



## **LOWER BEVERLEY LAKE**

# **LAKE MANAGEMENT PLAN**



**Lower Beverley Lake Association**

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**Lower Beverley Lake** is situated at Lat. 44' 36'N, and Long. 076' 08'W in south-eastern Ontario, Canada. Originally slated to be part of the original survey plan for the Rideau Canal, the lake now lies just south of the Rideau Canal, separated from the Rideau system by a dam at Morton. Lower Beverley Lake currently has over 390 lake front properties and approximately two thirds of the owners of these properties are summer residents. Those landowners involved in the association (and probably many more) believe that the lake is important, beautiful and worth protecting and therefore felt the need to proceed with this lake plan.

When the Wisconsin glacier receded from our area ten to eleven-thousand years ago, it scooped out a depression in the local limestone-laden rock which would become the water body we now know as Lower Beverley Lake (earlier known as Gananoque Lake). With the passage of the centuries, a productive fauna and flora developed, supported by rich soils and adequate rainfall. The lake remained relatively unchanged until the arrival of European explorers and settlers. It was then only about three-fourths its present size. The early lake had four inlets, of which the Morton Creek was probably the largest. It had only three islands: what are now Prisoner's, Whiskey, and Aird (now, Mott Island).

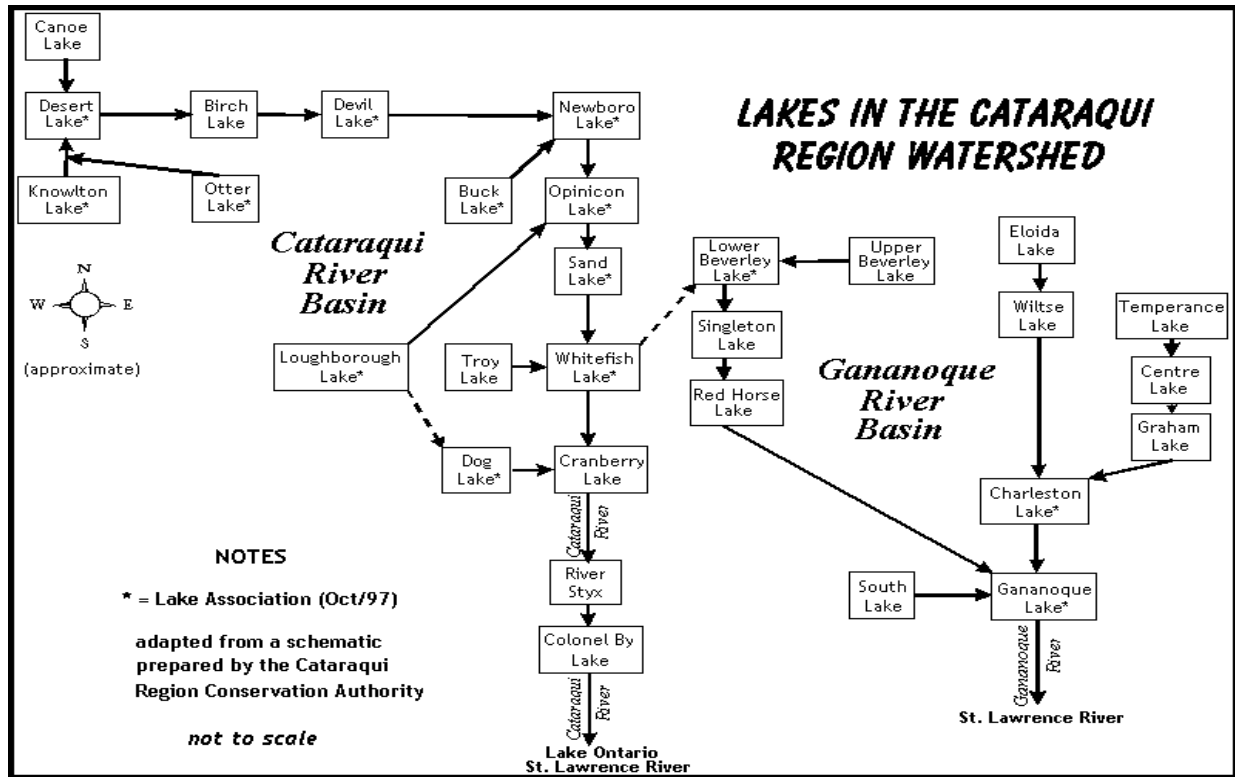
With the arrival of local settlers, the lake was altered. Dams and flumes were erected where hydropower could drive flourmills, iron foundries, and saw mills. A dam at Lyndhurst raised the water level substantially, and in the early 19th century the water level of Lower Beverley Lake was determined largely by milling requirements and weather.

