

Sydenham Lake Stewardship Plan

Draft - For Discussion Purposes

June 27, 2017



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Cover Picture

Blake Buchanon with Maggie on the south side of the East Basin.

Executive Summary

The purpose of the Sydenham Lake Stewardship Plan is to identify and protect the significant social, natural and physical features that make the lake and its surrounding area a healthy natural environment and a desirable place for people to live and visit.

The Sydenham Lake Stewardship Plan was prepared through the collective effort of a dedicated team of community volunteers, township and county representatives, the Cataraqui Region Conservation Authority, provincial agencies and French Planning Services Inc. The Plan summarizes the issues and observations identified in the 2017 State of the Lake Report (www.sydenhamlake.ca) and provides a series of actions that can be taken to address the known issues. These actions cover a wide range of activities that are further described in Chapter 4 and 5.

The current list of Goals, Objectives and Actions provides a solid starting point toward ensuring and maintaining a healthy lake environment. New issues and actions will evolve over time and modifications and updates to this Plan will be undertaken as a necessary step towards ensuring that the Lake Plan meets the needs and aspirations of the community.

Lake Community - Common Goals

1. Water Quality

Work towards maintaining high water quality in Sydenham Lake and its inflowing streams to support a healthy natural environment and to support the use and enjoyment by residents and visitors.

2. Natural Environment

Work towards maintaining a healthy and diverse ecosystem, including a healthy fishery,

3. Water Levels

Work towards maintaining water levels that sustain natural ecosystems and minimize risks.

4. Climate Change

Work towards adapting to climate change.

5. Land Use and Development

Work towards maintaining the character of the lake and protecting the sensitive natural environment, water quality, and the social/recreational features on Sydenham Lake.

6. Social and Recreational Activity

Work towards social and recreational activities that respect the natural environment and the people of the lake, and help to build a sense of community.

The Sydenham Lake Association commits to investing leadership in helping to achieve these goals. This will be an ongoing effort that will include an annual assessment to measure progress which will be made available to all stakeholders of the Plan.

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1. Introduction

1.1 About the Plan

The purpose of the Sydenham Lake Plan is to identify and protect the significant social, natural and physical features that make the lake and its surrounding area a healthy natural environment and a desirable place for people to live and visit.

The Plan provides an assessment of the current condition of the lake and a blueprint for community based action on Sydenham Lake and surrounding area. Fifty-two actions are proposed to protect the values and address the issues identified in the lake planning process. The actions may be short term or long term in nature, and implementation will depend on a cooperative program that engages everyone who has an interest in the lake – cottagers, residents, farm owners and operators, commercial operators on and near the lake, lake users such as fishermen and hunters, township, county, conservation authority, and other government agencies.

The Sydenham Lake Plan is based on the observations and recommendations found in the State of the Lake Report (2017). The State of the Lake Report provides a summary of the most current and relevant environmental and social information on Sydenham Lake and its watershed and can be obtained at www.sydenhamlake.ca.

1.2 Preparing the Plan

The Sydenham Lake Association was established in 2011, and the idea of preparing a lake plan has been talked about almost since that same time. In July 2015 a proposal to develop a plan was formally approved by the Sydenham Lake Association (SLA) at their Annual General Meeting. A Steering Committee was established, with membership from the SLA, South Frontenac Township, and the Cataraqui Conservation Authority. Development

The Planning Process

| | |
|------------------------------------------------|-----------------|
| Initial Set-up | 2015 |
| Community Survey | 2013 |
| Public Workshop 1 - Values & Issues | August 2016 |
| Prepare State of the Lake Report | 2015 - 2017 |
| Prepare Draft Plan | May - June 2017 |
| Public Workshop 2 – Draft Plan | June 2017 |
| Draft Lake Plan Release | July 2017 |
| Final Lake Plan Release | September 2017 |

of the Sydenham Lake Plan began in 2015, with the hiring of French Planning Services to assist in facilitation and writing of the plan.

A Membership Survey was conducted in 2013, to gather advice and information from the people who live and cottage around the lake. Seventy-one lakefront property owners completed the survey, indicating how they felt about the SLA and its work to date, and stating the community's opinion on the concerns or issues that need to be addressed.

Public Workshop #1 was held in August 2016 and brought together people from around the lake to identify values, discuss issues and develop a preliminary list of actions to best address those issues.

The Sydenham Lake State of the Lake Report was developed over the period from the fall of 2015 through to its release to the public in May 2017. This document provides a summary of the history of the area, a snapshot of the state of the lake's environment, land uses and development levels, and a synopsis of some of the social and recreational opportunities and desires on and around the lake. The report is a key building block in the Sydenham Lake planning process, and provides the best available information to develop a detailed plan that will guide stewardship action and land use policy for the long-term protection of the lake environment.

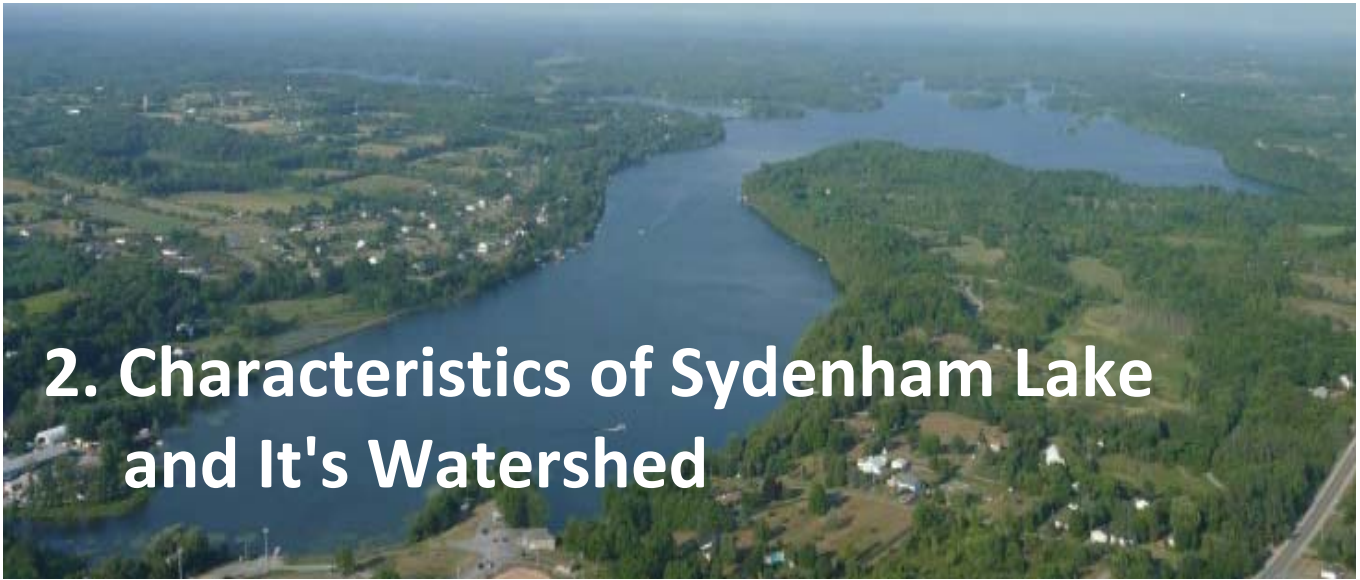
The Sydenham Lake Plan was developed in draft form during the period April to June, 2017. In May, the draft Plan was submitted for review and comment by the Steering Committee.

Public Workshop #2 took place on June 24, with the objective of reviewing the content of the Draft Stewardship Plan prior to its finalization.

The Draft Sydenham Lake Plan was presented at the Annual General Meeting of the Sydenham Lake Association, on July 8, 2017 **and finally approved.....**

All documents produced as a result of the planning process are available at www.sydenhamlake.ca.





