



# WATER

3.0

The Region's Water Resources

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Benchmarks of Health



## The Region's Water Resources

Clean, fresh water is one of the most precious resources we have: it is vital to our existence and our economy. We depend on it water for drinking, for irrigating crops, for cooling industries and for industrial processes, for transportation, waste assimilation, and recreation.

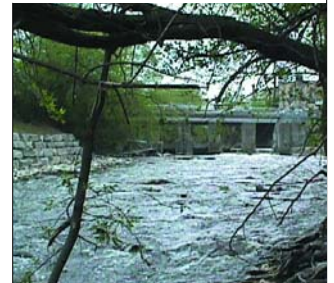
### How Water Moves

In the environment, water is in constant motion in what is called the hydrologic cycle. Water is stored in the Region in its lake, rivers, streams, wetlands, ponds, aquifers and vegetation. This water is continually evaporating to form clouds in the atmosphere. When it rains, the water vapour in the atmosphere falls to the earth in the form of rain, snow or hail. If this rain falls on an impermeable surface such as clay soils or pavement, most of it runs overland into streams, rivers or lakes. On permeable soils, such as those of the Oak Ridge Moraine, most of the rain that falls percolates through the soil to replenish, or "recharge" underground aquifers. Water can stay in these aquifers for thousands of years. Some of it, however, moves laterally and surfaces as springs. These upwellings form the headwaters of our rivers and provide baseflow to streams and rivers.

York Region is blessed with access to lots of fresh water. The water needed for drinking, irrigation, industrial and other uses comes from many different sources: Lake Ontario, Lake Simcoe, kettle lakes, the Region's river system, and groundwater.

### Groundwater

The Region of York contains many aquifers that contain good quality water. The best quality water is usually obtained from the deepest aquifers; upper level aquifers are the least protected from pollution. The largest and most productive aquifer system within the Region is a lower aquifer called the Alliston Aquifer Complex. The communities of Nobleton, Schomberg, King City, Aurora, Newmarket, Holland Landing, and Sharon/Queensville obtain all or part of their municipal water supply from here. The Region's groundwater is a reliable and cost-effective source of drinking water, especially in areas that cannot practically be supplied with surface water. Almost a third (30%) of the Region's population depends on groundwater for drinking and other domestic uses. Groundwater is also used for irrigating golf courses, maintaining private recreational ponds, and in groundwater-based heating and cooling systems.



York Region has abundant water resources which are used for drinking, irrigation and industrial purposes.



Lake Simcoe, at the northern edge of the Region, is Ontario's fourth largest inland lake.

## Surface Waters

### Lake Ontario

York Region is part of the Great Lakes Basin. Lake Ontario, the last in the chain of the Great Lakes provides drinking water and waste assimilation for most of York Region's residents. About 68% of the Region's 1998 population (approximately 453,000 people) depend on treated water from Lake Ontario for drinking and other domestic use. Wastewater from 94% of the Region's municipally-serviced population (approximately 626,000 people) is transmitted by the York-Durham Sewage System to the Duffin Creek Water Pollution Control Plant in Pickering where it is treated and then discharged to Lake Ontario.

### Lake Simcoe

Lake Simcoe lies at the northern edge of the Region. The fourth largest inland lake in Ontario, it provides drinking water for the communities of Keswick and Sutton. The Lake also provides process and cooling water for many local industries, and is a point of discharge for treated wastewater. Lake Simcoe is a major recreational resource: leisure activities such as boating, cottaging, camping, swimming, and fishing are estimated to contribute \$160 million annually to the local economy.

### Kettle Lakes

The Region has dozens of kettle lakes, another legacy from the last ice age. Unlike other lakes, kettle lakes usually have little or no inflow and outflow. For this reason, pollution problems and eutrophication (caused by excess nutrients) can be magnified. Many kettle lakes, including Lake Wilcox and Musselman Lake are surrounded by residential homes and cottages, and are used for recreational activities such as swimming, boating and fishing.

