

Frequently Asked Questions

Report on Phosphorus Loads to Lake Simcoe 2007, 2008 and 2009

Purpose:

The Report on Phosphorus Loads to Lake Simcoe 2007–2009 has been prepared by the Ontario Ministry of Environment, in partnership with Lake Simcoe Region Conservation Authority (LSRCA).

Phosphorus was identified as a problem for the health of the lake in the 1970s. We have been monitoring it to help us understand its sources and impacts. The purpose of this report is to share with our watershed communities the most current data about the amount of phosphorus entering the lake.

The phosphorus loads presented are for the three hydrological years (2007, 2008 and 2009) following the last report. Hydrological years go from June of one year to May of the next, so this period covers June 1, 2007 to May 31, 2010.

Lake Simcoe Protection Act (2008) & Lake Simcoe Protection Plan (2009)

In 2008, the Province of Ontario implemented the [Lake Simcoe Protection Act](#), which provides the legislative framework for protecting Lake Simcoe and its surrounding watershed. Following the Act was the development of the [Lake Simcoe Protection Plan](#) in 2009.

1. What is Phosphorus?

Phosphorus is a naturally occurring nutrient in our environment and is also commonly found in commercial fertilizers and other household products. While Phosphorus is a valuable nutrient that helps plants to grow, such as our lawns and gardens, when there is an excessive amount of phosphorus, it can have a negative impact on our watershed environment, including the quality of water in Lake Simcoe and its river system.

2. Why measure the amount of phosphorus entering the Lake?

In order to improve the health of Lake Simcoe we must know how much phosphorus is entering it and what the primary sources are. When we have this information we have indicators over time to gauge how and if our collective protection and restoration efforts are positively impacting the lake and where to focus efforts to reduce phosphorus.

3. Why do we need to address phosphorus?

Excessive phosphorus has been the most significant cause of water quality impairment in Lake Simcoe and its rivers, or tributaries. It leads to excessive aquatic plant and algal growth in the lake.

When algae decay in the deeper areas of the lake, they create an oxygen shortage that affects coldwater fish such as lake trout and lake whitefish, which need sufficient levels of oxygen to survive and reproduce. Although there is more oxygen available in the deep cold parts of the Lake now than there was 30 years ago, we still need to work on raising the oxygen levels so the fish community can sustain itself. This means reducing the amount of phosphorus that goes into the lake.

High levels of phosphorus also contribute to nuisance aquatic plants. For more information on aquatic plant growth and the impact of phosphorus, read our publication [Lake Simcoe Science - Aquatic Plants](#).

4. Is phosphorus reduction the only indicator being used to measure the health of Lake Simcoe and its watershed?

No. Phosphorus reduction is only one of several indicators identified in the Lake Simcoe Protection Plan for measuring the lake's health. The Lake Simcoe Protection Plan identifies and directs a multitude of actions required to restore the overall health of the Lake, including:

- § restoring the health of the coldwater fishery and other aquatic life
- § improving water quality, including reducing the amount of phosphorus going into the lake
- § maintaining water quantity
- § protecting and rehabilitating important natural areas such as shorelines, and
- § addressing impacts of invasive species, climate change and recreational activities.

5. How often is the phosphorus report issued?

Reporting on the phosphorus loads to Lake Simcoe is typically done every three hydrological years. It takes approximately two years to collect, review and analyze the data provided by a number of partner organizations. Detailed quality assurance checks are conducted on the data and the loading calculations to ensure that the phosphorus loading results are accurate.

6. When was the last Phosphorus Loads Report issued?

In partnership with the Ontario Ministry of the Environment, LSRCA published the last report in 2009 presenting findings on how much phosphorus entered the lake in 2004, 2005 and 2006, hydrologic years. This report can be found online at [Report on Phosphorus Loads to Lake Simcoe 2004-2007](#).

7. What are the results from the current report on phosphorus loads to Lake Simcoe?

This report presents findings on how much phosphorus entered Lake Simcoe from various sources in 2007, 2008, and 2009.

The overall results show an increase of phosphorus entering the lake in 2007 (97 tonnes) and 2008 (116 tonnes), followed by a return in 2009, to the previous five-year annual average of 72 tonnes (averaged over 2002–2006).

Based on scientific data, it is estimated that the increase in phosphorus in 2007 and 2008 was a result of greater precipitation (snow & rain). Both years were very wet in comparison with previous years.

8. Why are phosphorus loads higher during a wet year?

Phosphorus loads fluctuate over time due to constantly changing factors such as weather.

Phosphorus load levels in tributaries, such as a river or stream, are a combination of phosphorus concentration -- that is, the amount of phosphorus in each litre of water -- and water flow, so increased water flow will result in an increased phosphorus load level. For example, if the phosphorus concentration level is low in a tributary, such as a river or stream, but the water flow is increased due to heavier than normal precipitation, the phosphorus load could also increase.