2. Characteristics of Sydenham Lake and It's Watershed

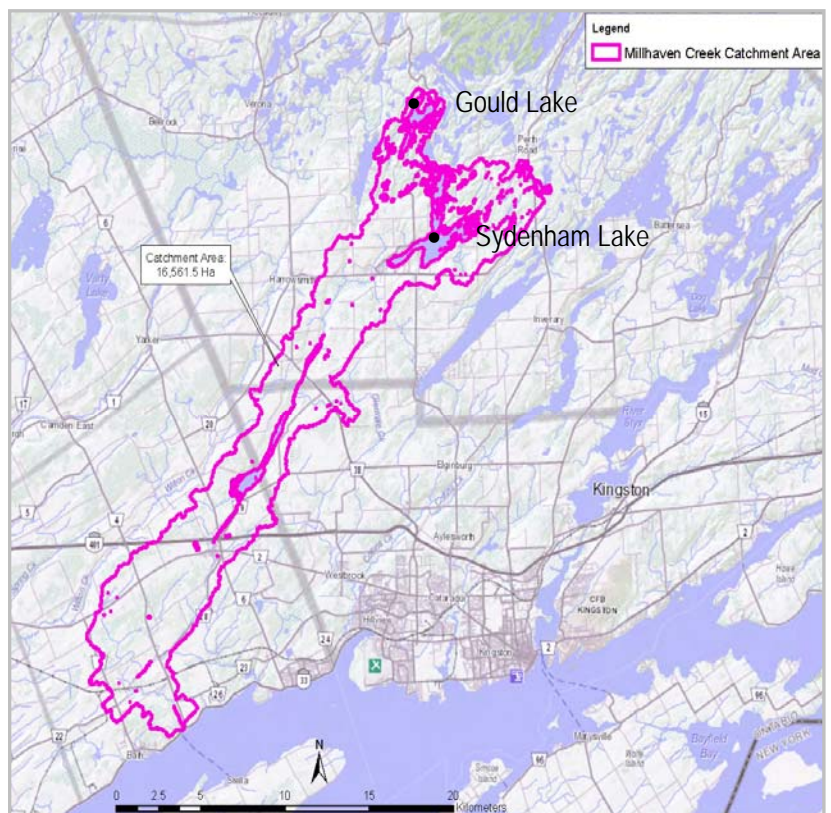
2.1 The Sydenham Lake Watershed Area

Sydenham Lake is located approximately 25 km. north of Kingston in south eastern Ontario and is situated within the upper portion of the greater Millhaven Creek Watershed (Map 1). The northern part of Sydenham Lake lies within the Frontenac Arch, and is partially underlain by pre-Cambrian bedrock of the Canadian Shield and the remainder is underlain by sedimentary limestone of the St. Lawrence Lowlands. Sydenham Lake is within the municipal jurisdiction of the Township of South Frontenac (formerly Loughborough Township) of the greater Frontenac County and is within the boundaries of the Cataraqui Region Conservation Authority (CRCA).

Sydenham Lake lies in the upper reaches of the Millhaven Creek watershed and is the largest lake in the watershed, covering 5% of the total watershed area. Gould Lake is the second largest lake in the system and is the most significant source of water for Sydenham Lake.

Millhaven Creek is a relatively small watershed, with headwaters in the Canadian Shield that generally flow in a southwesterly direction and empty into Lake Ontario. Millhaven Creek is a warmwater system that has mixed land uses including agricultural, residential, natural forested areas, and wetland. Land use throughout the watershed is predominately agricultural, especially downstream of Sydenham Lake.

The area that drains directly into Sydenham



Map 1 - Millhaven Creek Watershed

Lake is a relatively small subwatershed of forest, wetland, and farmland encompassing three distinct catchment areas (also called subwatersheds): Gould Lake, Little Long Lake Catchment and the Sydenham Lake Catchment (Map 2). The Sydenham Lake catchment can be further divided into 4 smaller catchment areas: Northern; Eastern; Western; and Southern (See inset on Map). Thirteen streams flow into the lake there is one outlet that flows into Millhaven Creek from the south-western portion of the lake, at the Sydenham Lake Dam, located in the Village of Sydenham (Map 3).

2.2 Sydenham Lake

Sydenham is a medium sized lake and has a total shoreline perimeter of 53.9 km. (69.2 km including islands), and an approximate surface area of 7.8 km² (780 Ha.). Sydenham Lake possesses a flushing rate of 0.67 times per year experiencing a low turnover approximately every 1.5 years. Sydenham Lake has one outlet that flows into Millhaven Creek, located in the Village of Sydenham. The Sydenham Lake Dam is operated by the Cataraqui Region Conservation Authority and is primarily responsible for maintaining the lake's water level, which varies minimally throughout the seasons.

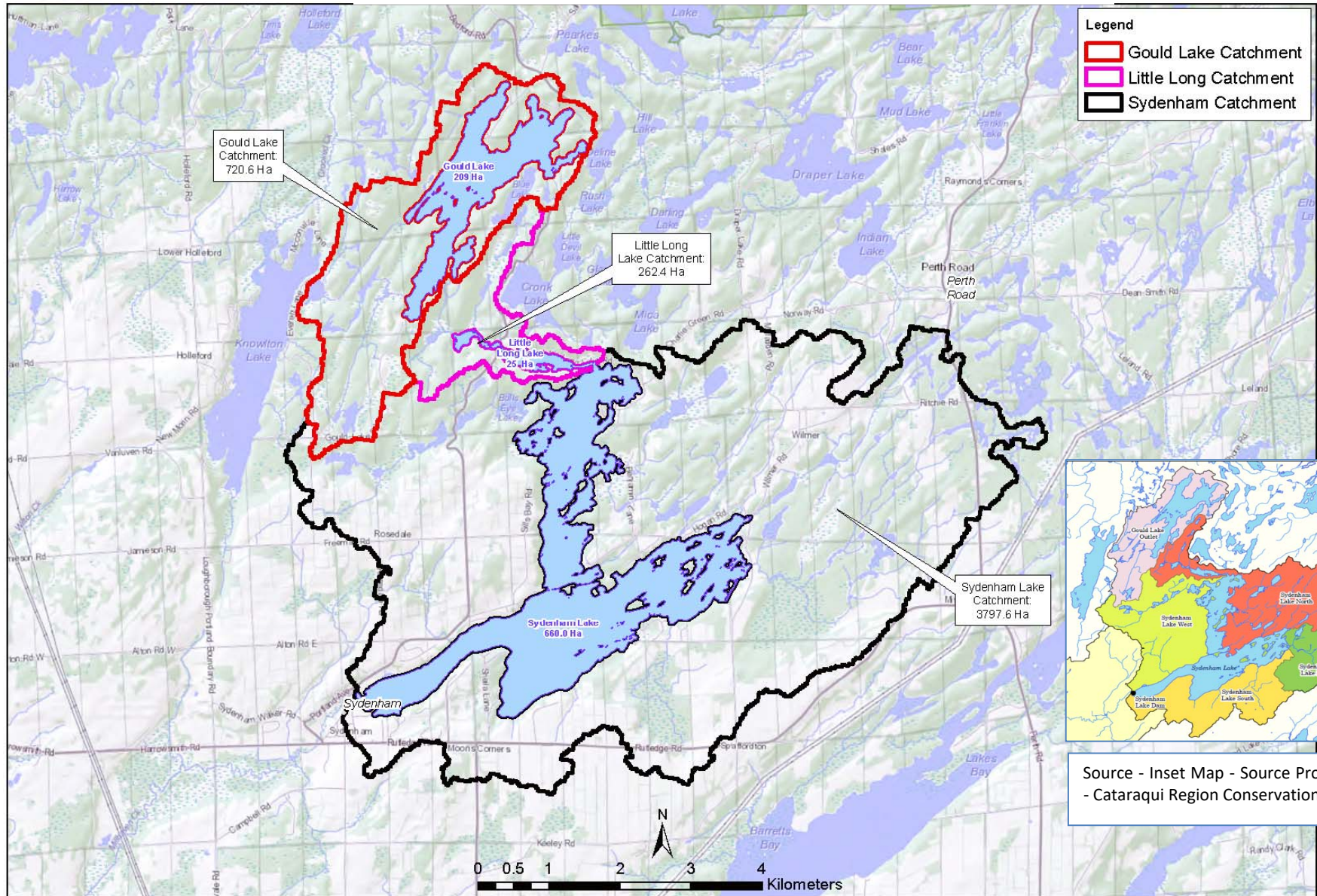
Sydenham Lake is comprised of three separate basins of glacial origin, Sydenham Lake Main Basin, Sydenham Lake East Basin and Eel Bay. Eel Bay is connected to the other basins by a relatively narrow channel. Sydenham Lake has granite outcrops, a series of wetlands along the shoreline, as well as till shorelines and slopes. Rock shoals are quite frequent within Sydenham Lake and often pose hazards to recreational boating. Sydenham Lake has been classified as a moderately productive, mesotrophic lake.

The western and central portions of Sydenham Lake are considered to be the Main Basin which has a maximum depth of 36.6 m. (120 ft.) and a mean depth of 6.7 m. (22 ft.). The nearshore habitat of the main basin is mainly comprised of rock rubble, silt and sand. The bottom of the main basin is heavily silted, due to sediments carried into the lake by different sources such as wind, inflowing streams, wave action and accumulating remains of plant and animal life. The bottom substrate near the islands on the east end of the main basin is rocky. Marl (a clay substance) was noticed in some shallow areas of the main body of the lake. Due to its depth, the main basin thermally stratifies and can experience oxygen stress at its lower depths prior to spring and fall turnover.

The most productive areas of the lake are Eel Bay and the East Basin which are heavily vegetated, and contain a large Provincially Significant Wetland, known as the Eel Bay/Sydenham Lake Wetland Complex. Both the East Basin and Eel Bay are shallow, and because of this, a substantial portion of Sydenham Lake (46%) is considered to be 'littoral', meaning that approximately half of the lake is comprised of shallow nearshore areas, marshes or wetlands. Littoral zones are of high biological significance to lake ecosystems, are sensitive to environmental degradation, and provide essential habitat to numerous fish, amphibian, waterfowl and mammal species.