### Rivers and Streams

The Oak Ridges Moraine is a drainage divide that separates the Lake Simcoe and Lake Ontario watersheds. North of the Moraine, the Pefferlaw Brook, and the Black, Maskinonge, and Holland Rivers flow into Lake Simcoe. South of the Moraine, the Humber, Don, and Rouge Rivers flow into Lake Ontario. These rivers and their streams drain York Region, convey flood waters, provide water for farm stock, and provide habitat for diverse aquatic communities.

## Aquatic Communities

Limited information was obtained on the fish communities in the Region's rivers. The rivers tend to be dominated by warmwater fish communities. Coldwater fish such as brook trout are still found in some of the headwater areas of the East Humber, Rouge, Holland and Black Rivers. Lake Simcoe has a very diverse fish community. About 60 species are found in the Lake, including panfish, major game species, and introduced species. The Lake's fish community has changed considerably over the last 100 years because of overfishing, habitat alteration, nutrient pollution and the introduction of exotic species such as carp and rainbow smelt.

## Recreational Uses

York Region's lakes and rivers support many recreational uses including swimming, fishing, boating and cottaging. Lake Simcoe is an especially important regional resource for recreation and approximately \$500 million is spent annually on tourism and recreational activities in the Lake Simcoe watershed. The Lake boasts both a coldwater and warmwater fishery, and receives the greatest angling effort of any inland lake in Ontario, with an estimated 172,000 anglers visiting the Lake in 1990. Ice fishing is three times more popular than fishing in the summer, with an estimated 2,000 to 4,000 ice huts put on the Lake each winter. During the ice fishing season, the most sought-after species are lake trout and whitefish.

## Values of the Resource

The Region's ground and surface waters have many values. The major human use values are: drinking water; irrigation of crops; watering livestock; receiving stormwater, receiving and assimilating waste; industrial process and cooling water; recreational activities; and aesthetic. The major ecological functions provided by healthy ground and surface water systems include: retaining stormwater; conveying stormwater; recharging aquifers; maintaining baseflow in streams and lakes; filtering pollutants; and providing habitat for aquatic communities.



York Region's lakes and rivers support many recreational uses such as swimming, fishing, boating and cottaging.



Nutrients from sewage treatment systems, animal feces and fertilizers can lead to excess plant and algae growth in water.

## Stresses on the Region's Water Resources

### Pollution

The discharge of pollutants into ground or surface waters can have a dramatic impact on water quality. Pollution can come from many sources. Sediments originating from eroded stream banks or soil from construction activities can impair water clarity and cover up fish habitat. Agricultural run-off can carry pesticides and fertilizers into surface waters. Agricultural practices such as poor manure storage can lead to nitrate and bacterial contamination of watercourses.

Nutrients from sewage treatment systems, animal feces and fertilizers can lead to excess plant and algae growth in water bodies. While stormwater volume can be a significant problem in urbanized areas, the quality of stormwater is also an issue, as it typically picks up bacteria, nutrients, chemicals and metals from streets, farms and yards and then deposits them in streams and rivers. Industries can discharge pollutants into municipal wastewater treatment systems. Industrial spills and improper disposal of household hazardous wastes (e.g., cleaners, bleaches, paints, solvents, and oil) can result in the contamination of water sources. Air borne pollutants such as acid rain can also be deposited into our streams, rivers and lakes.

#### Municipal Wastewater Treatment

In the Region wastewater (sewage) is treated in one of two ways: by municipal treatment facilities or private sewage disposal systems (septic systems). Municipal treatment takes place in community based municipal wastewater systems or the York-Durham Sewage System. Community based municipal wastewater systems are operated by York Region and include trunk sewers, pumping stations and seven Water Pollution Control Plants that service the communities of Keswick, Sutton, Holland Landing, Mount Albert, Kleinburg, Stouffville and Schomberg. The wastewater generated by most (94%) of the municipally serviced population is conveyed by the York-Durham Sewage System to the Duffin Creek WPCP in Pickering. Here it is treated, and the effluent is discharged to Lake Ontario. The effluent from all the WPCPs that service York Region meets the Ministry of the Environment requirements.

