SHUSWAP
watershed council

2023–24

WATER QUALITY REPORT

Photo Credit: Erin Vieira

shuswapwater.ca

Photo Credit: Darren Robinson Photography / Shuswap Tourism

The Shuswap watershed is a very special place.

It is within Secwepemc'ulecw, the traditional unceded territory of the Secwepemc Peoples and the homeland of the Neskonlith, Skw'lax, Adams Lake and Splatsin te Secwepemc First Nations. Parts of the watershed in the south are also within the traditional unceded territory of the Syilx Peoples. The Shuswap watershed —including Shuswap Lake, Mara Lake, Mabel Lake, Adams Lake, and many more lakes and rivers—is about 1.5 million hectares. Lakes in the Shuswap watershed are known for their pristine water and beautiful beaches. These attributes make the Shuswap one of the most popular recreation destinations in BC and contribute to a desirable lifestyle for residents and a significant tourism economy. The Shuswap is a nursery watershed for four species of Pacific salmon, and provides important habitat for a variety of plants and wildlife. The Shuswap is a vitally important source of water for drinking for many communities and rural residents, and for agriculture.

?

Did you know?

Shuswap Lake is one of only a few large lakes in BC without a dam or control structure on the outlet. Shuswap Lake's water level fluctuates 3–4 metres annually.

Water quality is monitored at several locations in the Shuswap watershed, at different times of year, and by different organizations for different reasons.

The Shuswap Watershed Council (SWC) is a **partnership of many organizations** with mandates or responsibilities for monitoring, protecting, and improving water quality. In this eighth annual report, the SWC is pleased to present a summary of water quality information, monitoring results, and water quality protection projects in the Shuswap watershed:

- Shuswap Lake, Mara Lake, and Mabel Lake
- Popular beaches
- Provincial Water Quality Objectives for Shuswap Lake
- Algal blooms and cyanobacteria
- Aquatic invasive species
- The SWC's Water Quality Grant Program
- A new wetland strategy for the Shuswap
- Wildfires in the watershed.

SHUSWAP watershed council

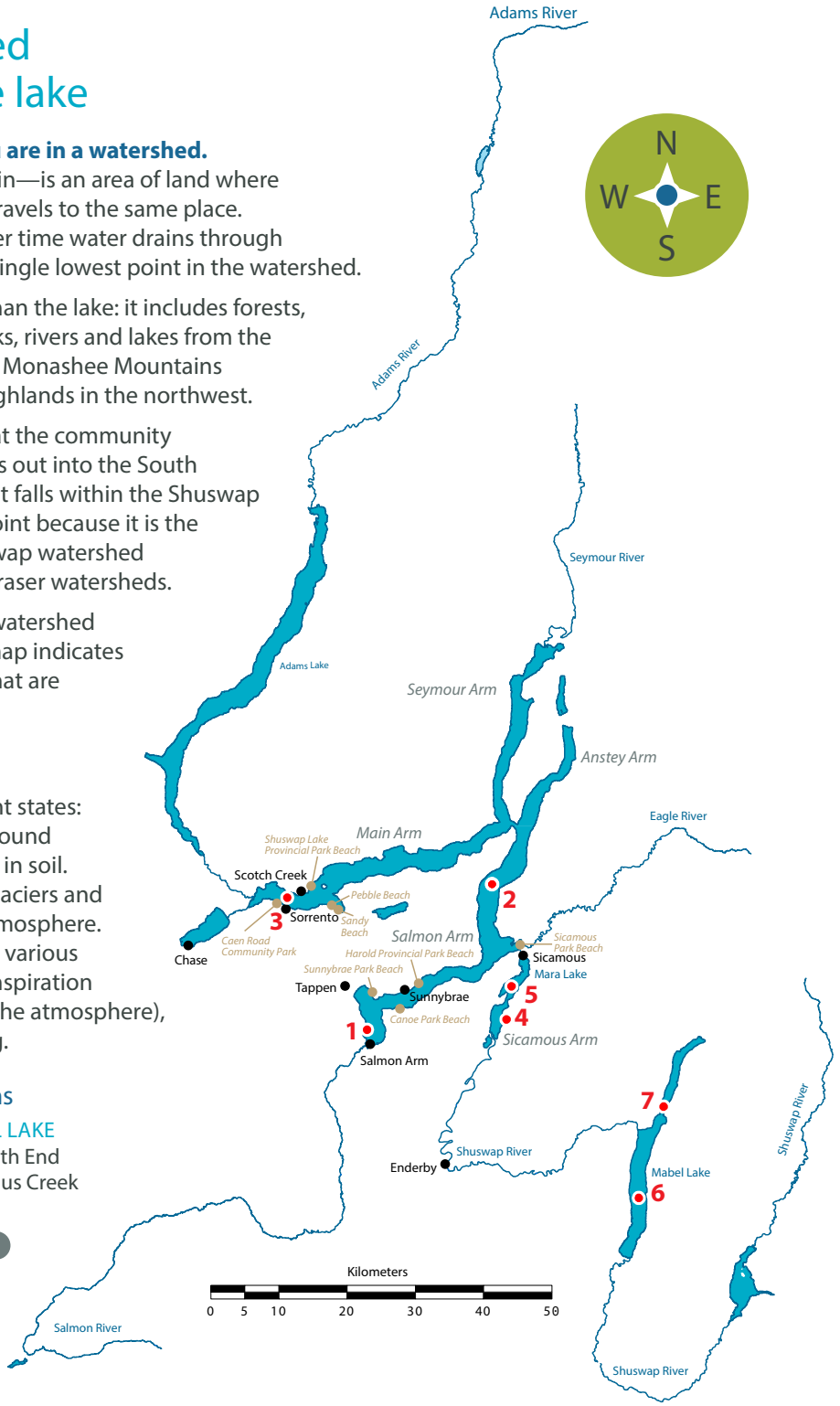
The Shuswap watershed —much more than the lake

No matter where you live on Earth, you are in a watershed.
A watershed—also called a drainage basin—is an area of land where all the rain or snow that falls eventually travels to the same place. Watersheds receive precipitation and over time water drains through wetlands, creeks, rivers and lakes to the single lowest point in the watershed.

The Shuswap watershed is much more than the lake: it includes forests, fields, glaciers, wetlands, meadows, creeks, rivers and lakes from the Okanagan Highlands in the south, to the Monashee Mountains in the north and east, to the Shuswap Highlands in the northwest.

The outlet of the Shuswap watershed is at the community of Chase where Little Shuswap Lake flows out into the South Thompson River. All the precipitation that falls within the Shuswap watershed will eventually drain to this point because it is the lowest point in the watershed. The Shuswap watershed forms part of the larger Thompson and Fraser watersheds.

This is a simplified map of the Shuswap watershed showing the large lakes and rivers. The map indicates the water quality monitoring locations that are reported on the following pages.



