monitoring for non-native aquatic invasive species is performed annually in each of the four lakes by trained volunteers from LPSA. In addition, an expert from the Adirondack Park Invasive Plant Program (APIPP) performs a visual invasive species confirmation survey in each of the four lakes on a rotating annual basis.

LPSA Boat Launch Inspection Program

LPSA in conjunction with APIP and support from Camp-of-the-Woods and Lake Pleasant Marine, provides boat launch monitoring during much of the high use times frames where risks of Invasive entering are lake are most prevalent.

In 2022, Lake Stewards inspected over 2,300 watercraft and recorded over 4,000 visitors to Lake Pleasant and Sacandaga Lake (Table 6). Stewards prevented two invasive species from entering Sacandaga Lake, finding watercraft with Eurasian Watermilfoil and Zebra Mussels.

Location	Boats Inspected	Visitors	Boats decoded	Boats w/ organisms	Boats w/ AIS
Lake Pleasant Marine	83	177	-	25	0
Lake Pleasant Pavilion	1,113	1,337	-	538	0
Moffitt Beach	1,014	2,376	-	70	1
Speculator Roadside DECON Station	112	186	84	1	0

Table 6: 2022 Stewards Summary Source: AWI

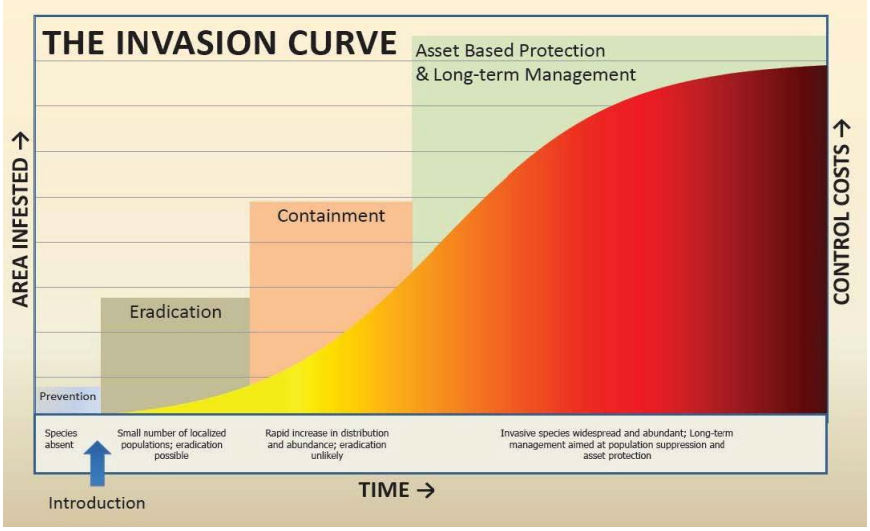


Figure 11: Invasion Curve Source: US Fish and Wildlife Service

The "Invasion Curve," shown in Figure 11, is a visual management tool that illustrates how the likelihood of eradicating an invasive species decreases while control costs increase as the species spreads over time. Prevention remains the most cost-effective approach, followed by early eradication. If an invasive species is not detected and addressed promptly, costly and prolonged control efforts will become necessary, and eradication becomes increasingly unlikely. This tool is valuable for evaluating whether investments in specific best management practices are justified compared to their potential costs.

Preventing the spread of aquatic invasive species (AIS) is essential for protecting all lakes. AIS introduced beyond their natural ranges can reproduce quickly, outcompeting and displacing native species. This can significantly diminish a lake's recreational and aesthetic value, as has been observed in many nearby lakes, leading to reduced community economic vitality and lower property values. A major concern is Eurasian Watermilfoil, which can form dense monocultures and spread easily between lakes through plant fragments. Milfoil is found in nearby lakes like Lake Algonquin and Caroga Lake. These monocultures hinder recreation, degrade fisheries, disrupt wildlife and their habitats, displace native species, alter food webs, and reduce overall biodiversity.

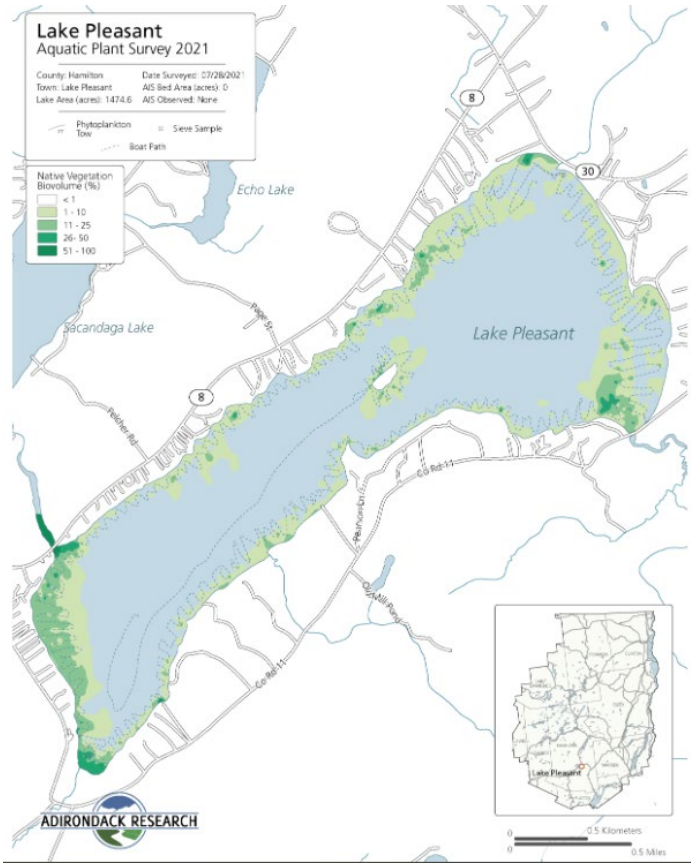


Figure 12: Aquatic Plant Survey of Lake Pleasant Source: APIPP

Weed Growth

Lake Pleasant has had significant aquatic weed and algae growth over the past 5-10 years most notably in depths ranging from 3 to 10 feet for the weeds and in the calm water shallows for the algae. These aquatic plants are indigenous to the lakes but have created a nuisance for swimming, boating, and lake aesthetics. As Figure 12 shows, these aquatic growths are in many areas of the lake and expanding significantly. The weeds are bottom rooted and become visible on the surface as they mature during the summer. The algae typically pools in warmer waters with depths under 3 feet on the northern shoreline. The increase in algae growth and potential for Harmful Algae Blooms was noted by survey respondents as a major concern for the Lakes.

Notably, the growth has been greater in Lake Pleasant than in Sacandaga Lake despite similar water chemistry and temperatures. LPSA has been working to better understand the cause of this difference to focus messaging to bring greater awareness and inform potential mitigation efforts by the community.

The current theory of what is causing the rapid bottom rooted weed expansion in Lake Pleasant as compared to Sacandaga Lake is that Lake Pleasant is significantly more developed along its shoreline and that there may have been substantial man made changes to the historic flow of a key tributary (Cherry Creek) both of which could create increased nutrient rich sedimentation in the Littoral zones where the weeds are growing. For most areas of Lake Pleasant, the greatest concern is the effect of shoreline erosion while in the large bay in the Southeast corner, the raising of the South Shore Road causeway could be causing continued sedimentation in that bay. The effects of shoreline erosion and best mitigation techniques are discussed further in this section.

The other factor impacting all lakes in our area is increasing water temperatures which creates a more suitable environment for aquatic growth but also the associated lengthening of the thermocline period which not only has a fishing impact but also limits the lake ability to clean itself from sedimentation that forms below the thermocline.

Harmful Algae Blooms (HABs)

HAB occurrences are increasingly common in Adirondack lakes due to the introduction of nutrients from sources such as lawn care fertilizers, stormwater runoff, and failing septic systems, among others. Climate change and warming water temperatures compound the issue, lengthening the growing season for algae and creating more favorable conditions for a HAB occurrence. However, it should be noted that not all algae blooms are HABs, which are created by a specific type of toxin, Cyanobacteria, and is sometimes referred to as Blue Green Algae.

Figure 13: Augur Lake HAB Source: NYSDEC

Depending on current weather and lake conditions, HABs may last only several hours or can persist for multiple weeks. Each HAB occurrence can look very different from each other. They are characterized by a water surface that looks like spilled paint or have long parallel streaks. Figure 13 shows a confirmed HAB on Augur Lake.

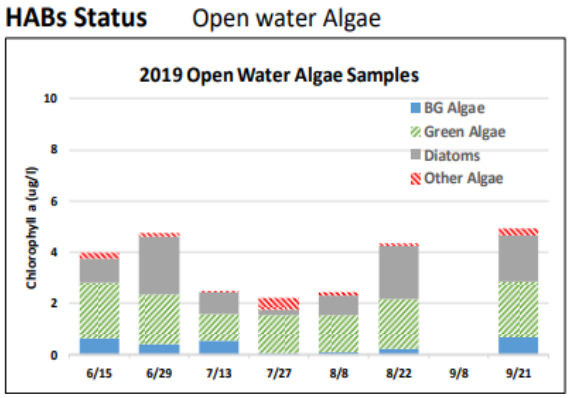


Figure 14: 2022 Lake Pleasant Open Water Sampling Source: CSLAP

As a part of the CSLAP, volunteers collect samples of surface algae which are then tested for the presence of cyanobacteria. Recent results can be found for Lake Pleasant (Figure 14) and Sacandaga Lake (Figure 15). Neither lake has had confirmed open water or shoreline HABs and constantly have algae toxin levels below recreational concern.

