



Conservation Advisory Council | *Town of East Greenbush*

# Hampton Manor Lake Assessment

Strategies for improving the health of the lake and enjoyment by residents



East Greenbush Conservation Advisory Council  
May 2023

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## ***Executive Summary***

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Hampton Manor Lake is an important resource and amenity for Town residents. Nestled at the bottom of the Hampton Manor neighborhood and easily accessible to others in East Greenbush, this 14-acre suburban lake provides recreational and scenic opportunities, while also serving as valuable wildlife habitat. However, due to its shallow, nutrient-enriched condition, the lake cannot meet expectations of residents who desire clear water, sparse aquatic vegetation, and a pleasant swimming area. Aside from these unrealistic expectations, Hampton Manor Lake is valued by many, and there are opportunities the town can take to improve the overall health of the lake to further benefit residents and the native flora and fauna.

This document, written by the Town's Conservation Advisory Council (CAC), is intended to consolidate information about Hampton Manor Lake, and provide descriptions of strategies available for improving lake health. Not all strategies are a good option for this particular lake, which will be noted in the recommendation section of each strategy. There is no one key strategy to "fix" Hampton Manor Lake; however a strategic combination of feasible tasks can set the lake towards a better path than its current one.

The overall goal of this effort is to maximize the ecological and recreational potential of Hampton Manor Lake. Towards this effort, the CAC researched lake management projects within four broad categories:

- Strategy 1. Reduce external sources of sediment and nutrient loading
- Strategy 2. Reduce amount of accumulated sediment and nutrients
- Strategy 3. Manage excessive aquatic plant growth
- Strategy 4. Increase enjoyment of lake by East Greenbush residents and visitors

Of the many potential projects described, the following have been identified by the CAC as having a good return-on-investment towards improving lake health:

- Regularly clear outfalls of debris so they can function properly as sediment traps.
- Plant more native trees, shrubs, and herbaceous plants along the lake shoreline to prevent erosion and help control nutrient and sediment runoff.
- Continue to manage the small population of the invasive water chestnut so it does not grow to cover a large portion of the lake.
- Outreach to the community about landscaping practices that protect the lake.

The CAC also encourages the town to further explore these additional projects: redirecting well water to the lake inlet, floating wetland islands, applying benthic barriers in small areas to improve access, and adding native aquatic plants in areas where weeds have been suppressed. These projects may also have good potential to improve lake quality.

## ***About this Document***

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The Town of East Greenbush Conservation Advisory Council was established by Local Law in 2020 to serve as a resource for the Town on matters affecting the preservation, development, and use of natural and human-made resources, features and conditions within the Town of East Greenbush insofar as environmental quality, biological integrity, natural beauty, and other conservation factors are concerned. Duties include advising the Town Board on environmental matters; providing the Planning Board, developers, and residents with information on natural resources to inform land use decisions; and reviewing and updating the Town's Natural Resources Inventory.

The Conservation Advisory Council was tasked by the East Greenbush Town Board on June 14, 2022, "to review and make recommendations for improving the health of Hampton Lake so that water quality and usability can be improved and Hampton Lake's important position as a Town amenity can be preserved and enhanced." (Resolution 158-2022; see [Appendix I](#)).

Contributors to this report and Conservation Advisory Council Members are Jennifer Dean (Chair), Jennifer Hixon, Fred Henson, Victoria Manieri, Evan Barr, Brad Wenskoski. Dan Fiacco, Commissioner of Public Works, also provided helpful information for this report.



## ***Current Conditions and Challenges***

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### **Waterbody Description**

Hampton Manor Lake is a 14-acre waterbody situated in the Town of East Greenbush that was created in the 1920's by damming a tributary of Mill Creek to raise the water level in an existing wetland. The lake is fed by runoff and groundwater. The lake is shallow and nutrient-enriched (eutrophic) with vegetated littoral habitats comprising 100% of the lake's area.

Detailed water quality testing was last conducted by the NYS Department of Environmental Conservation in 2013 through the Division of Water's Lake Classification and Inventory (LCI) Survey program. Previous LCI surveys were completed on Hampton Manor Lake in 1982, 1989, and 1996. The 2013 report notes that, "Since 1982, none of the water quality indicators measured through the LCI has exhibited any clear long-term trends."

Characteristics of Hampton Manor Lake <sup>1</sup>

Surface Area: **14 Acres**

Lake Depth: **mean depth of 5 feet** and reaching a **maximum depth of 11 feet**

Retention Time: **0.2 years** (time for a drop of water to pass through the lake)

NYS Lake Classification: **C** (suitable for non-contact recreational activities, including fishing)

Dam Classification: **A** (low hazard dam)

Trophic State: **Eutrophic** [based on low water clarity, high algae levels (chlorophyll a), and high nutrient (phosphorus) levels]

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<sup>1</sup> [2013 NYS DEC Lake Classification and Inventory Report](#)

## Watershed Description

The “watershed” (the area that drains into the lake) of Hampton Manor Lake comprises 242 acres mostly covered by residential (85.1%) and urban (4.7%) development (Fig 1). The remaining land cover types are natural cover (forests, shrubs, and grasses; 5.5%) and the lake itself and surrounding wetlands (4.7%). Due to the very developed nature of the watershed, much of the runoff that flows into the lake contains high levels of sediments and nutrients.

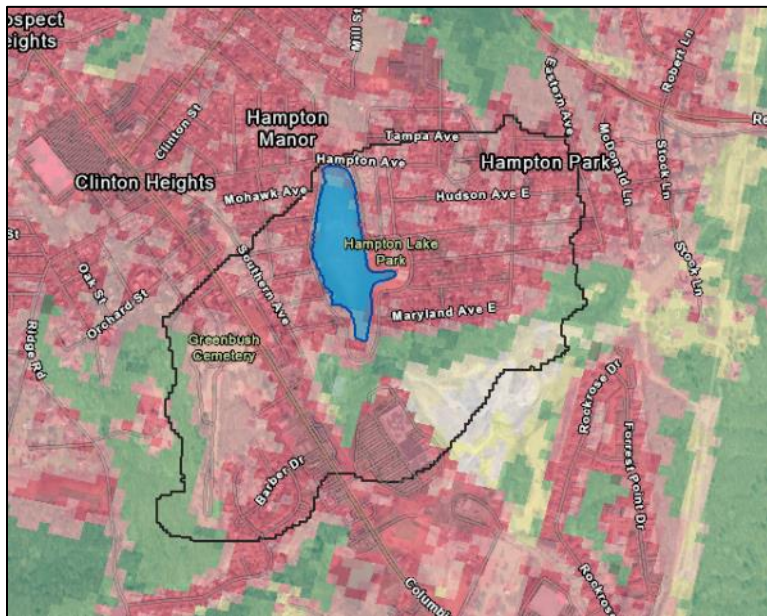
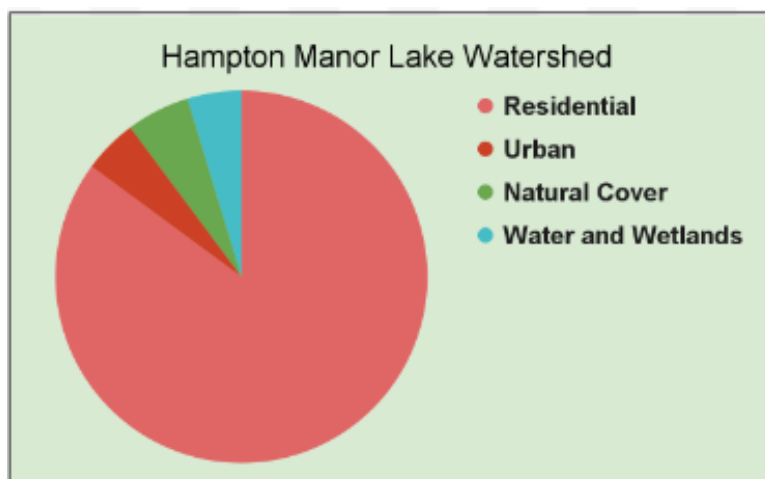
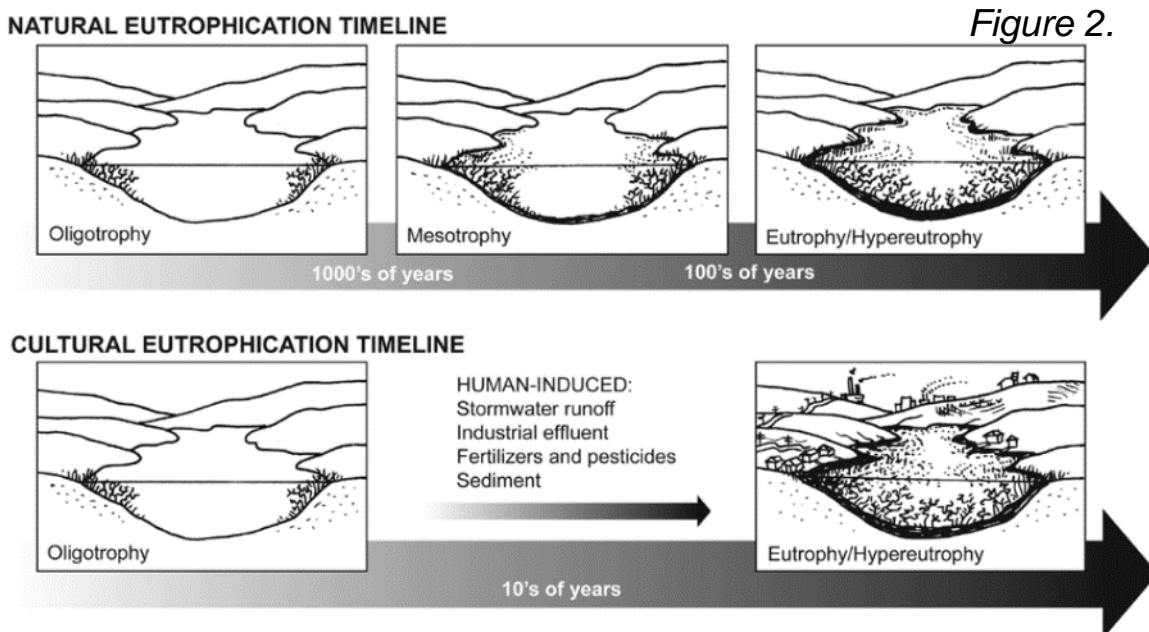