#### Industrial Sewer Use

The Region's Industrial Sewer Use By-Law sets limits on what can be discharged to municipal sewers. Staff from the Transportation and Works Department regularly inspect industrial wastewater discharges to the municipal sewer systems to ensure compliance with the limits set under the Sewer Use Bylaw.

## Septic Systems

Rural areas within York Region are serviced primarily by on-site private sewage disposal systems (septic systems). There were an estimated 42,000 septic systems in the Region in 1998. From 1990 to 1997, an average of 446 permits for new systems were issued by the Region annually. The lifespan of septic systems ranges from 10 to 25 years and malfunctioning systems can contaminate the surrounding area with fecal bacteria and nitrates. From 1990 to 1997, in response to complaints received, York Region Health Services found an average of 182 malfunctioning systems a year.

## Stormwater

Stormwater is a form of wastewater that results from rainfall and snowmelt in urban and rural areas. Stormwater poses a significant problem in urban areas because of the large amount of impervious surfaces present (such as roads, parking lots and roofs). Because of these impervious surfaces, rainwater cannot infiltrate into the ground, as it does in natural areas or on agricultural land. If unmanaged in urban areas, large flows of stormwater rush into stream and rivers, causing erosion and increasing the potential of flooding. Stormwater also picks up pollutants as it runs over roads and parking lots. These pollutants can include spilled materials such as gasoline or oils, bacteria from animal feces, road salt, deposited atmospheric pollutants, and toxic compounds such as pesticides, fertilizers, and heavy metals.

Storm sewers and ditches are used to remove water from roadways so that flooding is avoided. These sewers transport water directly to a water body or storm water management pond. Stormwater management to control the quantity of stormwater has been practiced in the Region since the early 1980s. Recently, measures to improve the quality of stormwater have been incorporated into stormwater management practices.

## **Physical Restructuring**

Physical restructuring can have a dramatic and sometimes irreversible effect on our water resources. Dams built to control flooding also act as barriers to fish movement. Straightening or armouring streams or putting them underground makes for efficient stormwater conveyance but limited habitat. Disturbance of groundwater discharge areas can lessen flows in rivers and filling in wetlands will eliminate all the ecological functions that they perform. The action of urbanization - replacing permeable surfaces with impermeable pavement - alters the hydrologic cycle dramatically. Less infiltration of rain takes place, more overland runoff must be dealt with, and flood potential increases in local streams and rivers.



Stormwater is wastewater that results from rainfall and snowmelt.



Purple loosestrife can colonize and degrade wetlands, driving out other plants and the animals that depend on those plants.

## Resource Consumption

Over-consumption of water resources - especially groundwater - is using water at a rate faster than it is replenished by nature. While water supplies are relatively plentiful in York Region, over-consumption is a potential problem that cannot be overlooked. Because of the predicted increase in population to 1,008,000 by the year 2011, the Region is studying how best to obtain water to supplement the existing supply in the future, and is working to implement water conservation programs throughout the Region.

## Introduction of Foreign Species

The introduction of non-native species of aquatic plants and animals can upset the equilibrium in aquatic habitats. This can become a significant problem where introduced species lack predators and aggressively out-compete local plants or animals for resources. Three noteworthy introduced species in the Region are zebra mussels, purple loosestrife and the spiny water flea. Zebra mussels were first observed in Lake Simcoe in 1994, and have since spread to many inland lakes and rivers. On the one hand, zebra mussels have improved water clarity where they have become established. On the other hand, communities such as Keswick that take their water from Lake Simcoe have had to install chlorination systems to stop the mussels clogging water intake pipes. Zebra mussels may also be responsible for a decline in the population of freshwater clams in Lake Simcoe, and an increase in the growth of blue-green algae that cause taste and odour problems in drinking water.

Purple loosestrife is a tall plant with a spike of bright fuschia flowers. First introduced from Europe in the early 1800s, it can now be found throughout North America. In York Region, colonies of note can be found in the Holland River at Roger's Reservoir, Black Creek by the Sutton Dam, and the Pefferlaw Impoundment. Purple loosestrife can colonize and degrade wetland areas, driving out other plants and animals that depend on those plants.