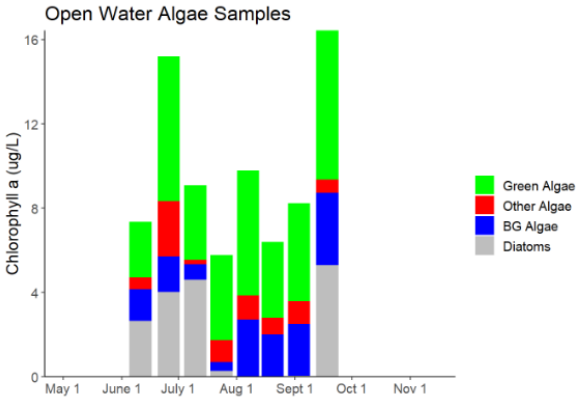


Figure 15: 2019 Sacandaga Lake Open Water Sampling Source: CSLAP

Shoreline Erosion:

Shoreline erosion is a natural process that occurs on lakes, streams, rivers, and along the coast. It is the gradual, although sometimes rapid, removal of sediments from the shoreline. It is caused by several natural factors including storms, wave action, rain, ice, winds, runoff, and loss of trees and other vegetation. The human alteration of vegetation on the shoreline is often the largest factor contributing to erosion. Trees and plants hold soil in place and when they are cut down or plowed over the soil becomes more vulnerable to being washed or blown away. Figure 16 shows the difference between an unhealthy and health shoreline buffer.

All waterbodies face the threat of shoreline erosion, which can be increased by the rapid overdevelopment of shoreline properties. The increased sedimentation from eroding soils is a contributing source of excess phosphorus and nitrogen and can affect the clarity of a waterbody. The creation of vegetated shoreline buffers is the greatest defense against shoreline erosion. Buffers are trees, shrubs, and ground cover that catch sediment and nonpoint source pollution before it enters a waterway. Buffers benefit the environment in many ways by providing food, shelter, and nesting for birds and other wildlife, protecting water quality by intercepting nutrients, reducing runoff and sedimentation, controlling shoreline erosion, and deterring nuisance wildlife. Staff members at HCSWCD work with local governments and individual property owners to identify and implement actions that can be taken to help reduce erosion on lake shorelines and along stream and riverbanks.

Figure 16: Eroded Shoreline Source: Dragonfly Pond Works versus a Natural Shoreline Source: VLAWMO

Fertilizer Usage:

Lawn fertilizer can be a major source of excess phosphorus and nitrogen in a waterbody, which can cause significant harm to the chemistry and natural workings of a lake. These excess nutrients can feed algae, creating a more suitable environment for HAB occurrences, as well as causing the natural process of eutrophication to speed up. Aquatic weed growth can also intensify with the additional supply of nutrients.

New York State law has restricted fertilizer use with phosphorus, while some local municipalities have prohibited fertilizer application along lake shorelines. Personal actions that can be taken to limit fertilizer runoff include; Never fertilize when heavy rain is predicted, fertilize in the fall for best results, and sweep excess fertilizer particles off of paved surfaces and back onto the lawn. Even lawns that are not fertilized can contribute additional nutrients to a lake due to rainwater and snow melt are likely to wash nutrients from a lawn into a nearby lake. In a natural forest environment, much of this water is filtered through the ground and plant roots, and fewer nutrients are washed into the lake. Shoreline landscape buffers, retention swales and berms between landscaped areas and the lakeshore can help to minimize the amount of nutrients that are washed into a lake.

Figure 17: Sign depicting the Town of Queensbury's fertilizer usage law Source: LCLGRPB

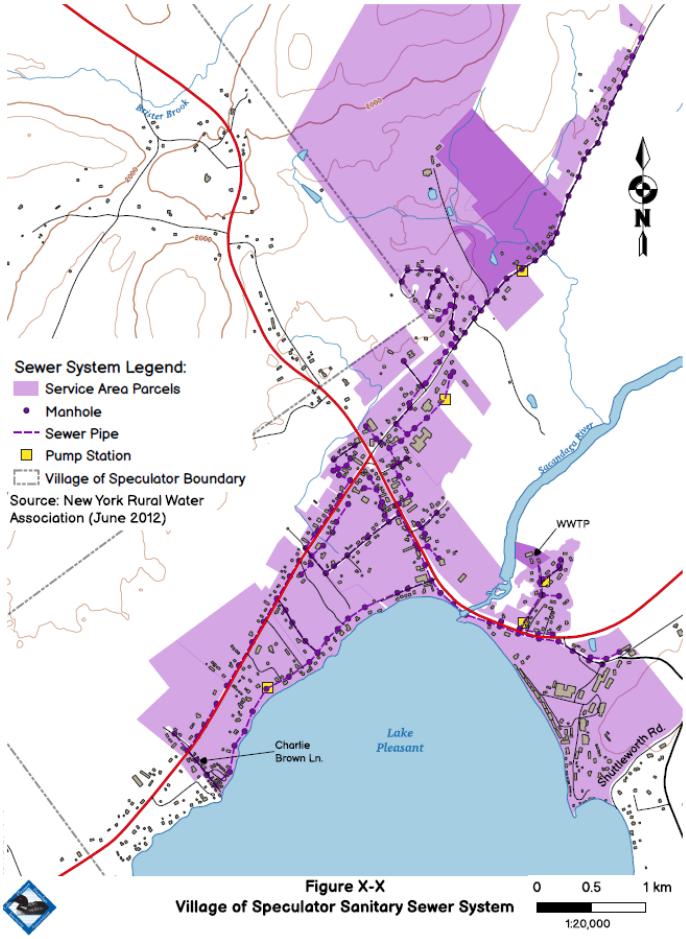


Figure 18: Village of Speculator Sewer System

Inadequate Septic Systems

Aging and antiquated septic systems are among the main sources of excess nutrient loading in waterbodies and can cause significant impacts on water quality. Major septic failures could even create public health hazards for those who recreate on the lakes. Homeowners rely on their septic systems for safe and effective treatment of their wastewater before it filters into the soil and if the system is not working properly, it can contaminate nearby waterbodies and wells. There are approximately 461 lakefront properties on Lake Pleasant and 319 on Sacandaga Lake which utilize private septic systems. As lakefront development continues or residences move from seasonal to full time, the risk of septic failure increases. The US Environmental Protection Agency estimates that on average, the nationwide septic failure rate is around 20%.

Currently, many of the Village of Speculator's lakefront properties are connected to the municipal sewer system. The extent of the system can be seen in Figure 18. The Village has also passed a septic inspection upon property transfer law in 2023. This law requires inspections when the sale of or conveyance of property occurs within 250 feet of Lake Pleasant, Lewey Lake, and Whitaker Lake. The Town of Lake Pleasant does not have municipal sewer or any septic transfer laws

Homeowners must ensure their septic systems are functioning properly so as not to adversely affect water quality. Septic owner education focused on proper care and inspection and pump-out frequency are among the ways the LPSA can work to mitigate this potential issue. At the local government level, many communities in and around the Adirondack Park have created septic laws or programs to ensure proper function and maintenance, which could be replicated for Lake Pleasant and Sacandaga Lake. Examples of these regulations can be found in Appendix C.

Septic Dye Testing

A septic dye test is one of the simplest methods of pinpointing issues with a septic system and is most often used to check for leakage due to broken pipes or incorrect installation The test is performed by adding dye, usually green or red, to the septic system, flushing water into the system and waiting to see if the dye appears anywhere above ground. The dye makes escaping effluent

visible and traceable. If there is a problem with the system, the dye may show up in the drain field, your yard, or a nearby waterway.

Septic Education

Educating homeowners about proper septic system maintenance and the importance of protecting water quality is an impactful and cost-effective strategy for addressing inadequate septic systems on the lakes. Future efforts can draw inspiration from successful initiatives, such as the LCLGRPB Septic Smart education program within the Lake George watershed, which utilized direct mailings (Figure 19) and social media campaigns to reach homeowners. Additionally, the U.S. Environmental Protection Agency offers a wealth of educational materials, which can be tailored to meet the specific needs of the community.