When the Rideau Canal system was opened in 1832, another important impact was felt on Lower Beverley Lake. Lt. Colonel John By, the canal designer and builder, provided "for the possibility that the Rideau Waterway might be getting too much water" and arranged for an "overflow or spillway dam at Morton... which serves as a 'safety valve' to the system...", allowing excess water to move "down Morton Creek into Lower Beverley Lake and eventually into the St. Lawrence by way of the Gananoque River." (Legget, 1955). Thus, the original watershed of Lower Beverley Lake included the entire watershed of what is now called Whitefish Lake, and probably measured around 35,000 hectares (estimated only). Morton Creek has since become a minor lake input. The creek flow is the most erratic of all lake contributors, based primarily on the vagaries of weather and the dam overflow management practiced by Parks Canada at Morton.

By the early 1900s, waterpower was being replaced by other power sources, and the dam at Lyndhurst fell into disrepair. At the same time tourism and lakeside cottages were growing in importance, and a more forceful demand for increased and more stable lake levels prevailed. This demand resulted ultimately in the construction of the present dam at Lyndhurst by the Department of Public Works (now, Ontario Ministry of Natural Resources), with the first effective operation in June, 1960.

Today, Lower Beverley Lake is connected to the Cataraqui Region Watershed through Morton Creek, but that inflow is considered relatively minor. The area of the lake is 770 hectares or 1900 acres or about 3% of the Beverly Lake watershed which is 64,220 acres or 26,000 hectares. The majority of the lake lies within the Township of Rideau Lakes with the southern waters bordering the Township of Leeds and the Thousand Islands. If one were to travel along its perimeter, one would traverse 44 kilometres or 27.3 miles. The target surface elevation (summer) of the lake is 91.85 metres or 301.3 feet above sea level and its deepest part at the mouth of Kendrick Bay is 28.7 metres or 94 feet. The mean depth is 9.1 metres or 30 ft. The Narrows divides the lake into two parts: one a continuation of Morton Creek and the other the main body of the lake running north and south. Lower Beverley Lake is centrally situated in the UNESCO-designated Frontenac Arch Biosphere attesting to the unique natural and cultural significance of the region.

**Lower Beverley Lake within the Cataraqui Region Watershed, Ontario**



## Lower Beverley Lake Vision

*The Lower Beverley Lake community envisions the lake to be a place where:*

- The beauty of the landscape, the tranquility of the surroundings and the quality of the water are preserved.
- Wildlife, fish, and plant habitat are safeguarded.
- The community is actively involved in stewardship.
- There is an appropriate balance between economic development and the preservation of the environment.
- Local residents and visitors to Lower Beverley Lake will have access to the lake's recreational opportunities.

In support of the Lower Beverley Lake Vision, the Lower Beverley Lake Association and its partners have developed the following Lake Management Plan.

To be successful, the implementation of the Lake Management Plan must engage the entire lake community.



## Past Achievements

Over the years, The Association has undertaken many projects to improve the area for wildlife, to monitor water quality, and to provide other benefits for area residents.

Some of these projects include:

- Erection of loon nesting platforms;
- Posting of turtle crossing signs (acquired for the 2010 egg-laying season);
- Regular water testing (which shows the lake to be eutrophic);
- Monitoring the beaches for E. coli;

- Monitoring the lake levels;
- Installation of navigational aids;
- Multiple fish and aquatic vegetation studies.