The spiny water flea is one of Lake Simcoe's most recent aquatic invaders. It is a tiny crustacean - less than half an inch long - with a long, sharp, barbed tail. Originally native to Great Britain and northern Europe, the creature was found in Lake Huron in 1984. It most likely arrived in North America in the ballast water of an ocean-going freighter and made its way to Lake Simcoe in the bilge water from a boat or a bait bucket. The spiny water flea is now well established in Lake Simcoe. It reproduces rapidly, and has few predators because of its long tail, which makes it unappetizing for small fish. It is difficult to predict what impacts the spiny water flea will have on the lake and other aquatic ecosystems. Scientists worry that because of its consumption of plankton, the spiny water flea will cause a decrease in populations of species such as perch that also feed on plankton.

The ultimate impact of zebra mussels, purple loosestrife, the spiny water flea is yet unknown.

# The Current Condition of the Region's Water Resources

## Groundwater

### Quality

Groundwater quality is usually determined by the characteristics of the soil and rocks through which it passes. Groundwater typically becomes highly mineralized. Water drawn from deep sources for municipal supply is naturally filtered as it flows through the ground and so typically contains few or no disease-causing microorganisms. Water quality in the Region's aquifers varies, and quality may also vary within an aquifer. Overall, York Region's groundwater is considered moderately to very hard with slightly elevated levels of iron and manganese.

With unconfined (upper) aquifers, there is little protection from surface contaminants migrating down to the water table, and groundwater quality may be extremely variable (e.g., seasonally) since it is immediately affected by surface runoff. Except for the three Stouffville wells, all municipal wells in York Region take water from confined (lower or intermediate) aquifers that are better protected from surface contamination.

One recent incident of well contamination in York Region occurred in Whitchurch-Stouffville. In 1986, it was discovered that a number of relatively shallow, unconfined, private wells had elevated levels of sodium chloride, nitrates and bacteria due to contamination from road salt and leaking private sewage disposal systems. In 1997, the Ballantrae-Musselman Lake water system began operation to provide an alternate water supply for affected residents.

### Quantity

There has been concern expressed in the past about the rate of groundwater withdrawal from the lower aquifer in the Newmarket-Aurora area. Excessive use of groundwater can result in the supply being withdrawn faster than it is replenished by nature. If this happens, it can cause a lowering of the water table, which can in turn reduce water levels in nearby streams, lakes, wetlands, and even other wells and aquifers. Over-consumption and depletion of the resource is a major concern in the Yonge Street Aquifer. Current groundwater supplies will not sustainably meet the projected growth and demand in Newmarket and Aurora. Accordingly the Region has initiated a program to augment the water supply with water from Lake Ontario.

Water conservation can have a significant impact on water use. The Region has developed a water conservation program to reduce water waste and increase water use efficiency.



Current groundwater supplies will not meet the projected growth and demand in Newmarket and Aurora.



Lake Simcoe has experienced algae blooms, nuisance weed growth, and a declining coldwater fishery.

## Surface Water

### Lake Ontario

Along Lake Ontario's nearshore, water quality conditions are strongly linked to water quality of the watercourses and sewers flowing into the Lake. Phosphorus levels in nearshore waters exceed the provincial water quality guideline. Bacteria levels in nearshore waters are often high enough to close some beaches along the waterfront. Elevated levels of heavy metals and toxic organic compounds are also present along the waterfront, especially in the vicinity of river mouths, sewer outfalls, Wastewater Treatment Plant effluent discharge pipes, and where water circulation is poor. As with the other Great Lakes, Lake Ontario contains many persistent toxic pollutants. Levels of persistent toxic contaminants such as DDT in water and wildlife have decreased since the 1970s because of bans and restrictions on their production and use. In 1987, government agencies began to develop a Remedial Action Plan (RAP) to address the complex environmental problems facing the rivers and waterfront in the Toronto area. Implementation of the RAP began in 1996.

