

Executive Summary

Watershed Protection and Management Plan for Ballston Lake

Introduction

Regardless of whether our water resources are intended for consumption or for a combination of drinking use and general recreational activities, these resources are increasingly being threatened by the nature of current land uses. This study examines the land use threats to the Ballston Lake watershed, which is located in Saratoga County and entirely within the towns of Ballston and Clifton Park.

During the past 20 years, Saratoga County was the fastest growing county in Upstate New York with a total population growth of 30.5%. However, Census Block Group data indicate that the Ballston Lake watershed maintained its rural character with a much lower growth rate.

While the Ballston Lake watershed has not experienced large-scale growth, the extension of water lines along Route 50 has raised concerns about impending development. Development related activities have degraded fishery resources in many areas of Saratoga County and are a possible threat to Ballston Lake's water quality.

The ultimate intent of this study is to identify existing and future land use related threats to the Ballston Lake watershed and to offer a range of options that the Ballston Lake community can employ to protect Ballston Lake's natural water resources.

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The Saratoga County Water Quality Coordinating Committee (WQCC), Saratoga SWCD agents, and Saratoga County planners identified the Ballston Lake watershed as having the possibility for increased development. The Primary expressed concern is that new, unguided development could damage the water quality and recreational opportunities in the Lake and surrounding watershed.

It is the Capital District Regional Planning Commission's hope that this study's findings and recommendations will assist the affected communities in implementing measures to protect the watershed's natural resources.

An Overview of Watershed Systems

All land areas on the earth are part of a watershed. Watersheds may be as small as several acres or some may encompass thousands of acres of land. Furthermore, smaller sub-watersheds aggregate to form larger watersheds. The highest elevations are the divides that separate one watershed from another and therefore define water drainage. This boundary line will intersect at the lowest elevation of the watershed planning area, typically the mouth of a stream or the outlet of a lake.

Figure 1 shows the Ballston Lake watershed boundaries and its location relative to each of the communities within the study area.

NONPOINT SOURCE POLLUTION

There are many potential sources of water quality contamination. This study focuses on *nonpoint source pollution* or pollution that enters a water body from diffuse origins rather than from discernible and discrete conveyances (such as a pipe). According to the NYS Department of Environmental Conservation, nonpoint source pollution is the primary source of contamination for more than 90% of the impaired water bodies in New York State.

Common Nonpoint sources of Pollution

Listed below are nonpoint sources as found in the Watershed Planning Handbook for the Control of Nonpoint Source Pollution prepared by the NYSDEC and the NYS Soil and Water Conservation Committee.

Agricultural Uses

- Runoff including plowed soil, fertilizer, pesticides, and animal waste.

Anti-skid Components and Chemicals

- Road salt, resulting in high chloride levels in the water systems

Atmospheric Fallout

- Dust, contaminants, and particles land on the ground and are washed away

Infiltration and Inflow/Combined Sewer Overflow

- Wet weather creates more wastewater than treatment plants can handle.

Erosion and Sedimentation

- Erosion from sites cleared of vegetation adds excess nutrients and sediment to streams and other waterbodies.

Home Septic Systems

- Failing septic systems add excess nutrients, oxygen-demanding organics, and pathogens to ground and surface water.

Litter

- Various types garbage give off different pollutants. Possibly the most visible form of nonpoint pollution.

Motor Vehicles

- Roadway runoff including fuels, lubricants, and various chemicals.

Spills

- Spills and leaks from producers and users of hazardous products.

Street Pavement

- Asphalt, tar and other oil-based products are released as roads are torn-up and replaced.

Storm Water Runoff and Impervious Surfaces

- Stormwater that would normally be absorbed by vegetated land runs quickly into streams and rivers, picking up contaminants with the velocity.

Storm Sewers

- Accumulate materials that are dislodged during storms.

Vegetation

- Leaves, grass clippings and other plant materials become part of the fast-moving runoff in urban settings, adding to the nutrient load.

Common Pollution from Nonpoint Sources

Sediment

- Sand, silt, clay blanket streambeds and destroy habitat, adding excess nutrients in the process.