Fig 1. Hampton Manor Lake (in blue) and the watershed boundary (black line). The colors refer to the land cover types from the National Land Cover Dataset (2019), with pink to red showing developed land, green showing forested or shrub land, and white is barren land.



## Current State: Stormwater and Succession

Hampton Manor Lake is undergoing the natural process of succession common to all shallow nutrient-enriched (eutrophic) lakes (Fig 2). Eventually, as sediments and organic matter accumulate, open water will become wetland and the end result will resemble the habitat that existed prior to construction of the dam. However, in the case of Hampton Manor Lake, this process has been greatly accelerated by nutrient and sediment loading from the watershed. Changes in water quality and vegetation are evident to long-time residents.



*Figure 2: Lakes naturally and slowly progress towards eutrophic conditions. When human activities accelerate the process, it is called cultural eutrophication (Credit: Wendy Skinner). Hampton Manor Lake is considered eutrophic, and falls towards the right side of the diagram. Source: NYSFOLA. 2009. Diet for a Small Lake: The Expanded Guide to New York State Lake and Watershed Management. New York State Federation of Lake Associations, Inc. <https://www.dec.ny.gov/chemical/82123.html>. Image used with permission.*

With 22 mapped stormwater outfalls, Hampton Manor Lake currently functions as a stormwater basin for the surrounding neighborhood. In this regard, the stormwater infrastructure performs as designed to efficiently drain paved areas and convey the runoff to the lake. Thus, rainstorms and melting snow “load” the lake with sand, loose soil, and nutrients. In the same way, typical suburban contaminants including lawn fertilizers, litter, road salt, and pathogens from pet waste are regularly washed into the lake.

Because Hampton Manor Lake has served the neighborhood in this way for many decades, and because dams always retain sediments, it is unsurprising that the current maximum depth of the lake is substantially less than informal estimates of the maximum depth when the dam was built. While some suspended solids and nutrients leave the lake with outflowing water, the accumulation of decades worth of organic matter and nutrients is a source of “internal nutrient

loading.” This means that, even if nutrients from the watershed were reduced to zero, the nutrients already in the lake would continue to cycle between sediments and the water column and fertilize algae and rooted aquatic plants.

Many of the frequently expressed desires for Hampton Manor Lake, such as clear water, sparse aquatic plants, and healthy swimming opportunities, are at odds with the current state. Moreover, the current state is literally built-in by the longstanding land use and infrastructure in the watershed. As the process of succession proceeds to its predictable conclusion, residents are more likely to lament the loss of a familiar amenity rather than welcome a new landscape.

## Challenges

While the fundamental management challenge for Hampton Manor Lake is the broad disconnect between its current function and its desired form, there are several specific challenges worthy of further discussion.

### Stormwater

- Point Sources - While some of the 22 stormwater outfalls along the shoreline of Hampton Manor Lake have rudimentary sediment traps to reduce inputs to the lake, these structures do not capture dissolved nutrients. Moreover, many of these traps no longer function because they are full of sediment and in need of maintenance to restore function. There is no information available to assess which of the 22 outfalls are the largest contributors of nutrients pollutants and sediments to the lake. Therefore, maintenance and modifications cannot be effectively prioritized. As a matter of topography, alternatives to Hampton Manor Lake for gravity-based stormwater drainage are lacking and space is limited for construction of new infrastructure. The majority of stormwater drainage was designed with the intention of moving water away from developed areas as quickly as possible as was the priority at the time.
- Nonpoint Sources - Nutrients and pollutants from adjoining roads and properties can also be washed directly into the lake by heavy rains. Additional non-point contamination includes waste from pets and waterfowl.
- Impermeable surfaces - The lake is surrounded by extensive pavement in the form of roads, parking areas, driveways, and patios. This not only increases surface runoff but reduces infiltration of rainwater and cuts the supply of cool groundwater entering the lake.



*Photo: B. Wenskoski*

*Stormwater collecting along the north shore of the lake*

### **Accumulated Nutrients**

The amount of nutrients stored in the lake sediments can fuel a level of plant growth well beyond the preferences of most residents. According to the NYS DEC 2013 lake report, Hampton Manor Lake has high levels of phosphorus. These nutrients can be accessed directly by the roots of aquatic plants. Nutrients that reenter the water column can be accessed by either aquatic plants or algae. Aquatic plants and algae compete for nutrients and shallow nutrient-enriched lakes are typically dominated by one or the other. In other words, more intense algae blooms and further reductions in water clarity would be expected in the absence of the extensive weed beds.

### **Recreational Impairments**

Several specific concerns are commonly raised about the current state of Hampton Manor Lake. These include:

- Turbid water - In 2013 water clarity measured by Secchi disk averaged 6.2 feet. While this is not unreasonable, water clarity is sometimes far less and is aesthetically disappointing to residents and recreational users.
- Surface algal growth - according to the NYS DEC 2013 lake report, water quality conditions indicate a high susceptibility to blooms, although blooms are only periodically reported along the shoreline or in the open water. When algae blooms occur, pets and humans may be exposed to harmful substances produced by the algae.
- Undesirable aquatic vegetation - Dense aquatic vegetation that reaches the water surface is also considered unsightly by many residents. It can be a nuisance to boaters and can reduce water circulation and oxygen concentration in areas of the lake.
- Unsuitable for swimming - During its early history, the lake supported swimming as a pleasurable recreation activity. The extensive vegetation now makes swimming difficult and the bacterial load makes it extremely unwise.

- Nuisance waterfowl - The open areas of the shoreline along the lake attract loafing waterfowl. While aspects of their presence are enjoyed by some residents, the copious droppings that they leave behind detract from the safety and recreational appeal of the lakefront.



***Above:*** Short open grassy areas are a buffet for Canada geese. Spring and fall migrations bring several flocks to Hampton Manor Lake. Current mitigation efforts help discourage many from staying but each year several mating pairs stay for breeding season. Fall 2022

## ***Strategies to Improve the Health of Hampton Manor Lake***

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For almost a century the small lake in Hampton Manor has served as a gathering place and a focal point for residents of the area. Despite concern for the overall health of the lake there are ways to slow down the process of succession and address the challenges the waterbody faces. The Conservation Advisory Council has researched and laid out a number of strategies with the goal to maximize the ecological and recreational potential of the lake for generations to come.