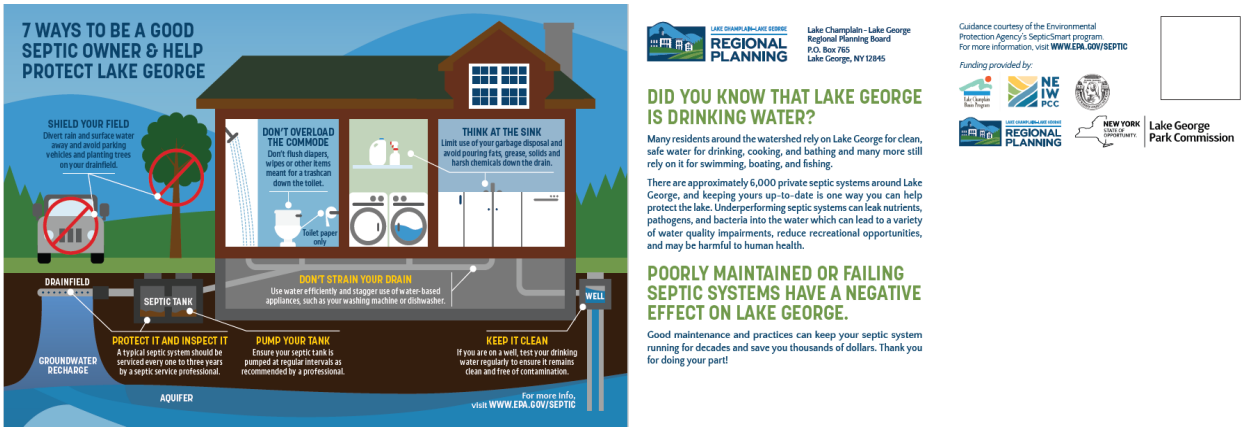


Figure 19: LCLGRPB Septic Smart mailer Source: LCLGRPB

Road Salt

Figure 20: Effect of chloride on roadside trees Source: Michigan State University Extension

The impacts of road salt on the environment can be wide ranging and can alter lake ecosystems. Over the past several decades road salt usage has increased significantly, and some Adirondack lakes now have up to 300 times the background concentrations of chloride.

Both Lake Pleasant and Sacandaga Lake have significant road infrastructure within their watershed. With major State and County thoroughfares and several smaller public and private roadways. In total, the watershed contains approximately 24 miles of roadways (Table 7). The Town of Lake Pleasant Department of Public Work's salt storage area is also within the watershed. The combination of this infrastructure and levels of salt historically laid on State and county-maintained roadways has shown to impact both Lake Pleasant and Sacandaga Lake.

The impacts of road salt are well documented, especially in Adirondack waterways. Data collected by the HCSWCD for their long-term monitoring project has indicated that both Lake Pleasant and Sacandaga Lake are being moderately impacted by road salt application. Chloride is toxic to aquatic life, and even low concentrations can produce harmful effects in freshwater ecosystems. High chloride levels in water can inhibit aquatic species' growth and reproduction. Salt-contaminated runoff could cause oxygen depletion within a water body, which would further negatively affect aquatic life as well as disrupt lake mixing patterns.

Town Lake County	Lake Area (km^2)	Lake Basin Area	Road Length (km) State		Lake Basin Road Density (km/km^2) State	County	Town
Fawn Lake	1.16	4.52	0.00	0.00	0.00	0.00	0.00	0.00
Oxbow Lake	1.26	13.67	6.09	0.08	4.09	0.45	0.01	0.30
Echo Lake	0.28	3.85	0.00	0.00	4.57	0.00	0.00	1.19
Sacandaga Lake	6.51	51.97	7.54	0.00	36.99	0.15	0.00	0.71
Lake Pleasant	5.97	86.49	15.65	9.53	59.04	0.18	0.11	0.68
Lake Pleasant not incl. Sacandaga L.	--	34.52	8.11	9.53	22.05	0.23	0.28	0.64

Table 7: Roadway kilometers within the watershed

Acid Rain

Acid rain, more accurately known as acid deposition, begins with the burning of coal for energy. The resulting air pollution discharged from the smokestacks of coal-burning electric power plants contains sulfur dioxide (SO_2) and nitrogen oxide (NO_x). These gases react in the atmosphere with water and oxygen to form acidic compounds. The sulfuric acid and nitric acid can be carried hundreds of miles with wind and air currents, and then fall to the ground as rain, snow and fog, and as dry deposition. These acidic compounds can have negative impacts on plants and animals. Many of the nation's power plants are located in the Midwest states, and prevailing winds carry their pollution straight to the Adirondacks.

Congress passed the Clean Air Act in 1963. This law, plus amendments in 1970 and 1990, placed limits on the amount of pollutants allowed to be released by coal-burning power plants. These laws have been successful in reducing the amount of acid rain that falls in the Adirondacks. However, even after the amount of acid rain produced each year has been reduced, it may take a long time for lakes and soils in the Adirondacks to recover. Calcium in the soil helps to buffer, or neutralize, the effect of acidic precipitation, but over time, large amounts of acid precipitation can exhaust the supply of this buffering agent faster than it can be replaced by normal weathering of rocks, and the ground loses its ability to buffer and balance the effects of the acid rain.

In addition to the direct effects of acid in lake waters, there are indirect effects also. Acidic precipitation can leach aluminum from rocks and soil in the watershed. High levels of aluminum in lake water can cause respiratory problems for fish, leading to their death. Studies have also shown

that acid rain can cause problems for sugar maples and red spruce trees, thus having a significant effect on the lakes' watersheds.

Mercury

Another harmful element in emissions from coal-burning power plants is mercury. The compound methyl mercury (MeHg) is very toxic, causing neurological problems in higher animals and reduced reproductive capacity for most animals. When MeHg gets into lakes, it is absorbed by algae, which is eaten by zooplankton, which is then eaten by fish. As the mercury works its way up the food chain, it becomes more concentrated in the animals higher in the food chain. Twenty years ago, the mercury level was so high in many fish in the Adirondacks that NYSDEC recommended that people not eat more than one meal per week of fish taken from Adirondack waters. At the same time, studies showed very high levels of mercury in loons in the Adirondacks, whose main diet is fish. Federal laws limiting power plant emissions have helped to reduce the amount of mercury in these emissions, and there has been a corresponding reduction in the amount of mercury in fish and loons in Adirondack lakes. However, mercury can remain in the environment for a long time, so there may be lingering effects for many years.

Because acid rain and mercury can have such profound effects on trees, fish, aquatic plants, and lake birds, it is important to be aware of the potential damage it can cause to our forests, lakes, and wildlife. New York State has imposed laws on emissions that are stricter than Federal laws, but emissions from coal-burning power plants in other states upwind of New York can still cause acid rain deposits in the Adirondacks. Further legislation may be needed at the Federal level to protect the long-term health of our lakes.

4.1 Recommendations and Actions

Organizational

- Assign liaison to regularly coordinate with the Town of Lake Pleasant and the Village of Speculator on matters that could impact water quality such as:
    - Funding Support
    - Septic Laws
- Create and expand educational outreach opportunities for residents and visitors on the importance of environmental stewardship in Lake Pleasant and Sacandaga Lake
- Formally document "in kind" services
- Conduct yearly reviews of the LPSA Lakes Management Plan and recommendations

Water Quality Monitoring

- Continue volunteer monitoring program through CLASP
- Continue to participate in the HCSWCD Lake Monitoring Program

Aquatic Invasive Species or HABs

- Provide support to retain boat wash stewards at public access points to Lake Pleasant
- Expand the 2019 LPSA "Don't Feed the Weeds" Campaign to better educate association membership and the larger community on the connections between nutrient additions to our lakes and the associated aquatic weed growth
- Maintain active invasive species monitoring through CSLAP volunteers and partnership organizations such as the HCSWCD, Adirondack Park Invasive Plant Program, and the Adirondack Watershed Institute
- Increase LPSA aquatic invasive species prevention educational programming

Shoreline Erosion and associated Nuisance Weed Growth

- Partner with HCSWCD to identify areas of erosion on private property around Lake Pleasant and Sacandaga Lake
- Promote native riparian buffers to stabilize shorelines where feasible
    - Include links on the LPSA Website to purchase appropriate plants
- Provide educational guides to property owners on the benefits of reducing erosion
- Repeat aquatic plant survey done in 2021 at a minimum every 5 years to create trending data. A similar baseline survey is recommended for Lake Sacandaga for both baseline and comparative purposes.
- Develop triggers and action plan for nuisance weed growth and management actions

Onsite Septic Systems

- Conduct education and outreach to homeowners around the lake to inform about the link between failing septic systems and water quality
    - Consider participation in the Septic Smart Education Campaign
- Work with the Village to explore the feasibility of sewer extension to Shuttleworth Road and Second Beach properties to mitigate nutrient loading risks from high water tables

Road Salt

- Conduct education and outreach to homeowners around the lake to inform about the link between road salt and water quality
- Support municipal transition to road salt reduction practices (Brine, live edge plowing…)

4.2 Past Grants and Potential Funding Sources

The continued operation of LPSA's wide-ranging programs involves a tremendous amount of local employee and volunteer man hours for the actual activities as well as the administration of the personnel. This local manpower commitment is above and beyond the budgetary allocations of the Town of Lake Pleasant and LPSA. If this commitment is converted to a monetary value using normal compensation factors, it adds up very quickly and results in a total comparable expenditure that would be unmanageable by the local municipalities and LPSA.

In 2016, the LPSA successfully secured two grants through NYSDEC's aggressive statewide program aimed at protecting our lakes. Each grant covered a three-year period and supported the purchase and operation of a boat washing and decontamination station, as well as staffing costs for lake stewards stationed at boat launches to inspect vessels entering and leaving the lakes.