The experience gained working with these projects led the association to believe that development of a lake management plan would better prepare us to meet and advance the interests of the membership, as well as the general lake community, in the future.

The Lake Management Plan will include the continuation of several of these earlier and on-going endeavours.

## **Lake Management**

The Lake Management approach represents a long-term commitment of the lake community to a plan of activities, and a related decision-making process, for the routine evaluation and improvement of Lower Beverley Lake's environmental and community attributes.

As part of the plan, the Lower Beverley Lake Association proposes the development of a Lake Management Committee to oversee a science-based monitoring program, evaluate the condition of the lake, and make management recommendations to the LBLA membership each year. Such a monitoring program will provide baselines of the lake's condition, as well as allowing comparisons of current and past conditions of the lake and comparisons to conditions in similar lakes within the watershed and elsewhere.

The management tools that will be considered by the Lower Beverley Lake Association over the coming years will include a full range of methods and options that generally apply to lake systems. In addition, and building on the monitoring work, additional activities may include water quality management, aquatic plant management, water level management, shoreline development and maintenance, and watershed management. Further, the Association needs to maintain involvement with the greater community, and promote the support of existing and potential members, both individual and corporate.

Some of the activities and objectives presented are, at least in part, a continuation or extension of past and ongoing activities and projects.

## **Monitoring the Physical and Ecological Attributes of Lower Beverley Lake**

The Lake Management Committee will oversee a program to measure and report on the following indicators (among others) and use the results to make recommendations regarding:

- Water quality;
- Water level;
- Aquatic habitat;
- Fish population surveys;
- Available qualitative and quantitative information from the past, in addition to the results of new monitoring.

## **Objectives and Activities for Lake Management**

### **1 PROTECT WATER QUALITY**

#### **1.1 Monitoring Water Quality**

Water quality has been, and will continue to be an on-going concern and issue. In order to be aware of the state of the lake and remain knowledgeable about all aspects of its health, the Lower Beverley Lake Association must continue to lead in this regard and work in partnership with appropriate agencies (e.g., MOE, MNR, CRCA), and the business community to continue water quality monitoring programs.

#### ***Objective:***

To ensure that water quality in Lower Beverley Lake is improved and to monitor changes over time.

#### ***Activities:***

1. Continue monitoring phosphorus and water clarity annually under the MOE Lake Partner Program; explore the acquisition of advanced sampling equipment for further investigation of nutrient and pollution sources, especially of the inflowing creeks and heavily developed areas.
2. Promote public awareness regarding the impact of phosphorus inputs on water quality in the lake. Provide discussion information on phosphorus free products.
3. Consider additional water quality sampling during the entire ice-free season to better evaluate conditions;
4. Complete intensive oxygen and temperature profile sampling at least once every 5 years during the August 15 to September 21 critical time period; coordinate this effort with the appropriate agencies so oxygen and

temperature surveys may be conducted by the agencies in the intervening years.

Timeline: Some sampling activity is already on-going; additional sampling is proposed for the immediate future, depending on the availability of equipment and personnel.

## **1.2 Septic Systems**

The supply of nutrients from septic systems is recognized by the Ministry of the Environment (MOE) to be one of the main anthropogenic (human related) sources of phosphorus. The focus of this project is to improve septic systems functionality on Lower Beverley Lake. Approvals for development and redevelopment continue to be the basis of septic system design. The Lower Beverley Lake Association must continue to encourage the municipality to be proactive in monitoring septic system maintenance and effectiveness.

### ***Objective:***

To ensure that nutrient supplies and bacterial sources from septic systems are minimized as much as possible and to support the townships and Health Unit to the extent possible in undertaking re-inspection programs.