### **Strategy 1. Reduce external sources of sediment and nutrient loading**

Given that Hampton Manor Lake serves as a drainage basin for a developed suburban landscape, excessive inputs of sediments and nutrients are not a surprising issue. There are, however, measures that can incrementally reduce and filter the loading from roads and yards.

#### **Clean out outfalls**

- Description: There are 22 outfalls along the shoreline of Hampton Manor Lake, which are points where stormwater (washed down from roads and other impervious surfaces during rain events) drains into the lake from catch basins on the surrounding roads (see the [East Greenbush MS4 Data Viewer](#) for interactive map). Many of these outfalls were designed to trap sediment into small rock-lined channels before the water enters the lake. Over time, the trapped sediment accumulates, and fills the basin and outfall channel. Once this happens, the sediment-filled water washes directly into the lake during rain storms. Clearing these outfall basins with shovels or larger equipment can restore their function.
- Pros:
  - Clearing out the outfalls can be accomplished by town DPW staff. Maintenance can help prevent road flooding and damage. Stormwater backup was observed in Summer 2022 as some outfalls were buried and compacted with sediment.
- Cons:
  - DPW already has a very long list of tasks to keep our town functioning. The removed sediment needs to be disposed of somewhere. This sediment can contain anything washed down from the roads, such as soil, gravel, and chemical residues.
  - The designed traps work best with light to moderate water flow. The volume of water during heavy rainstorms will continue to bypass the outfall basin.
- Recommendations:
  - Inspection and clearing of the lake outfalls should be part of the annual DPW schedule. An initial inspection could lead to obvious prioritization of the least functional outfalls. Clearing can also be accomplished over multiple years. DPW did an emergency cleaning in autumn 2022, and is planning to do a more systematic clearing of the catch basins and outfalls in the spring/summer of 2023.



**Above:** Outfalls near Spring Ave East fill with sediment quickly (March 2023)

### **Enhance natural shoreline buffers**

- Description: Shoreline buffers of native trees, shrubs, and forbs can help control nutrient and sediment runoff and prevent erosion. Reduce grassy and gravel surfaces and improve diversity of plantings where possible.
- Pros:
  - Strategic plantings add ecological value while enhancing the safety and perceived aesthetic quality of the area as a town asset.
  - Reducing grassy turf areas and other areas dominated with shrubby invasives will save time and money on maintenance by town staff.
  - Stabilizing the shoreline with plantings will help prevent further erosion and safety hazards.
  - Additional plant cover reduces water temperature.
  - Recreation is made easier with additional tree cover providing increased areas of shade.
  - Canada geese prefer large open areas of short cut grass (less than 6" tall) for grazing. Reducing these areas with natural buffers will discourage geese and their nitrogen rich waste.
- Cons:
  - Upfront costs and manpower may be drawbacks but these should not be a recurring cost.
  - Residents accustomed to accessing the water's edge from a mowed grass lawn may initially view the vegetative buffer as "messy" or as a barrier.

- Recommendations:

Create a long term vision for conservation landscaping around the lake with native species along the shoreline. Consult with the CAC when developing a plan and planting list.

Utilize programs through the DEC such as Buffer in a Bag and Trees for Tribes to access recommended plants.

Identify and control spread of invasive plants where possible to help protect new plantings and diversity of flora.

Convert the southern portion of Hampton Manor road into public park/nature walking path to decrease impervious cover and runoff and increase recreational area.



**Top Left:** The shoreline along Hampton Ave. showing signs of heavy erosion. Buffer vegetation should offer multiple services including slowing storm water and stabilizing the shoreline. (March 2023)

**Bottom:** The root structure of mowed turf grass (Left) around detention pond provides little erosion control compared with the smooth alder (right) just a few feet away. (March 2023)





Aerial view of Lake Shore Drive at the Southern of the lake. This area could be better utilized by transitioning to a pedestrian only walk allowing for a wider vegetated buffer (reducing the current mowed 6-9' roadside edge.) This area is mainly dominated by *Phragmites australis* which filters waters, stabilizes the shoreline but unfortunately offers little benefit to wildlife and displaces native wetland plants.  
Photo: B. Wenskoski



Vegetative buffer on shoreline of Campus Pond, UMass Amherst July 2022.

## Outreach to community about landscaping practices that protect the lake

- Reducing runoff from properties

Description: Reduce the flow of rainwater from rooftops and driveways into the lake. Homeowners can take measures which divert the runoff from their roofs away from streets and storm drains and into rain barrels, compost-amended flow paths, rain gardens, and other bioretention features.

Pros: Measures are scalable and can be tailored to homeowners' budget, capacity for maintenance, and lot size, slope, and soil type. Citizen involvement increases awareness of stormwater issues. Successful bioretention measures can significantly reduce sediment and nutrients in water that reaches the lake. Design principles and "how-to" information is readily available online (e.g., [MAPC Bioretention Areas Fact Sheet](https://chautauqua.cce.cornell.edu/gardening/rain-gardens), [Bioretention Areas & Rain Gardens](#), [Bioretention \(Rain Gardens\)](#)).

Cons: Requires individual effort to implement. Measures must be tailored to lot size, slope, soil type to prevent erosion or flooding in neighboring properties. Regular maintenance must be performed to prevent clogging and overflow. Poorly maintained systems may create further problems, such as stagnant water breeding grounds for mosquitoes. Hard to quantify the effect of measures taken.

Recommendations: Provide citizens with educational materials. Work with local Cornell Master Gardeners to deliver demonstrations on design of bioretention features.

<https://chautauqua.cce.cornell.edu/gardening/rain-gardens>

Photo: F. Henson

- No chemical lawn care - reducing or eliminating applications of fertilizers and pesticides to neighborhood landscaping.

Description: Pesticides and fertilizers can negatively impact waterways.

- Fertilizers: Excessive vegetative growth and algal blooms in Hampton Manor Lake are fed by phosphorus and nitrogen. Although phosphorus-containing fertilizers are sold in New York State they are illegal to apply on established turf unless soil is properly tested and in need of phosphorus.
- Pesticides: The diversity of organisms is directly impacted by pesticide use (including herbicides, fungicides and rodent control.) Integrated Pest Management (IPM) should always be used rather than broad spectrum preventative measures.

Pros: Low cost to promote lawn care best management practices.

Cons: Relies on individuals and a change in vision of what constitutes the "perfect lawn."

Recommendations: Public education on easy effective lawn care can be posted in public places and online. By law retailers must display phosphorus fertilizers separate from non-phosphorus along with a "threat to water quality sign" - this is an opportunity for Town/CAC outreach to local businesses by offering signage that goes beyond the minimum required signage. Team up with local groups such as Wild Ones or Capital District Pollinator Allies to offer an informational workshop on low/no spray practices and pollinator/native landscaping. (Resources: [Cornell College of Agricultural & Life Sciences Fertilizing Your Lawn](#); [Consumer Reports A Lush Lawn without Pesticides](#))

- No dumping

Description: Educate homeowners on the effect that dumping into storm drains or directly into water bodies can have on water quality.

Pros: Low cost measures can raise awareness so people are less likely to introduce pollutants such as used motor oil, paint, etc., into storm drains and water bodies.

Cons: Relies on individuals to change their habits. Hard to quantify the effect of measures taken.

Recommendations: Undertake public education measures such as marking storm drains with “no dumping” medallions, distributing brochures with water bills, etc.

- Homeowner ecological planting selection

Description: Provide information on native plantings that will bring low-maintenance beauty to neighborhood lawns while absorbing stormwater runoff, discouraging erosion, and providing food and shelter for pollinators and other local fauna.

Pros:

- Low cost to promote native plantings.
- Encourages individual investment and pride in fate of Hampton Manor ecosystem.

Cons:

- Requires homeowner education and effort.
- Cost to the homeowner of plants and labor.
- May challenge prevailing landscape aesthetics.

Recommendations: Continue to enhance CAC native planting resources.

Publish on Town website and publicize through social media, water bill inserts, etc. For all these strategies, consider incentivizing homeowners to consider these home/yard improvements.