The Water Cycle

Water moves around the Earth in different states: liquid, solid, and vapour. Liquid water is found in oceans, rivers, lakes, and underground in soil. Water in the solid form (ice) is found in glaciers and snow. Water vapour is found in Earth's atmosphere. Water continuously cycles through these various states through melting, evaporation, transpiration (water vapour released from plants into the atmosphere), condensation, precipitation, and freezing.

Select Water Quality Sample Locations

SHUSWAP LAKE
1. Tappen
2. Marble Point
3. W. Sorrento

MARA LAKE
4. Kingbaker
5. Fossette

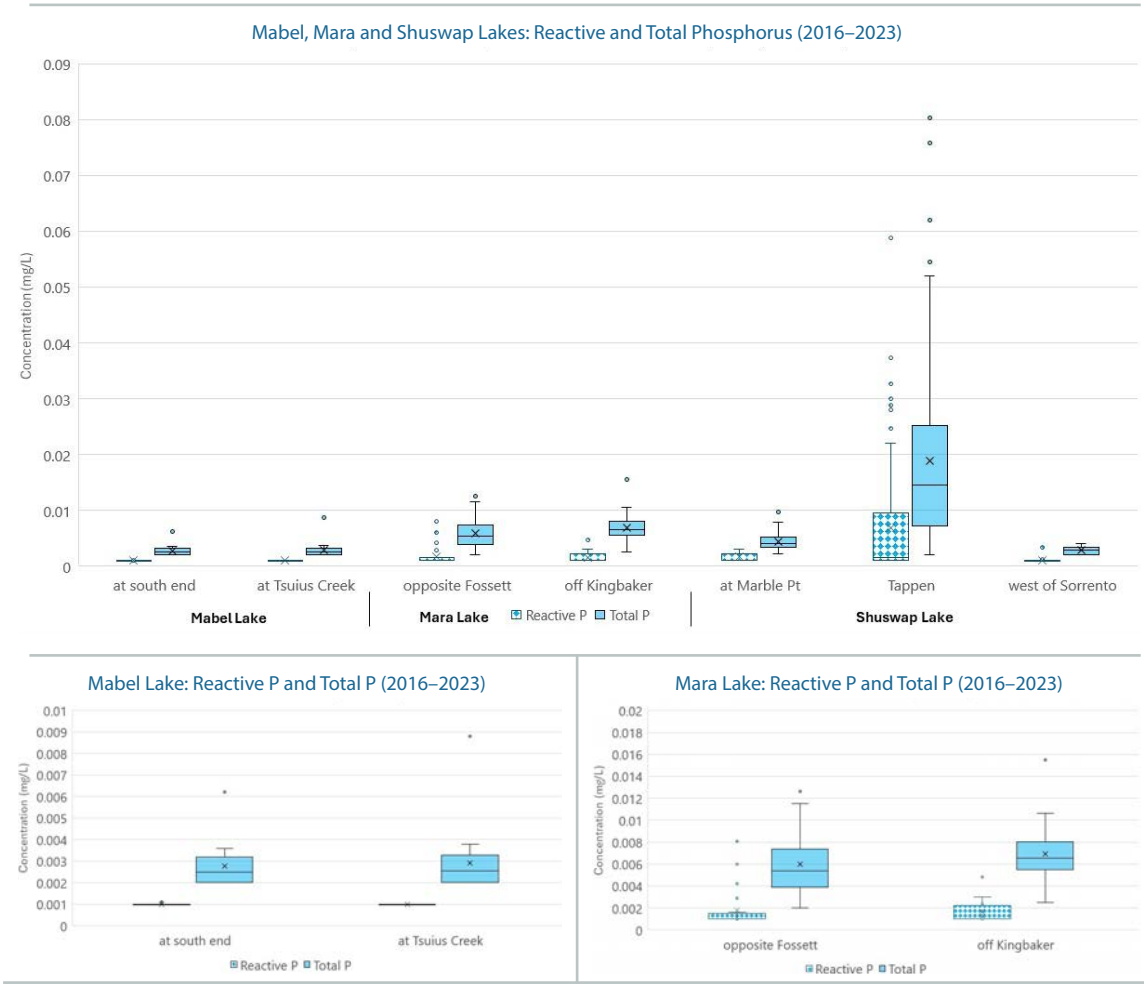
MABEL LAKE
6. South End
7. Tsuius Creek

WHERE IS EARTH'S WATER?

- 96.5% is in the oceans
- 1.7% is in lakes, rivers, streams, in soil
- 1.7% is in polar ice caps and glaciers
- .001% is in the Earth's atmosphere

Shuswap, Mara, and Mabel Lakes

The Province of BC (Ministry of Environment & Climate Change Strategy) staff routinely monitor several locations in the Shuswap watershed twice per year —spring and fall—to identify long-term water quality trends in the lakes. Several water quality parameters are monitored including nutrients (phosphorus and nitrogen), chemistry, pH, temperature, turbidity, and more. Here is a snapshot of water quality monitoring results for seven sites from 2016–2023.



How to interpret a box plot

These data are presented in box plots. A box plot is a standard method of presenting a range of data. The box represents the data values from the 25th percentile to the 75th percentile, and the horizontal line through the centre of the box represents the median (the middle value of the data set). The 'x' within the box represents the mean (the average value of the data set). The vertical lines extending from the boxes are called 'whiskers', and they extend to the upper and lower boundaries of the data set. The small dots are outliers—data points that differ significantly from the rest of the data set.

Three charts of data are shown here. The top chart shows phosphorus data from seven monitoring sites in the Shuswap watershed from 2016–2023. The y-axis (vertical axis) is scaled to accommodate the entire range of data. The two lower charts show the same data for Mabel and Mara Lakes, but the y-axis is adjusted to better illustrate the ranges.

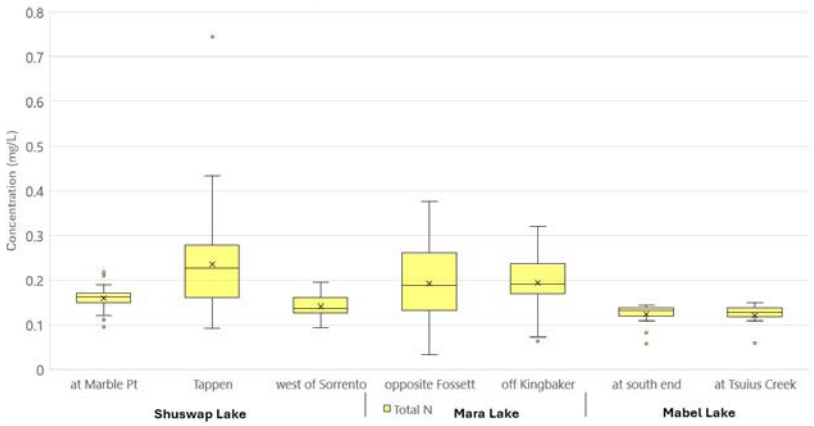
One of the key take-aways from these data is that the levels and range of phosphorus at the monitoring sites are all very low except for the site at Tappen which shows a broad range of phosphorus and some much higher levels. Water quality at the Tappen site in Salmon Arm Bay is heavily influenced by the Salmon River, which carries large quantities of phosphorus and other nutrients to the lake.