### Lake Simcoe

Concerns about water quality in Lake Simcoe first arose in the late 1970s, when observers began to notice significant changes in the Lake. Algae blooms became a common occurrence, nuisance aquatic weeds began to grow along the shoreline, and the numbers of coldwater fish, especially lake trout and whitefish, dramatically declined. In the early 1980s, in response to concerns over the decline in the coldwater fishery, studies were initiated under the Lake Simcoe Environmental Management Strategy. These studies concluded that agriculture and urban growth were responsible for increasing nutrient levels in the lake. The excess nutrients, primarily phosphorus, were leading to eutrophication. Actions taken since that time, including setting loading limits for sewage treatment plants, have reduced phosphorus inputs into the Lake to about 100 tonnes a year. The target for a healthy coldwater fishery - 75 tonnes a year - will require actions on many fronts to deal with inputs from agriculture, urban areas, sewage treatment systems and septic systems, streambank erosion and inputs from the greatest source, the Holland River, which includes the Holland Marsh.

### Kettle Lakes

Water quality concerns in Lake Wilcox prior to 1998 included declining fish quality and fish kills, excessive growth of nuisance aquatic plants, blue-green algae blooms, and hydrogen sulphide (i.e., rotten egg) odours following windy days. Monitoring showed a complete lack of oxygen in the water below 5 metres in depth during the ice-free season and high phosphorus concentrations. Major sources of pollutants to the Lake include stormwater runoff that carries phosphorus from lawn fertilizers and chloride from road salt. The Town of Richmond Hill is working with the Lake Wilcox community and the TRCA to restore the health of Lake Wilcox.

Detailed monitoring of the condition of Musselman Lake began in 1997. This kettle lake also suffers from high phosphorus levels that lead to occasional blooms of blue-green algae.

## Rivers and Streams

The major rivers in the area also suffer from high levels of phosphorus. Although phosphorus concentrations have declined since the 1970s in most of the Region's major rivers due to improved sewage treatment and restrictions on phosphate levels in detergents, the mean annual phosphorus levels for these rivers remain higher than the target set in the Provincial Water Quality Objectives. The Holland River has values that are markedly higher than the other rivers flowing into Lake Simcoe. The Rouge and East Don Rivers have shown significant improvements in phosphorus levels since the early 1970s. Levels of bacteria (fecal coliforms) exceed the Provincial Water Quality Objectives in the Rouge, Don River and Humber Rivers, including the tributaries of the East Humber in King City and in Nobleton. Other pollutants such as heavy metals and organic compounds are present in the rivers but data are limited. In terms of habitat, the condition of the rivers varies, and is greatly influenced by the amount of riparian vegetation, the presence of natural areas, and surrounding land uses.

## Aquatic Communities

All fish have particular requirements for food, shelter, spawning habitat and water quality. Coldwater species, however, can only exist in a narrow spectrum of conditions: they require cool temperatures and well-oxygenated water. In the 1800s, coldwater fish species such as Atlantic salmon and brook trout were abundant in the Humber, Rouge and Don Rivers. Over the years, disturbances from land clearing, agricultural practices, industrial pollution, dams that prevented fish movement, and over fishing, led to the extirpation of Atlantic salmon. Today, many of the tributaries in the Don River support only pollution-tolerant species such as blacknose dace and creek chub. Brook trout are still present in some parts of the headwaters of the Humber and Rouge Rivers but their range has been dramatically reduced. Brook trout are also found in some headwater tributaries of the Holland and Black Rivers. Between 1952 and 1982, in the Lake Simcoe watershed, the number of kilometres of cold water streams in the Holland River declined 77%, and the number of marginal cold water streams declined 81%.

The coldwater fish communities in Lake Simcoe (lake trout, lake whitefish, and cisco) have been in decline for many years. One factor in this decline is low concentrations of oxygen in the deeper parts of the Lake that lead to a low survival rate of eggs and young fish. Presently, stocking is required to maintain many of the fish populations.