### ***Activities:***

1. Encourage the townships to continue their Septic System Re-inspection Program on an ongoing cyclical basis; seek periodic reports.
2. Continue to educate septic system owners on the maintenance and operation procedures to ensure systems are functioning properly (tips would include regular pump-outs, no chemicals down the drain, setbacks for new or replacement systems as far as possible from the shoreline, no driving or parking over the bed, etc.), and to undertake to repair or replace failed and failing systems to a point where they meet or exceed standards and regulations;
3. Encourage townships to apply the highest level of standards of zoning by-laws in site plan approvals for new construction and reconstruction especially as it applies to the installation of septic systems, setbacks at waterfronts and maintaining shoreline vegetation buffer zones;
4. Seek mandatory inspections and approvals of septic systems when properties change hands.



Timeline: this activity has been initiated, and will be on-going.

### **1.3 Reducing Nutrient Supply**

Lower Beverley Lake in area is about 3% of its watershed. This leaves considerable room for outside influences on the lake. The lake is part of an extensive watershed of streams, wetlands, and aquifers. The land uses within that watershed impact lake water quality. There are also external influences to the watershed and lake, such as air quality, precipitation, and development pressures including increased building and road densities and more, which impact the qualities of the watershed environment.

#### ***Objective:***

To reduce excessive nutrient supply to the lake from all sources and prevent further enrichment. This will include the reduction of negative impacts from the overall watershed area insofar as is possible.

#### ***Activities***

1. Continue with education and assistance to shoreline owners to maintain natural buffer strips along the lake and to re-naturalize shorelines where required;
2. Continue to interact with municipal Councils towards best planning practices for land use in the watershed;
3. Support the Townships in their implementation of progressive planning principles, zoning bylaws and land management practices that protect against increased nutrient loading (including winter manure spreading), hazardous wastes and soil erosion; and that encourage source and groundwater protection;
4. Work in partnership with farm owners and farm organizations towards conservation strategies, and with conservation partners such as the Leeds County Stewardship Council, the Cataraqui Region Conservation Authority, the Province of Ontario and the Government of Canada. Issues would include farm management plans, ways to assist property owners to reforest vacant and marginal lands, and other remediation efforts to control nutrient migration from the land to inlet streams through conservation tillage, fencing livestock out of streams, and stream buffering.
5. Investigate methods for quantifying and monitoring aquatic weed growth in LBL; weed growth is often associated with relatively higher phosphorus levels (and other nutrients, as well).

Timeline: Some of this activity was initiated in 2008 and 2009, and will be an on-going effort.

## **2. MONITOR WATER LEVELS**

At this time, the water levels are maintained at a target level of 91.85 meters above mean sea level, for the spring and summer months. To prepare for the fall and winter seasons the Ministry drops the target water level to 91.70 meters, and maintains that level until the spring.

### ***Objective:***

Establish clear and consistent goals and target levels with OMNR, and any other appropriate agencies, in the operation of the Lyndhurst, Morton Creek and Delta dams and improve communication in regards to their impact on our lake levels.

### ***Activities:***

1. Continue to monitor water levels for comparison to targets.
2. Continue to communicate with the appropriate agencies and encourage the maintenance of the established target water levels.

Timeline: Independent monitoring activity was initiated in 2005, and will be on-going as long as useful data is collected. Communications have been on-going for several years.

## **3. MAINTAIN HEALTHY FISHERIES**

### **3.1 Regulation and enforcement**

Fishing ranks high as one of the important recreational activities at the lake. It is also recognized as an important economic resource for local businesses. Monitoring has shown a decline in the native fish population.

### ***Objective:***

To protect, enhance and maintain a sustainable, healthy fishery.

### ***Activities:***

1. Continue to educate anglers about the deleterious effects of angling for bass over nests;
2. Identify through signage and pamphlets the bays or sections of the lake that are temporary fish sanctuaries each spring until the opening day of bass season.