Little Long Lake is connected to Eel Bay by a small channel. Similar to Sydenham Lake, its water level is controlled by the Sydenham Lake Dam. Past studies indicate Little Long Lake possesses a warmwater thermal regime and shallow waters which do not stratify.

Map 1 - Sydenham Lake Subwatershed

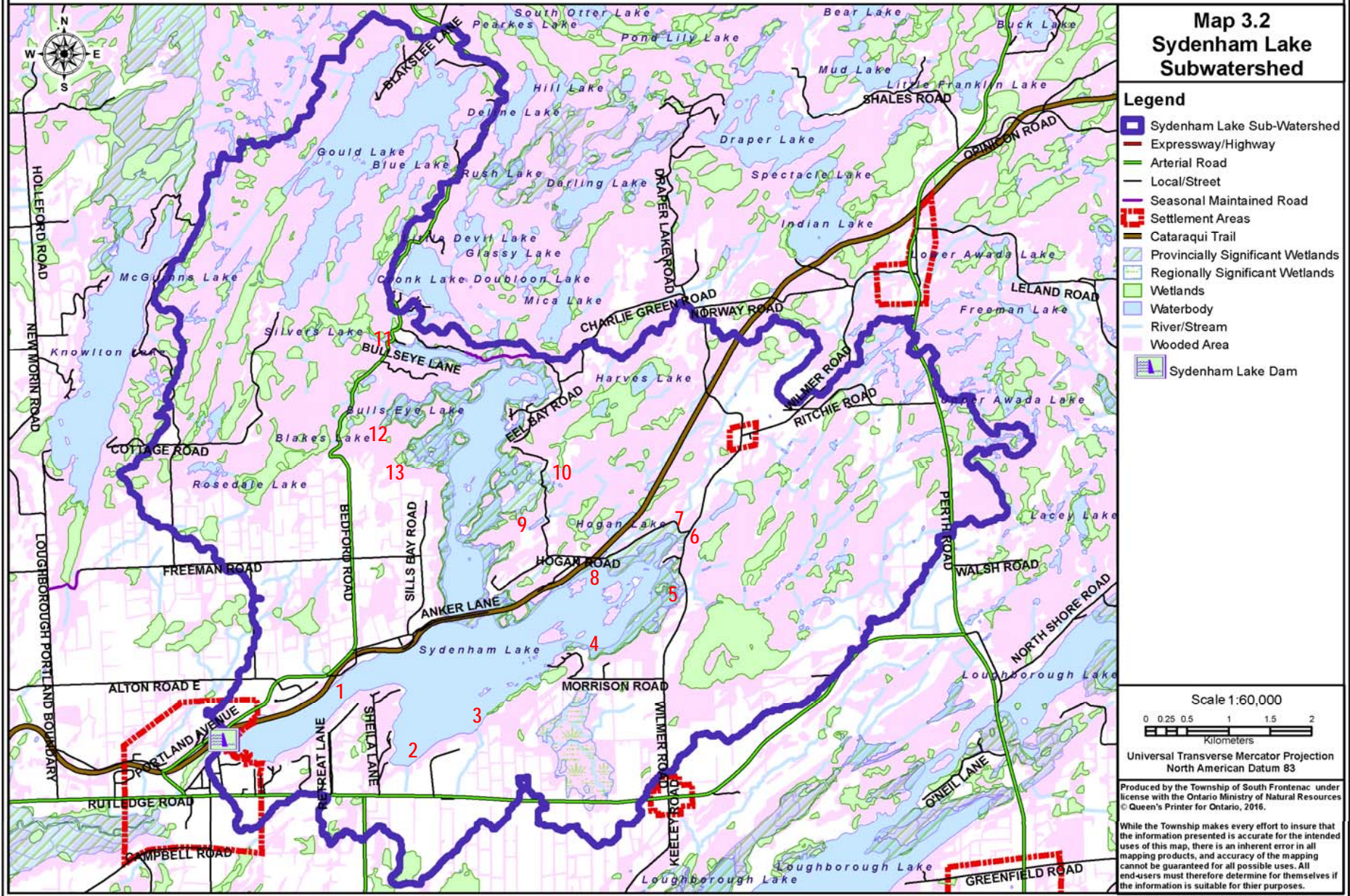


UTM Zone 18 (NAD 1983)
 Information Provided by: Ministry of Natural Resources and Forestry, Ministry of the Environment and Climate Change, Ministry of Municipal Affairs and Housing.
 Imagery Provided by Land Information Ontario
 Catchments Delineated Using DFAT III

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Sydenham Lake State of the Lake Report



2.3 Gould Lake

Gould Lake is a small deep and cold headwater lake with a maximum depth of 61.6 m. (202 ft.), a mean depth of 18 m. (59 ft.) and total surface area of approximately 2.2 km² (222 Ha.) (Map 3.5). Gould Lake has a relatively small catchment area of approximately 7.2 km² (720.6 Ha), and shoreline perimeter of 16.9 km. Gould Lake's littoral zone has been previously estimated as 23% of the total lake surface area. Gould Lake exhibits a very low flushing rate of 0.08 times per year experiencing turnover approximately once in every 12 years. Small tributary streams flow into Gould Lake from the surrounding catchment area on the Canadian Shield. The lake's catchment area is predominately composed of coniferous and mixed forests. Gould Lake is characterized by granite outcrops that rise sharply above the water from the lake bottom.

Gould Lake has deep, clear and cold water with good concentrations of dissolved oxygen supporting natural reproducing lake trout species. Gould Lake flows through a creek into the upper wetland areas of Little Long Lake. Development on Gould Lake is minimal and is likely to remain low as a large portion of the shoreline forms part of the Gould Lake Conservation Area. The CRCA owns approximately 50% of the lake shoreline and the remainder is not easily accessible. There exists a large swamp area between the outlet of Gould Lake and the inlet to Little Long Lake acting as a natural purifier for water eventually reaching Sydenham Lake.



Looking North on Gould Lake from Conservation Area



This Stewardship Plan is based on a set of values and issues identified by the community – cottagers, residents, municipalities, non-government and government organizations with an interest in Sydenham Lake. The values and issues allowed for the identification of six main goals upon which to focus effort. The goals are listed in Section 3.3.

3.1 Community Values

The Sydenham Lake Association conducted a membership survey in 2012-13. The survey asked respondents to identify the level of importance that they would attach to the ten values listed in the survey and to add any further values that they felt were not being recognized.

A public workshop was held in August, 2016, to help reaffirm and expand upon the survey findings. These community consultations allowed for a coherent expression of the community's values. While ensuring that all feedback received due recognition, it became evident that there were many areas of common interest, from which three broad sets of values could be identified, as follows:

Three Common Community Values

1. **Good Water Quality** - Water quality is, by consensus, the top priority value of the community.
2. **Healthy Natural Environment** - The community recognizes and values the healthy natural features (aquatic life, wetlands, and extensive natural shorelines) and the abundance and variation of fish and wildlife. There is a strong desire to protect the natural environment.
3. **Social Well-Being** - The lake is a place where people can enjoy peace and tranquility and security of home and property and enjoying recreational activities. There was also recognition of the importance of maintaining a sense of community around the lake, and generally recognizing the importance of the lake to the community today and for future generations. Maintaining a visible night sky and natural shorelines rounded out the social values of importance.

3.2 Community Issues

The community survey also asked respondents to rate the importance of 19 possible issues and concerns, and to identify their top priorities for action that should be taken to preserve and enhance the lake. Issues and concerns were also discussed at the Public Forum #1, and more intensely at the second forum. The ranking in the community survey, together with the results of Public Forum discussions and the information collected for the Sydenham Lake State of the Lake Report, were consolidated into a list of nine key issues, as follows:

Ten Key Issues to be Addressed

1. **Deterioration of Water Quality** – Water quality is the top priority value and is recognized by the community as the key issue to be addressed. Concerns have been expressed about the impacts on the lake from old or faulty septic systems and run off from shoreline and rural areas.
2. **Respectful Use of Property** - The ability to use your property while respecting the sensitive nature of the environment ranked second only to good water quality.
3. **Water Quantity and Levels** – Some waterfront owners expressed a concern that the drawing of water for the municipal water supply in Sydenham village may have a negative effect on water levels in the lake.
4. **Potential Deterioration of the Fishery** – The diversity of the fish and wildlife populations and their habitat must be maintained. It was thought that fishing derbies may impact local fish populations, bass are being caught out of season, when the pike season is open.
5. **Loss of Natural Shorelines and Natural Environment** – Action to maintain healthy shorelines and natural environment is important to most community members.
6. **Invasive/Nuisance Species** - Invasive species that are present now, or potentially arriving, are of concern to many in the community (e.g., zebra mussels, wild parsnip, phragmites). Nuisance species (Canada geese and cormorants) also were cited as a problem.
7. **Impacts from New Land Uses and Development** – The concern is to ensure that any future development minimizes negative effects on the natural shoreline and environment, and peoples’ use and enjoyment of the lake.
8. **Respectful Use of the Lake** – Concerns were expressed about unsafe boating, excessive boat wakes, impact on environmentally sensitive areas and the respectful use of the lake and public areas including the Cataraqui Trail.
9. **Loss of Dark Night Skies** – Increasing urban lighting has reduced the natural dark night skies.
10. **Impacts from Changes in Climate and Watershed** - Some issues encompass a broader area than the lake and its immediate surroundings need to be considered, such as what can be done about climate change and protecting habitat with the watershed.