Thermal Stress

- Removal of streambank vegetation and runoff from hot urban surfaces allows sunlight to raise the water temperature above fish tolerance limits.

Nutrients

- An overload of nutrients can cause excess algae and plant growth, threaten water quality and recreational uses, and destroy habitat.

Oxygen-Demanding Organics

- Human and animal excreta, organic matter, and food wastes deplete oxygen from surface water as they decay.

Toxic Substances

- Heavy Metals, pesticides, petroleum products.

Pathogens

- Bacteria and viruses often associated with human and animal wastes.

Ballston Lake History

- Early-Mid 1800's, new rail lines converge near Ballston Lake
- Early 1900's lakeside properties are developed into seasonal cottages.
- Post WWII era sees some subdivision activity in the watershed.
- WWII-today, cottages along lake replaced with year-round residences.
- 1970-80's, health regulations regarding septic systems brings subdivision activity to a near halt.

Existing Environmental Conditions (Figures 2,4,and 5)

WATER BODIES

Ballston Lake is the only lake or pond in the watershed. NYSDEC has listed Ballston Lake as a class A lake. Class A water bodies are deemed as a suitable supply of drinking water. They are also suitable for primary and secondary contact recreation and fishing.

- Seven primary tributaries and a number of underwater springs supply most of Ballston Lake's water.
- All but one of the tributaries flows through a NYSDEC recognized wetland before entering the lake.
- The one tributary that does not flow through a wetland washed out a section of Lake Road in 2000 during a heavy storm. It is additionally undercutting a bank and picking up significant sediment.
- The lake is moderately-to-highly productive with a noticeable amount of algae and weed growth.
- Lake nutrient levels are moderately high, pH is normal, and transparency is low.
- If nutrient levels are reduced, plant growth will also be reduced.
- Beavers and wetland growth have clogged the lake's outlet, causing lake levels to rise and lakeshore erosion to accelerate.

WETLANDS

Wetlands provide many beneficial functions. Surface water is filtered and purified as it passes through wetlands, thereby trapping and transforming pollutants and improving water quality. Wetlands serve as important wildlife and plant habitats. They also serve as natural storage basins for groundwater thereby aiding in groundwater recharge and helping to reduce downstream flooding.

There are numerous wetlands in the watershed. Four of the tributaries enter the lake through wetlands while two of the other three travel through wetlands on their way to the lake.

- The wetlands at the south end of the lake stand between the auto salvage yards and the lake, possibly filtering out contamination.
- Wetlands along the western side of the lake stand between the old septic systems in Buell Heights and the lake, possibly filtering out contamination.
- Wetlands are a source of nutrients for the lake. A reduction of nutrients entering the wetlands may lower the nutrient levels in the lake.

STEEP SLOPES

Slopes of 15% or greater are typically considered "steep". Development on steep slopes creates problems due to the increased risk of soil erosion and sedimentation, increased construction and land excavation costs, and difficulty of access for vehicles during winter months.

- As shown in Figure 2, areas of steep slopes are fairly limited in the watershed. New development should avoid these areas.

FLOODPLAINS

Large tracts of deforested and developed land can cause more frequent and severe flooding. Land with forest cover or undisturbed vegetation slows the flow of water from heavy rains, allowing it to seep into the water table rather than flowing rapidly into the nearest water body.

- The most significant floodplains in the Ballston Lake watershed are adjacent to the Lake.
- There are serious concerns about high water levels in Ballston Lake. Heavy rains can raise the levels quickly and the water recedes slowly through the outlet, causing erosion.
- There has been flooding along Lake Road, causing a road washout and significant erosion.

SOILS

Ballston Lake and the watershed are underlain with glacial till and impervious bedrock. The bedrock is dominated by sandstone and shale. The glacial till has many different types of soil mixed together in a nearly random pattern.

- The Ballston lake watershed has only a small amount of soil that is suitable for standard septic systems.
- Combined with the absence of sewer services in the watershed, the lack of good septic soils appears to be a serious impediment to large-scale development.
- Soils with high erosion potential are not widespread in the watershed, but they do overlap with many of the steep slope areas, making these locations even more susceptible to erosion.

