



Photo by K. Moran, 2014



Lake Whatcom Management Program 2020-2024 Work Plan

March 2020

Prepared by the Lake Whatcom
Interjurisdictional Coordinating Team

ACKNOWLEDGEMENTS

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Lake Whatcom Management Program

lakewhatcom.whatcomcounty.org



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PROGRAM OVERVIEW

Introduction

Lake Whatcom plays an important role in the quality of life for Whatcom County residents. It is the drinking water source for over 100,000 people, a recreational destination for outdoor enthusiasts and provides valuable habitat for plants and animals unique to our region. Keeping the lake clean and its forests and ecosystems healthy is no small task. Watershed residents and visitors play a critical role in this effort through stewardship of this shared resource. Local organizations and governments work to promote stewardship and take cooperative action to restore water quality, protect environmental health and preserve healthy forests in the watershed.

The 2020–2024 Lake Whatcom Management Program Work Plan represents this coordinated endeavor, bringing together the planned efforts of the City of Bellingham, Whatcom County, and the Lake Whatcom Water and Sewer District and consolidating them in one place to ensure actions are efficient and effective. This document outlines the efforts that these local entities will implement over the next five years to further the goals of the Lake Whatcom Management Program (see page 4).



Lake Whatcom | Photo by T. Ward, 2018

Statement from County Executive, City Mayor, District General Manager

As new leaders of Whatcom County, the City of Bellingham, and the Lake Whatcom Water and Sewer District, we stand by our organizations' long-standing commitment to restore, protect, and preserve Lake Whatcom's water quality and ecological health.

This updated work plan builds on over two decades of coordinated work and an impressive list of on-the-ground projects that are fulfilling our commitments to make steady progress in protecting and improving the lake. We are committed to working with our staff and the community to accomplish the work identified in this work plan. Our partnership is strong, and we remain on schedule to achieve a clean and protected source of drinking water for people and a healthy habitat for wildlife.



Justin Clary
District General Manager



Seth Fleetwood
Bellingham Mayor



Satpal Singh Sidhu
County Executive

PROGRAM OVERVIEW

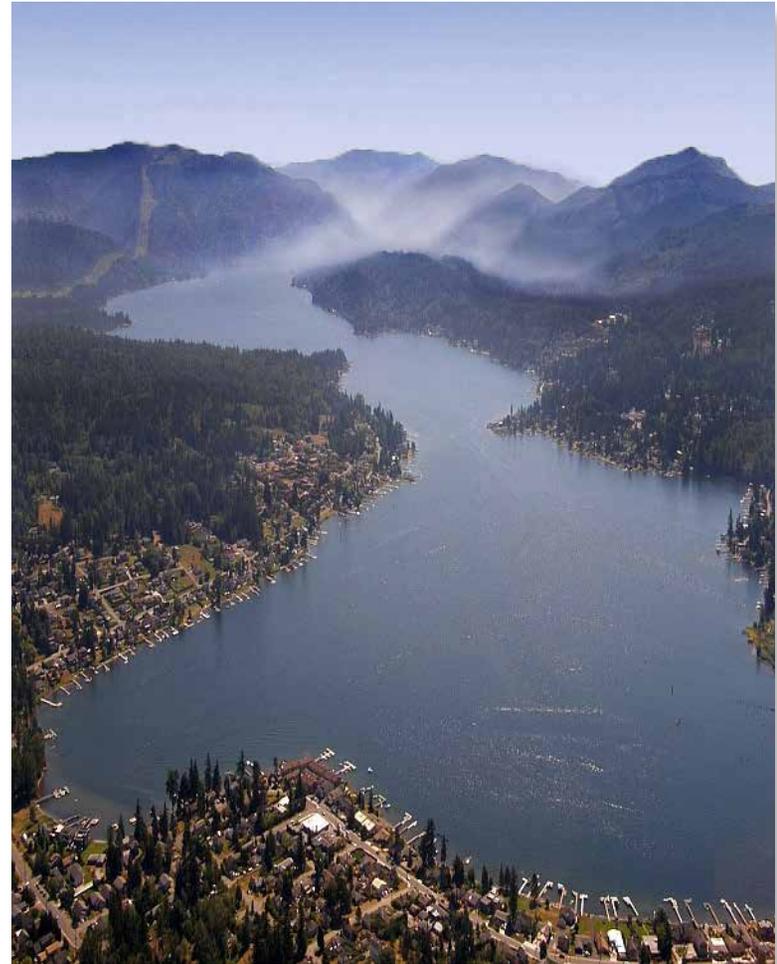
A Comprehensive Approach

The Lake Whatcom Management Program (LWMP) had its beginnings in the 1980s and early 1990s, when deterioration of Lake Whatcom's water quality was documented and brought to the attention of agencies and the public. In response, a joint resolution was passed by the City of Bellingham, Whatcom County and the Lake Whatcom Water and Sewer District in 1992 to organize efforts to address the most serious threats to the watershed. This comprehensive approach to managing the lake became the basis of the LWMP, which was established by Interlocal Agreement in 1998.