3.3 Goals

The table below lists the six goals of the Lake Plan, and indicates how these reflect the values and issues previously determined. In Chapter 4, these goals are further developed into series of specific objectives and actions to be undertaken.

Table 1 - How Values and Issues are Reflected in Goal Statements

| Sydenham Lake Goals | Values <i>(see Section 3.1)</i> | | | Issues <i>(see Section 3.2)</i> | | | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------|-------------------|------------------------------------|---------------------------------------|-----------------|-----------------------------|-----------------------------------------------|--------------------------------|-----------------------------|---------------------------|-----------------------------|---------------------------------------------------|
| | GOOD WATER QUALITY | ENVIRONMENT | SOCIAL WELL-BEING | 1. Deterioration of Water Quality | 2. Respectful Development of Property | 3. Water Levels | 4. Deterioration of Fishery | 5. Loss of Natural Shorelines and Environment | 6. Invasive / Nuisance Species | 7. Impacts from development | 8. Respectful Use of Lake | 9. Loss of Dark/Night Skies | 10. Impacts from Changes in Climate and Watershed |
| 1. Water Quality Work towards maintaining high water quality in Sydenham Lake and its inflowing streams to support a healthy natural environment and to support the use and enjoyment by residents and visitors. | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| 2. Natural Environment Work towards maintaining a healthy and diverse ecosystem, including a healthy fishery. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3. Water Levels Work towards maintaining water levels that sustain natural ecosystems and minimize risks. | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | ✓ |
| 4. Climate Change Work towards Actions that help adapting to climate change. | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ | | | | ✓ |
| 5. Land Use and Development Work towards maintaining the character of the lake and protecting the sensitive natural environment, water quality, and the social/recreational features of Sydenham Lake. | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ |
| 6. Social And Recreational Activity Work towards social and recreational activities that respect the natural environment and the people of the lake, and help to build a sense of community. | ✓ | | ✓ | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | |



4. Future Actions

This section addresses each of the six goals listed in Chapter 3. Specific objectives are presented under each of the goals, along with a brief discussion of relevant issues and observations. Chapter 6 (Table 5) summarizes all the Goals, Objectives, and Actions.

4.1 Water Quality

GOAL: Work towards maintaining high water quality in Sydenham Lake and its inflowing streams to support a healthy natural environment, and to support the use and enjoyment by residents and visitors.

Objective 1 - Monitor and assess overall water quality.

Based on the information available, Sydenham Lake, Eel Bay, Little Long Lake, and Gould Lake all meet or exceed the Ontario government's Provincial Water Quality Objectives for recreational use. Results also indicate that the water quality of these lakes is sufficient to support healthy aquatic life. Recent data suggest that the total phosphorous levels may be increasing in Sydenham Lake and Eel Bay, but there are not enough years of data to confirm this. This possible trend can be confirmed with a few more years of consistent monitoring, a process that the SLA initiated in 2015 for Sydenham Lake, Eel Bay, and Little Long Lake. Gould Lake, at the 'top' of the watershed, has very good water quality but this conclusion is based on very limited water quality data.

Work done by XCG Consultants for the Source Water Protection Plan including testing for a wide array of parameters. One that stood out as a possible concern was sodium. XCG's testing found levels of sodium above the provincial 'benchmark' in the tributaries and storm drain near the village, with highest levels from the boat ramp storm drain. In their final report, XCG suggests that the potential source of sodium is from road salt application in the village.

Lakes throughout Ontario are being impacted by multiple stressors and especially by climate change, invading species, and the effects of incremental development. Recent cases of blue-green algae blooms on lakes in eastern Ontario may be occurring because of this combination of factors. Good records have been kept of the ice on/ice off conditions on Sydenham and Little Long Lakes. Maintaining these records

may help to explain possible future changes to the lakes' environment, such as increases in algae blooms.

The overall condition and level of productivity of the lakes based on three different water quality measures are noted in Table 2.

Table 2 – Trophic Levels by Water Quality Measurements

| | Sydenham Lake | Eel Bay | Little Long Lake | Gould Lake |
|------------------------------------------|---------------------------------------|----------------------------|----------------------------------|-------------------------------------|
| Water Clarity* (Secchi disk) | GOOD Mesotrophic | GOOD Mesotrophic | EXCELLENT Oligotrophic | EXCELLENT Oligotrophic |
| Total Phosphorous | GOOD Mesotrophic | GOOD Mesotrophic | EXCELLENT Oligotrophic | EXCELLENT oligotrophic |
| Chlorophyll α** | SLIGHTLY POOR Low eutrophic | N/A | N/A | VERY GOOD Low mesotrophic |

* Very limited data **No data later than 1990

Actions

Objective 1

Monitor and assess overall water quality.

1. Continue annual sampling of Sydenham (east and west basins), Eel Bay, and Little Long Lake and analyze for water clarity (Secchi disk depth) and total phosphorous – under the Lake Partners Program.
2. Establish a water quality sampling program on Gould Lake.
3. Establish a sampling program for sodium and chloride levels in Sydenham Lake at the stormwater outfalls near the village. An effective sampling program would also include bacteria, Total Suspended Solids, oil and grease, and water flows.
4. Continue measuring timing of ice-on/ice-off on Sydenham and Little Long Lakes. Initiate on Gould Lake.
5. Put in place a protocol for reporting algae blooms.

Objective 2 - Reduce the negative impact of surface runoff.

Runoff from the land around the shore of the lake and along the watershed's other lakes and tributary streams and drains, can bring with it nutrients (e.g., phosphorous, nitrogen), and other contaminants such as chemical pesticides. For example, it is estimated that 45% of the total input of phosphorous to Sydenham Lake comes from 'runoff.' Actions can be taken to reduce the impact of surface run-off. Such actions would target all sources of runoff, including stormwater, residential/cottages (lawn and garden fertilizer, septic systems, animal feces), commercial (lawn fertilizer and pesticides), and agricultural properties (fertilizers, manure, soil erosion).

Objective 2
Reduce the negative impact of surface runoff.

Actions

6. Identify and assess general flow of water in streams during peak (spring) and low flow scenarios (summer/fall).
7. Monitor run off in streams from farm land and rural areas.
8. Work with the Township to complete a Road Salt Management Plan and establish 'best management practices' to lessen the impacts of road salt on Sydenham Lake.
9. Establish a storm water management program in Sydenham village to implement best management practices in urban areas.
10. Consider need for applying 'best management practices' on surrounding farmlands within the subwatershed, to reduce erosion and contaminated runoff entering lakes. and means to implement the BMPs.

Objective 3 - Promote the proper operation of on-site sewage disposal systems.

Poorly installed and/or maintained septic systems may allow release of contaminants and nutrients to the lake. These can also introduce harmful diseases that could affect the local population as well as communities downstream. There is no evidence to suggest that this is a current concern for Sydenham Lake, however concerns about faulty septic systems and the potential impact of these on water quality were expressed during the planning process. These concerns are usually directed to older development that may not have up-to-date or adequate septic systems. Additionally, the practice of using seasonal properties as year-round residences can put additional stress on systems not designed to handle the extra level of use. When a property undergoes a conversion where a building permit is obtained, a septic inspection is required and this may lead to improvements to the existing septic system, if needed. Notwithstanding, any septic system, old or new, residential or commercial, that is not functioning properly will contribute to the degradation of the health of the lake.

Potential risk to water quality in general, and human health in particular, is sufficient to warrant taking a proactive approach and develop precautionary measures. An ongoing education program is essential, and should be supported with a program to confirm that systems are operating effectively. A voluntary septic inspection program was undertaken in 2005-2006, and it is time to consider re-establishing such a program.

Objective 3
To improve the performance of on-site sewage disposal systems.

Actions

11. Work with the Kingston Frontenac Lennox and Addington Health Unit and South Frontenac Township to establish a septic system maintenance awareness program focusing on education, communication and voluntary action.
12. Undertake a soil survey in the watershed to characterize percentage calcium carbonate, percentage aluminum and percentage iron in native soils to better understand the capability of local soils to bind phosphorus coming from septic systems.

Objective 4 - Increase the Lake Community's level of knowledge and awareness regarding water quality issues.