*The lake is enjoyed by many but our actions at home in the watershed impact the overall health of the waterbody. Hampton Manor Lake, Fall 2022. Photo: VM*

## **Slowing Storm Water with Plantings in the Watershed**

Description: Using the same concept as described in “Enhance natural shoreline buffers” and “Outreach to community about landscaping practices,” strategic planting throughout the watershed focusing on fast growing native species with dense foliage can slow down the movement of stormwater, allowing for better absorption and filtering. During heavy rain events the current outfall system does little to catch sediment and pollutants due to the velocity of stormwater. Where possible plantings in the watershed near storm drains and culverts can act like a rain garden or swale to help reduce the impact of stormwater.

### **Pros:**

- Quick growing species often can be cut back heavily when needed.
- Can add to the aesthetic beauty of the watershed.
- Can be planned and managed over the course of time.
- Adds habitat for pollinators.
- Increases water absorption before reaching the lake.
- Reduces sediments carried by water before reaching the lake.

### **Cons:**

- Many storm drains and culverts are in asphalt so this method can not work.
- Some suitable areas may be privately owned.
- Some residents may respond negatively.
- Added maintenance.

Recommendations: Identify the best areas to test and observe this method.

There are several areas where a partnership in trial planting could be beneficial such as along the AHET in Hampton Manor and near CSC, along East Greenbush Cemetery towards Columbia Turnpike, and the NYS enclosed basin off of Columbia Turnpike. The City of Watervliet with the CDRPC completed a green infrastructure project that highlighted the use of rain gardens and bioswales. Although this project featured the use of porous pavement and layered bioswales integrated into the stormwater system, the final project can give us a visualization of putting strategic plantings into practice in a neighborhood setting. More on that project can be viewed here:

<https://cdrpc.org/watervliet-route-32-green-infrastructure-project>



Views from Columbia Turnpike and along the Albany-Hudson Electric trail show areas of opportunity to slow stormwater where it can more readily be filtered and absorbed rather than flowing directly into the lake.

## Strategy 2. Reduce amount of accumulated sediment and nutrients

### **Alum treatment - reduce nutrients**

- Description: Alum (Aluminum sulphate) is added to the water by a professional applicator where it reacts with phosphorus to form an inert chemical compound that has no nutrient value to algae or higher plants. This substance coagulates into flakes that settle to the bottom and form a layer that helps to make the accumulated nutrients unavailable to plants.
- Pros:
  - Usually less expensive than physically removing sediments.
  - Can be applied without dewatering the pond.
  - Results of a well-designed treatment are usually more durable than annual herbicide treatments that do not address nutrient availability.
- Cons:
  - DEC permit required.
  - Disturbance to the pond bottom by human activities or by wildlife can disrupt the Alum layer and liberate nutrients.
  - If nutrient loading from the watershed has not been curtailed then the accumulation of nutrients will quickly resume and the benefit of the treatment will be short-lived.
- Recommendations: Do not consider an application of alum or other nutrient binding agents without stormwater water chemistry data that demonstrate a substantial reduction in nutrient loading has been achieved relative to current rates. If an alum treatment is considered, contact the Kinderhook Lake Association for a relevant local experience with the merits of an alum treatment in a shallow nutrient-enriched lake.

### **Floating Wetland Islands - reduce nutrients**

- Description: Floating Wetland Islands (FWI), also known as Floating Treatment Wetlands, are a tool for mitigating contaminants in the water column. Floating mats are planted with species of native vegetation and anchored in the water where the plant roots take in nutrients such as phosphorus and nitrogen while beneficial bacteria colonize along the roots and underside of the mat, further filtering the water. Mats systems are available commercially but various methods may be used for construction by individuals.
- Pros:
  - Visible symbol of remediation.
  - Can be inexpensive to construct floating mats.
  - FWIs can enhance biodiversity and aesthetic quality of the lake.
  - FWIs also help by shading out nuisance vegetation underneath.
  - Mats are able to move up and down with changing depth of water.
- Cons:
  - A small fence may be needed to protect plants from waterfowl as they become established.

- Until desired plants are established, maintenance may be required to take care of weeds that may seed themselves.
- Trial and error may find the most suitable locations as both water column and lakebed are nutrient rich.
- Professional mat systems are costly.
- Time to build, source plants and assemble FWI.
- Recommendations: Floating Wetland Islands have increased in popularity over the last decade as a cost effective form of bioremediation. The Radix Center located in Albany, NY may offer guidance as they have implemented FWIs for multiple projects.

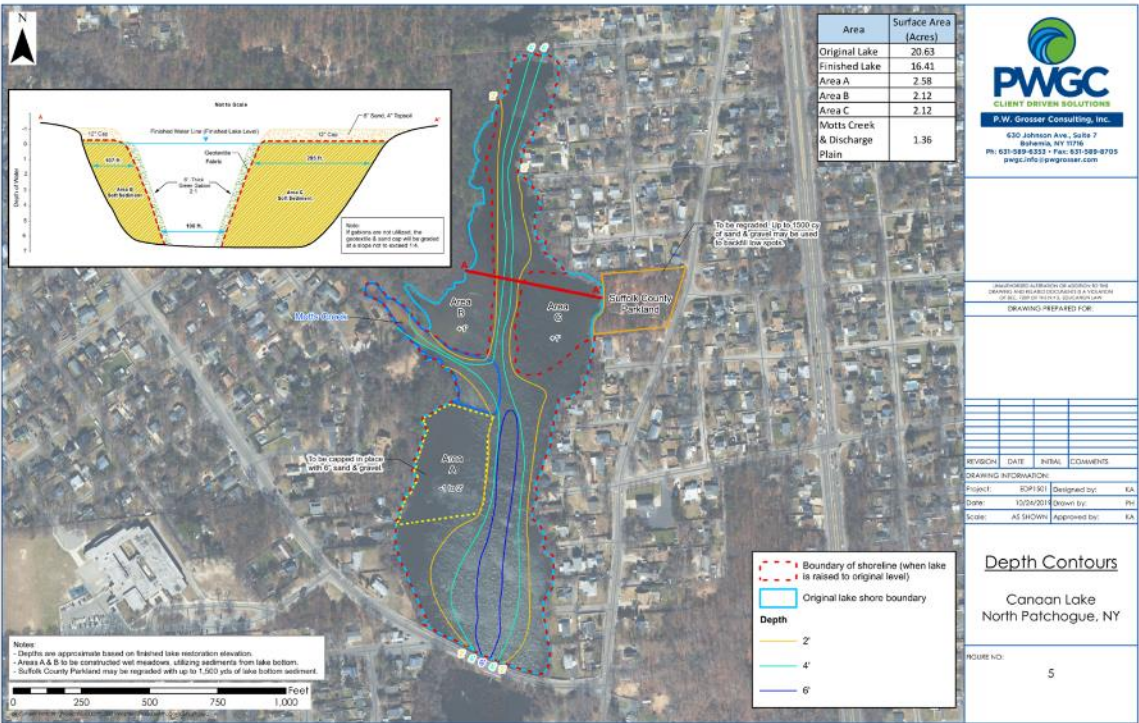
### **Redirect former Hampton well water into lake**

- Description: Up until 2018, the residents surrounding the lake received their drinking water from the Hampton Manor Water District which drew from aquifer ground water sources. After all residents were switched to the East Greenbush General Water District and the well water was no longer consumed, the town found that the groundwater level needed to be continuously pumped down to prevent damage to infrastructure near the existing wells. Currently, a pump moves an estimated 100,000 gallons of water per day from the Onderdonk Park area into the creek just below the lake outlet. This action should have been accompanied by a hydraulic and hydrologic (H&H) study to determine the impacts it has on the Special Flood Hazard Area (SFHA) associated with this stream shown on Flood Insurance Rate Map (FIRM) 3611330003A.  
 If this excess water was instead pumped into the inlet of the lake, it could reduce flooding impacts to the stream below the lake outlet. An H&H study would be necessary to determine the impacts on the floodplain. Rerouting the well water into the lake could have the added benefit of flushing clean water into the system and help reduce the accumulated levels of nutrients. In order to redirect the excess ground water, a pipe would need to be installed along the east shoreline of the lake.
- Pros:
  - The increase of about 100,000 gallons of water per day to the inlet of the lake will help dilute and flush out excess phosphorus. Currently, the natural flushing of the lake is about 312,000 average gallons per day.
  - No inconvenience or disturbance to recreational uses.
  - Potentially reduce flooding impacts on stream below lake outlet
- Cons:
  - The cost of installing 2000 feet of 2-inch plastic pipe from the current pump to the lake inlet and a possible pump upgrade is estimated to cost between \$40,000 and \$75,000. Requires DEC permit.
- Recommendations: Take the first step of comparing total phosphorus levels in well water with total phosphorus levels in the lake. If the difference is small then no benefit can be expected. Analysis needed to determine the effect on the flood plain. If the well water is very low in total phosphorus and no negative effect on the floodplain is determined then installing a pipe to direct the pumped water to the inlet is recommended.