The LWMP shares resources to apply the best available science, engage the most knowledgeable local experts and build the strongest coalition amongst all who enjoy the benefits of this shared natural resource. The program strives to ensure that public dollars are spent responsibly and to the greatest benefit of the community and our quality of life. The LWMP identifies threats to Lake Whatcom, eliminates them if possible and mitigates them as necessary. As new threats are identified, solutions to address them are incorporated into subsequent work plans.

Program focus has evolved and expanded over time. In the 1990s, threats from forest harvest and forest practices were a major concern. In 1998, reducing phosphorus in stormwater entering the lake became a primary focus when Lake Whatcom was placed on the state's list of polluted water bodies due to low dissolved oxygen levels. By 2012, concern over threats from invasive mussels led to a new collaborative Aquatic Invasive Species program.

Current management efforts are focused in ten program areas, comprehensively addressing watershed health. Work plans are developed by LWMP partners. The 2020–2024 Work Plan is the fifth plan to date. It will guide actions to reduce the amount of phosphorus reaching the lake and address other watershed issues over the next five years. Consistent with previous plans, the 2020–2024 Work Plan is organized by program areas, each with specific objectives and planned activities.



Lake Whatcom | Photo by M. Kjelstad, 2010

PROGRAM OVERVIEW

Watershed and Lake Facts

Population and Drinking Water Supply

- Lake Whatcom is the drinking water source for over 100,000 Whatcom County residents, which is about half the county's population.
- Lake Whatcom provides drinking water for the City of Bellingham, Lake Whatcom Water and Sewer District, several smaller water districts and associations and homes that draw water directly from the lake.
- The City of Bellingham withdraws water from the lake's middle basin through a 1,200-foot wooden pipeline that leads to the water treatment plant in Whatcom Falls Park.
- About 18,000 people live in the Lake Whatcom watershed (2018 estimate).
- Approximately 25% of the watershed population lives within the City of Bellingham and approximately 75% live outside city limits in unincorporated Whatcom County.



Lake Whatcom | Photo by K. Moran, 2014

Physical Characteristics

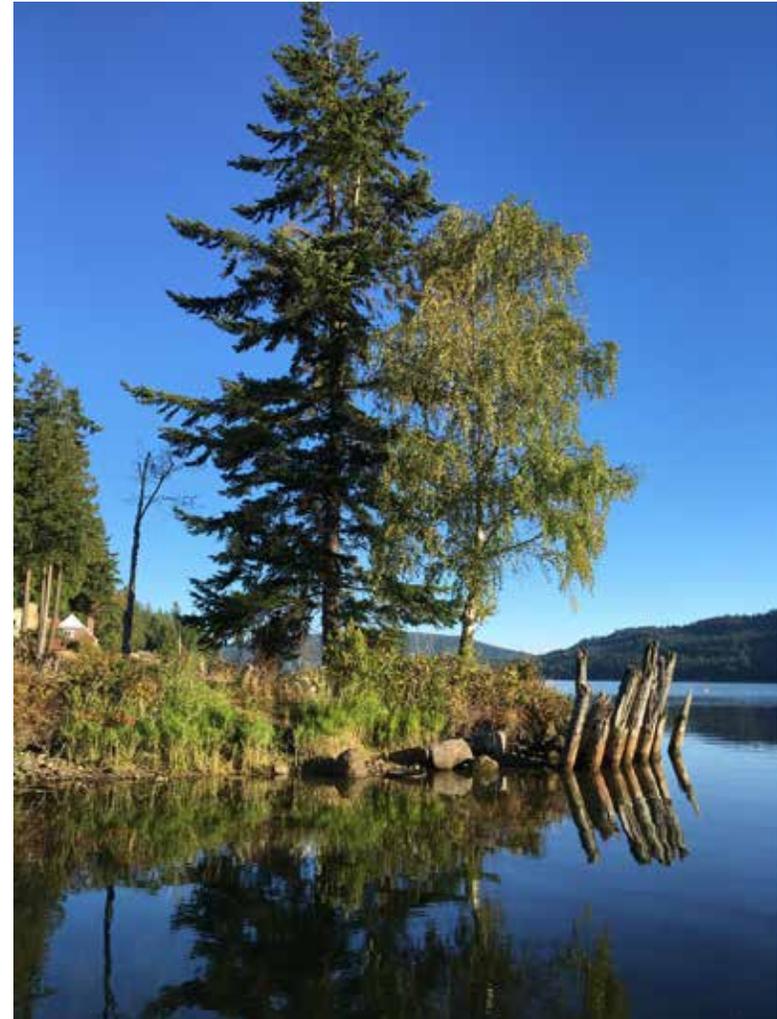
- Lake Whatcom is about ten miles long and just over one mile wide at its widest point.
- Lake Whatcom's total shoreline is about 30 miles long.
- Lake Whatcom's surface area is about 5,000 acres with 92% outside of city limits.
- Lake Whatcom is made up of three distinct basins that hold about 250 billion gallons of water.
- Lake Whatcom's natural outflow is to Whatcom Creek and Bellingham Bay.
- The City of Bellingham controls the lake level with a small dam at the outlet draining to Whatcom Creek. When the lake level reaches 314.94 feet above mean sea level the city is obligated to release water through the control dam.
- Lake Whatcom's watershed covers about 56 square miles (36,000 acres) with 97% outside of city limits.
- Lake Whatcom is fed by 36 streams (many do not flow year-round). Major streams include Silver Beach, Carpenter, Olsen, Smith, Anderson, Brannian, and Austin Creeks.
- Lake Whatcom also periodically receives water diverted from the Middle Fork of the Nooksack River by the City of Bellingham to meet water supply needs.
- Lake Whatcom's depth ranges from 15 feet deep to 334 feet deep.