## Drinking Water

York Region's water supply comes from both surface and groundwater, via four different supplies. Surface water is taken from Lake Ontario and Lake Simcoe, and groundwater is taken from Regional production wells and private/domestic wells. Per capita, the Region's residents use about 385 litres of treated water a day, with 65% of this being used within the home.



**Brook Trout**  
*Salvelinus fontinalis* (Mitchill)

Brook trout are still present in some headwater streams but their range has been dramatically reduced.



York Region Health Services Department monitors water quality at York Region's public beaches.

### Municipally Supplied Water

York Region purchases treated Lake Ontario water from the City of Toronto. This water supplies about 68% of the Region's population - the majority of residents in Richmond Hill, Vaughan and Markham. About 2% of the population (the communities of Sutton and Keswick) is serviced by water from Lake Simcoe. About 23% of the Region's population is serviced by water from 35 deep production wells; this includes the residents of Holland Landing, Queensville, Sharon, Mount Albert, Newmarket, Aurora, Stouffville, Ballantrae, Schomberg, Nobleton, King City, and Kleinburg. The water for the remainder of York Region's population (7%) is supplied by private/domestic wells.

The water supply in York Region is delivered through a "two-tiered" system. The Region is responsible for the production, treatment, storage and transmission of the water to the area municipalities. The municipalities are responsible for distribution, service connections, fire protection and retail billing.

The quality of municipally supplied drinking water is measured against the provincial Ontario Drinking Water Objectives. All municipally supplied water (from Lake Ontario, Lake Simcoe and the Regional Production Wells) meets the health-related parameters of the Ontario Drinking Water Objectives. Almost every municipal well-based system exceeds one or more of the objectives for iron, manganese, turbidity, colour and hardness. These parameters are either Aesthetic Objectives or Operational Guidelines, not health-related objectives, and therefore do not pose health risks.

### Private Wells

Those not receiving municipally treated water get their water from private wells. Obtaining information about water quality of private wells is difficult. Results obtained from an Ontario Ministry of Health survey of 1,300 farm wells in the province in 1991-92 suggest that having a private well does not necessarily guarantee a supply of good quality drinking water because aquifers are susceptible to contamination.

## **Recreational Uses of Water**

### Swimming

The York Region Health Services Department monitors water quality at York Region's public beaches. Beach water quality can be affected by industrial discharges, municipal sewer systems, septic systems, agricultural run-off, water fowl and marine traffic. Contact with polluted water may result in skin rashes, gastrointestinal illness, and ear and throat infections. The bacterium *Escherichia coli* (*E. coli*) is used as an indicator of fecal contamination and water pollution. Individual sample bacterial counts may vary considerably because of rainfall, surface run-off, water turbidity, wind velocity, air and water temperature, number of bathers, and time of sampling. In York Region, beaches are posted when the geometric mean of two successive sets of five samples exceed 100 *E. coli* per 100 ml of water. In 1998, 16 beaches were monitored and beaches were posted as being unsafe for swimming on 38 days. Beaches can also be closed by the Health Services Department because of blue-green algae blooms.

### Contaminants in Sport Fish

Certain toxins in water (persistent organic contaminants and toxic metals) accumulate in fish over their lifetime. If concentrations in fish become high enough, this poses a health hazard to those who eat the fish. The concentration of toxins in fish also provides an indicator of the health of the environment. In its Guide to Eating Sport Fish, the Ministry of the Environment provides guidance on the consumption of fish from lakes and rivers in Ontario: this is given as the number of meals that can be consumed a month per species per size of fish. Generally, levels of persistent organic contaminants in fish in the Great Lakes Basin are lower than they were twenty years ago, reflecting the dropping levels of these contaminants in the environment. Most fish caught in York Region can be safely consumed eight times or more per month.

### **Benchmarks of Health**

Proposed benchmarks of health for the Region's water resources follow. The table includes measures, targets and current measurement (or status). In some cases, the information needed has not been gathered for this SOE Report. Where this is so, it is indicated in the table.



Most fish caught in York Region can be safely consumed eight times or more per month.