Watershed Land Use (Figures 6 and 7)

Due to the lack of sewer service and adequate septic soils, the Ballston Lake watershed is primarily devoted to agricultural, and vacant lands. From a location and amenities perspective, the Ballston Lake watershed has a great amount of growth potential. The primary factor restricting population growth in the watershed is the drinking water and wastewater restrictions of the land.

- Most of the watershed's subdivision activity occurred before the current State septic requirements were adopted.
- Buell Heights, near the south end of Ballston Lake, was constructed on small lots prior to the mid 1950's. There are reports that septic odors in this area are noticeable in the spring.
- The commercial businesses in the watershed primarily serve the local community or provide a special good or service that customers are willing to seek out.
- The industrial properties on the northern edge of the watershed are within realistic reach of Saratoga County sewer lines and transportation corridors.
- There are concerns about a series of fields that are the origin of the only Ballston Lake tributary that does not pass through a wetland before entering the Lake.

Existing Regulations

New York State realty subdivision laws, which effectively limit new residential development in the watershed to larger than five-acre lots, have the greatest impact on Ballston Lake's development. There is really no way to bypass these laws and develop a major subdivision without showing septic suitability for each lot. Doing this is almost impossible in the Ballston Lake watershed. Specially engineered septic systems are not permitted for new development, leaving residential developers with no alternatives for major subdivision development in the watershed.

If actively implemented, the SPDES program from the federal Clean Water Act would help minimize construction runoff problems. The CWA requires soil erosion plans and SPDES permits for construction sites that disturb more than five acres of soil, though the program is vigorously enforced in much of the country, including the Town of Ballston. Clifton Park, on the other hand, requires a soil erosion plan for any construction that disturbs more than one acre. Clifton Park's requirements match the Phase II SPDES requirements that will go into effect in 2004.

Farmers in the Ballston Lake watershed have not yet taken advantage of the federal subsidies for voluntary agricultural soil conservation measures. While they are not regulations, these programs are an area where outreach and information could make a positive difference for Ballston Lake's water quality.

The Town of Clifton Park, as a result of its long experience with suburban growth, has adopted some of the most progressive environmental development regulations in Saratoga County.

While the Town of Ballston does have subdivision regulations and zoning, they are out of date with the current development requirements and practices. Not having been faced with significant development since the early 1980's there has been little incentive for the Town to adopt updated, environmentally focused regulations.

Assessment of the Threats To Ballston Lake Watershed

The following categories cover the concerns about and primary threats to water quality in the Ballston Lake watershed.

New Development

While Ballston Lake is an appealing location, impending large-scale development along Route 50 is not currently a major threat to the watershed. The soils in the watershed are generally not suitable for septic systems and it would cost \$20-30 million to install sewers. While this does not completely exclude major development, it does make other locations in the Region more attractive. Smaller developments with large lots are more likely to locate in the Ballston Lake watershed.

The Town of Ballston does not have laws or regulations necessary to mitigate the environmental threats associated with large-scale development if it were attracted to the watershed.

Failing Septic Systems

Existing, inadequate septic systems appear to be a major threat to water quality. Older, failing systems along the Ballston Lake and in subdivisions near streams are providing excess nutrients to the lake. Fortunately, most of the subdivisions are upstream from wetlands where toxins are reduced. However, the extra nutrients likely pass through the wetland sub layers and into the Lake.

Failing lakeside septic systems are a serious concern. Redevelopment of these properties is helping the situation. When an existing dwelling is replaced, an engineer must certify the septic system. In this case, construction activities improve Ballston Lake's water quality.

Lakeshore Erosion

Lakeshore erosion has been identified as a major source of excess nutrients and sedimentation for Ballston Lake. High water levels that recede slowly and power boat wakes have accelerated the natural process of erosion. Evidence of this problem can be seen in the riprap that covers much of the lakeshore. The Ballston Lake Improvement Association and the Town of Ballston have attempted to mitigate the problem through a plan to dredge the stream channel through the northern wetland. The plan ran into a brick wall when the Army Corp of Engineers determined that the plan would damage the wetlands at the northern end of the lake.