## Dredging

- Description: Physically removing the muck that has accumulated on the bottom of the lake over the decades “turns back the clock” to an earlier stage of the lake succession process (see *Figure 2.*) Success depends on achieving two objectives:
  - Enough nutrient-laden sediments are removed to curtail the rampant growth of algae and rooted aquatic plants;
  - A meaningful proportion of the lakebed is restored to a depth at which insufficient sunlight penetrates to support plant growth.
- Sediment can be removed by suction and slurry pumped offsite to a temporary holding area to dry out and be hauled away. Alternatively, the lake can be drained as low as possible and the loose sediments allowed to dry and compact in place. The sediment can then be removed with heavy equipment and hauled away.
- Pros:
  - If a thorough dredging project is feasible, the results will be decisive and immediately evident. In the absence of heavy external nutrient/sediment loading, the benefit will last many decades.
- Cons:
  - Lake succession never sleeps! The process will resume with the first rainstorm after the dredging is completed.
  - To put it mildly, dredging is expensive (see Canaan Lake example below)
  - Dredging is disruptive due to the need for heavy equipment, drying and hauling of sediments. Residents must be prepared to live with a mucky eyesore for weeks or months. Fish and wildlife will be displaced.
  - Because Hampton Manor Lake drains to a C(TS) classified trout stream, DEC permits will be required and stringent water quality standards will apply to downstream discharge throughout the project.
- Recommendations:
  - Dredging should not receive serious consideration by the Town Board unless phosphorus and sediment loading from the watershed can be reduced by 50% from the status quo (see stormwater recommendations).
  - Costs and benefits of dredging Hampton Manor Lake must not be considered in isolation but in comparison to alternatives including permanent removal of the dam and restoration to a flowing stream and floodplain.
  - Suction dredging should not be considered because “working in the wet” is inherently more complicated and turbidity containment adds cost and risk to the project.
  - If it is feasible to draw down the lake to remove sediments, drawdown should occur in the fall to minimize impact on residents.

**Dredging example:** A project to drain, dredge and restore Canaan Lake, a suburban lake in Suffolk County, NY, was completed in January 2021. This lake is approximately twice the surface area of Hampton Manor Lake with a set of very similar problems. Project cost was initially estimated at \$2.5 million. The final cost was reported at approximately \$4 million (Personal Communication - Robert Calarco; images used with permission).



### New Challenges

- The Summer and Fall of 2018 experienced record rainfall and sediment did not sufficiently dry
- In 2019 our machinery could not operate in the lake bottom and we needed special equipment brought in to cut a channel and move the material into piles



Lower Yaphank February 2019

### Strategy 3. Manage excessive aquatic plant growth

Aquatic plants are an essential component of healthy lake ecosystems that provide shelter and food for fish and other animals, infuse needed oxygen into the water, stabilize shorelines, and cool the water temperature. However, when a lake is overloaded with nutrients and sediments, aquatic plants can grow excessively, and thus negatively affect appearance and recreational activities. We never want to eliminate all aquatic vegetation; rather we want to minimize the negative impacts of excessive plant growth, especially for invasive plants that do not have the suite of natural herbivores to keep them in check as do native plants. Overall, reducing nutrient and sediment overloading can help work towards the long term goal of less excessive plant growth. More short term options exist, but will require regular maintenance.

#### **Benthic barrier**

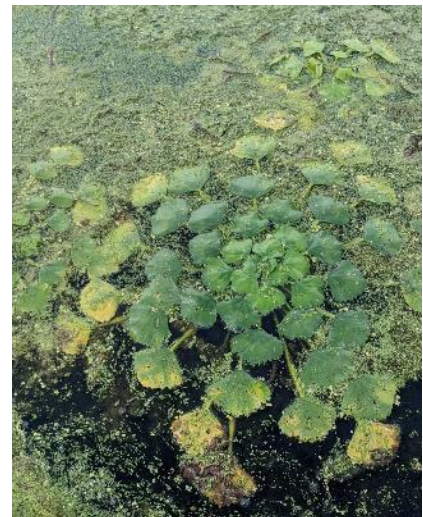
- Description: Benthic (lake bottom) barriers can be a useful management tool for targeted areas of invasive aquatic plant growth and nuisance growth. A barrier such as a tarp or mat made of porous or non-porous material is placed over an area to prevent sunlight from reaching plants on the bottom of the lake bed. There are various barrier materials that offer advantages and disadvantages to consider.
- Pros:
  - Can reduce growth quickly.
  - Method is targeting a precise area (although is not selective in treating plants underneath the barrier).
  - Benthic barriers are not visible from shore after they are installed.
  - Low cost material options are available.
- Cons:
  - Professional installation can be costly.
  - Maintenance is necessary and can be labor intensive.
  - Reusable barriers should be removed at the end of season and periodically inspected.
  - Most cost effective materials may only last one season requiring multiple applications for effectiveness.
  - Timing is very important for effectiveness while reducing disturbance to aquatic life utilizing the lakebed.
  - Disturbance and loss of benthic invertebrates is unavoidable.
  - Is not selective and will prevent growth of all plants underneath the barrier.
- Recommendations
  - Identify small areas where benthic barriers may be most effective such as areas of invasive concern and areas that are favored for fishing traffic.

#### **Harvesting (hand pulling or mechanical harvesting)**

- Description - Hand-pulling, suction-harvesting, or using machine harvesters to remove aquatic plants is similar to mowing the lawn or weeding a garden: it can temporarily reduce the amount of vegetation, but in most cases the plants will regrow in the same spot quickly. Eurasian watermilfoil and coontail, the two dominant species in the lake currently, will reproduce from tiny fragments, so harvesting can actually spread the

population if care is not taken. The Town has previously hired a company to remove Eurasian watermilfoil with a combination of hand-pulling and suction harvesting to capture fragments. This may have offered plant reductions during those years, but this plant is still present in the lake in sometimes dense patches. Harvesting may be a viable temporary solution to increase boat access to the middle of the lake if plants are too thick to paddle from the shore. Water chestnut (*Trapa natans*), an invasive plant capable of covering small shallow lakes like Hampton Manor Lake, is an exception since this is an annual plant that only reproduces via seeds. Hand-harvesting of water chestnut from mid-July to mid-August each year can eventually deplete the seed bank.

- Pros:
  - Can temporarily reduce the vegetation cover in small spots, which could be useful if paddling access is impeded.
  - Hand-pulling/ harvesting of aquatic plants in Hampton Manor Lake does not require a permit.
  - Control of water chestnut is possible with dedicated hand-pulling every year.
- Cons:
  - Requires regular maintenance.
  - Expensive and labor-intensive.
  - Other plants may fill gaps created by removal.
- Recommendations:
  - Schedule water chestnut pull each July (see [pulling tips](#) from the Capital Region Partnership in Regional Invasive Species Management).
  - Hiring contractors to harvest aquatic plants is not recommended. This is expensive with minimal long term return on investment.



*Water chestnut found growing in Hampton Manor Lake in August 2022. Photo J. Dean.*

## Herbicide

- Description: Hire a professional applicator to apply an approved aquatic herbicide to kill some or all of the aquatic vegetation. Repeat as needed.
- Pros:
  - Less expensive than physically removing nutrient enriched sediments.
  - An experienced professional applicator can tailor the extent and selectivity of the herbicide treatment by choosing the chemical, formulation, and treatment concentration that best matches the desired outcome.
- Cons:
  - Herbicides treat the symptom (excess plant growth) rather than the underlying cause (excess nutrients).