Maintaining and improving the water quality of Sydenham Lake will depend, to a large degree, on the actions of the property owners and lake users. Best practices for managing one's property, including streams, shorelines and septic systems, should be provided to the community to better understand what individuals can do to improve water quality and shoreline habitat. Many actions related to education and awareness can be done in cooperation with the CRCA and the Township of South Frontenac who may have existing initiatives related to these topics.

| <i>Objective 4</i> | <i>Actions</i> |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Increase the Lake Community's level of knowledge and awareness regarding water quality issues. | 13. Record, interpret, and report water quality results to the Community. |
| | 14. Provide information regarding the potential impact of various fertilizers, pesticides, household cleaners, oil, gas, and other potentially harmful substances. |
| | 15. Provide information regarding the importance of shoreline buffers, maintaining natural shorelines, restoring lawns to natural areas. |
| | 16. Provide information regarding the care and maintenance of septic systems. |

4.2 Natural Environment

GOAL: Work towards maintaining a healthy and diverse ecosystem, including a healthy fishery.

Objective 1 - Maintain and enhance the natural environment.

The Sydenham Lake watershed is located in a very biologically diverse area, thanks to an abundance of wetlands and good forest cover, and to the fact that it is partially on limestone bedrock, and partially on the granite of the Frontenac Arch. The catchment areas of Gould Lake and Little Long Lake contain very low levels of 'cleared' land: 10% and 7.6% respectively. Sydenham Lake catchment area is substantially higher, but even at 42.8% cleared, there still remains a significant amount of natural cover.

The watershed also contains a large amount of wetland (primarily swamps and marshes). Wetlands provide various environmental services for the surrounding area and ecosystems including: maintaining ground water quantity; filtering contaminants; maintaining lake water levels; reducing erosion and sedimentation rates; and providing important habitat and food for fish and wildlife. The East Basin of Sydenham Lake and most of the shoreline of Eel Bay contain extensive shoreline wetlands.

While there is a great diversity of plant and animal species in the forests, wetlands, and lakes of the area, data on what species are present and their numbers is limited.

Maintaining healthy forest cover and wetlands in the Sydenham Lake watershed will be the backbone of a continued healthy natural environment.

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Objective 1</i></p> <p>Maintain and enhance the natural environment.</p> | <p>Actions</p> |
| | <p>17. Conduct a thorough inventory of flora and fauna.</p> |
| | <p>18. Conduct an assessment of unevaluated wetlands under the Ontario Wetland Evaluation Service (OWES) to determine provincial or regional significance.</p> |
| | <p>19. Ensure maintenance, and where needed, rehabilitation, of natural wetlands to promote water conservation and storage within the subwatershed and protection of important fish and wildlife habitat.</p> |
| | <p>20. Promote existing community-based programs such as Turtle Watch, Frog Watch, and Canadian Lakes Loon Survey to conduct inventories and monitor changes to the flora and fauna of the lake.</p> |
| | <p>21. Develop and distribute educational material and programs on the natural environment of Sydenham Lake, including its wetlands, and how to protect and enhance them.</p> |
| <p>22. Establish a reporting mechanism on the SLA website, and encourage the public to report algae blooms, other water quality issues, and general observations regarding the natural environment.</p> | |

Objective 2 - Prevent further loss of natural shorelines and re-naturalize altered shorelines.

The shorelines of water bodies are considered the “ribbon of life” because of their importance to plant and animal (including fish) life functions. Natural shorelines will inhibit or capture run-off that might otherwise enter the lake. As well, natural features along the shoreline (in the water and adjacent to) provide important habitat for fish and other animals that inhabit the “ribbon of life.”

While a substantial amount of natural shorelines exists on Sydenham Lake, many shorelines have been hardened over the years, with natural vegetation removed, and grassed over (e.g., many existing and older properties have lawns to the water with no natural buffers). An inventory of the lake’s shoreline conditions has not been completed.

| | |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Objective 2</i></p> <p>Prevent further loss of natural shorelines and re-naturalize altered shorelines.</p> | <p>Actions</p> |
| | <p>23. Work with Watersheds Canada to naturalize altered shorelines. Consider applying the (voluntary) ‘Love Your Lake’ program to identify options for property owners to naturalize shoreline areas. http://watersheds.ca/our-work/the-natural-edge/.</p> <p>24. Work with the CRCA to establish programs to provide information and education to property owners about the protection and rehabilitation of shoreline areas.</p> |

Objective 3 - Identify, and where possible, control invasive and nuisance species.

Plants and animals that have been introduced from other parts of the world may become well established and disrupt the balance of existing ecosystems, crowd out native species, or cause harm to us or our life styles. There has not been an inventory of invasive species, but certain species are known to exist in the watershed, as listed in Table 3. Other invasive species are known to exist in the broader area around the Sydenham Lake watershed, including the Emerald Ash Borer, Spiny Water Flea, and Round goby.

The presence of other invasive species should be confirmed, and steps taken to prevent their entry to the lake or watershed.



Zebra Mussel

Central Lake Ontario Conservation, 2016



Emerald Ash Borer www.nrcan.gc.ca



Common Reed of Eurasia

Ontario Invading Species Awareness Program



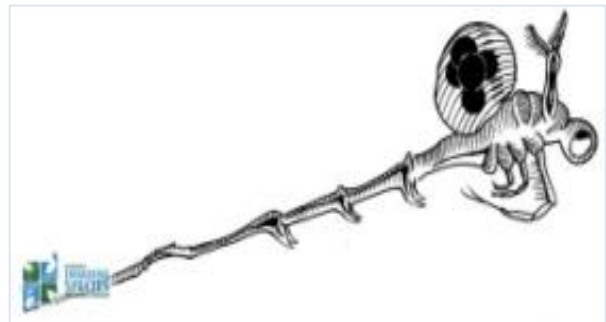
Wild Parsnip

Ontario Invading Species Awareness Program, 2016



Dog Strangling Vine

Ontario Invading Species Awareness Program



Spiny Water Flea

Ontario Invading Species Awareness Program, 2016

Gould Lake is free of one of the worst invaders, zebra mussels, and diligence should be taken to keep these out of the lake.

In addition to potential concerns related to invasive species, many residents expressed concerns about the numbers of cormorants and Canada Geese found on and around the lake, and the negative effects on the fishery and general enjoyment of one's property. These native species may find conditions that allow their populations to grow to nuisance levels, and residents want to find ways to discourage their presence.

| Table 3 - Invasive Species in Sydenham Lake Watershed |
|--------------------------------------------------------------|
| <i>Common Buckthorn</i> |
| <i>Common Lilac</i> |
| <i>Purple Loosestrife</i> |
| <i>Scots Pine</i> |
| <i>Wild Parsnip</i> |
| <i>Dog-strangling vine</i> |
| <i>Common Reed of Eurasia</i> |
| <i>Eurasian Milfoil</i> |
| <i>European Frogbit</i> |
| <i>Flowering-rush</i> |
| <i>Zebra Mussel</i> |
| <i>Double-crested Cormorant</i> |
| <i>Butternut Canker</i> |

| <i>Objective 3</i> | Actions |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Identify, and where possible, control invasive and nuisance species. | 25. Establish a boat-washing station at the boat launch near the Point to reduce the spread of invasive species into and out of Sydenham Lake. |
| | 26. Establish an intensive education program about invasive species on Gould Lake, to prevent invasive species from entering the lake. |
| | 27. Establish a general invasive species awareness program for the broader watershed of Sydenham Lake. |
| | 28. Work with OFAH and MNRF to identify and monitor invasive species. |

Objective 4 - Identify and protect species at risk, and their habitats.

The purpose of this objective is to achieve a better understanding of the populations and habitats of species at risk, and to develop awareness programs about applying best practices that ensures the continued existence and contribution of these species to a healthy environment.

While there are a number of species known to exist within the Sydenham Lake watershed, no comprehensive inventories have been conducted to date on the lake.

| Table 4 - Species at Risk in the Sydenham Lake Watershed | |
|-----------------------------------------------------------------|------------------------------|
| Vascular Plants & Lichens | Birds |
| <i>Butternut</i> | <i>Bald Eagle</i> |
| <i>Broad Beech Fern</i> | <i>Barn Swallow</i> |
| Reptiles & Amphibians | <i>Bobolink</i> |
| <i>Blanding's Turtle</i> | <i>Cerulean Warbler</i> |
| <i>Snapping Turtle</i> | <i>Eastern Meadowlark</i> |
| <i>Eastern Musk Turtle</i> | <i>Loggerhead Shrike</i> |
| <i>Northern Map Turtle</i> | <i>Louisiana Waterthrush</i> |
| <i>Gray Ratsnake</i> | Invertebrates |
| | <i>Monarch Butterfly</i> |

| <i>Actions</i> | |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Objective 4</i></p> <p>Identify and protect species at risk and their habitats.</p> | 29. Continue monitoring and research of Species at Risk to ensure the overall health of the Sydenham Lake ecosystem. |
| | 30. Liaise with governments and NGOs to secure funding and to conduct surveys of species at risk. |
| | 31. Develop an awareness program to inform the public regarding existing species at risk, and the proper protocols to protect these species. |
| | 32. Establish partnerships with existing programs (eg: Adopt a Pond program with the Toronto Zoo). |

Objective 5 - Protect and maintain a healthy fishery.