Typically, grant funding requires a local financial match, which can be challenging to provide due to budget limitations. The LPSA has addressed this challenge by leveraging volunteer time to meet local match requirements. Without these dedicated volunteer contributions, meeting the necessary budget thresholds—either locally or through the state—would not be feasible.

As a result, continued reliance on volunteer support, coordinated through the LPSA, remains a critical component of the Lake Management Plan

Potential Grant Sources:

Funding Source	Program	Eligible Applicants	Project Types
NYS Department of Environmental Conservation	Water Quality Improvement Project (WQIP) Program	Local Government Entity, Non-profit 501(c)3 organizations	Wastewater, Nonpoint Source, Land Acquisition, Salt Storage, Aquatic Connectivity, Culverts, Habitat Restoration, Water Infrastructure, Green Infrastructure, Nature Based Solutions, Ecological Restoration, Dam Removal, Wetlands, Resilience, Water Quality, Shoreline Projects/Streambank Stabilization
NYS Department of Environmental Conservation	Environmental Restoration Program	Local Government Entity	Remediation, Hazardous Waste
NYS Department of Environmental Conservation	Non-Agricultural Nonpoint Source Planning Grant Program	Local Government Entity, Soil and Water Conservation Districts	Wastewater, Green Infrastructure, Nature Based Solutions, Shoreline Projects/Streambank Stabilization, In-Waterbody Controls, Ecological Restoration, Culverts, Nonpoint Source, Resilience, Water Quality

NYS Department of Environmental Conservation (DEC) and Department of Health (DOH)	Drinking Water Source Protection Program (DWSP2)	Local Government Entity	Drinking Water
NYS Department of Environmental Conservation	Invasive Species Grant Program	Local Government Entity, 501(c)3 organizations	Invasive Species, Management
NYS Environmental Facilities Corporation (EFC)	Water Quality State Revolving Fund	State Government Entity, Other	Wastewater, Nonpoint Source, Green infrastructure, Nature Based Solutions, Water Quality
NYS Environmental Facilities Corporation (EFC)	Drinking Water State Revolving Fund	State Government Entity, Other	Drinking Water, Water Infrastructure, Public Health
NYS Environmental Facilities Corporation (EFC)/ New York State Department of Conservation (NYSDEC)	Engineering Planning Grant Program	Local Government Entity	Engineering Report, Environmental Review, Wastewater, Water Quality, Water Infrastructure
NYS Environmental Facilities Corporation (EFC)	Septic System Replacement Program	Local Government Entity	Septic Replacement, Cesspools, Wastewater, Water Infrastructure, Water Quality, Maintenance

4.3 LPSA Response Action Plans

Action Trigger: Suspected Harmful Algal Bloom

- **Response Plan:**
    a. LPSA Members to be educated on HAB detection, identification, and reporting process. LPSA will highlight this information at least once per year via newsletters and social media.
    b. In event of a suspect HAB, LPSA members should document the occurrence to the best of their ability, and notify LPSA Board members.
        i. Documentation includes photographs of the suspected HAB, as well as noting the extent, weather conditions, and location.
        ii. If possible and safe to do so, a water sample can be collected to support the above documentation.
    c. Notifications occur to relevant authorities and Stakeholders
        i. Authorities include: Hamiliton County Public Health, NYSDOH, Town and Village officials, NYSDEC, and HCSWCD.
        ii. Reporting and documentation can be submitted through the NYSDEC *Suspicious Algal Bloom Report Form (https://survey123.arcgis.com/share/66337b887ccd465ab7645c0a9c1bc5c0)*.
    d. LPSA Lake Ecology Committee requests to be informed by HCSWCD as to actions taken for public safety (e.g. buoy marking, beach closing).
    e. LPSA Communications Committee to notify LSPA members and community residents of the suspected HAB.
        i. Notification can occur through email, social media, or community meetings
        ii. Explain the risks to humans and pets.
    f. Continue to conduct regular HAB monitoring.

Action Trigger: Detection of new Aquatic Invasive Species

- **Response Plan:**
    a. LPSA Members and Lake Monitors are to be educated on AIS detection, identification, and reporting process. Yearly educational updates and reminders.
    b. LPSA Leadership will annually maintain a list of qualified service providers in coordination with NYSFOLA.
    c. Conduct validation efforts with LPSA Lake Ecology Committee within two weeks of suspected detection.
        i. Validation efforts include the collection of samples and photographs.
    d. LPSA Lake Ecology Committee to notify LPSA Board and partnership organizations (Hamilton County SWCD, Adirondack Park Invasive Plant Program, or the Adirondack Watershed Institute, NYSDEC) for secondary validation and coordination.
    e. Coordinate in-lake surveys to delineate the spread of/ affected areas.

f. LPSA President or Designee communicates with LPSA members and community stakeholders.
    i. Stakeholders include: Town and Village officials, Camp-of-the-Woods, HCSWCD, APA, and Hamilton County Express with a Board approved communication.
    ii. Share information about the species, potential risks, steps being taken to address it, how to stop and prevent further spread.
g. Develop an Action Plan
    i. Collaborate with partnership organizations to create a management or eradication plan.
    ii. Plan should include short-term actions (e.g., physical removal, chemical treatment if safe) and long-term monitoring recommendations.
    iii. LPSA President or designee identify potential companies for removal services estimate.
    iv. Obtain LPSA Board Approval for using Huber Funds to fund mitigation.
h. Depending on chosen mitigation strategies, begin the process of collecting necessary NYSDEC and APA approvals to allow mitigation within one year of detection (e.g. aquatic herbicide application).
i. Conduct monitoring efforts through regular CSLAP efforts or create programming with LPSA member assistance.
    i. Regularly monitor the lake for signs of the invasive species and evaluate the effectiveness of management efforts.
    ii. Adjust management methods based on LPSA Ecology Committee recommendations to the LPSA Board.

Action Trigger: Reported Septic System Failure

- **Response Plan**
    a. LPSA to continue to provide ongoing septic system maintenance education to lakeshore property owners and community residents.
    b. LPSA will maintain a list of septic inspectors on the organizations website.
    c. Monitor the lake for suspected signs of septic failure and document any findings.
        i. Signs of septic failure include unusual vegetation growth or algae blooms in the lake.
        ii. Standing water, soggy soil, or pooling near septic drain fields.
    d. Encourage or incentivize property owners to undertake voluntary septic inspections, can be done with the assistance of partnership organizations.
    e. If major septic failure is suspected, LPSA will report findings and documentation to relevant authorities.
        i. Including; Town and Village Code Departments and Hamilton County Public Health.
    f. Promote usage of septic replacement funding, such as the NYSDEC Septic Replacement Program

Action Trigger: Shoreline Erosion

- **Response Plan**
    a. LPSA Board to coordinate with HCSWCD and private property owners to survey shoreline properties to identify high erosion areas.
        i. The survey should include determining potential causes of shoreline erosion such as natural or human causes.
    b. Partner with property owners and stakeholders to implement stabilization methods including:
        i. Vegetative plantings, reconstruction of buffer areas, structural stabilization.
    c. Continue to provide educational materials highlighting the importance of stormwater mitigation, proper lawn care for shoreline property owners, and buffer maintenance.

Appendix A. Sources of Additional Information

Water Quality Monitoring:

Hamilton County Soil and Water Conservation District: https://www.hamiltoncountyswcd.com/

Paul Smith's College Adirondack Watershed Institute: https://www.adkwatershed.org/adirondack-lakeassessment-program-alap

Invasive Species:

Adirondack Park Invasive Plant Program: https://adkinvasives.com/

Hamilton County Soil and Water Conservation District: https://www.hamiltoncountyswcd.com/

Lake George Association: https://www.lakegeorgeassociation.org/protect/lake-friendly-boating/preventingspread-invasive-species/ and http://www.protectlakegeorge.com/

Paul Smith's College Adirondack Watershed Institute: https://www.adkwatershed.org/https:/www.adkwatershed.org/research/invasive-species

Erosion:

Hamilton County Soil and Water Conservation District: https://www.hamiltoncountyswcd.com/

Lake George Association. *Lake Friendly Living*: https://www.lakegeorgeassociation.org/protect/lake-friendlyliving/

Road Salt Reduction:

ADK Action: https://www.adkaction.org/project/reducing-road-salt/

Paul Smith's College Adirondack Watershed Institute: https://www.adkwatershed.org/https%3A/www.adkwatershed.org/research/road-salt-research

Septic Systems:

Lake George Association. (2020). The Complete Guide to a Safe Septic System from Fixing to Financing: http://safesepticsystems.org/

Navitsky, C. (2018). Town of Lake George Septic Initiative Program: An analysis of the management of onsite wastewater treatment systems in the Town of Lake George: https://lgpc.ny.gov/system/files/documents/2021/07/town-of-lg-septic-iniative-report-01-2019.pdf

Parker, H. (2021) The Homeowner's Guide to Septic Dye Testing: https://homereference.net/septic-dye-testing/

Town of Queensbury. (2018). Septic Inspection Upon Property Transfer: https://www.queensbury.net/wpcontent/uploads/2018/10/ADOPTED-Chapter-137-NEW-CHAPTER-Septic-Inspection-Upon-PropertyTransfer-October-15-2018.pdf