- A DEC permit is required.
- Results can be expected to last a few years at best before *something* re-colonizes the lake to take advantage of the available nutrients. The *something* may be less desirable than the current mix of species.,
- In the absence of competition from aquatic vegetation, single-celled algae (phytoplankton) can be expected to take maximum advantage of available nutrients. Unsightly and potentially toxic algae blooms may intensify and become more frequent.
- The cost of frequent repeat treatments adds up over time. In 2010, the estimated cost per treatment for Canaan Lake in Suffolk County was between \$10,000 and \$20,000 per treatment (personal communication - Robert Calarco).
- Extensive loss of aquatic vegetation can negatively affect largemouth bass, bluegill, and other desirable fish species.
- Recreational uses of the lake must be curtailed during treatment in accordance with the registration label of the chemical applied.
- Recommendations: Because herbicides do not address the nutrient problem and cannot be expected to achieve satisfactory long term results, we do not recommend their application to Hampton Manor Lake.

### **Grass Carp - not an option**

- Because Hampton Manor Lake Is an impoundment of a permanent, natural stream, it does not meet DEC criteria for issuance of a grass carp stocking permit.
- <https://www.dec.ny.gov/permits/25024.html>

### **Plantings of native aquatic plants once thick growth is reduced**

- Description: If measures are taken to reduce the thick growth of undesired aquatic plant species, then restoration plantings of other more desirable plants should be considered to fill the voids. Native aquatic plant species, such as White water lily (*Nymphaea odorata*), Yellow Pond Lily (*Nuphar variegata*, *advena*, *microphylla*, & *rubrodisca*), eel grass (*Vallisneria* sp.) and some native species of pondweeds (e.g. longleaf pondweed, *Potamogeton nodosus*) will provide shading, food for wildlife, vegetation structure in the water column, and can [provide beautiful scenery](#).
- Pros:
  - A diversity of native plants will provide ecological benefits and be aesthetically pleasing.
- Cons:
  - There are limited examples of restoration plantings in similar lakes, so techniques for successful establishment are not well known.
  - Nursery stock of native aquatic plants may be expensive.
- Recommendations: More research will need to be done to determine if some areas of Hampton Manor Lake will benefit from plantings of native aquatic plants. This may be a good option to consider if areas of the lake are cleared of nuisance plants.

## **Routine surveys of lake vegetation**

- Description - Many different species of aquatic plants thrive in Hampton Manor Lake, with seasonal variations in the amounts of each type of plant. There can also be year-to-year differences in plant composition as lake conditions change or new species are introduced. Surveying the aquatic plants of the lake each summer will provide information about whether the lake condition is progressing towards our overall goals as improvements are made, and are helpful for detecting new invasive species introductions. Plant surveys should be conducted about the same time each year, ideally between mid-July and mid-August (this timing is the same for pulling water chestnut plants, so these activities could occur together if convenient). Surveys will be most efficient if performed by two people in one boat (such as a canoe), so one person can maneuver the watercraft while the other conducts the visual surveys and records the data.
- Pros: Annual data on the species and density present in designated sections of the lake will help determine if the lake is progressing towards goals. Also, surveys can catch new populations of invasive species before they become widespread.
  - Surveys can be conducted by volunteers, such as members of the CAC and/or other interested community members.
  - Data collection forms can be set up using the CAC Esri mapping software account, which will allow for easy data recording from tablets or phones while on the lake.
- Cons: The survey effort does take time to organize and conduct, so there may be years during which volunteers cannot participate. Also, someone with aquatic plant identification skills will need to be enlisted to either participate in the surveys or look at photos taken during the surveys.
- Recommendations: Conduct a survey each year in mid- to late-summer that records the species and densities of each in designated sections of the lake. Store the data in either the town or CAC Esri mapping account.

## Strategy 4. Increase enjoyment of lake by East Greenbush residents and visitors

While Hampton Manor Lake serves many important ecological roles, it is clearly a suburban feature that was created for the purpose of human enjoyment, and continues to serve this role for town residents and visitors. Community buy-in for improvements to the lake are key to achieving the long term goal of maximizing ecological and recreational potential of Hampton Manor Lake.

### Improve fishing access

- Description: Planned fishing access and canoe/kayak launching can benefit the community while limiting disturbance of the buffer.
  - Landscape design and signage can help direct foot traffic to shoreline in specific areas, thus limiting degradation of lakeside where compaction, erosion, litter and buffer vegetation damage are consistent issues.
  - Addition of a dock or pier can allow more greater opportunity for lake access.
  - Benthic barriers can be utilized to create less obstructed routes for fishing in addition to controlling invasive vegetation.
- Pros
  - Improved fishing access can provide safer recreation.
  - Changes made can contribute to aesthetic quality of the lake area.
  - Directing foot traffic and fishing to certain areas can help reduce the number of wildlife accidents and fatalities by limiting snagged lines and hooks.
- Cons
  - Public may still utilize undesignated areas for water access.
- Recommendations
  - Observe the areas of greatest fishing traffic to determine the best places to focus improvements.

### Improve wildlife habitat

- Description: Improving wildlife habitat can have a wide range of positive impacts that benefit the local food web, neighborhood community and functionality of the lake. Activities can include:
  - Promote native plant growth giving a variety of vegetative layers (ground cover, shrub, understory and tree) to provide habitat for increased biodiversity.
  - Manage impacts of invasive species
  - Install nesting boxes (such as swallow and wood duck) and bat houses
- Pros:
  - Provides habitat for native wildlife in and around Hampton Manor Lake.
  - Increases enjoyment of the lake by residents.

- Cons:
  - Public opinion may see some wildlife as nuisances.
  - Extra caution may be needed for motorists at certain times of the year due to wildlife crossing (such as frogs, turtles).
- Recommendations: see Description above



*Wood ducks are cavity nesters building their home in trees and often lay 2 clutches of eggs in a season. Constructed wooden boxes can make suitable nesting sites helping to increase the chances of a successful brood.*  
 Photo: VM

### **Public outreach about the beauty of Hampton Manor Lake**

- Description: Despite insults from polluted runoff and invasive species, Hampton Manor Lake is still a lively refuge for native plants and wildlife and a scenic and recreational asset to the neighborhood and the town. If, as Jacques Cousteau said, “people protect what they love,” local residents will be more interested in supporting and participating in efforts to protect and restore Hampton Manor Lake once their eyes are opened to its beauty and richness. Public outreach efforts can be tailored to different audiences, use different media, and evolve along with community interest. The recommendations below will surely be supplemented with new ideas from community members.
- Pros: Public education projects can be scaled as time and budget allow. Successful efforts will have a multiplier effect, as they are likely to increase support for the other strategies described in this report.
- Cons: It is difficult to quantify the effect of public outreach.
- Recommendations: Education and outreach is an ongoing endeavor, so it is recommended to offer activities each year that help connect residents to the natural beauty and benefits of Hampton Manor Lake. Activities could include:
  - Photo exhibit at East Greenbush Public Library and/or Town Hall.
  - Photo contest.
  - Poetry contest.

- Promote iNaturalist Hampton Lake project (<https://www.inaturalist.org/projects/hampton-lake>), possibly by advertising project with a QR code on community boards, or organizing community [Bioblitz](#).
- Post photos and information to local social media.
- Post information on bulletin boards on walking path around lake.
- Encourage local science teachers to incorporate Hampton Manor Lake observation in classes.
- Encourage local Participation in Government teachers to give credit for assisting in Hampton Manor Lake clean up activities.
- Recruit Riverkeeper, River Haggie, and other local groups for citizen scientist projects.
- Involve East Greenbush Garden Club in effort to establish native plantings around lake shore.
- Enroll Hampton Manor Lake in Homegrown National Park program <https://homegrownnationalpark.org/>



*Cattails are sometimes characterized as nuisance but they have evolved with waterbodies and the communities around them over millenia. There is opportunity to shift public perception about the lake and its surroundings which can provide a more positive experience for many. Photo: 2022 VM*

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- Managing Floodplain Development in Approximate Zone A Areas [https://www.fema.gov/sites/default/files/documents/fema\\_approx-zone-a-guide.pdf](https://www.fema.gov/sites/default/files/documents/fema_approx-zone-a-guide.pdf)
- National Flood Insurance Program Regulations [https://www.fema.gov/pdf/floodplain/nfip\\_sg\\_appendix\\_e.pdf](https://www.fema.gov/pdf/floodplain/nfip_sg_appendix_e.pdf)

## ***Appendix I - RESOLUTION 158-2022***

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### **TOWN OF EAST GREENBUSH RESOLUTION 158-2022**