Fishing is an important recreational activity on Sydenham Lake, both summer and winter. It is popular for waterfront residents and cottagers, as well as for individuals who visit the resorts, or come to the lake and use the public boat launch. Fishing tournaments are becoming more popular and there is a growing concern about the impact that these events may have on the fish population.

Sydenham lake is considered by the Ministry of Natural Resources and Forestry to be a self-sustaining “warm/cool water” fishery. Stocking for lake trout, maskinonge, and yellow pickerel (walleye) was tried before 1970, with no success. The lake supports cool and warmwater species including northern pike, yellow perch, largemouth bass, smallmouth bass, and a variety of panfish. Sydenham Lake is part of the Ministry’s Broad-Scale Fish Monitoring Program, under which the fishery will be monitored every five years.

Fish habitat is plentiful in all three basins of Sydenham Lake, with spawning areas are available for walleye, bass, and other species along shorelines and around the islands. Thirteen small streams flow into Sydenham Lake. Only two streams are permanent and may provide fish habitat. The other streams are intermittent and are unlikely to be provide fish habitat except where they enter the lake during high water levels in the spring.

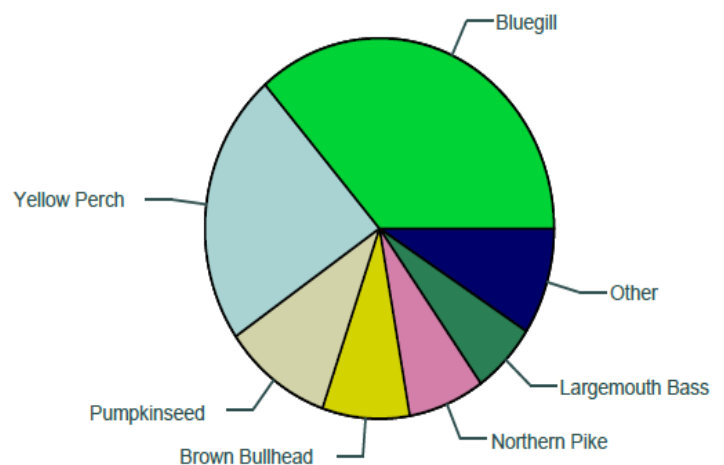


Figure 1 - Proportion of Fish Caught - 2014
Broad-scale Monitoring Bulletin, 2014

Monitoring done by MNRF in 2014, under the Broad Scale Monitoring Program, indicated the most plentiful species to be bluegill and yellow perch, with a significant percentage catch of pumpkinseed, bullhead, northern pike, and largemouth bass (see Figure 1).

Gould Lake is a naturally reproducing lake trout lake, reflective of its deep, clear and cold waters. In addition to lake trout, the lake contains populations of largemouth bass, smallmouth bass, brown bullhead, rock bass, yellow perch, bluegill, pumpkinseed and bluntnose minnow.

| <p><i>Objective5</i></p> <p>Protect and maintain a healthy fishery.</p> | <p><i>Actions</i></p> |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>33. Work with the CRCA to educate shoreline property owners about the use of best management practices when constructing near the shoreline or in the water.</p> |
| | <p>34. Request that MNRF provide increased enforcement of fishing and ice fishing regulations.</p> |
| | <p>35. Engage fishing tournament organizers to formulate appropriate rules/regulations to minimize the impact of these events on the natural environment and overall well being of the lake.</p> |
| <p>36. Develop a public education program about the fishery of Sydenham Lake, including good fishing practices and behaviour.</p> | |

4.3 Water Levels

GOAL: Work towards maintaining water levels that sustain natural ecosystems and minimize risks.

Objective 1 - Monitor Water Levels.

The water level of Sydenham Lake is controlled through the management of a dam located at the lake's outlet in the Village of Sydenham. There are no dams upstream of Sydenham Lake, so the water levels of Little Long and Gould Lakes are subject to natural conditions in the watershed, and to the level of the Sydenham Lake dam.

The CRCA has the responsibility for managing water levels at this dam, with the initial and primary objective being flood control. Management for flood control is balanced by two other objectives: maintaining wetlands; and ensuring continued recreational use of the lake. Flooding of Sydenham Lake shorelines is not common, however, downstream flooding in the village is a regular concern that the CRCA must take into consideration each spring in managing the levels of the dam. To the contrary, low water levels in the fall cause shallow conditions and some waterfront properties to lose access to/from the lake.



Water Depth Gauge at Western Railway Bridge

One concern that was expressed at the community workshop was of ‘water taking,’ especially the withdrawal of water for the village water system. Due to the very limited draw down of water levels caused by current operations and the low future population growth that is expected in the Village the taking of water to be used as drinking water for the Village can be expected to have no significant impact on the water level of Sydenham Lake.

| <i>Objective 1</i> | <i>Actions</i> |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Monitor water levels. | 37. Continue to work with CRCA to monitor water levels and continue to communicate and provide information to all shoreline property owners. |

4.4 Climate Change

GOAL: Work towards adapting to climate change.

Objective 1 - To reduce the effects of climate change.

Climate change is bringing with it warming of average temperatures and erratic weather patterns. Climate change has been predicted to exert numerous impacts including contribution to



more frequent severe weather events, higher intensity rainfall, and more frequent and prolonged drought. Additionally, changes in climate are predicted to affect the distribution of flows in surface watercourses including reduced flow and levels in streams, rivers, lakes and groundwater.

Increased temperatures and reduced water flows from the surrounding subwatershed may cause a reduction in the flushing rate of Sydenham Lake. A reduction in flushing rate may cause an increase in nutrient levels within the lake that in combination with increased air and water temperatures may lead to more weed and algal growth.

One effect of climate change that is noticeable is the change in winter conditions. The ice-free period for Sydenham and Little Long Lakes, measured over the past 30 years, has been gradually increasing.

| <i>Objective 1</i> | <i>Actions</i> |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Work towards adapting to climate change. | 38. Encourage local stewardship actions (such as reducing nutrient inputs, preserving and restoring riparian vegetation, inspecting and upgrading septic systems) to help buffer against impacts associated with climate change. |

4.5 Land Use and Development

GOAL: Work towards future development that maintains the character of the lake and that protects the natural environment, water quality, and the social/recreational features of Sydenham Lake.

Objective 1 - Ensure that future development on the lake takes place with minimal impact on water quality and the natural environment.

The land uses in the Sydenham Lake Watershed are comprised of a mixture of agriculture, urban development (in the Village of Sydenham), rural residential, shoreline residential, and urban and resort commercial uses. The agricultural lands drain through 5 streams to Sydenham Lake and the activities include cropland and pasture and no intensive livestock operations.

There are 333 existing lots of record that are immediately adjacent to Sydenham Lake, Eel Bay and Little Long Lake with 290 properties on the mainland and 43 properties on islands. About 18% (51) of mainland properties and 79% (34) of island properties are vacant. Although many of the vacant islands in Eel Bay and on Sydenham Lake are zoned Limited Service Waterfront Residential (RLSW), they are too small to meet the zoning requirements to obtain a building permit and therefore likely to remain vacant. There are 27 shoreline properties that are zoned Rural that permit agricultural activities to occur near the shoreline. Some of these properties are located along the southern shoreline and are physically separated from the lake by a rock ridge that parallels the shoreline.

There are opportunities for the redevelopment of existing shoreline properties, including rebuilding or expansion of residential uses, Bed and Breakfast operations and expansion of agricultural uses. Many shoreline residential buildings were constructed before the passing of the zoning by-law and do not meet the required 30 m. setback from the shoreline. Any redevelopment or construction of new buildings should adopt a principle of "Net Improvement" which requires a property owner do apply best management practices



(planting shoreline vegetation, redirecting roof and lot drainage, protecting and replanting shoreline buffer areas, use pervious surfaces) before being issued a building permit. Educational material should be prepared and distributed to promote the adoption of this principle voluntarily throughout the watershed.

Do this....



Not This!



The shoreline of Sydenham Lake has been developed to its physical capacity and there are very limited opportunities for new development (lot creation, expansion of existing commercial, creation of new commercial operations) to occur on these waterbodies. The Township requires a minimum of 90 m (300 ft) of shoreline frontage for new lots and this severely restricts the possibility for new development. The Official Plan and Zoning By-law are currently under review.

| <i>Objective1</i> | <i>Actions</i> |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Ensure that future development on the lake takes place with minimal impact on water quality and the natural environment.</p> | <p>39. Consider revising policies in the Official Plan regarding the redevelopment of shore lots. For example, applications for a building permit should follow the principle of net improvement in terms of total phosphorous loading from the lot – by means such as planting shoreline vegetation, re-directing lot drainage.</p> |
| | <p>40. Promote stewardship activities that support and complement the policies of the official plan and zoning by-law.</p> |
| | <p>41. Continue to work with the Township in the development of the new Official Plan and Zoning By-law. Include policies that require the retention of shoreline vegetation and protects the natural character of the lake.</p> |

4.6 Social and Recreational Activity

GOAL: Promote social and recreational activities that respect the natural environment, the residents and users of the lake, and help to build a sense of community.