Commercial Activity

Gray water from Carney's newly installed septic system, while not a current concern, should be monitored. The last septic system failed after five years. Care should be taken in the maintenance of this facility so that it will last longer and do a better job of cleaning the water.

Runoff from the Lake Auto Salvage is also a concern. Contamination from old, deteriorating cars can pose a serious threat to water quality. It is not known how much contamination comes from the junkyard and it is fortunate that any runoff flows through a wetland before entering the Lake. The junkyard has been in place for more than 40 years and there could be significant contamination of the site.

Lake Auto Salvage does have a SPDES permit for stormwater runoff and receives periodic inspections.

Agricultural Erosion

It appears that farmers on the east side of the Lake are plowing through swales that are the headwaters for a tributary that enters the lake without the benefit of traveling through a wetland. This poses a threat to both water quality and the field's topsoil. Sediment, nutrients, fertilizer, and animal waste may flow directly into the stream and Lake. It may also cause higher water volumes and velocity downstream during storms. This tributary has washed over Lake Road during heavy storms and has a bank that is experiencing heavy erosion.

Anti-Skid Components

The Town of Ballston has outdated road-salting equipment. When the truck stops, the salt spreading does not. This leaves excess salt on the roads and raises the chloride levels in the Town's streams and lakes.

Recommendations for Watershed Protection Strategies

Contamination from Problematic Septic Systems-

The most common solution to the septic problems would be the extension of sewer service to the watershed. This solution is cost-prohibitive in this watershed and would result in large-scale development near Ballston Lake. A more feasible, though by no means easy solution would be to facilitate the repair and maintenance of individual septic systems.

Because New York State financing cannot be used to improve private property, the NYS Environmental Facilities Corporation has established a framework for public ownership of individual septic systems. This framework allows a sewer district to take ownership of a septic system, replace, and maintain it using state financing, and bill the homeowner as a sewer service customer.

Recommendations:

- Public ownership and management of individual septic systems in affected areas.
- Utilize the new state public-private program for financing the repair of failing septic systems.

Lakeshore Erosion

Strategies for slowing the erosion of the lakeshore have been difficult to implement. The Army Corps of Engineers has precluded any mechanical changes to the wetlands at the northern end of Ballston Lake. The Ballston Lake Improvement Association has actively cleared the outlet channel by hand. This activity should continue. While the clearing helps, the Lake still faces water level problems. A no-wake zone close to shore, which would include the entire southern basin, would reduce the waves hitting the shore.

Recommendations:

- Continued maintenance of the outlet channel.
- Expansion and enforcement of no wake zones.

Agricultural Runoff

Streams in and adjacent to agricultural fields should have planted buffers that would filter and slow stormwater runoff. Voluntary federal programs provide funds to reimburse farmers for the loss of use of the buffer zones. Options for implementing these practices should be presented to the farmers who might qualify for the program.

Recommendations:

- Establish stream buffers and management practices to minimize erosion.

- Utilize government programs to make these practices feasible.

Anti-Skid Compounds

The Town of Ballston road salt equipment should be updated. The Town's equipment wastes the salt and causes unnecessary damage to the waterways.

Recommendations:

- Utilize Environmental Facilities Corporation programs to purchase new snow removal and de-icing equipment.

Commercial and Industrial Activity

Carney's has good incentive to maintain their new septic system, as replacing the five-year-old system was expensive. NYSDEC and the Town building inspector should continue to periodically monitor the SPDES permitted discharges. Periodic monitoring of Lake Auto Salvage should also continue with particular attention to the draining and storage of fluids from junked cars.

Recommendations:

- Continued close monitoring of SPDES permitted facilities.

New Development Concerns

In preparation for new, moderate levels of construction and eventual large-scale development. Town of Ballston should consider requiring developers to give the Town a copy of the SPDES construction stormwater plan for any development that must submit the plan to NYSDEC. It is also recommended that the Town enact a new set of performance standards for site plans. The performance standards would include limitations on non-permeable surfaces, requirements for vegetation coverage and for stormwater drainage and retention.

Recommendations:

- Require adherence to SPDES requirements.
- Enact new legislation to codify current Town engineering requirements and practices.
- Establish performance standards to require vegetation coverage and limit non-permeable surfaces.