Total P is the sum of all forms of P in a water sample. **Reactive P** is a form of phosphorus that's immediately available to plant life such as algae and aquatic plants. Therefore, Reactive P is the form of P that has the potential to trigger an algal bloom.

Photo Credit: Darren Robinson Photography / Shuswap Tourism

Phosphorus, nitrogen, and a lake's trophic classification

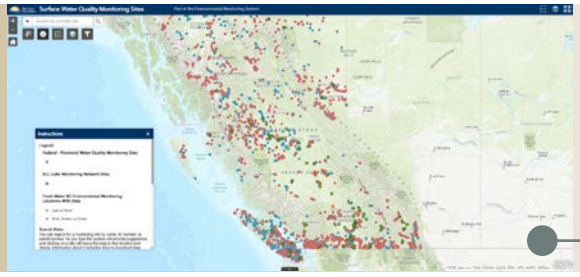
Shuswap, Mara and Mabel Lakes: Total N (2016–2023)



Eutrophication is the progression of a lake toward a higher trophic classification. Many lakes in the world are naturally, slowly moving toward becoming more eutrophic as a result of their watershed impacting water quality. In some lakes, eutrophication is happening more quickly due to anthropogenic activities such as agriculture, industry and settlement.

If you've been reading our annual water quality reports for a while, you've likely noticed that we usually present phosphorus (P) and nitrogen (N) data. This is because P and N are important nutrients for almost all living things. The amounts of P and N in a lake limit growth starting from microscopic plankton, to invertebrates, plants and fish. Generally, lakes that have high levels of nutrients can support lots of growth and productivity. Biologists classify these lakes as **eutrophic**. Conversely, lakes with low levels of nutrients support less growth and these are classified as **oligotrophic**.

In a lake, the first plant life to react to nutrients is often phytoplankton or algae. Algae and other forms of aquatic life need these nutrients to grow and reproduce. In a healthy ecosystem, the give-and-take of nutrients is balanced. Too many nutrients in an aquatic ecosystem can upset the balance and lead to excessive algae growth known as an **algal bloom**. Algal blooms may occur in reaction to a sudden influx of nutrients to a lake ecosystem, or because of long-term high levels of nutrients. Algal blooms can create unpleasant formations and odours, reduce water clarity, and compromise the quality of water for drinking and recreation.



The Province of BC has a Provincial mandate to monitor water quality. Did you know that you can **access real-time data from an online interactive map?** Check out the Province's Surface Water Quality Monitoring Sites website (link in Works Cited on page 16).

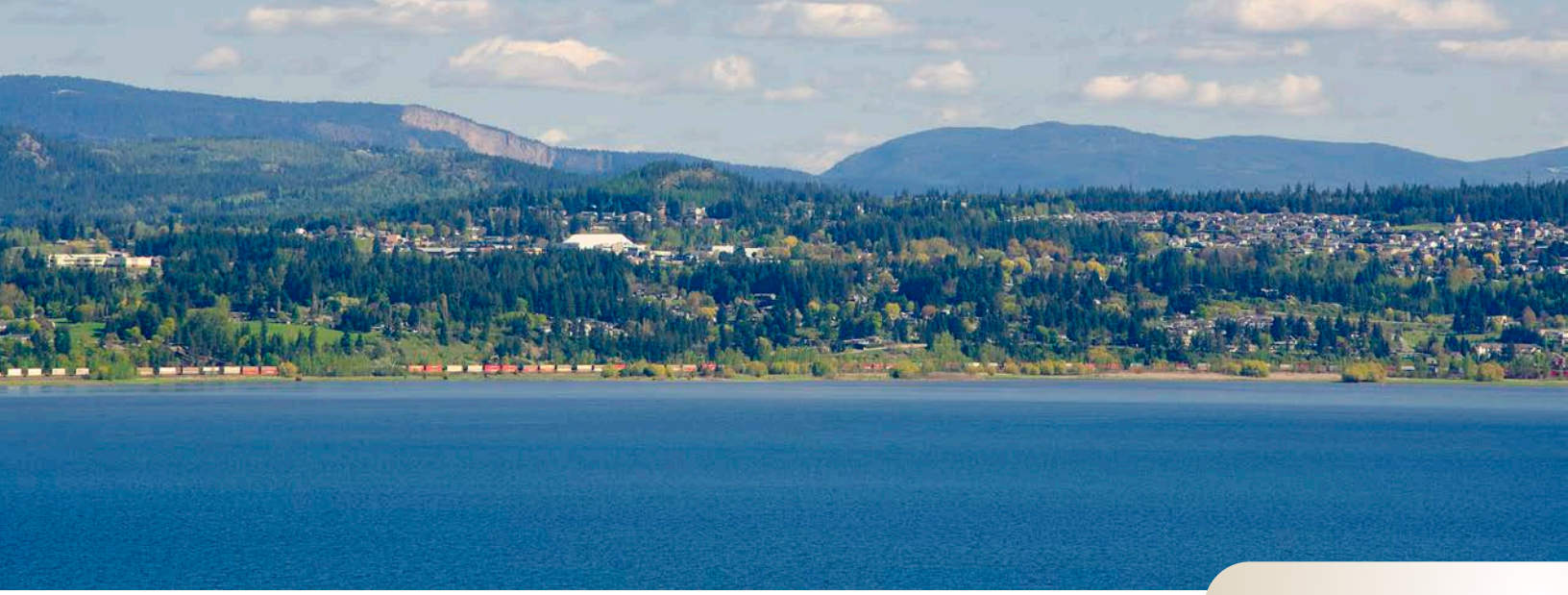


Photo Credit: Darren Robinson Photography / Shuswap Tourism

Water Quality Objectives for Shuswap Lake

Have you ever read our water quality reports and wondered, *"What do these data mean?"* As of 2022, there are Water Quality Objectives (WQOs) for Shuswap Lake set by the Province of BC and Pespesellkwe te Secwepemc. WQOs are benchmarks against which water quality measurements can be compared and evaluated. They can also be used by the Province of BC as a regulatory tool to protect water quality. WQOs are Provincial policy statements that apply to specific waterbodies, and may be used in Provincial decisions and permitting processes.

A water quality assessment was completed by the Province of BC and Pespesellkwe te Secwepemc with data from four water monitoring locations in Shuswap Lake from 2000–2020 to inform the development of the WQOs.