Objective 1 - Address concerns about boat traffic and conduct of lake users.

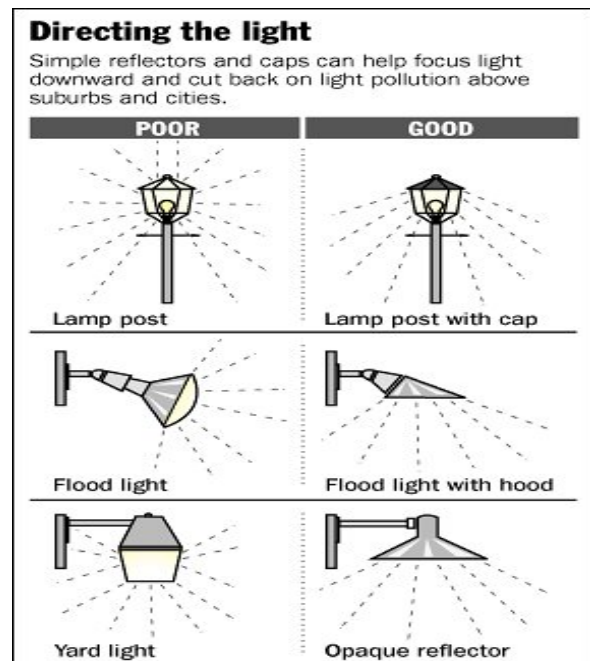
Boating traffic and boating safety were identified as significant or moderate concerns by more than half the respondents to the SLA survey, and numerous comments were offered about the size and speed of boats using the lake. At the community workshop, concerns were expressed about the general issue of ‘respectful use of the lake.’ This included some residents’ concern with boat noise and wakes, and boaters who lack local knowledge of shoals, and fishermen who fish too close to private docks.

| | <i>Actions</i> |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Objective 1</i> Address overall concerns about boat traffic and conduct of lake users. | 42. Establish a broad-based education program with focus on safety and respectful lake use that includes information on: speed limits, rules of conduct, management of boat wakes, noise abatement, and pollution control. |
| | 43. Develop a Code of Conduct brochure for boating and lake use, to be distributed widely. |
| | 44. Continue the SLA’s signage programs, ‘Share the Lake’ and ‘Watch your Wake’. |
| | 45. Invite the OPP to participate in, and make presentations at SLA sponsored Boat Safety seminars. |

Objective 2 - Promote light pollution reduction measures.

Feedback from the community has reflected the high value placed on the peaceful natural environment of the lake, and concern was expressed regarding the steady erosion of this environment as a result of light pollution. An important objective of the Lake Plan, therefore, is to promote initiatives to retain and enhance dark skies as an essential element of the character of the lake.

Now is the time for education and action, to ensure that the lake community and surrounding region can continue to enjoy the peace and beauty of the lake far into the future.



| <i>Objective 2</i> Promote light pollution reduction measures. | <i>Actions</i> |
|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 46. Promote awareness of the importance of reducing light pollution to the social enjoyment and ecological well being of the lake. Promote good neighbour lighting practices, including the identification of suitable lighting fixtures, and appropriate retailers. |
| | 47. Provide educational materials to lake residents and users that will help shift lighting habits to improve night sky conditions around Sydenham Lake. |
| | 48. Engage the township and municipal businesses to set an good example by adopting dark sky lighting practices. |
| 49. Engage the municipalities to enact bylaws similar to the Mississippi Mills dark sky by-law No. 03-62 (9 Sep 2003). | |

Objective 3 Support local community initiatives and have fun on the lake.

Sydenham Lake, Eel Bay, and Little Long Lake provide their residents and visitors a high quality natural environment within which to enjoy a sense of community, diverse recreational activities and quiet and tranquility. These were among the list of values identified by the participants in the August, 2016 community workshop.

The sense of belonging and social interaction is also clear from the workshop participants when they were asked to list some of their special memories of the lake. There are direct links to the Village of Sydenham, historical events, community events on and around the lake, extended family gatherings and activities, and enjoyment of the many outdoor facilities around the lake. The lake and its environment are central to the lifestyle and social engagement of those who live around the lake, and this was very evident when workshop participants were asked to express some of their values and fond memories.

Sydenham Lake Association and its predecessors have been an active organization in the social and community life on and around the lake. They should keep up this important aspect of their work – to have fun on the lake!

| <i>Objective 2</i> Support Community Initiatives and Have Fun on the Lake. | <i>Actions</i> |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 50. Continue support for community activities such as the Sydenham Triathlon, Canada Day Fireworks at the Point, and regattas at the Sydenham Lake Canoe Club. 51. Conduct initiatives to better understand the local environment – a bioblitz, or a boat tour of the lake interpreting the natural environment. |



5. Implementing the Lake Plan

The preparation of the Sydenham Lake Plan has provided a good opportunity to engage the community in dialogue about their lake and allowed people to have a voice in local matters. The content of the plan has been built upon their concerns and suggestions, and reflects what they consider to be important factors to ensure the continued health of the lake environment.

The implementation phase that follows the plan will bring new opportunities to engage and revitalize the community. The list of actions in the plan offers a multi-year agenda. It will be progressed based on the availability of funding sources and willing participants and partners. Implementation will require a dedicated and combined effort from:

- Sydenham Lake Association
- Cottagers, residents, and other lake users
- Township of South Frontenac
- County of Frontenac
- Cataraqui Region Conservation Authority

For effective implementation, a working group must be struck, including members representing the Sydenham Lake Association, Cataraqui Region Conservation Authority, and the Township of South Frontenac. This “Sydenham Lake Implementation Working Group” would take responsibility for the implementation of the plan, including:

- Confirming priorities for action;
- Seeking individuals and organizations to carry out actions;
- Obtaining funding for actions;
- Ensuring a continued sharing with the lake community of the results of actions taken; and
- Overseeing or directing an annual “report card” on implementing the plan’s activities and conduct plan updates as needed.

Table 5 on the following pages consolidates all the proposed actions of this Plan.

Objective 1 - Work with friends and partners in the implementation of the lake plan.

| <i>Objective 1</i> | <i>Actions</i> |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Work to Implement the Plan. | 52. The SLA, municipalities and CRCA work together to collectively take action and promote education to protect the health of Sydenham Lake. They should meet on annual basis to review actions taken and establish new activities related to the lake. |

Table 5 - Summary of Actions

| GOAL | OBJECTIVES | ACTIONS |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>WATER QUALITY</p> <p>Work towards maintaining high water quality in Sydenham Lake and its inflowing streams to support a healthy natural environment and to support the use and enjoyment by residents and visitors.</p> | <p>Monitor and assess overall water quality</p> | <p>1. Continue annual sampling of Sydenham (east and west basins), Eel Bay, and Little Long Lake and analyse for water clarity (Secchi disk depth) and total phosphorous – under the Lake Partners Program.</p> |
| | | <p>2. Establish a water quality sampling program on Gould Lake.</p> |
| | | <p>3. Establish a sampling program for sodium and chloride levels in Sydenham Lake at the stormwater outfalls near the village. An effective sampling program would also include bacteria, Total Suspended Solids, oil and grease, and water flows.</p> |
| | | <p>4. Continue measuring timing of ice-on/ice-off on Sydenham and Little Long Lakes. Initiate on Gould Lake.</p> |
| | | <p>5. Put in place a protocol for reporting algae blooms.</p> |
| | <p>Reduce the negative impact of surface runoff</p> | <p>6. Identify and assess general flow of water in streams during peak (spring) and low flow scenarios (summer/fall).</p> |
| | | <p>7. Monitor run off in streams from farm land.</p> |
| | | <p>8. Work with the Township to complete a Road Salt Management Plan and establish 'best management practices' to lessen the impacts of road salt on Sydenham Lake.</p> |
| | | <p>9. Establish a storm water management program in Sydenham village to implement best management practices in urban areas.</p> |
| | | <p>10. Consider need for applying 'best management practices' on surrounding farmlands within the subwatershed, to reduce erosion and contaminated runoff entering lakes, and means to implement the BMPs.</p> |
| | <p>Promote the proper operation of on-site sewage disposal systems</p> | <p>11. Work with the Township to establish a septic system maintenance awareness program focusing on education, communication and voluntary action.</p> |
| | | <p>12. Undertake a soil survey in watershed to characterize percentage calcium carbonate, percentage aluminum and percentage iron in native soils to better understand the capability of local soils to bind phosphorus coming from septic systems.</p> |
| | <p>Increase awareness and knowledge of water quality issues</p> | <p>13. Record, interpret, and report water quality results to the Community.</p> |
| | | <p>14. Provide information regarding the potential impact of various fertilizers, pesticides, household cleaners, oil, gas, and other potentially harmful substances.</p> |
| | | <p>15. Provide information regarding the importance of shoreline buffers, maintaining natural shorelines, restoring lawns to natural areas.</p> |
| | | <p>16. Provide information regarding the care and maintenance of septic systems.</p> |