## 4. RESTORE AND PROTECT THE LITTORAL ZONE

### 4.1 Shoreline Review

The purpose of the Healthy Shoreline Review Program, 2008 Lake Study, was two-fold: to note the types and amounts of natural habitats at present, and to offer suggestions to landowners on ways to improve shoreline habitats ecologically. Protecting the littoral zone (near shore zone) and the terrestrial riparian (water's edge) buffer is an important step in maintaining a healthy lake ecosystem. The program as of this writing (September 09) is still under way and aims to educate property owners about the impact of their shoreline activities on the lake. It will also document the current state of shoreline environments for future reference.

#### **Objective:**

To determine the location and degree to which landowners act on recommendations, and to determine a strategy for future shoreline remediation efforts.

#### **Activities:**

1. Distribute educational materials through LBLA Newsletters and website;
2. As properties change ownership, supply the new landowner with a copy of the property's Healthy Shoreline Review(HSR) and accompanying handbook, and other educational materials;
3. Establish some of the sites where restoration work has been done as demonstration sites where landowners may visit to see results and learn techniques;
4. Conduct demonstration remediation workshops, advertised at sites where landowners are willing, to demonstrate ways of meeting typical recommendations as in the shoreline reviews;
5. Hold work sessions to replant formerly landscaped or disturbed areas with native or otherwise appropriate species;
6. Monitor the before and after biological community at demonstration sites and other restored shoreline properties. This could be undertaken in partnership with secondary school science classes and lake association members;
7. Plan at some future point to repeat the Shoreline Review (HSR) program, particularly in more heavily impacted areas of the lake, to determine the state and rate of progress of shoreline restoration.

### 4.2 Awards Recognition

Awards recognize good efforts and help to promote the values of good stewardship. Awards promote pride for achievement and peer pressure to do the same.

#### **Objective:**

To recognize and reward good stewardship of the land.

**Activities:**

1. Work with landowners to create an award to be presented with ceremony at annual gatherings such as the AGM, in recognition of property owners who have maintained, and/or protected the riparian buffer and littoral zone; and/or have taken effective action to restore such habitats.

Timeline: The initial phases of this program are a joint venture with A2A, which is currently (as of Sept 09) preparing landowner materials for distribution. Any independent LBLA activities will follow this joint activity.

**5. PROMOTE SAFE BOATING**

Sensitive habitats, fragile shorelines, and wildlife are needlessly damaged throughout the boating season, but damage could be largely avoided through boater education, and related education / communication projects to improve boating safety and awareness.

**Objective:**

To make boaters more aware of the impact of their activities on others and on the shore side environment, and to promote safe boating habits.

**Activities:**

1. Work with or adapt from the Canadian Power Squadron a code of ethics and etiquette, and a boating safety program for Lower Beverley Lake;
2. Design and promote a "Code of Conduct" through posters, newsletters and on our website;
3. Educate boaters on the need to preserve and protect shorelines; avoid tying up boats in sensitive vegetative areas; avoid accelerating near shorelines, which will reduce impacts on aquatic habitat (particularly feeding, spawning and nesting areas);
4. Encourage more frequent patrol of the lake by the OPP to enforce boating regulations;
5. Maintain a pamphlet with a lake map highlighting sensitive shorelines, wetlands, loon nesting sites and so forth, to be distributed at retail outlets and through the Lake Association;
6. Post signs at narrow channels notifying "No Wake Zone";
7. Continue the program to maintain shoal markers ("information buoys").
8. Provide educational material regarding the impacts of oil pollution from boat engines, and procedures to lessen such impacts.

Timeline: Some activities have been undertaken; others will depend on resources available (volunteers, and possibly printing resources).

## **6. CONTROL & PLANNING OF DEVELOPMENT**

### **6.1 Noise and Light Pollution**

Many people responding to questionnaires about lake issues and values identified tranquility and the ability to view the night sky as important values to residents. Unfortunately, increased development in cottage country often brings suburban characteristics. The light effects of excessive artificial lighting (area, yard, dock, driveway, walkway lights), and the sound of lawn mowers, high-power boat motors and personal watercraft, loud music and loud parties all carry significantly across water. Such intrusions are an increasing irritant, and detract from the goal of escaping to the lake for quiet and tranquility. Many concerns can be resolved as a matter of common sense and courtesy.