U.S. Environmental Protection Agency. (2017). How your Septic System Can Impact Nearby Water Sources: www.epc.gov/septic/how-your-septic-system-can-impact-nearby-water-sources

Appendix B. Acronyms and Definitions

AIS – Aquatic Invasive Species

APIPP - Adirondack Park Invasive Plant Program

AWI – Adirondack Watershed Institute

CSLAP - Citizens Statewide Lake Assessment Program

HABs – Harmful Algae Blooms

HCSWCD – Hamilton County Soil and Water Conservation District

HUC – Hydrologic Unit Code

LCLGRPB – Lake Champlain-Lake George Regional Planning Board

LPSA – Lake Pleasant-Sacandaga Lake Association

NYSDEC – New York State Department of Environmental Conservation

TP – Total Phosphorus

WI/PWL - Waterbody Inventory & Priority Waterbodies

Descriptions of waterbody impairments assigned by NYSDEC:

Precluded	Frequent/persistent water quality, or quantity, conditions and/or associated habitat degradation prevents all aspects of a specific waterbody use.
Impaired	Occasional water quality, or quantity, conditions and/or habitat characteristics periodically prevent specific uses of the waterbody, or Waterbody uses are not precluded, but some aspects of the use are limited or restricted, or Waterbody uses are not precluded, but frequent/persistent water quality, or quantity, conditions and/or associated habitat degradation discourage the use of the waterbody, Support of the waterbody use requires additional/advanced measures or treatment.
Stressed	Waterbody uses are not significantly limited or restricted (i.e., uses are supported and water quality standards are met) but occasional water quality, or quantity, conditions and/or associated habitat degradation periodically discourage specific uses of the waterbody.

Threatened	Water quality supports waterbody uses, water quality standards are met, and ecosystem exhibits no obvious signs or significant stress (i.e., uses are fully supported) however: Changing land use patterns may result in restricted use or ecosystem disruption, or Worsening trends or sub-optimum water quality suggest future impacts to uses, or Support of a specific/distinctive use (e.g., Class AA waters) make the water more susceptible to water quality threats.

Appendix C: Adirondack Septic Inspection Laws

Septic Inspection upon Property Transfer Law Ordinance

The Town of Inlet, Hamilton County was the first Adirondack town to enact a septic inspection ordinance more than a decade ago. The ordinance requires homeowners to have a completed inspection of their septic system prior to the sale/conveyance of property.

The Towns of Queensbury and Bolton, Warren County. passed ordinances requiring homeowners to obtain a detailed inspection of the on-site wastewater treatment system by a certified professional or a town-designated official. During a house sale, the real estate agent is required by law to disclose any information about failing infrastructure on the property including the septic system. Any inadequacies in the system must be repaired prior to the completion of any property transfer. Since the onset of this program, the Town of Queensbury has found that approximately 80% of systems that have been inspected needed replacement or repair.

Septic Pump Out Programs

Schroon Lake. Septic systems need regular cleanouts to be effective (usually every three to five years), or they will eventually fail. In 2014 and 2015, the Schroon Lake Association and the East Shore Schroon Lake Association, using funding from a New York State Department of State grant, conducted a septic pump out program for lakefront homeowners. Costs for the program were shared between the homeowners and the Association using grant funding.

Appendix D: Watershed Maps

Maps created by the LSPA.

