



Indicators of Watershed Health Executive Summary

The goal of the Muskoka Watershed Council is to preserve and enhance the air, water and terrestrial ecosystems of the watersheds in Muskoka for the environmental, health, economic, spiritual and intrinsic values they provide. This is to be done through several activities including:

- Education and public information programs
- Encouraging environmentally responsible lifestyles
- Promoting sound land and water use planning
- Promoting Best Management Practices for a variety of activities; and
- Developing implementation and reporting programs to assess and monitor the watersheds.

Early in 2002, the Watershed Council began to develop a set of indicators of watershed health that will form the base of a watershed report card. A report card is a useful tool for providing the public with a concise evaluation of the state of the watersheds of Muskoka. By establishing benchmarks and targets for key programs and environmental values, change in the watersheds can be monitored and evaluated, and proactive programs or remedial action can be taken to ensure the long-term health of the area.

The process used by the Muskoka Watershed Council to develop a set of indicators of watershed health involved a series of technical and non-technical workshops. The process began in May 2002 with a series of public consultation sessions held in a variety of locations across the watersheds. Those sessions resulted in the development of a set of public values, identified stresses in the watershed, set a “top 10” action list and ultimately resulted in the Draft Goals and Objectives for the Watershed Council. In November 2002, a group of 29 technical experts came together to provide advice on indicators that would assist the Muskoka Watershed Council and the general public in assessing the health of the watersheds of Muskoka from a technical perspective. In February 2003, the members of the Muskoka Watershed Council came together in a similar workshop and developed a list of indicators that reflected the concerns of the public with respect to the health of the watersheds. These two lists of indicators form the basis upon which the Muskoka Watershed Council’s suite of indicators is based.

The following suite of indicators reflects the advice of the Technical Advisory Committee and the recommended areas of interest identified by the Muskoka Watershed Council with respect to key aspects of watershed health.

Indicators of Watershed Health

Water that is Swimable

A healthy watershed will have lakes and rivers that are swimable as defined by:

- *No public bathing beaches closed or recreational swimming areas displaying bacteria counts in excess of provincial standards for body contact recreation as a result of human activities.*

- *No nuisance algae blooms*

The Muskoka Watershed Council will use the following indicators to determine swimability:

- Beach closings, measured in number of occurrences and total number of days closed.
- Bacteria counts, measured as the number of occurrences and total number of days that a lake association measures bacteria levels above provincial guidelines.
- Phosphorus concentrations, measured as the number of occurrences of spring turnover phosphorus measurements that exceed established benchmark levels.
- Changes in water clarity (i.e. secchi disc) measured as the incidence of the annual average water clarity measurement less than long-term average measurement for a given lake.

Water that is Drinkable

A healthy watershed will have lakes and rivers that are drinkable as defined by:

- *Municipal treated water that is safe for human consumption; and*
- *Surface water and groundwater that are safe for human consumption with only standard disinfectant procedures available to private systems.*

The Muskoka Watershed Council will use the following indicators to determine drinkability:

- Incidence of unacceptable bacteria counts in treated drinking water (private and public supplies)
- Incidence of malfunctioning or inadequate septic systems
- Number of boil water advisories
- Report of spills, process upsets and other incidents that release chemicals into the raw water supply and which could threaten drinking water treatment plants
- Concentration of chemicals as a result of human activity in raw water (e.g. well driller's records, municipal drinking water reports)

Water that is Fishable

A healthy watershed will have lakes and rivers that are fishable as defined by:

There shall be no restrictions on the human consumption of fish in the waters of the inland lakes and rivers of Muskoka or Georgian Bay as a result of human inputs of persistent toxic substances.

The Muskoka Watershed Council will use the following indicators to determine fishability:

- Fish consumption advisories

Air that is Breathe-able

A healthy watershed will have air that is breathe-able as defined by:

No incidence of respiratory ailments as a result of human inputs to the air.

The Muskoka Watershed Council will use the following indicators to determine breathe-ability:

- Incidence and length of smog alerts issued
- Number of lakes with a pH less than 6

Ecosystems that are Healthy

A healthy watershed will have healthy natural areas as defined by:

- *Maintenance of the ability of natural areas to function normally with no environmental stress (ecosystem health) and to cope with changes in environmental conditions, i.e. to be able to maintain their process of self –organization on an ongoing basis (ecosystem integrity).*
- *Maintenance of the diversity of biological communities, species and genetic variation within species.*

The Muskoka Watershed Council will use the following indicators to determine the state of natural areas:

- Presence and abundance of selected key species within the food web, including top predators, mid-trophic level species, and species at the food base. (e.g. loon counts, frogs, benthic analysis)
- Quantity and quality of particular habitat types (e.g. changes in land cover or habitat such as forest, wetlands, lake trout habitat, agriculture, urban areas)
- Quality of shoreline and buffer area
- Number and abundance of endangered native species, including fish, waterfowl, plants and invertebrates
- Cumulative number and abundance of exotic species introduced
- Specific stresses on habitat (e.g. phosphorus concentrations, pH levels)

A Physical Environment that is Sustainable

A healthy watershed will have a sustainable physical environment as defined by:

Land development and land use that is compatible with maintaining aquatic and terrestrial habitat of a quantity and quality necessary and sufficient to sustain a widespread collection of fish and wildlife populations.

The Muskoka Watershed Council will use the following indicators to determine the state of the physical environment:

- Long term protection for habitat (e.g. ownership by a conservation organization, zoning, conservation easements)
- Changes in large scale land use (e.g. wetlands, forest cover, urban areas)
- Quantity and quality of stream base flow
- Incidence of water levels above or below the chart datum of 176.5 on Georgian Bay, or established rule curves for inland systems
- Quantity of groundwater consumption
- Number of man-made shoreline structures and extent of shoreline alteration

- Land use and land use practices including, for example, amount of land zoned to protect environmentally significant areas (EP, NR), lot creation, building size, waterfront density.

Community Values that are Environmentally Sustainable

A healthy watershed will have sustainable community values as defined by:

- *An economy that is viable and sustainable and provides jobs for people living in the watersheds.*
- *An environmental ethic that supports the desired outcomes of clean water and healthy natural areas.*

The Muskoka Watershed Council will use the following indicators to evaluate community values:

- Employment levels in key resource based activities
- Total employment in the watershed
- The number of schools that have been recognized as Muskoka Green Schools
- The number of businesses that are recognized as practicing good environmental behaviour.
- The number of lake associations actively involved in a lake stewardship program measured as more than 75% of lake residents actively involved in stewardship activity.
- Number of households recognized as being Muskoka Watershed Friendly

The Indicators Report provides a set of indicators for use by the Muskoka Watershed Council to review and evaluate the state of the health of the watersheds of Muskoka. The indicators will also form the basis for a Watershed report card that will provide the public with an evaluation of that state of the watersheds. The report focuses on a relatively small number of pertinent indicators that reflect key aspects of watershed health. By keeping the indicators simple, it is hoped that a broader number of people will use them to evaluate actions and promote sustainable development.