#### ***Objective:***

To prepare a voluntary 'Code of Conduct' for all lake users to make everyone aware of the impact of their actions on others.

#### ***Activities:***

1. Design and promote a "Code of Conduct" through Website, posters, newsletters;
2. Educate boaters about excessive noise on the water, and abatement systems available for engines;
3. Develop a reasonable guideline for noise/music activities for lake residents fostering a respect for neighbours;
4. Educate landowners about techniques and technologies for less exterior artificial lighting and issues of light trespass, and hold special night sky events such as star gazing, night hikes and lake legend storytelling at campfire events;
5. Work with townships on zoning by-laws, to address exterior lighting and noise issues through zoning and Site Plan Controls.

### **6.2 Official Plans and Zoning By-Laws**

The Lower Beverley Lake Association has participated actively with the Townships to update their Zoning By-laws, with a view to protecting the lake environment and ecosystem, and to prevent urbanization of the shorefront. Future opportunities for discussion can continue to promote sound lake planning objectives.

**Objective:**

To ensure that the townships update their Official Plans(OP) and Zoning By-laws in a manner consistent with this report and any other background reports, reflecting the most recent findings and recommendations of the Province; and to continue to participate actively with the townships to update Official Plans, zoning, and other pertinent regulations.

**Activities:**

1. Work with Townships to ensure that appropriate standards and safeguards are in place for new and redevelopment proposals;
2. Work the Township of Rideau Lakes and the Township of Leeds and the Thousand Islands to ensure that both have similar and parallel zoning by-laws regarding regulation of waterfront development;
3. Encourage Townships to adopt consistent and lake-wide standards for building height, shoreline setback distances, sleeping cabins, percentage of lot coverage, boat houses, septic systems, vegetation buffers within the 30 metre setback distance, etc.; Work with conservation partners and the Townships to identify and update information on wetlands, conservation zones, fish habitat, special habitats for species at risk and others including loon nesting sites etc. on the Official Plan Schedules, and relevant to Zoning By-Law.

Timeline: some of this activity has been ongoing, and will continue as resources permit.

**7. KEEP ECOSYSTEMS HEALTHY****7.1 Wildlife Habitat Sustainability**

Ecosystems are often incrementally weakened as they are diminished in size. Healthy habitats in the upland and shorelines of the lake, and throughout the watershed, provide multiple beneficial functions. These may include: erosion reduction; trapping and absorbing sediment and nutrients; hosting wildlife; reducing air pollution; moderating climate effects; and providing recreational and economic value. In this region, there exists one of Canada's highest biodiversities, because of the great variations of habitat.

**Objective:**

To protect, preserve, or enhance existing large blocks of upland and wetland habitat around the shoreline of the lake and in the watershed.

**Activities:**

1. Continue to work with study teams of conservation partners such as OMNR and Parks Canada in ecological studies underway in the Frontenac Arch Biosphere, to learn locations of both representative and critical habitats in the Lower Beverley Lake watershed;
2. Partner with conservation groups, agencies and landowners in strategies to conserve and protect significant wildlife habitats;
3. Work with landowners of wetland properties that impact on streams entering Lower Beverley Lake, and with conservation partners such as the Thousand Islands Watershed Land Trust, to conserve and protect these areas which buffer the lake as filters and nutrient absorbers, as well as representing vital wetland habitat;
4. Work with landowners and groups such as the Stewardship Council to replant disturbed, formerly landscaped and corridor areas between blocks of habitat with native species appropriate to those areas;
5. Investigate the impacts, if any, from former or current landfill sites.
6. Continue projects like the annual lake clean-up and encourage other projects to reduce litter pollution in the lake.
7. Continue projects such as the loon nesting platforms, and the eagle nesting sites.

**7.2 Species at Risk**

Ecosystems worldwide are under considerable pressure from far-ranging effects of development. There is a steadily growing number of species at risk—those plants and animals that are of concern, threatened, and endangered. While this region has one of the highest numbers of species at risk in Canada, there is an element of good news in the statistic. There are still large areas of healthy habitats in the upland and shorelines of the lake, and throughout the watershed, and there are great variations of those habitats.