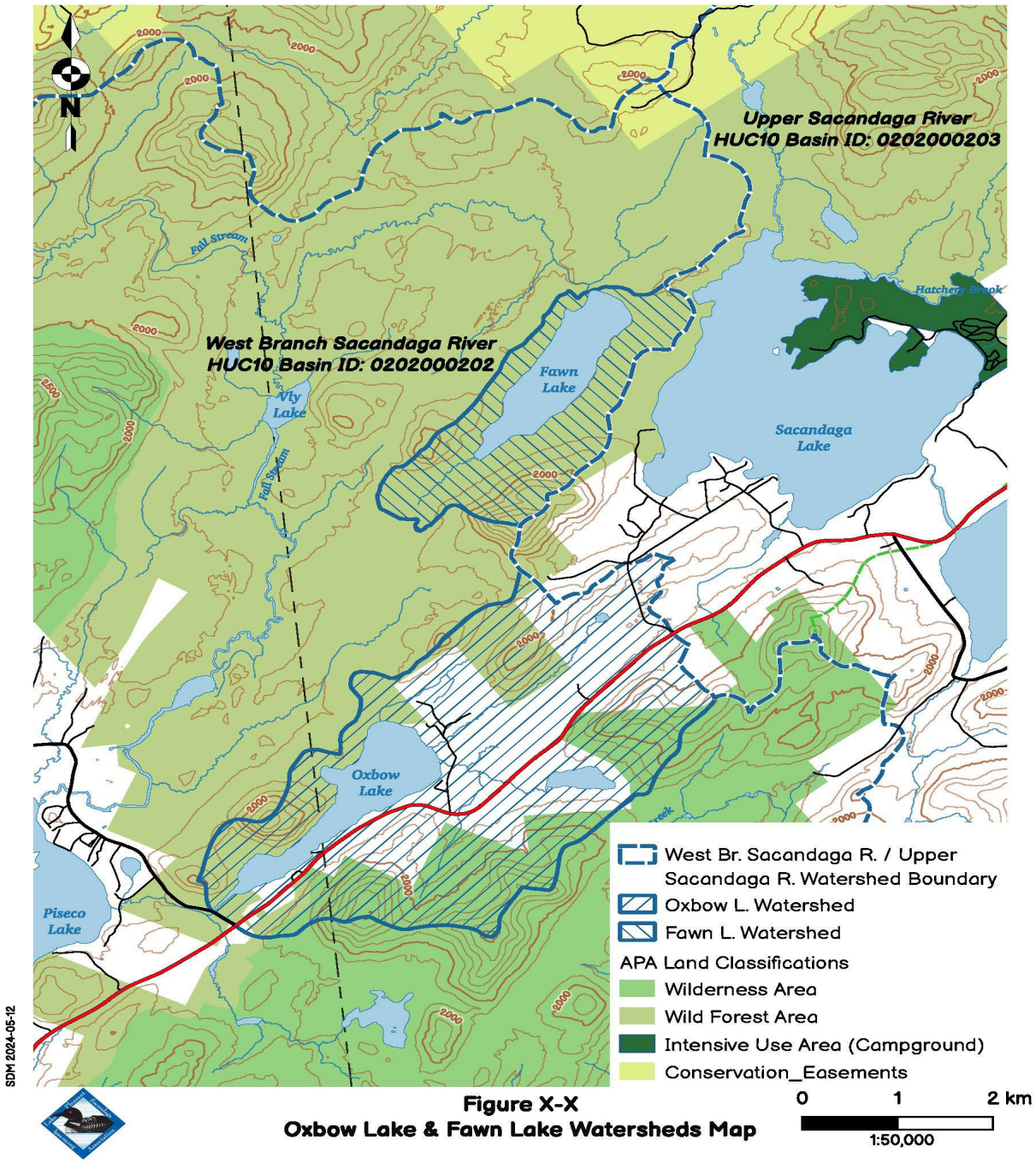


Figure X-X
Oxbow Lake & Fawn Lake Watersheds Map

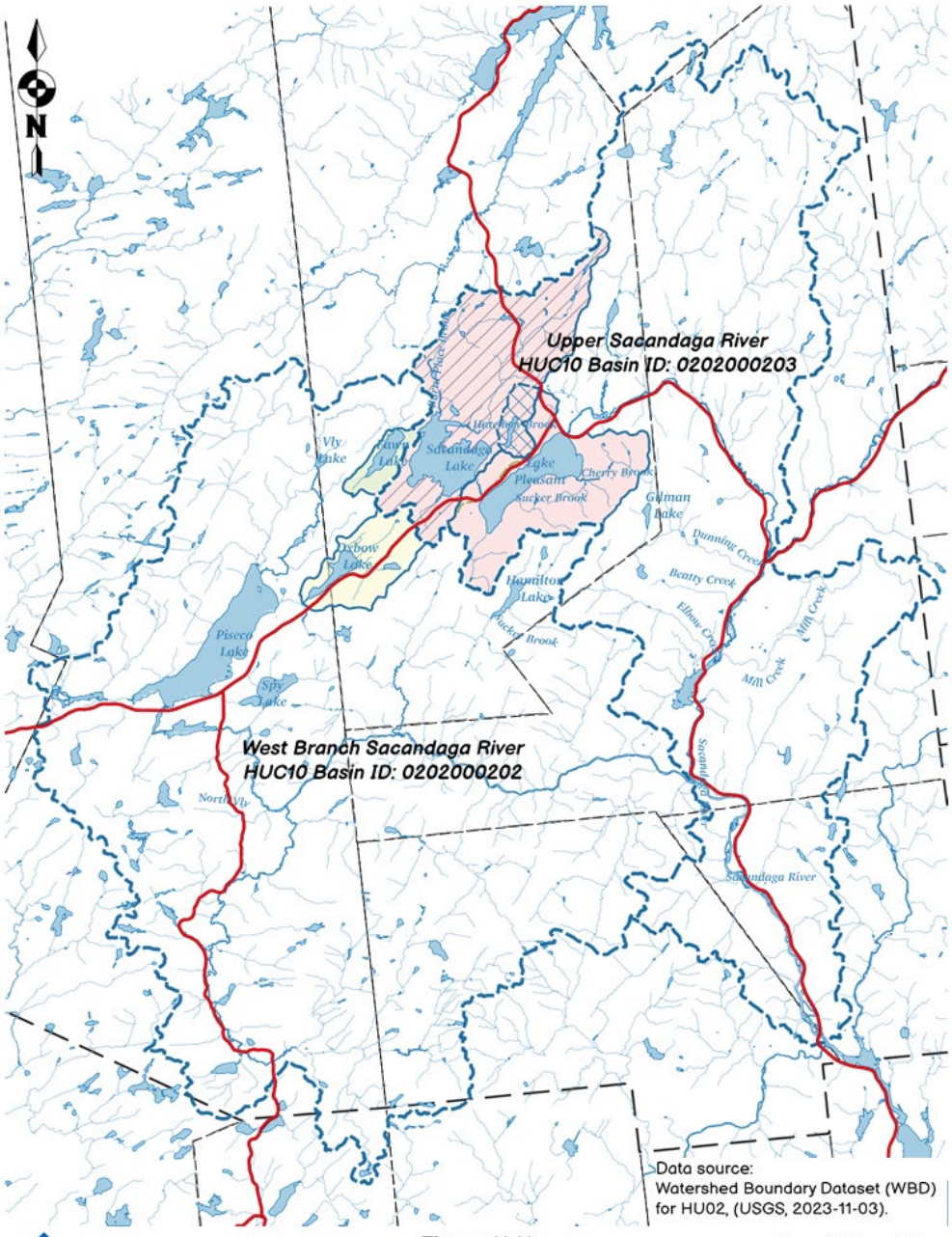


Figure X-X
Hydrologic Unit Code (HUC10) Watershed Basin Map

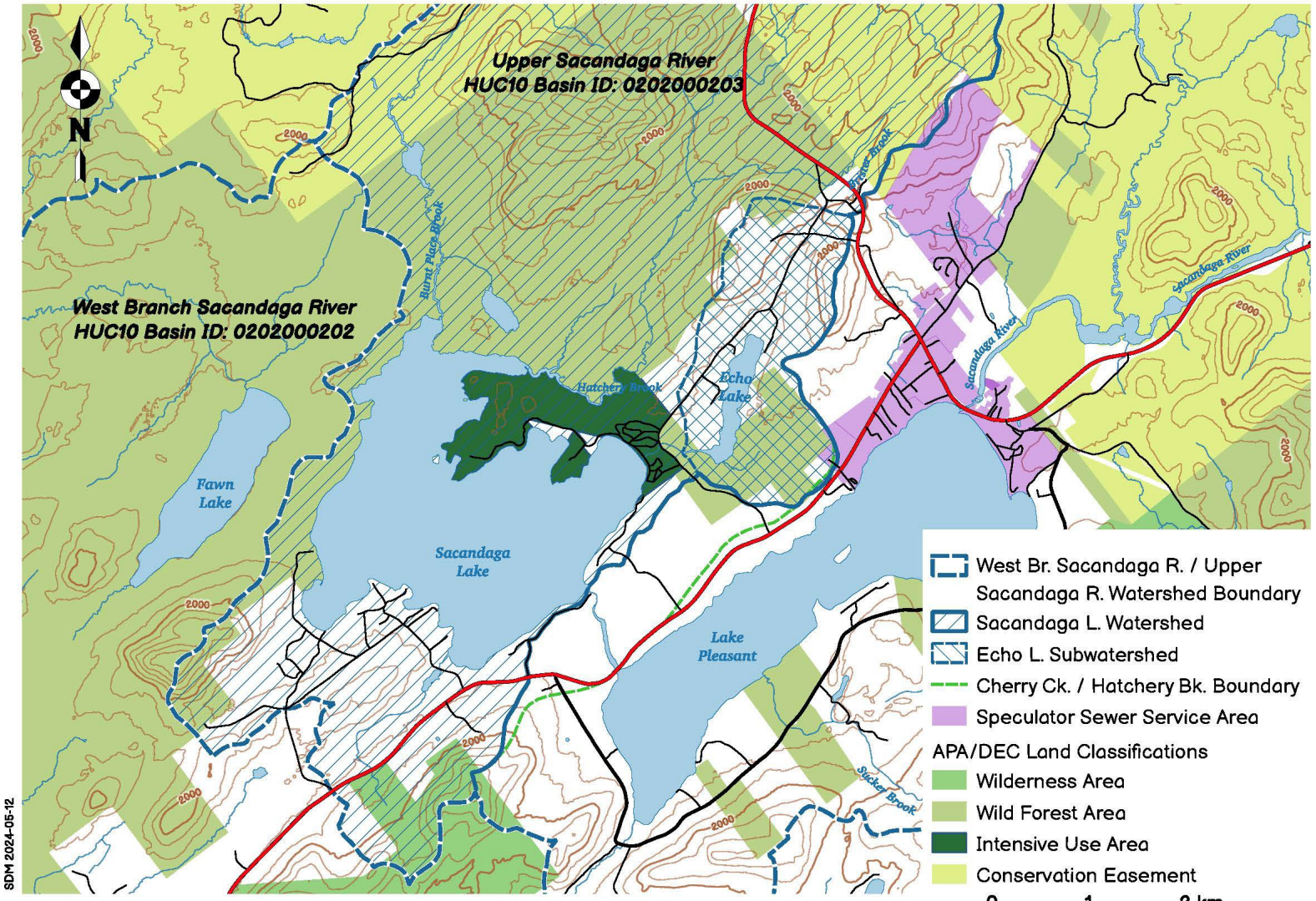


Figure X-X
Sacandaga Lake & Echo Lake Watershed Map

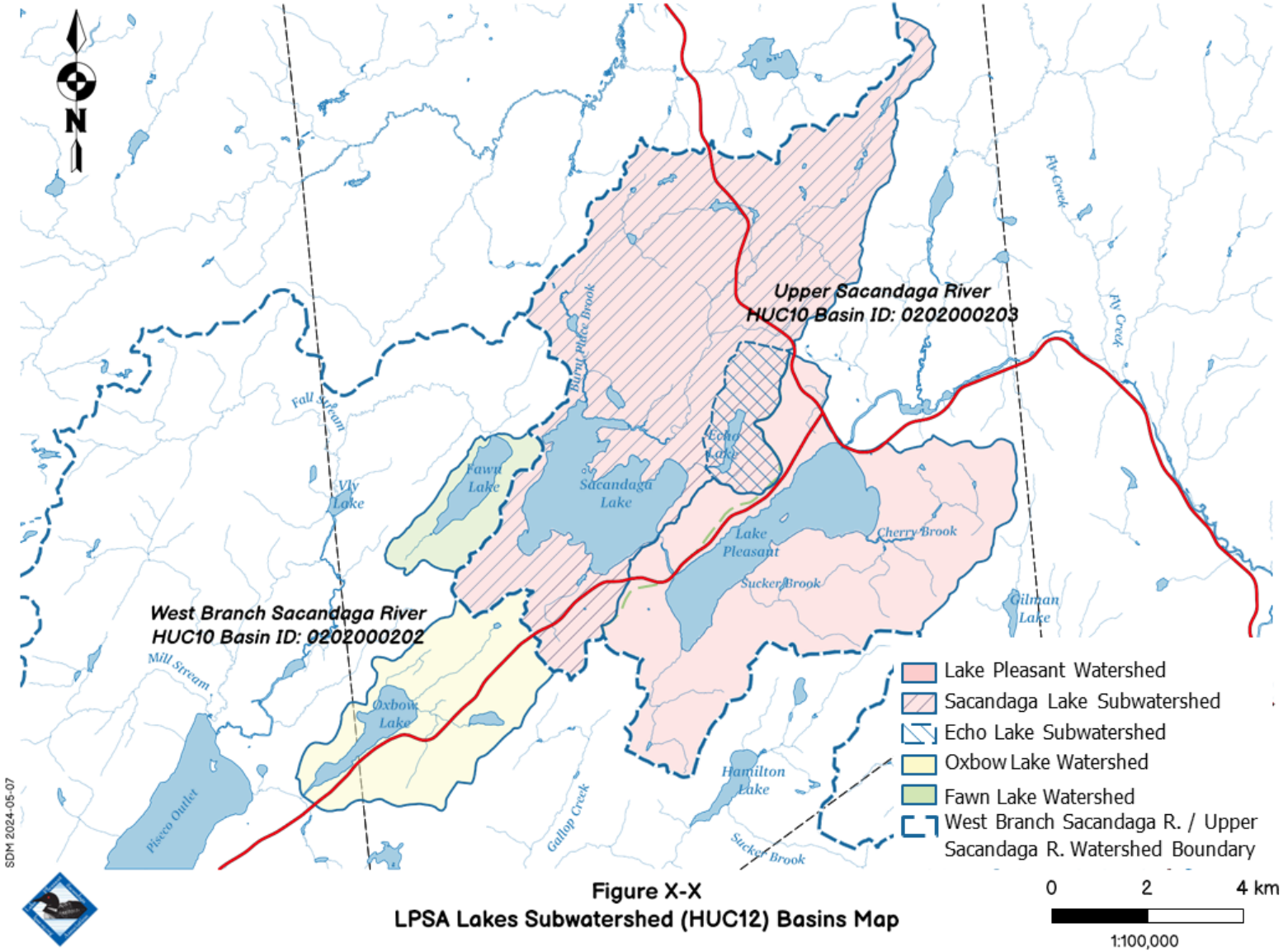


Figure X-X
LPSA Lakes Subwatershed (HUC12) Basins Map

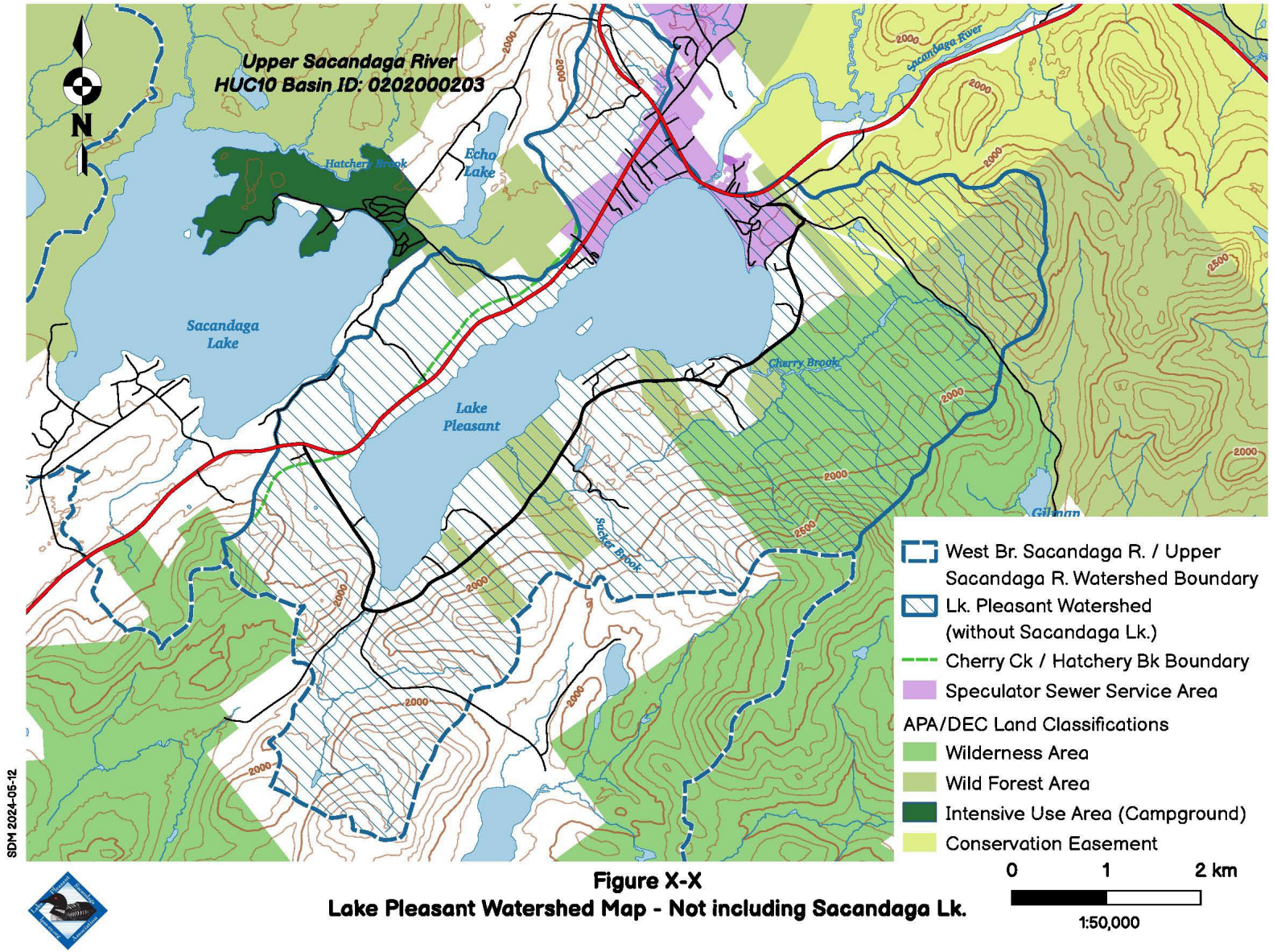


Figure X-X
Lake Pleasant Watershed Map - Not including Sacandaga Lk.

Appendix E: Process for Developing the Lakes Management Plan

Many other lake communities in the Adirondacks and throughout New York State have already developed their own Lake Management Plans, so there is already a well-developed process for development of these plans. The first step is to gather technical information on the current condition and health of the lakes. This includes historic data that allows analysis of any trends over time in lake characteristics. We are very fortunate that the Lake Pleasant – Sacandaga Association (LPSA) has been collecting scientific data for Lake Pleasant for over 10 years and for Sacandaga Lake for over 30 years, through the New York State Citizens Statewide Lake Assessment Program (CSLAP). Also, Hamilton County Soil and Water Conservation District (HCSWCD) has been collecting technical lake data for many lakes in Hamilton County since 1993, including Lake Pleasant, Sacandaga Lake and Oxbow. This lake data is provided elsewhere in this plan.

One of the next steps in preparing this plan was to conduct a broad survey of individuals in our community to identify (1) how they use the lakes in the Town of Lake Pleasant, (2) how they view the current condition (health) of these lakes, and (3) what issues or concerns they have about the future of our lakes. The results of this survey are summarized elsewhere in this report. The input from members of our community helped to guide the development of this plan.

A significant element of this plan is a list of identified threats that have the potential to detract from the health and beauty of our lakes. For each threat, this plan provides information on what actions might be taken to reduce the probability or magnitude of the impact of each of these threats. Similarly, the plan provides responses that could be invoked if invasive species are identified in the future. If any of our lakes is invaded by an invasive plant, it will be very beneficial to have a response plan defined before the problem occurs. That will allow our lake community to respond much more quickly and hopefully eradicate the invasive species before it becomes well-established in any of our lakes.