Water Quality Objectives for Shuswap Lake were published in September 2022 for seven parameters. The WQOs for nutrients are summarized below:

	WATER SAMPLING LOCATION			
Parameter	E208723 Armstrong Point	0500123 West of Sorrento	0500124 Marble Point	E206771 Sandy Point (Tappen)
Total Phosphorus (µg/L)	10	10	10	15
Total Nitrogen (µg/L)	300	300	300	300
Nitrogen : Phosphorus	≥ 30:1	≥ 30:1	≥ 30:1	≥ 20:1

* to convert µg/L to mg/L, divide by 1000. For example, the above-noted WQO for Total Phosphorus at the West of Sorrento location is 10 µg/L which is equal to 0.01 mg/L.

"Phosphorus and nitrogen concentrations are the primary water quality concern, especially in Tappen Bay near the mouth of the Salmon River where algal blooms have been occurring. Setting Water Quality Objectives for nutrients to decrease the potential for algal blooms is a key aspect of this WQO policy."

Source: Shuswap Lake Water Quality Objectives Policy Report. September 2022. Province of BC and Pespesellkwe te Secwepemc.

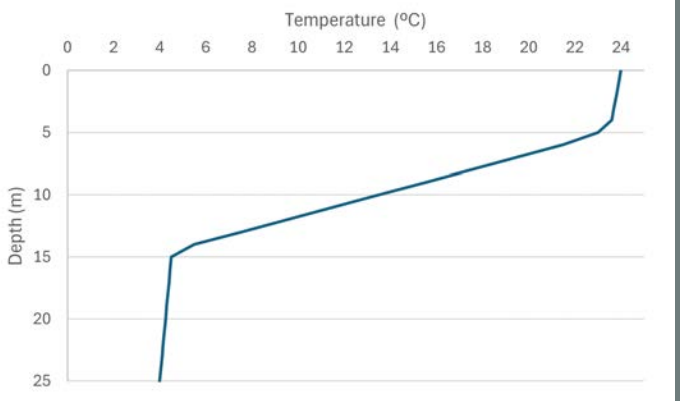
Try comparing the Water Quality Objective values to the data that is presented on pages 4 and 5.

Shuswap Lake is a monomictic lake

Did you know that biologists classify lakes on the basis of temperature and stratifications? Shuswap Lake develops strong vertical thermal stratification during the summer. This means there are distinct zones or layers in the lake with different temperatures. In Shuswap Lake, the upper-most layer of water, called the **epilimnion**, can exceed 22C in summer. Below that layer, historically around a depth of about 10 m, is the **thermocline**. This middle zone of water is where the temperature drops with increasing depths. The bottom-most layer of water, called the **hypolimnion**, is the coldest and densest, usually maintaining a temperature of about 4C. In the fall and winter, the warm epilimnion cools and mixes completely with the hypolimnion layer. After this mixing, the lake has a consistent temperature profile. Then, in spring, the sun heats up the surface of the lake and it re-stratifies into layers. These characteristics are what classify Shuswap Lake as a **warm monomictic lake**. Monomictic means that the lake mixes completely once each year. Other lakes, by comparison, are dimictic (thermal stratifications form in summer and in winter under ice, and the lake completely mixes twice, in spring and fall). There are also lakes that are polymictic (irregular thermal stratifications and mixing), or meromictic (incomplete mixing).

Source: Integrated Water Quality Monitoring Plan for Shuswap Lakes, BC. November 2010. Northwest Hydraulic Consultants.

A THERMALLY STRATIFIED LAKE IN SUMMER



This diagram illustrates the temperature profile of a lake that is thermally stratified in summer. The water in the upper-most layer, the epilimnion, is found up to 5m deep and is around 24C. The thermocline is from 5–15m. In this layer, the temperature drops with increasing depths. The bottom layer, the hypolimnion, is 15m deep and deeper and is around 4C.

* For illustration purposes only—does not depict Shuswap or Mara Lakes

For more information

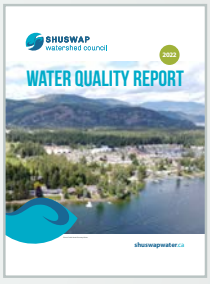
If you are thirsty for more knowledge about Shuswap Lake and the watershed, check out these resources:

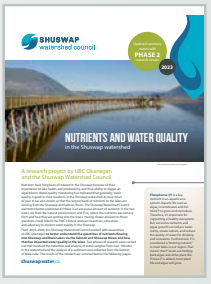
From the Shuswap Watershed Council:

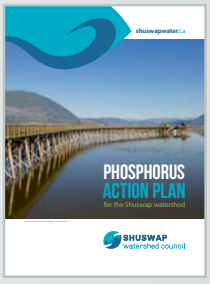
- Previous annual water quality reports
- Nutrients and water quality research report
- Phosphorus Action Plan

From the Province of BC: [1]

- Water Quality Assessment for Shuswap Lake (2022)
- Water Quality Objectives for Shuswap Lake (2022)
- Salmon River Water Quality Assessment Summary (2022).







1 Find the links to these resources in our Works Cited section on page 16.

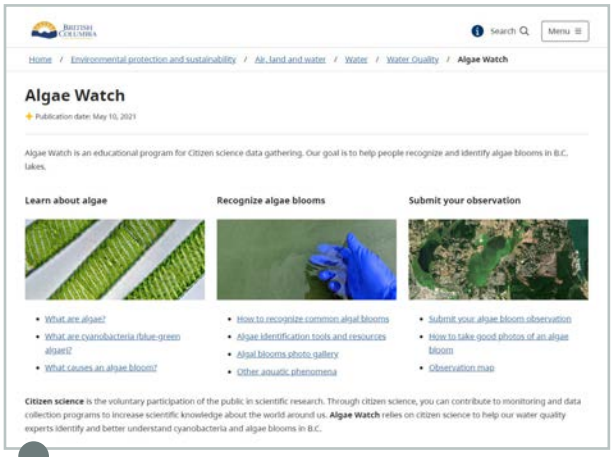
About algae and algal blooms

Algae are a diverse group of simple plants that live in freshwater and marine environments. Algae perform important ecosystem functions such as providing food for fish and supplying oxygen into the environment.

When conditions are favourable for algae, they may grow and reproduce prolifically resulting in a dense mass of algae called a bloom. Several factors may contribute to the formation of an algal bloom including water temperature, nutrients, sunlight, and weather. Blooms may occur naturally, or may be driven by land use activities such as agriculture and horticulture or by waste water from domestic or industrial sources.

It's not uncommon for small isolated algal blooms to occur in Shuswap Lake or any of the other lakes in our region, especially in spring and early summer when spring freshet delivers a fresh supply of nutrients to the lakes. That time of year there can also be organic debris such as pollen in the lakes which can make identifying algae a challenge.

You can learn more about algae and how to recognize and report an algal bloom from a Province of BC website, Algae Watch: **www.gov.bc.ca/algaewatch**.