**Objective:**

To protect species at risk in the region, both at the lake and in the watershed.

**Activities:**

1. Participate in monitoring and Recovery Plans, as designed by Environment Canada, Ontario Parks, and OMNR, in the Cataraqui River Watershed, for species such as map turtles, stinkpot turtles, eastern (formerly black) rat snake and others, through committees of volunteers;
2. Partner with conservation groups, agencies and landowners in strategies to conserve and protect significant wildlife habitats, such as spawning areas, breeding habitat for birds, reptiles and amphibians, and other plant and animal species;

3. Identify specific habitat locations where species at risk are known, and develop strategies such as conservation plans, isolation from disturbance, habitat improvement, landowner awards and other;
4. Communicate information about species at risk, and plans and projects at the lake for their protection, through newsletters to the membership and to other lake users;
5. Place awareness signs such as "Turtle Crossing" at critical locations; (note: not all turtle species are considered "at risk.")

### **7.3 Invasive Species**

"Invasive species" are plants and animals from ecosystems outside of our own, which have successfully established here and which often damage and disrupt the regional ecosystems and inhabitants. Hundreds of invasive species have established in Ontario over the years, and new species continue to arrive. Common amongst these are dandelion, English sparrows, starlings, cormorants, zebra mussels, purple loosestrife, Eurasian milfoil. Garlic Mustard, for example, has been found to retard hardwood tree germination and growth by up to 90%. While many invasive species are here to stay, sometimes eliminating native species, some effects can be limited and new threats may be avoided. There has also been a concern regarding the numbers of Canada geese and gulls and the influx of black bear and cougars.

#### ***Objective:***

To prevent new invasive species from establishing at the lake and in the watershed, and to diminish the effects of some that are now here.

#### ***Activities:***

1. Educate landowners of the importance of using native species of plants in landscaping and maintaining existing native ground cover and forests, to provide shelter and forage for native species while preventing invasive species to establish;
2. Educate landowners and lake users about possible new invasive species that may arrive here, and encourage measures to avoid "invasions", such as from live bait, arrivals on boat trailers, introductions from landscaping and soil and unintentional releases;
3. Place posters at visible locations and in newsletters and website, identifying invasive species;
4. Hold work sessions to replant formerly landscaped or disturbed areas with native species.



Timeline: Some of this activity has been initiated, but much of it will depend on volunteers willing to get involved.

## **8. WORK WITH THE GREATER COMMUNITY**

The community of lake residents is not isolated, but rather is very much a part of the economy and society of the regional community. In some ways, the same inter-connectivity links the ecosystem health of Lower Beverley Lake to the health of the community at large.

### ***Objective:***

To continue to partner with the community at large, and the agencies and groups that are part of that community, to achieve common goals.

### ***Activities:***

1. Continue to network with other lake associations, government and non-government groups in and beyond the Frontenac Arch Biosphere;
2. Continue to work closely with the Townships;
3. Continue to partner with government agencies whenever possible;
4. Continue to work in partnership, and by example, towards a healthy, safe, strong and sustainable community and ecosystem locally, in the Frontenac Arch Biosphere and in the broader Algonquin to Adirondack landscape;
5. Continue to work in partnerships towards a healthy, safe, strong and sustainable community in the lake watershed, as well as the larger Cataraqui Watershed.

## **9. SUPPORT YOUR LAKE ASSOCIATION**

The Lower Beverley Lake Association (LBLA) was founded in 1932, and incorporated in 2004. The LBLA has the following objectives:

- To foster preservation of the pristine character of the lake environment
- To serve as a focal point for lake stewardship and improvement projects
- To provide information concerning matters related to the lake community
- To provide a forum for lake users to meet and to get know each other

### **9.1 Serving on Boards and Committees**

Achievements of the Lower Beverley Lake Association cannot continue without the dedication of a large number of people. Combined efforts of many volunteers make projects enjoyable and rewarding, and are of tremendous benefit to every aspect of life at the lake. When many share the load and responsibility, more projects can be undertaken, projects have higher rates of success, the rewards are great, and the

work is less of a burden. Few can donate all of their free time, but many can donate some time and expertise to lake association activities.