Phosphorus is transported into rivers, streams and the lake during rainfall and snowmelt events. During extremely wet years more phosphorus can be transported into the tributaries and Lake Simcoe increasing the total phosphorus load. Since we cannot control the weather, we try to reduce the sources of available phosphorus and stop it from being washed into tributaries and the lake.

9. What affect did the high phosphorus loads in 2007 and 2008 have on the water quality of Lake Simcoe?

We do not always see an immediate response in the lake after a year of high phosphorus load, as many factors are involved. In the immediate years following the 2007 and 2008 loads, we did see a slight increase in phosphorus and algae in the lake, as well as a decrease in dissolved oxygen at the lake bottom.

After the loads became more typical, the lake appeared to quickly recover, with a decrease in phosphorus and algae and an increase in dissolved oxygen.

10. How has phosphorus loading changed since the early 1990s?

The average phosphorus load to Lake Simcoe is lower now than it was during the early 1990s when it was consistently well over 100 tonnes. The Lake's water quality has improved as well, with more oxygen available to fish in the deep waters of the lake as well as lower phosphorus concentrations in the spring.

11. What is guiding our work in Phosphorus Management?

Under the Lake Simcoe Protection Plan, the province has set a phosphorus loading goal of 44 tonnes per year. It represents an ecological target to create optimal conditions for the cold water fishery in Lake Simcoe.

In June of 2010, as part of the provincial Lake Simcoe Protection Plan, the Ministry of the Environment released the Lake Simcoe [Phosphorus Reduction Strategy](#).

This strategy identifies specific reduction goals and potential reduction opportunities for each major source or sector of phosphorus within the watershed.

12. How will reductions in phosphorus be achieved?

Ontario's Phosphorus Reduction Strategy for the Lake Simcoe watershed is based on shared responsibility to continually reduce phosphorus loads over time. These actions are designed to achieve proportional reductions from each major contributing source.

The strategy uses an adaptive management approach, which allows us to update or revise it as new science and technology that could help us meet the targets becomes available. The strategy will be reassessed every five years.

We have a history of success in working closely with watershed partners. We will review and update the Phosphorus Reduction Strategy, as necessary, to ensure its success.

LSRCA undertakes numerous activities and projects, in collaboration with our many municipal, community and other government partners, to reduce the amount of phosphorus being washed into the lake, including:

- innovative technologies such as engineered wetlands
- state-of-the-art stormwater retrofits
- private landowner stewardship projects to reduce and prevent soil erosion and restore natural buffers along streambanks

- community tree planting events and workshops
- working with the agriculture industry to implement best management practices for a multitude of farming activities
- classroom and outdoor education programs for youth
- public outreach at fairs, festivals and through community group activities

To learn more about what we do, check out the **Programs & Services** section of our website: www.LSRCA.on.ca/programs

13. What can I do to help reduce phosphorus from entering the lake?

There are many ways that we can all contribute to decreasing phosphorus input to Lake Simcoe, some are as simple as switching to phosphate-free fertilizer, eliminating pesticide use, leaving a natural buffer along rivers, streams and creeks and planting rain gardens.

Each and every facet of our modern-day lives impacts the health of our Lake and the watershed as a whole. We have a shared responsibility to work together, continually, to reduce our impact on these essential natural resources.

The Public Report on Phosphorus Loads 2007–2009 contains information on how to connect to provincial, municipal and Lake Simcoe Region Conservation Authority resources and programs. You can also visit the Ministry of the Environment’s website to find out [What You Can Do To Help - My Actions, Our Lake Simcoe](#) or continue to explore our LSRCA website.

LSRCA publishes a Watershed Report Card, reporting on a variety of indicators that illustrate the health of the watershed and lake. The 2013 Watershed Report Card will be released in March. Check back at www.LSRCA.on.ca/reports to read a copy.

Ministry of the Environment (MOE)

The MOE is responsible for protecting clean and safe air, land and water to ensure healthy communities, ecological protection and sustainable development for the people of Ontario.

Using stringent regulations, targeted enforcement and a variety of innovative programs and initiatives, the ministry continues to address environmental issues that have local, regional and/or global effects.

Lake Simcoe Region Conservation Authority (LSRCA)

Established in 1951, LSRCA provides leadership in the protection and restoration of the environmental health and quality of Lake Simcoe and its watershed. Working with our community, municipal and other government partners, we deliver important environmental programs and services.

Our role as co-authors of this report is to provide scientific data collected through our lake monitoring program and the analysis of that data. Readers may also be interested in the accompanying technical report, Annual Water Balances and Total Phosphorus Loads to Lake Simcoe (2007–2009) that documents the scientific methodology used.