If you've spotted an algal bloom, submit your observations via the **BC Algae Watch** website.

Your submission will go directly to staff at the Province of BC. You can also view an **interactive map** of algae observations submitted by citizen scientists across BC.

www.gov.bc.ca/algaewatch

Photo Credit: Viktoria Haack / Shuswap Tourism

What are cyanobacteria?

Cyanobacteria, also known as blue-green algae, are several species of microscopic bacteria that occur in lakes around the world. Similarly to algae, when conditions are favourable for growth and reproduction they can form a bloom. Cyanoblooms are particularly concerning because **some species can produce toxins called microcystins** that are harmful to people, pets, and livestock. Not all cyanobacteria are toxic, and even toxic species do not always produce toxins.

Staying safe around algal blooms and cyanoblooms

You can reduce your risk of becoming exposed to cyanobacteria toxins by never drinking untreated water from lakes or ponds, and never swimming or recreating in water with a visible bloom.

Beach owners/operators are responsible for monitoring beaches throughout the swimming season to ensure the *Canadian Recreational Water Quality Guidelines* are met. In the event of a cyanobloom, a beach owner/operator may issue a cautionary notice advising against swimming. If water quality monitoring detects microcystins at a beach impacted by a cyanobloom, the local health authority may post a beach closure notification.

For the most up-to-date conditions at popular beaches, you should contact the beach owner/operator. Additionally, you can view beach closure notifications issued by Interior Health online: **https://www.interiorhealth.ca/health-and-wellness/environmental-health-and-hazards/public-beaches.**

Did you know?

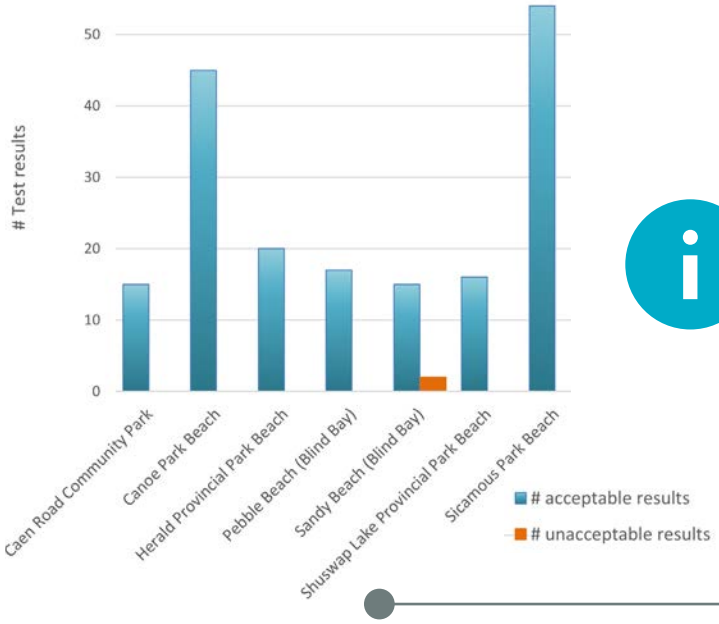
The average volume of Shuswap Lake is 19,130,000,000 m3. That's 19 billion, 130 million cubic metres of water!

Photo Credit: Erin Vieira

Swimming Beaches

Water quality monitoring at popular swimming beaches is a joint responsibility of Interior Health, First Nations Health Authority, and local and Provincial government beach owners/operators. **Water samples are collected and tested throughout the summer months for *E. coli*,** a type of bacteria that is an indicator of water contamination.

Seven beaches in the Shuswap watershed were monitored in 2023. Some beaches are monitored more frequently than others. Out of 182 samples collected, all but two met the federal water quality guidelines for swimming and recreation.



You can access up-to-date beach water quality data online from Interior Health. Visit their Public Beaches website: **https://www.interiorhealth.ca/health-and-wellness/environmental-health-and-hazards/public-beaches#**

What is an acceptable or unacceptable result?

There are federal guidelines for water quality for swimming and recreation that are different from guidelines for drinking water. The recreation guidelines recommend that a safe bacteria level is less than 400 *E. coli* in a 100 mL sample, or an average of less than 200 *E. coli* in five consecutive 100 mL samples collected on a weekly basis. If results are above these, a swimming advisory may be posted.

Did you know?

Shuswap Lake has a relatively high 'flush rate' and a relatively low 'residence time' of approximately two years. That means that in a span of about two years, all of the water in Shuswap Lake is replaced. Okanagan Lake, by comparison, has a residence time of approximately 55–60 years.

Potential Economic Impact of Zebra and Quagga Mussels in B.C.

MAY 2023

BRITISH COLUMBIA

Ministry of Water, Land and Resource Stewardship

Guarding the Shuswap against invasive zebra and quagga mussels

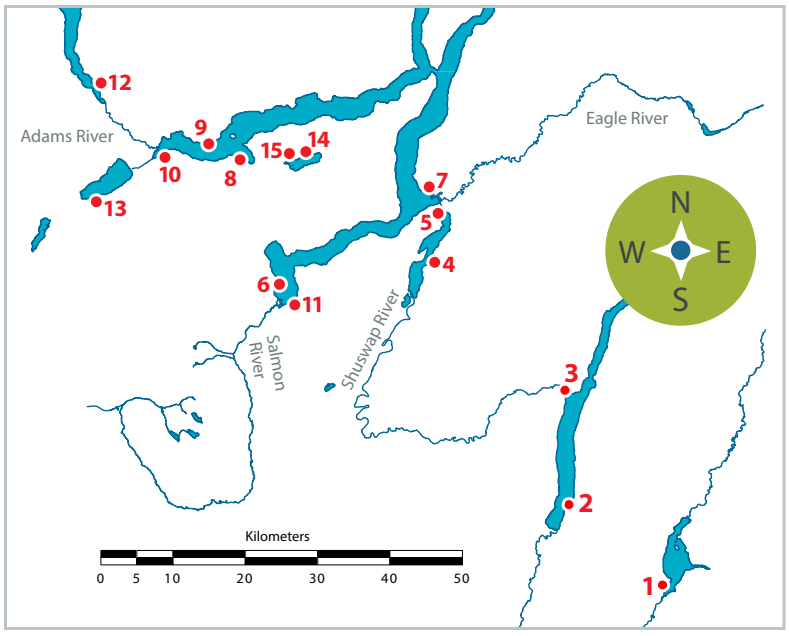
Zebra and quagga mussels are two species of fresh-water mussels that could ruin the lakes and beaches in the Shuswap watershed if they were introduced here. Originally from Europe and Asia, these invasive mussels came to North America in the 1980s in trans-Atlantic ship ballast water and have been spreading across the continent ever since.

Zebra and quagga mussels are two of the most destructive aquatic invasive species due to their ability to attach and grow in clusters on anything submerged, from boat hulls to dock pilings and pipes. With no predators and no feasible treatment, they're nearly impossible to eradicate once they're established and infestations require costly ongoing management.