Conversely, when the many chores of a successful Association are carried by too few, important objectives may not be effectively met, and once enthusiastic members may "burn-out."

**Objective:**

To increase the interest of LBLA members in becoming active on the Executive, and in serving on committees or otherwise participating.

**Activities:**

1. Develop a strategy to attract new thinking and talent to the Executive, such as holding workshops on volunteerism and Board development;
2. Recognize the contribution of volunteers through an awards program;
3. Prepare a handbook on the background and the work of the Executive, as a tool in recruiting volunteers and new Board members;
4. Develop youth activities, and designate some projects which they could manage, assist with or complete such as recreation programs, monitoring and restoration;
5. Continue to hold an annual social event such as golf, a picnic and entertainment, to celebrate work completed in projects and to present awards to volunteers and landowners.

Timeline: Recruitment is ongoing; implementation of many items will require volunteers.

**Implementation of this Plan**

**Action Matrix**

This plan is an annual tool for evaluation and improvement, and for work planning and budgeting. Setting Priorities among a typically long wish list of potential goals and actions is an essential part of planning. Once this Comprehensive Plan is completed and approved, and periodically thereafter, it will be important to select those goals and actions to give priority.

While some of the objectives and activities presented have been under way and are on-going for varying periods of time, others are new or proposed. The successful implementation, and the timing of such implementation, of many of these proposed efforts will depend on the participation and interest of LBLA members, and in some cases, the availability of other resources.

We will utilize the Action Matrix below for our work. As priorities are set, it is important to identify the individuals who will provide leadership for each task, the resources needed, and the measurable results expected.

**Year:**

- **Area of Interest #**
- **Objective**
- **Tasks to do**
- **By when**
- **Leader(s)**
- **Assisted by**
- **Resources required**
- **Communication need**

### **Acknowledgements**

The Lower Beverly Lake Association Executive Committee would like to thank the many lake users and partners for their contribution to the development of this plan. Organizations that partnered with the Lower Beverley Lake Association in developing its lake management plan are:

- Algonquin to Adirondacks Conservation Association,
- the Ontario Ministry of Natural Resources,
- the Cataraqui Region Conservation Authority (CRCA),
- the Gananoque River Waterways Association (GRWA),
- the Leeds County Stewardship Council (LCSC),
- the Centre for Sustainable Waterways (CSW),
- the Department of Fisheries and Oceans (DFO),
- The Ontario Ministry of the Environment

## Glossary

Some of the terms used in this plan may be unfamiliar to the reader. Because such words actually have very specific meanings in the discussions sections, particularly ISSUES, they have been used in the text. Hopefully, the definitions below will explain those unfamiliar words and terms;

**Algae** - microscopic, light-synthesizing single cell plants, commonly found in water; there are many species, and are often found in colonies in strands, blobs or floating individually

**Chlorophyll a** - the green photosynthetic pigment found in living plants, including algae

**Eutrophic** - a nutrient-enriched lake, high in phosphorous and nitrogen; generally with excess growth of algae, poor in clarity and little or no deep-water oxygen

**Hypolimnion** - the lower, colder layer of water in a lake, largely stagnant and remaining at a constant temperature

**Isopleth** - a line on a map connecting points with the same value; eg. water depths

**Mesotrophic** - lakes which are moderately enriched; between eutrophic and oligotrophic

**Morphometry** - refers to the lake size and outside shape, including are, volume, fetch, mean depth, shoreline length etc.

**Oligotrophic** - nutrient poor lakes; deep, clear, cold, oxygen-enriched, low algae concentrations

**Phytoplankton** - free-floating microscopic plants

**Trophic status** - refers to the level of nutrient supply