#### **A Resolution Authorizing the Conservation Advisory Council to Review and Make Recommendations to the Town Board on the Issue of Restoring Hampton Lake to Good Health**

**WHEREAS**, this resolution was not able to be submitted in time to be considered at the regularly scheduled pre-board meeting of June 8, 2022 and was subsequently presented to the Town Board on June 14, 2022; and

**WHEREAS**, the Town Board established the East Greenbush Conservation Advisory Council (CAC) in 2020 and tasked it with advising the Town Board on matters affecting the preservation, development and use of natural and human made resources, features and conditions within the Town of East Greenbush, particularly as they relate to environmental quality, biological integrity, natural beauty and other conservation factors and, in relation to human activities and development, the CAC would advise the Town Board on major threats posted to environmental quality; and

**WHEREAS**, the CAC shall provide the Town Board, Planning Board and Zoning Board of Appeals, developers and residents with a source of information about natural resources and potential environmental impacts; create checklists and best practice guidelines as a planning tool for improvement projects; and carry out other duties as may be assigned from time to time by the Town Board; and

**WHEREAS**, Hampton Lake is an important resource and amenity for Town residents but has been experiencing a decline in health for many years and for many reasons; and

**WHEREAS**, one indicator of the health of a lake concerns the animal and plant populations that reside in and around it, and though no formal longitudinal study has been conducted of natural populations, Hampton Lake is still home to a variety of flora and fauna, indicating that the lake is declining, not dead; and

**WHEREAS**, numerous residents have expressed their concern about the need to improve the water quality and usability of the lake; and

**WHEREAS**, the Town Comptroller confirms that this resolution will not have a material impact on the Town's finances;

now, therefore, be it

**RESOLVED**, that the Town Board of the Town of East Greenbush requests and authorizes the Conservation Advisory Council to review and make recommendations for

improving the health of Hampton Lake so that water quality and usability can be improved and Hampton Lake's important position as a Town amenity can be preserved and enhanced.

The foregoing resolution was duly moved by Supervisor Conway and seconded by Councilor Tierney and brought to a vote resulting as follows:

Supervisor J. Conway	VOTED: YES
Councilor T. Tierney	VOTED: YES
Councilor H. Kennedy	VOTED: YES
Councilor B. Fritz	VOTED: YES
Councilor E. Nestler	VOTED: ABSENT

Dated: June 15, 2022

## Appendix II - History of Hampton Manor neighborhood



East Greenbush occupies lands that were part of the ancestral homeland of the Mahican or Mohican Nation, who settled on both sides of the Hudson and called themselves “Muhheaconneok,” meaning “People of the Waters That Are Never Still.”<sup>2</sup> The land was colonized by the Dutch, and the Mohicans began their long exile. Precolonial Mohican Territory<sup>3</sup>

A map made for Stephen van Rensselaer in 1789 shows a brook running through the area that is now Hampton Manor Lake. The area was known as Vers Water Vly (from the Dutch for “fresh water marsh”). In the war of 1812, soldiers stationed at the nearby East Greenbush Cantonment may have drawn water from the brook.<sup>4</sup>

In 1925, developer Harold Veder bought 187 acres of farmland from the McCulloch Family and subdivided it into hundreds of plots. In 1926, Veder created what he called “Hampton Lake” by damming up the Vers Water Vly brook.

The neighborhood grew as Veder and others built houses, including over 60 “kit houses” from Sears Roebuck and Montgomery Ward.<sup>5</sup> The lake was indeed a draw, the site of miniature sail boat races from 1933-41, and supervised swimming in the 1950s and 60s.<sup>6</sup> But just as the “clear, sparkling spring water” that used to flow from household taps in Hampton Manor became degraded over time, so, too, has Hampton Lake’s water quality suffered from the stresses of a growing population, multiple sources of runoff, and the introduction of invasive species. Even so, the lake supports many plants, animals, and fungi, and is a source of beauty and tranquility for the neighborhood.

<sup>2</sup> Stockbridge-Munsee Community , and Open Space Institute. “The Long Journey Home.” *ArcGIS StoryMaps*, Esri, 11 May 2021, <https://storymaps.arcgis.com/stories/4b5d61785b064ff49ceff158e05e89fb>.

<sup>3</sup> Kowalski, Heather. “Bidwell Lore - Mohican Territory and Loss of the Homeland.” *Bidwell House Museum*, 3 June 2021, <https://www.bidwellhousemuseum.org/blog/2021/06/01/bidwell-lore-mohican-territory-and-loss-of-the-homeland/>.

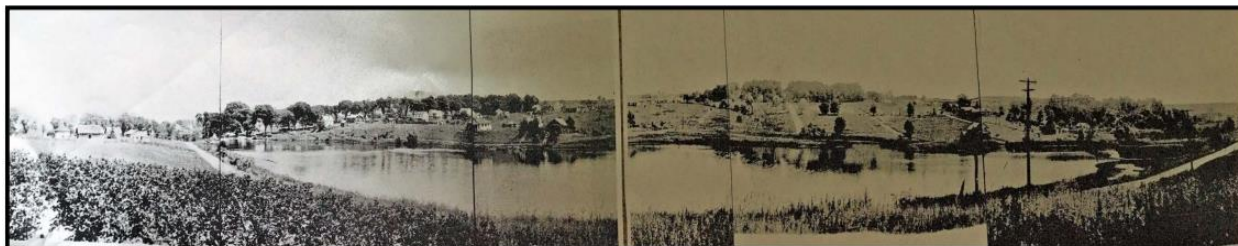
<sup>4</sup> “Hampton Manor in the Beginning to the Present,” *YouTube*, uploaded by Bobbie Reno, May 3, 2020, <https://youtu.be/C1le6Cy7gXc>

<sup>5</sup> Mutch, Andrew, and Wendy Mutch. “Kit House Hunters: Hampton Manor, New York.” *Hampton Manor, New York*, <http://kithousehunters.blogspot.com/p/hampton-manor-new-york.html>.

<sup>6</sup> Reno, op. Cit.

***“Hampton Manor is the development with the lake. This glistening sheet of water you can see from the Pittsfield road. The lake is stocked with trout which will be big enough to permit fishing next season. Boating and water sports on the lake will appeal to the younger generation.”***

7



<sup>7</sup> Ibid.

### Appendix III - Surrounding Vegetation

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Hampton Manor Lake is surrounded by approximately 1 mile in length of narrow land buffering the waterbody from Lake Shore Drive. Vegetation along the shore varies. In open areas closest to Hampton Avenue the shoreline is mainly turf grass and clover with little shade cover. These open areas are where big bur-reed, branched bur-reed, bristly sedge, dark green bulrush, broadleaf arrowhead and cat-tail are taking the opportunity to fill the shallow water near the lake edge. Native flowers such as jewelweed (touch-me-not), joe-pye weed (boneset), evening primrose and asters are common along with introduced flowering plants such as creeping thistle, motherwort, mugwort and purple loosestrife.



**Left:** *Sagittaria latifolia* (Broadleaf arrowhead) **Right:** *Asteraceae* (Asters) and *Onoclea sensibilis* (Sensitive fern) are just a few of the native species that can be spotted around the lake. Photo: VM

The eastern and southern edges of the lake are dominated by common reed (*Phragmites australis*). Although phragmites is known to act as a sediment trap, it is highly invasive and quickly takes over wetlands and disturbed areas spreading through both rhizomes and seeds. *Phragmites* can rapidly change a landscape by forming dense colonies and extensive monocultures.



**Left:** *Phragmites australis* (Common reed) **Right:** *Rhus typhina* (Staghorn sumac) are both found in the southern end of the lake. Photos: Fall 2022 VM



The majority of shade trees are introduced species such as Norway Maple and White Willow along with some North American naturalized trees such as Black Locust and Catalpa. A handful of trees native to this region are present including Silver Maple, Sugar Maple, Poplar and Ash. However the few pockets of native trees are being outcompeted by Norway maple and common buckthorn with added stress from oriental bittersweet and English Ivy. Small trees and shrubs such as staghorn sumac, silky dogwood, buttonbush and alder are present but also face the same challenges threatening the larger native shade trees.