Another important part of the process of the development of this plan is a review by stakeholders. A draft of this plan was distributed to a broad array of stakeholders to obtain their inputs before the final plan was published. The economic health of our community is dependent upon the ecological health of our lakes. The lakes in our area provide a reason for vacationers and visitors to come to our area, and are a significant reason that people buy property in the Town of Lake Pleasant. If the health and beauty of our lakes were to decline, it would lead to a decrease in visitors, an decline in property values, and a potential drop in income to local governments in property taxes. The long-term health of our lakes should be a matter of concern for anyone who lives or works in the area, everyone who owns property or a business in the area, and people who come here to vacation. The economic health of our Town and community can have also impacts on our broader region. Hence, the authors of this plan are making an effort to obtain ideas and input from a broad range of stakeholders, including the following:

a. Town of Lake Pleasant
b. Town of Arietta

c. Village of Speculator
d. Hamilton County, New York
e. Hamilton County Soil and Water Conservation District (HCSWCD)
f. Speculator Region Chamber of Commerce
g. Lake Pleasant – Sacandaga Association (LPSA)
h. CAMP-of-the-WOODS (COTW)
i. Lake Pleasant Library
j. Lake Pleasant Central School
k. Lake Pleasant – Speculator Historical Society
l. New York State Federation of Lake Associations (NYSFOLA)
m. Adirondack Lakes Alliance (ALA)
n. New York State Department of Environmental Conservation (DEC)
    i. Fish and Wildlife
    ii. Drinking Water Quality Council
    iii. Soil & Water Conservation
    iv. Adirondack Road Salt Reduction Task Force
o. Adirondack Park Agency (APA)
p. Adirondack Watershed Institute (AWI)
q. Adirondack Park Invasive Plant Program (APIPP)
r. Lake Champlain – Lake George Regional Planning Board
s. New York State Government
    i. Assemblyman Robert Smullen
    ii. New York State Senator Mark Walczyk (49th District)
    iii. New York State Senator James Tedisco (44th District)
t. U.S. Congress
    i. U.S. Senator Charles Schumer
    ii. U.S. Senator Kirsten Gillibrand
    iii. U.S. Representative Elise Stefanik Replacement
u. Local Fishing Organizations: TBD
v. Snowmobile Associations
    i. DRAG of Speculator
    ii. Pleasant Riders

The goal has been that this lakes management plan will be the product of inputs, ideas, and efforts from the entire lake community and multiple stakeholders, not just one organization or a few individuals. Throughout the process of developing this lakes management plan, we have received significant support and assistance from **Lake Champlain - Lake George Regional Planning Board**. Their experience from helping other lake communities develop their lake management plans has been very valuable. Hopefully, this plan will provide important data, perspective, and details that will guide actions in the future to preserve and protect the health of all the lakes in our community.