Table 6 - Summary of Actions

| GOAL | OBJECTIVES | ACTIONS |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>NATURAL ENVIRONMENT</p> <p>Work towards maintaining a healthy and diverse ecosystem, including a healthy fishery.</p> | <p>Maintain and enhance the natural environment</p> | <p>17. Conduct a thorough inventory of flora and fauna.</p> <p>18. Conduct an assessment of unevaluated wetlands under the Ontario Wetland Evaluation Service (OWES) to determine provincial and regional significance.</p> <p>19. Ensure maintenance of, and where needed, rehabilitation of, natural wetlands to promote water conservation and storage within the subwatershed.</p> <p>20. Promote existing programs such as Turtle Watch, Frog Watch, and Canadian Lakes Loon Survey to conduct inventories and monitor changes to the flora and fauna of the Lake.</p> <p>21. Develop and distribute educational material and programs on the natural environment of Sydenham Lake, including its wetlands, and how to protect and enhance them.</p> <p>22. Establish a reporting mechanism on the SLA website, and encourage the public to report algae blooms, other water quality issues, and general observations regarding the natural environment.</p> |
| | <p>Prevent further loss of natural shorelines and re-naturalize altered shorelines</p> | <p>23. Work with Watersheds Canada to naturalize altered shorelines. Consider applying the (voluntary) 'Love Your Lake' program to identify options for property owners to naturalize shoreline areas. http://watersheds.ca/our-work/the-natural-edge/.</p> <p>24. Work with the CRCA to establish programs to provide information and education to property owners about the protection and rehabilitation of shoreline areas.</p> |
| | <p>Identify, and where possible, control invasive and nuisance species</p> | <p>25. Establish a boat-washing station at the boat launch near the Point to reduce the spread of invasive species into and out of Sydenham Lake.</p> <p>26. Establish an intensive education program about invasive species on Gould Lake, to prevent invasive species from entering the lake.</p> <p>27. Monitor inflow and outflow temperatures and phytoplankton on Sydenham Lake.</p> <p>28. Work with OFAH and MNRF to identify and monitor invasive species.</p> |
| | <p>Identify and protect species at risk and their habitats</p> | <p>29. Continue monitoring and research of Species at Risk and Invasive Species to ensure the overall health of the Sydenham Lake ecosystem.</p> <p>30. Liaise with governments and NGOs to secure funding and to conduct surveys of species at risk.</p> <p>31. Develop an awareness program to inform the public regarding existing species at risk, and the proper protocols to protect these species.</p> <p>32. Establish partnerships with existing programs (eg: Adopt a Pond program with the Toronto Zoo).</p> |
| | <p>Protect and maintain a healthy fishery</p> | <p>33. Work with the CRCA to educate shoreline property owners about the use of best management practices when constructing near the shoreline or in the water.</p> <p>34. Request that MNRF provide increased enforcement of fishing and ice fishing regulations.</p> <p>35. Engage fishing tournament organizers to formulate appropriate rules/regulations to minimize the impact of these events on the natural environment and overall well being of the lake.</p> <p>36. Develop a public education program about the fishery of Sydenham Lake, including good fishing practices and behaviour.</p> |

Table 6 - Summary of Actions

| GOAL | OBJECTIVES | ACTIONS |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p align="center">WATER LEVEL</p> <p>Work towards maintaining water levels that sustain natural ecosystems and minimize risks.</p> | <p align="center">Monitor water levels</p> | <p>37. Continue to work with CRCA to monitor water levels and continue to communicate and provide information to all shoreline property owners.</p> |
| <p align="center">CLIMATE CHANGE</p> <p>Work towards adapting to climate change.</p> | <p align="center">To reduce the effects of climate change</p> | <p>38. Encourage local stewardship actions (such as reducing nutrient inputs, preserving and restoring riparian vegetation, inspecting and upgrading septic systems) to help buffer against impacts associated with climate change.</p> |
| <p align="center">LAND USE AND DEVELOPMENT</p> <p>Work towards maintaining the character of the lake and protecting the sensitive natural environment, water quality, and social/recreational features of Sydenham Lake.</p> | <p align="center">Ensure that all development on the lake takes place with minimal impact on water quality and the natural environment</p> | <p>39. Consider revising policies in the Official Plan regarding the redevelopment of shore lots. For example, applications for a building permit should follow the principle of net improvement in terms of total phosphorous loading from the lot – by means such as planting shoreline vegetation, re-directing lot drainage.</p> <p>40. Promote stewardship activities that support and complement the policies of the official plan and zoning by-law.</p> <p>41. Continue to work with the Township in the development of the new Official Plan and Zoning By-law. Include policies that require the retention of shoreline vegetation and protects the natural character of the lake.</p> |

Table 6 - Summary of Actions

| GOAL | OBJECTIVES | ACTIONS | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>SOCIAL AND RECREATIONAL ACTIVITY</p> <p>GOAL - Work towards social and recreational activities that respect the natural environment and the people of the lake, and help to build a sense of community.</p> | <p>Address overall concerns about boat traffic and conduct of lake users</p> | <p>42. Establish a broad-based education program with focus on safety and respectful lake use that includes information on: speed limits, rules of conduct, management of boat wakes, noise abatement, and pollution control.</p> <p>43. Develop a Code of Conduct brochure for boating and lake use, to be distributed widely.</p> <p>44. Continue the SLA’s signage programs, ‘Share the Lake’ and ‘Watch your Wake’.</p> <p>45. Invite the OPP to participate in, and make presentations at, SLA sponsored Boat Safety seminars.</p> | |
| | <p>Promote light pollution reduction measures</p> | <p>46. Promote awareness of the importance of reducing light pollution to the social enjoyment and ecological well being of the lake. Promote good neighbour lighting practices, including the identification of suitable lighting fixtures, and appropriate retailers.</p> <p>47. Provide educational materials to lake residents and users that will help shift lighting habits to improve night sky conditions around Sydenham Lake.</p> <p>48. Engage the township to set an good example by adopting dark sky lighting practices.</p> <p>49. Engage the municipalities to enact bylaws similar to the Sydenham Mills dark sky by-law No. 03-62 (9 Sep 2003).</p> | |
| | <p>To support local community initiatives and have fun on the lake</p> | <p>50. Continue support for the Sydenham Triathlon, Canada Day Fireworks at the Point, and regattas at the Sydenham Lake Canoe Club.</p> <p>51. Conduct initiatives to better understand the local environment – a bioblitz, or a boat tour of the lake interpreting the natural environment.</p> | |
| | <p>PLAN IMPLEMENTATION</p> <p>Work with friends and partners in the implementation of the lake plan.</p> | <p>To implement and update the lake plan</p> | <p>52. The SLA, municipalities and CRCA work together to collectively take action and promote education to protect the health of Sydenham Lake. They should meet on annual basis to review actions taken and establish new activities related to the lake.</p> |

Associated Programs

| Program | Sponsors | Web Site |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lake Partner | Federation of Ontario Cottagers' Associations | http://foca.on.ca |
| Watersheds Watch | Sydenham Valley Conservation Authority | http://mvc.on.ca |
| Love Your Lake | Watersheds Canada Canadian Wildlife Federation | http://loveyourlake.ca |
| Rural Clean Water | Sydenham Valley Conservation Authority | http://mvc.on.ca |
| Citizen Water Watch | Ontario Trillium Foundation Carleton University Friends of the Tay Association Mississippi Valley Conservation Authority Rideau Valley Conservation Authority | |
| Good Neighbour Lighting | Township of Sydenham Mills Sydenham Valley Conservation Authority Royal Astronomical Society of Canada International Dark Sky Association | www.Sydenhammills.ca http://mvc.on.ca www.rasc.ca www.darksky.org |
| Adopt a Pond FrogWatch Ontario Ontario Turtle Tally | Toronto Zoo | www.torontozoo.com |
| Canadian Lakes Loon Survey | Bird Studies Canada BirdLife International | www.bsc.eoc.org |
| Greywater Reuse Pilot | City of Guelph | http://guelph.ca |
| EDDMaps Ontario | Ontario Federation of Anglers and Hunters Invasive Species Centre Invading Species Awareness Program Ontario Trillium Foundation | www.eddmaps.org |
| Invading Species | Ontario Federation of Anglers and Hunters Ontario Ministry of Natural Resources and Forestry | www.invadingspecies.com |
| Aquatic Invasive Species | Federation of Ontario Cottagers' Association | http://foca.on.ca |
| Prevention and Monitoring | Ontario Ministry of Natural Resources and Forestry | |
| Broad-Scale Fish Monitoring | Ontario Ministry of Natural Resources and Forestry | https://www.ontario.ca |