**Left:** *Populus deltoides* (Cottonwood) **Right:** *Robinia pseudoacacia* (Black locust) & *Celastrus orbiculatus* (Oriental bittersweet) Photos: VM



#### Recommendations:

At present the vegetation surrounding Hampton Manor Lake is dominated by escaped ornamental introduced species. Without action the diversity of plant life will continue to diminish as invasive and aggressive species continue to out-compete the few native species. A diverse native plant population performs many ecological services by stabilizing land, slowing and filtering runoff, providing shelter to wildlife and forming the backbone of the local food web. In addition to vegetative management, community education focusing on native plantings and awareness of residential garden practices can help limit the spread of invasive species.

Observed Terrestrial Plants*		
Common name	Scientific name	Status
American Bugleweed	<i>Lycopus americanus</i>	native
Aster	<i>Asteraceae</i>	native
Balsam Poplar	<i>Populus balsamifera</i>	native
Big Bur-reed	<i>Sparganium eurycarpum</i>	native
Bittersweet Nightshade	<i>Solanum dulcamara</i>	introduced
Black Locust	<i>Robinia pseudoacacia</i>	adventive
Blue Vervain	<i>Verbena hastata</i>	native
Box Elder	<i>Acer negundo</i>	native

#### Invasive Species

NYCRR Part 575 “prohibits or regulates the possession, transport, importation, sale, purchase and introduction of select invasive species.” Plants highlighted in red are prohibited invasive species in New York State. Plants highlighted in orange are regulated invasive species in New York State. More information is available from the NYS DEC. See <https://www.dec.ny.gov/animals/99141.html> for more information.

Branched Bur-reed	<i>Sparganium angrocladum</i>	<b>native</b>
Bristly Sedge	<i>Carex comosa</i>	<b>native</b>
Broadleaf Arrowhead	<i>Sagittaria latifolia</i>	<b>native</b>
Cattail	<i>Typha latifolia</i>	<b>native</b>
Chinese Arborvitae	<i>Thuja orientalis</i>	<b>introduced</b>
Common Blue Violet	<i>Viola sororia</i>	<b>native</b>
Common Buckthorn	<i>Rhamnus cathartica</i>	<b>introduced</b>
Common Milkweed	<i>Asclepias syriaca</i>	<b>native</b>
Common Reed	<i>Phragmites australis</i>	<b>introduced</b>
Common Self-Heal	<i>Prunella vulgaris</i>	<b>native</b>
Creeping Thistle	<i>Cirsium arvense</i>	<b>introduced</b>
Dark Green Bulrush	<i>Scirpus atrovirens</i>	<b>native</b>
Eastern Cottonwood	<i>Populus deltoides</i>	<b>native</b>
English Ivy	<i>Hedera helix</i>	<b>introduced</b>
English Privet	<i>Ligustrum vulgare</i>	<b>introduced</b>
Evening Primrose	<i>Oenothera biennis</i>	<b>native</b>
Garlic Mustard	<i>Alliaria petiolata</i>	<b>introduced</b>
Goldenrod	<i>Solidago</i>	<b>native</b>
Honeysuckle	<i>Lonicera</i>	<b>introduced</b>
Jack-in-the-Pulpit	<i>Arisaema triphyllum</i>	<b>native</b>
Japanese Barberry	<i>Berberis thunbergii</i>	<b>introduced</b>
Japanese Knotweed	<i>Reynoutria japonica</i>	<b>introduced</b>
Jewelweed	<i>Impatiens capensis</i>	<b>native</b>
Joe-Pye Weed	<i>Eutrochium purpureum</i>	<b>native</b>
Mugwort	<i>Artemisia vulgaris</i>	<b>introduced</b>
Multifloral Rose	<i>Rosa multiflora</i>	<b>introduced</b>
Northern Catalpa	<i>Catalpa speciosa</i>	<b>adventive</b>
Norway Maple	<i>Acer platanoides</i>	<b>introduced</b>
Norway Spruce	<i>Picea abies</i>	<b>introduced</b>
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	<b>introduced</b>

Periwinkle Vine	<i>Vinca major</i>	introduced
Poison Ivy	<i>Toxicodendron radicans</i>	native
Purple Loosestrife	<i>Lythrum salicaria</i>	introduced
Red alder	<i>Alnus rubra</i>	native
Riverbank Grape	<i>Vitis riparia</i>	native
Sensitive Fern	<i>Onoclea sensibilis</i>	native
Silky Dogwood	<i>Cornus obliqua</i>	native
Silver Maple	<i>Acer saccharinum</i>	native
Smooth Alder	<i>Alnus serrulata</i>	native
Spikerush	<i>Eleocharis</i>	native
Staghorn Sumac	<i>Rhus typhina</i>	native
Straw-colored Flatsedge	<i>Cyperus strigosus</i>	native
Sugar Maple	<i>Acer saccharum</i>	native
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	native
White Willow	<i>Salix alba</i>	introduced

Observed Aquatic Plants *		
<b>Common name</b>	<b>Scientific name</b>	<b>Status</b>
Brittle Naiad	<i>Najas minor</i>	introduced
Coon tail	<i>Ceratophyllum demersum</i>	native
Curly leaf pond weed	<i>Potamogeton crispus</i>	introduced
Duckweed	<i>Lemna minor</i>	native
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	introduced
Water chestnut	<i>Trapa natans</i>	introduced

\*observed Summer 2022, not intended as a full comprehensive catalog

## Appendix IV - Wildlife

At any time of the year a variety of wildlife can be spotted in and around Hampton Manor Lake.

A number of fish species are present in the lake such as American Eel, Common Carp, golden shiner, white Sucker, Brown Bullhead, Banded Killifish, Pumpkinseed, Bluegill, Largemouth Bass, Black Crappie, Yellow Perch. Turtles are often very active at the lake during the warmer months – large snapping turtles, box turtles and many smaller red-eared sliders are at home in the lake.

Muskrat make their dens at the edges of the lake, accessing them from underneath the water; they are a common sight in late winter and spring as they prepare for mating season. Grey squirrel, chipmunk, field mouse, white-footed mouse, meadow voles and cottontail rabbits are the most common of the smaller mammals with white-tailed deer, raccoon, red fox and opossum frequently sighted. Other reptiles and amphibians also include a variety of frogs, toads and snakes.



### Common Wildlife

**Above:** Grey squirrel camouflaged in tree.

**Left Upper:** Muskrats eat a variety of vegetation along with small fish and amphibians, they can often be seen swimming carrying the leaves or roots of native grasses. This muskrat was enjoying some of the delectable big bur-reed Hampton Manor has to offer.

**Left Lower:** Cottontail rabbits are a common sight and may produce several litters a year. This rabbit nest was found in Hampton Lake Park.

**Lower Right:** Pedestrians and cars should look carefully around the lake where young turtles often cross. The lake is home to our native snapping and box turtle along with the introduced red-eared slider. Pictured below is a young red-eared slider making its way to the water. Photos: V. Manieri





*American Kestrel at Hampton Lake Park. 2021 VM*

Many species of birds are sighted year round including Canada goose, mallard duck, wood duck, cormorant, cardinal, bluejay, grackle, mourning dove, American robin, black-capped chickadee, tufted titmouse, cedar wax-wing, house sparrow, song sparrow, goldfinch and house finch. Raptors such as red-tailed hawk, American bald eagle, Cooper's hawk, sharp-skinned hawk, screech owl, merlin, American kestrel and peregrine falcon are often observed.

#### Migrating Birds:

Each season brings a variety of birds passing through the area on their migration.

Migrating waterfowl include common merganser, hooded merganser, greater and lesser scaup, pied-billed grebe, gadwall, green winged teal, ruddy duck, bufflehead, American coot, American wigeon and ring-necked duck.



*Palm Warbler. 2022 VM*



*Double-crested Cormorant. 2021 VM*

Spring and early summer mark a shift in the bird population as an influx of warmer weather arrivals take up temporary residence for breeding season. Red-winged blackbird, tree swallows, yellow warblers, palm warblers, wood thrush, catbird, indigo bunting, ruby-throated hummingbird, Baltimore oriole, vireo and many others are common to see. Osprey, great blue heron, egret, green heron, kingfisher are some of the species that can be seen fishing for their next meal in the lake with an occasional visit from a

variety of sandpipers and snipes. Ruby & Golden Crowned Kinglet, dark-eyed junco, redpoll, evening grosbeak are common visitors during the cooler months.



**Left:** Downy woodpecker **Middle:** Ring-necked ducks. **Right:** Canada goose & gosling. Photos: VM