A report from the Province of BC, "*Potential Economic Impact of Zebra and Quagga Mussels in BC*" (May 2023) estimates an **annual cost of $64–129 million to deal with impacts of invasive mussels** if they were to arrive in BC waters. This takes into consideration impacts on hydro-electric infrastructure, municipal and domestic water supply infrastructure, agriculture and golf course irrigation, maintenance to boats and marinas, losses to the tourism industry, and losses in residential values and property taxes due to reduced water quality and shoreline values.

In addition to the economic impacts, zebra and quagga mussels would wreak havoc on the lake environment. They would degrade water quality, contribute to harmful algal blooms, impact aquatic food webs, and reduce biodiversity by outcompeting native species. When the mussels die their small razor-sharp shells would wash up on beaches, spoiling the natural beauty and enjoyment of shorelines.

Fortunately, **zebra and quagga mussels have not spread to the Shuswap or any of BC's lakes** but they do occur in Manitoba, Ontario, Quebec, and several American states including a recent detection in Idaho.



ZQM Monitoring Sites in 2023

1. Sugar Lake—Resort
2. Mabel Lake—Provincial Park
3. Mabel Lake—Kingfisher
4. Mara Lake— Swansea Point
5. Mara Lake— Sicamous Narrows
6. Shuswap Lake—Pierre's Point
7. Shuswap Lake—Old Town Bay
8. Shuswap Lake—Blind Bay
9. Shuswap Lake—Scotch Creek
10. Shuswap Lake—Little River
11. Shuswap Lake—Salmon Arm Wharf
12. Adams Lake—The Point on Adams Lake
13. Little Shuswap Lake—Chase Memorial Park
14. White Lake—Provincial Park
15. White Lake—Community Park

Early-detection monitoring for zebra and quagga mussels

The Shuswap Watershed Council provides financial support to the Columbia Shuswap Invasive Species Society for monitoring several sites throughout the Shuswap watershed for the presence of zebra and quagga mussels. This early-detection monitoring program is critical to ensure that the Shuswap is still invasive-mussel free. All the monitoring results to-date have been negative, meaning that invasive mussels have not been detected.

Photo credit: Columbia Shuswap Invasive Species Society

This photo shows how quickly quagga mussels have colonized on pieces of pipe in Lake Mead (Nevada) over different periods of time. This imposes very costly ongoing maintenance to rid pipes and other infrastructure of mussel colonies.

15
sites on seven waterbodies in the Shuswap were repeatedly monitored in 2023

95
samples collected and tested for the presence of zebra and quagga mussels in 2023

Did you know?

Shuswap Lake and other lakes in our region are at high risk of a mussel infestation because of the influx of watercraft in the summer months. Boats and watercraft from outside of BC could be infested with zebra or quagga mussels. Additionally, the water chemistry here—temperature, pH, and calcium concentrations—are well suited to mussel survival.

A single female zebra mussel can produce up to 1 million eggs per year

The primary way that invasive zebra and quagga mussels spread is via boats and other watercraft and gear. Mussels may be attached when boats are moved from one lake to another, or juvenile mussels may be trapped within small compartments of water. Zebra and quagga mussels can survive out of water for up to 30 days! We all need to do our part to prevent the spread of aquatic invasive species.

What can be done?

- **Clean, drain and dry** boats, watercraft and gear when moving from one waterbody to another
- **Pull your watercraft drain-plug** before travelling on any BC road *(it's the law!)*
- Stop for **watercraft inspection** when travelling *(it's the law!)*
- Don't use invasive species as fishing bait
- Never release or dump aquarium plants or animals into the environment or down a drain
- Report suspected sightings of zebra or quagga mussels to the **Provincial RAPP line** immediately: **1-877-952-7277**
- Report sightings of other invasive species using the **Report Invasives BC** app

Water Quality Grant Program

The SWC's grant program supports watershed restoration and targets a significant threat to water quality.

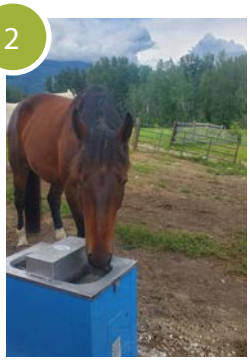
The Shuswap Watershed Council launched a water quality grant program in early 2020. The grant program provides financial support to farms, stewardship groups and landowners in the Shuswap watershed for projects that improve on-farm nutrient management, increase soil health, or retore wetlands and riparian areas. This helps protect and improve water quality in creeks, rivers and downstream to Shuswap and Mara Lakes. By taking care of the landscape, we take care of water quality.

2023 Water Quality Grant Funding recipients

1

Fresh Valley Farms (Spallumcheen) installed a new enclosed and automated pastured livestock system to manage livestock rotations across pastures and improve manure deposition, resulting in improved soil health and decreased nutrient loss through leaching and run-off.

2



Iron Horse Ranch (Celista) installed new paddock cross fencing to better manage animals on the property, improve the distribution of manure, and keep animals off wet areas of the property during the spring. Riparian fencing and off-stream waterers were installed to keep animals out of a creek that runs through the property.

3

Crystal Lake Ranch (Malakwa) installed new fencing adjacent to the riparian area along the Eagle River to control livestock access and installed new off-stream livestock waterers on the ranch.

4

Shuswap Organics (Grindrod) introduced new regenerative agriculture practices including cover cropping and no-till to improve soil health on the farm and improve the soil's ability to store and cycle nutrients.

5

Rivershore Nursery (Mara) introduced cover crops and new organic soil amendments. They replaced overhead sprinkler irrigation with a more efficient drip system to improve soil health and reduce surface run-off to ditches and the Shuswap River. The nursery also introduced mycorrhizal inoculation to new planting stock to reduce the need for phosphorus fertilizers.