Appendix F: LPSA Ongoing Initiatives Summary

Lake Stewards - Boat Inspections

Our primary concern is the potential introduction of aquatic invasive species (AIS) to our lakes. The primary defense against this threat is the Lake Steward program. New York State Department of Environmental Conservation (DEC) provides funding to the Adirondack Watershed Institute (AWI) at Paul Smith's College to fund this important program. Each summer, over 100 seasonal employees inspect boats and trailers at public boat ramps throughout the Adirondack Park to look for potential invasive species and eliminate them before the boats are launched into local lakes. If there is any evidence of a potential invasive species, the boat and trailer are provided a free boat wash at a decontamination station, using a high-pressure high-temperature water spray. Funding for the Lake Stewards at the boat ramps and at the decontamination stations is provided by DEC. This program provides boat ramp inspectors at Moffitt Beach Campground (Sacandaga Lake) and Speculator Pavilion (Lake Pleasant outlet at Sacandaga River). There is also a decontamination station on State Route 30, one mile south of the Speculator Pavilion boat ramp.

Picture 1: Adirondack Watershed Institute employee providing a free boat wash at a decontamination station

To supplement the work done by these AWI Lake Stewards, LPSA partners with CAMP-of-the-WOODS on Lake Pleasant to ensure that boats launched at their private boat ramp are also inspected prior to being launched into the lake. CAMP-of-the-WOODS staff members have received AWI training on how to inspect boats for potential invasive species, and all boats launched at that site are inspected. LPSA and the Town of Lake Pleasant provide additional funding to hire part-time seasonal employees to monitor the boat ramps at Moffitt Beach and Speculator Pavilion the two days per week when AWI staff members are off duty, to provide coverage for those boat ramps seven days per week throughout the summer season. Additionally, LPSA and the Town of Lake Pleasant hire a Lake Steward to inspect boats launched at the private boat ramp at Lake Pleasant Marine, on Lake Pleasant. All these employees have received the AWI training, to provide the same level of inspection performed by the AWI Lake Stewards.

Picture 2: LPSA Lake Steward JennaLee Smith, at Moffitt Beach boat ramp, Sacandaga Lake

Collectively, these Lake Stewards have inspected 2400 to 3800 boats per year, and in one year found ten boats with aquatic invasive species attached. The efforts of these Lake Stewards have resulted in identifying and removing these harmful invaders before they were introduced into our local lakes. Species identified recently included Eurasian milfoil, water chestnut, and zebra mussel.

Lake Monitors – Shoreline Inspections

Each summer a group of about 30 LPSA volunteers inspects the entire shorelines of Lake Pleasant, Sacandaga Lake, and Oxbow Lake to look for any aquatic invasive species (AIS). If any suspicious plants are found, photos and/or samples of the plants are collected and sent to LPSA Lake Ecology experts or Hamilton County Soil and Water Conservation District for further identification. If any AIS are discovered, remediation activities will be initiated, with a goal of eradicating the invasive species before it becomes well established in our local lakes. Each volunteer receives annual training on how to identify specific AIS that pose threats to the health of local lakes.

This activity is performed in conjunction with the Adirondack Park Invasive Plant Program (APIPP), which is funded by New York State Department of Environmental Conservation (DEC) and administered by the Adirondack Chapter on the international organization The Nature Conservancy. APIPP is one of the eight regions in New York for the Partnership for Regional Invasive Species Management (PRISM). These regional partnership programs collaborate with local ecology organizations and volunteers to plan regional invasive species management activities across the entire state of New York.

Annual Professional Lake Inspections

In addition to the Lake Stewards inspecting boats at boat launches and lake shore monitors looking for invasive plants along the shoreline, LPSA arranges for a professional inspection of one of the local lakes each year. A slow trip around the entire shoreline of the lake in a pontoon boat by a trained professional provides one more level of inspection to look for any invasive plants that might

be in our lakes. This inspection also provides data on the intensity of growth of native plants in our lakes. In recent years, these inspections have revealed an increase in the amount of native plants growing in water up to ten feet deep near shorelines. We have been told that this is happening in many lakes throughout the Adirondack Park, and that the primary contributing factors are increased lake temperatures and an increase in the amount of nutrients in the lakes.

Picture 3: APIPP Aquatic Invasive Species expert Brian Greene performing lake survey on Oxbow Lake

Lake Chemistry Monitoring

LPSA participates in the New York State Citizens Statewide Lake Assessment Program (CSLAP – pronounced "sea-slap"). In this program, LPSA volunteers collect water samples from one lake every two weeks throughout the summer, collecting samples and measuring water temperature and clarity (or turbidity – the lack of clarity) at eight times spanning four months. The water samples are sent to a certified laboratory, where the water is analyzed for chlorophyll content, phosphorus, nitrogen, acidity (pH), calcium, chloride, and conductance (a measure of "hard water" versus "soft water").

LPSA monitors data on a different lake each year, rotating data collection across three local lakes: Lake Pleasant, Sacandaga Lake, and Echo Lake. The laboratory analysis is funded by NYS Department of Conservation (DEC). The volunteer efforts are coordinated by the nonprofit New York State Federation of Lake Associations (NYSFOLA). Over 50 lakes across the State of New York benefit from participation in this program. LPSA has data for Lake Pleasant spanning 20 years and data for Sacandaga Lake spanning 30 years. This historical data provides a valuable baseline and trend data to help identify any changes in lake chemistry.

Picture 4: LPSA volunteers Kim Lewis, Chris Wang, and Jim Olsen collecting

Educational Outreach

If an invasive species is introduced into a lake, it can be difficult or impossible to completely remove the plant or animal. Hence, if an invasive species is introduced to a lake, it is very beneficial to identify it quickly, before it becomes well established in the new environment. The best defense against invasive species is prevention, to keep any invasive species from finding a pathway into a lake. This requires awareness of the threats of invasive species. The best way to achieve awareness is through education. LPSA employs several educational outreach programs to educate people about the threats of aquatic invasive species (AIS) and terrestrial invasive species that pose ecological threats in the Adirondack region. LPSA provides a newsletter to our members twice a year, containing information about different invasive species, and what individuals can do to help prevent their spread. The newsletters also provide other information related to protecting and preserving the health and beauty of our local lakes.

In the past three years, we have emailed monthly news bulletins to our members on a variety of topics related to lake ecology, including watershed management practices, erosion of shorelines and riverbanks, landscape buffers, acid rain, and pollution from road salt. Several of these articles have also been published in the regional newspaper, *Hamilton County Express*, to share this information with the general public.

Our lake ecology organization has a large display bulletin board with pictures and text describing twenty invasive plants and animals that pose threats to the Adirondack region. We also have a supply of informational hand-out literature provided to us by NYSDEC, APIPP, and Hamilton County Soil and Water Conservation District (HCSWCD). We share this information each year with our members at meetings in June and August, with the public at the local Farmer's Market each summer, and at an information booth on the front porch of the local grocery store. In 2024, we

presented a brief educational awareness training session at a property owners meeting at a lakeside community on Lake Pleasant with 85 homes, with 50 individuals attending that session.

We also provide information to our members and to the general public through our website, at LPSA-NY.org, and via our Facebook page @LPSA2016.

In addition to these educational outreach activities, LPSA has partnered with the Lake Pleasant Central School since 2012 and sponsored a research project in which students in the 7th and 8th grades study either aquatic or terrestrial invasives in a two-year rotation. Presentations of the top five finalists are given to the LPSA board members and cash awards are awarded to the contestant winners. This has become a required component of the school curriculum for all students. Each year, LPSA also sponsors an ecology field trip for 7th and 8th grade students to either the Lake George Floating Classroom and Streamhead study if they are studying Aquatic Invasives or the Wild Center at Tupper Lake if their research is focused on Terrestrial Invasives.

Picture 5: LPSA President Dan Wilt and LPSA school program coordinator Charlie Ascher

Picture 6: Students from Lake Pleasant Central School on ecology field trip

In the past three years LPSA has partnered with HCSWCD and the teachers at Lake Pleasant Central School to provide an ecology field trip for students in grades 4, 5, and 6 focusing on the prevention, effects, and remediation of erosion.

Picture 7: Students and teacher planting trees near local brook to control erosion

One of the recurring themes that is included in this training of our village's youth is that the *economic* health of our community is dependent upon the *ecological* health of our lakes. Students make these connections in their research, demonstrating that without healthy lakes, the local economy of their village cannot survive. Maintaining the health and beauty of our local lakes is vital to the continuing economic health of the area, so this topic should be a concern for everyone who lives here, visits the area, owns a business here, or has a job in the area.

We are very pleased to have this opportunity to start educating the next generation about the importance of protecting our environment. We have also realized that as the students are researching these topics and preparing their presentations, their parents are also learning a lot of information about these ecology topics.

Picture 8:Children enjoying recreational activities on Lake Pleasant

[i]HCSWCD performed laboratory analysis of pH, alkalinity, total phosphorus, nitrate +nitrite,and chlorophyll in their laboratory from the onset of the study until 2008. The study expanded to include aluminum and calcium in 1997, which were analyzed at the Adirondack Watershed Institute (AWI) laboratory at Paul Smith's College. The AWI took over all of the laboratory analysis in 2008, with the exception of pH and alkalinity, which occurred in 2012.