Benchmarks of Health for the Region's Water Resources

Benchmarks	Measure	Target	Current Status
Health of Lakes	Phosphorus concentrations in Lake Simcoe, Lake Wilcox and Musselman Lake.	No more than 0.02 mg/litre for the ice free period (LSRCA).	Above the target (1998)
	Phosphorus loading to Lake Simcoe.	75 tonnes/year (LMEMS).	100 tonnes/year (1990)
	Oxygen Levels in Lake Wilcox.	Restored oxygen levels in bottom waters in summer.	Improving due to use of "lake lung" (1998)
	Presence of algae blooms in Lake Simcoe and Musselman Lake.	No algae blooms	Algae blooms in Lake Simcoe in mid-summer; in Musselman Lake frequently (1998)
Health of Rivers	Phosphorus concentrations in the Don, Humber and Rouge Rivers; and the Black, Holland, Maskinonge Rivers and Pefferlaw Brook.	0.03 mg/litre (MOE)	Mean annual phosphorus levels exceed the target for all rivers (1995)
	E. coli levels in the Don, Humber and Rouge Rivers, and the Black, Holland, Maskinonge Rivers and Pefferlaw Brook.	100 counts of E. coli per 100 ml	Black, Maskinonge and Holland River meet the target; Humber and Rouge exceed the target; the East Don exceeds the target by a huge amount (1995)
	Presence of excessive amounts of duckweed in the Holland and Maskinonge Rivers.	No excessive duckweed	Excessive amounts of duckweed still present in the Holland and Maskinonge Rivers (1998)
	Percentage of rivers with riparian vegetation.	100%	Unknown (except about 50% in East Humber tributaries as of 1998)
Health of Coldwater Fish Communities	Ability of coldwater fish in Lake Simcoe to spawn successfully	Self-sustaining populations of lake trout, lake whitefish and cisco	Populations of lake trout and lake whitefish supported by stocking; population of cisco continuing to dwindle (1997)
	Presence of coldwater fish in the Don, Humber and Rouge Rivers, and the Black, Holland, Maskinonge Rivers and Pefferlaw Brook.	Presence of self-sustaining populations	Populations present in Humber (1997), Rouge (1992), Holland (1994), Black (1994) and Pefferlaw Brook (1979)

Benchmarks	Measure	Target	Current Status
Water Conservation	Per capita use of treated municipal water in the Region.	Reduce	385 litres per day (1997)
	Percentage of population taking part in water conservation activities in the Region.	100%	Undertake collection of data
Drinking Water Quality	Quality of municipally supplied water in the Region	Meets Ontario Drinking Water Objectives	Meets all health-related guidelines (1997)
	Quality of private well water.	Meets the health-related guidelines set out by the Ontario Drinking Water Objectives	Not available for this SOE Reort
Wastewater Treatment	Quality of effluent from Water Pollution Control Plants servicing the Region.	Meets the MOE requirements and Certificates of Approval.	Meets the MOE requirements and Certificates of Approval (1997)
Private Sewage Disposal Systems	Annual number of private sewage disposal systems inspected by area municipalities and number of malfunctioning systems found	Monitor	132 systems inspected (1997)

Benchmarks of Health for the Region's Water Resources (cont.)

Benchmarks	Measure	Target	Current Status
Industrial Sewer Use	Annual number of industries placed on surcharge programs, notified of Sewer Use By-Law infractions, and placed on compliance programs in the Region.	Monitor	483 industries or commercial buildings inspected; 23 placed on surcharge programs; 42 notified of bylaw infractions; 17 placed on compliance programs (1997)
Stormwater	Percentage of stormwater management facilities that provide some pollutant removal capability	Monitor	Not collected for this SOE Report
Beaches	Proportion of days that beaches in the Region are posted as unsafe for swimming and other water contact sports.	Zero	2.9 % (1998)
Fish Consumption	Level of contaminants in sport fish in the Region	All fish should be able to be eaten up to eight meals a month	Restrictions on eating large sizes of rock bass (Milne Reservoir), and large and smallmouth bass, yellow perch and walleye (Lake Simcoe), and largemouth bass (Lake Wilcox) (1997)