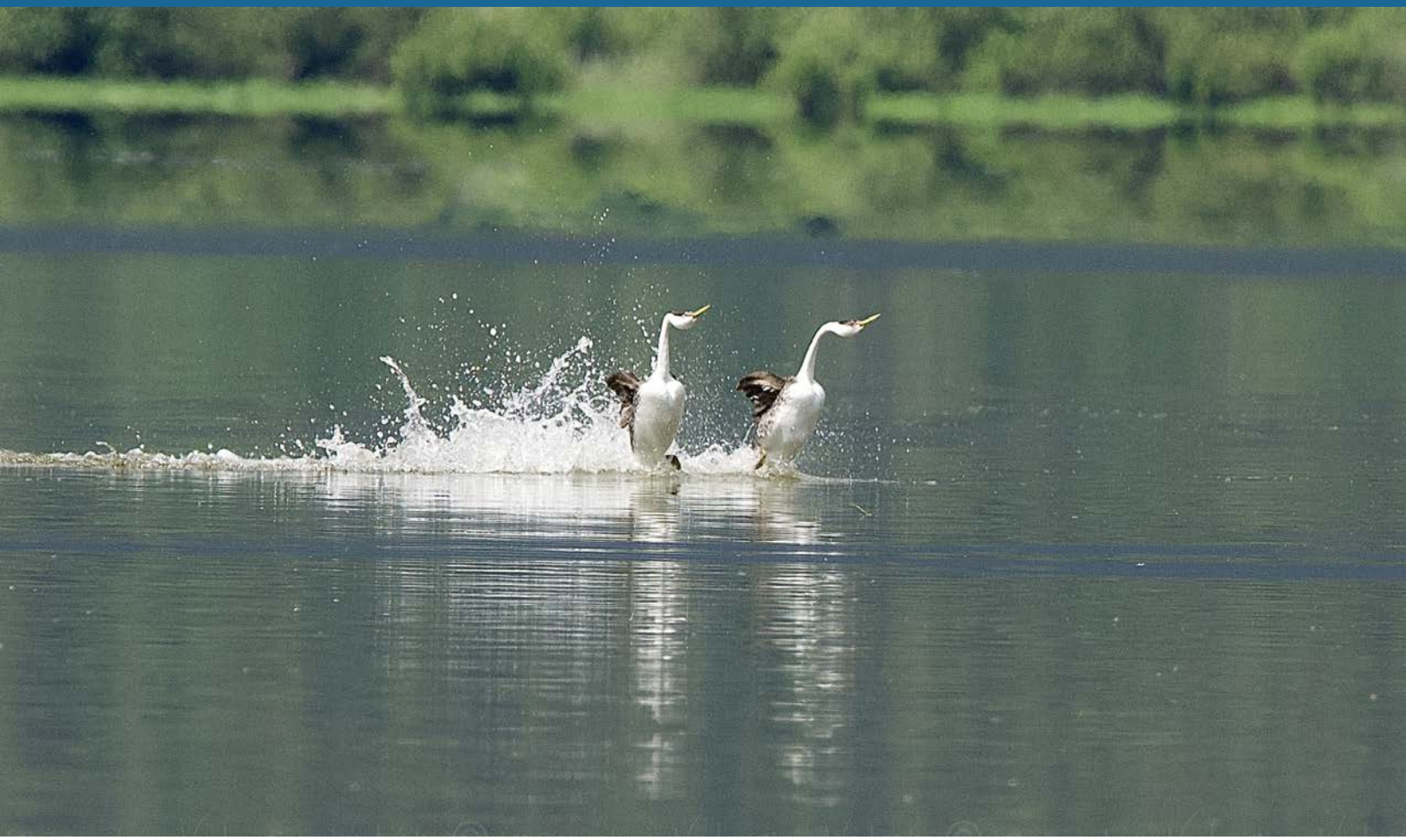
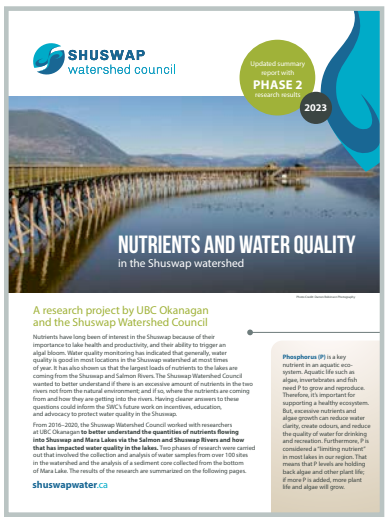


Photo Credit: Valerie Walsh

"Agriculture is a significant part of the economy in the Shuswap and contributes greatly to local food security. We want to support the adoption of new and improved nutrient management practices by local farms to help protect our water quality."

—SWC Chair Rhona Martin



The Water Quality Grant Program was developed by the SWC in response to the findings of a four-year research project done in partnership with UBC-Okanagan (2016–2020). Research results showed that the greatest proportion of nutrients in Shuswap and Mara Lakes originate from the agricultural landscapes in the valley bottoms of the Salmon and Shuswap Rivers. These are the areas where better nutrient management and watershed restoration will have the most impact in improving water quality in the lakes. Research results also show that phosphorus levels in Mara Lake have increased significantly since the 1980s.

Find the research summary report on the SWC website.

Did you know?

The surface area of Shuswap Lake is 310 km^2. The deepest location is 161 m. Adams Lake, by comparison, has a maximum depth of 397 m!

Wetlands: an important part of the Shuswap watershed

A wetland is an area of land that is saturated or flooded with water, either permanently or seasonally. Wetlands include marshes, swamps, bogs, peatlands, and floodplains. Lakes and rivers are also wetlands. Wetlands of all kinds are very important ecosystems.

- Wetlands hold and provide much of the world's freshwater
- Wetlands naturally filter pollutants and make water cleaner
- Wetlands have been important to civilizations for thousands of years, providing fish, other food, and water for crops and livestock
- Wetland support biodiversity—about 40% of the world's plant and animal species depend on wetlands
- Wetlands protect against storms and floods—a hectare of wetland can store up to 2.3 million litres of floodwater
- Wetlands capture CO2 from the atmosphere and store more carbon than any other ecosystem on Earth.

Globally and locally, wetlands are under pressure. Many human activities can impact and destroy wetlands including water withdrawals for domestic, industrial and agricultural uses; pollution from plastics and agriculture; wetland destruction from urbanization, forestry, agriculture and transportation; and climate change. Fortunately, awareness and appreciation of wetlands is growing in many parts of the world and efforts are underway to protect and restore wetlands.

A wetland strategy for the Shuswap

In 2023, the Shuswap Watershed Council began to develop a wetland strategy for the Shuswap watershed. Ultimately, a wetland strategy will help protect and improve water quality in the Shuswap watershed through policies and guidelines to conserve, manage and restore wetlands as vital components of a healthy watershed.

Initially, the wetland strategy is focusing on the Salmon River and Salmon Arm Bay regions of the Shuswap watershed. **The first two phases of a multi-phased process to create the strategy were completed in 2023.** This involved desk-top GIS data-gathering and analysis to gain an understanding of the current distribution and ecological functions of wetlands in the study area. These data will help inform the development of the strategy.

Floating treatment wetland research in the Salmon River

In early 2024, the Shuswap Watershed Council entered into a **research partnership with Royal Roads University to research how 'floating treatment wetlands' (FTWs) may help to improve water quality in the Salmon River.** The Salmon River is important for fish and wildlife habitat, domestic and livestock water, and irrigation for agriculture. Earlier studies have shown that the river carries a significant load of phosphorus and other nutrients to the lake which have contributed to nuisance algal blooms in Salmon Arm Bay.

FTWs are a nature-based solution that can improve water quality by absorbing nutrients and contaminants from a waterbody. They are simple, low-cost, and can have many ecological benefits. Graduate student and biologist Margot Webster is building and installing three FTWs in the lower reach of the Salmon River in 2024. She will monitor water quality and analyze plant tissue samples to determine how much nutrients the FTWs take up from river water. The field season will conclude later in 2024, with results anticipated in 2025.

According to the Convention on Wetlands, there would be enough freshwater to meet global demand for it if we better managed wetlands through protection, restoration and wise use.

Photo credit: Margot Webster

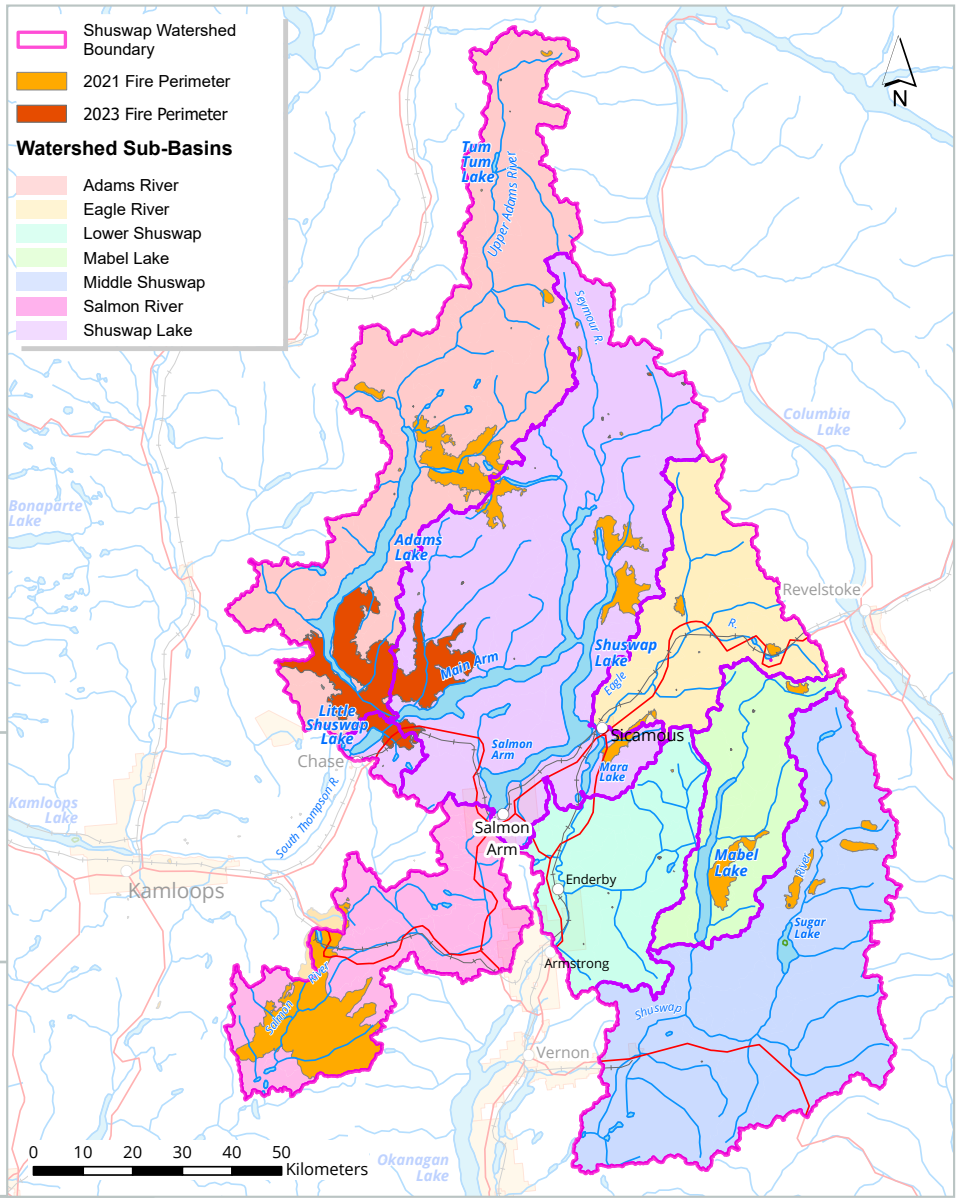
Forest fires in the Shuswap watershed

2021 and 2023 had significant wildfires in the region. This map shows the boundary of the Shuswap watershed with seven major sub-basins, and the wildfires in 2021 (orange polygons) and 2023 (red polygons).

1,552,678
HECTARES
the size of the Shuswap watershed

84,485
HECTARES
the total area burned within the Shuswap watershed in 2021

45,949
HECTARES
the total area burned within the Shuswap watershed in 2023



A forest acts like a shield, a sponge and a filter

In a healthy forested watershed, the trees and soil intercept and receive precipitation like a shield, sponge and filter. When rain or snow falls, trees capture some of it and prevent it from falling to the ground and potentially from causing erosion (shield). Some precipitation does fall to the ground directly or flows down the stems of trees to the ground where the soil soaks it up and stores some of it (sponge). As water moves downstream through the watershed, the soil cleans and purifies the water (filter).

What happens after a wildfire?

Smoke plumes and the ash they contain bring large quantities of nutrients, metals, and minerals that can be deposited on the surfaces of lakes. Additionally, the shield, sponge, and filter effects may all be compromised following a wildfire. The forest canopy is burnt in a wildfire, thus removing the shield. Consequently, rain hits the ground at full speed and erosion is more likely to occur, causing ash and soil to wash off the landscape into creeks, rivers and lakes. Additionally, with the forest canopy removed more sunlight hits the ground and the timing of snowmelt is earlier in the year. The rate of snowmelt may increase which can lead to erosion or flash flooding. Furthermore, an especially intense wildfire may burn the soil and alter its physical and chemical structure. As a result, soil may become hydrophobic (water-repellent) and unable to soak up water thus removing the sponge and filter effects. Lakes fed by burned watersheds receive a greater volume of run-off water—which in turn contains more nutrients and combustion residues—than lakes fed by unburned watersheds.

SHUSWAP watershed council

Who We Are

About the Shuswap Watershed Council

The SWC was established in 2014 as a watershed-based partnership of several organizations with an interest or responsibility for protecting water quality. There are 20 members that represent three regional districts, two municipalities, the Secwepemc Nation, three Provincial government agencies, and Shuswap communities. The SWC is a collaborative, non-regulatory group that focuses on strategic initiatives to protect, maintain, and enhance water quality and promote safe recreation in the Shuswap.

Staff

The Fraser Basin Council, a BC non-profit non-government organization established in 1997, provides staff services to the Shuswap Watershed Council. There are two staff in FBC's Kamloops office that lead the SWC's programs and initiatives.

Our Vision

Enhanced water quality that supports human and ecosystem health and the local economy in the Shuswap watershed.

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