PROGRAM OVERVIEW

Program Goals

The Lake Whatcom Management Program is guided by the general goals established in the 1992 Joint Resolution of the City of Bellingham, Whatcom County, and the Lake Whatcom Water and Sewer District. These are:

- To recognize Lake Whatcom and its watershed as the major drinking-water reservoir for the county and develop public and private management principles for the lake and watershed consistent with a drinking water reservoir environment.
- To protect, preserve and enhance water quality and manage water quantity to ensure long-term sustainable supplies for a variety of uses, with priority placed on domestic water supply. Management programs and actions will be made in recognition of existing contractual agreements and potential for review and renegotiation in light of these goals.
- To prioritize protection over treatment in managing Lake Whatcom and its watersheds. Management actions shall reflect a long-term view of replacement or treatment costs.
- To manage water quantity to sustain long-term efficient use of the water for beneficial uses within the county that are consistent with a drinking-water reservoir, and recognize the integral link with the Nooksack River and associated water resource concerns.
- To ensure that opportunities for public comment and participation are provided in policy and management program development, and to promote public awareness and responsible individual actions.
- To promote learning, research, and information opportunities which better our understanding of the watershed system, the impacts of activities, and the benefits and potentials of policies implemented.



Lake Whatcom | Photo by T. Ward, 2017

PROGRAM OVERVIEW

Addressing the Challenges

The Lake Whatcom Management Program (LWMP) addresses the main challenges facing the lake and its watershed to meet long term management objectives for watershed health. These objectives are met through actions by residents, visitors and local governments.

Objective:

Water quality in the lake is restored to protect human health and support a diverse ecosystem.

Clean, safe drinking water is available for over 100,000 Whatcom County residents, and its source is protected from pollution.

High quality low impact recreational opportunities around the lake are available, accessible and managed in a way that preserves the health of forests and waterways.

Management Challenge:

Runoff from developed areas entering the lake changes water chemistry and disrupts the natural balance of the ecosystem. Nutrients in the runoff feed algae blooms that affect native species and rob the water column of oxygen, creating poor water quality that threatens the health of aquatic species. Bacteria in stream runoff are a potential threat to the health of humans and pets coming into contact with the lake and streams.

Nutrients in polluted runoff lead to algae growth that can clog intake structures and interfere with water treatment processes. When such impacts occur, providing an adequate supply of drinking water requires the use of additional treatment strategies for both public and private systems. This increases costs and decreases efficiency of water supply systems.

Recreation throughout the watershed, from boating to hiking to mountain biking, can damage forests, harm water quality, cause erosion, disturb critical wildlife habitat, and introduce invasive species. Recreation activities that occur in environmentally sensitive areas, such as wetlands or steep slopes, can change the landscape in ways that result in long-term environmental damage. While most recreational activities in the watershed contribute positively to our community and our quality of life, unmanaged uses can threaten our shared enjoyment of the lake.

Our Response:

LWMP actions prevent, capture, and reduce the amount of nutrients and bacteria in runoff entering the lake. Large-scale engineering projects, small-scale pollution prevention efforts, and one-on-one assistance to residents all help reduce pollution. In addition, regulations and forest management strategies are designed to ensure that land use activities do not further exacerbate these problems.

As water purveyors, the City of Bellingham and the Lake Whatcom Water and Sewer District plan, operate and maintain treatment systems that remove impurities and provide clean, safe tap water to their customers. LWMP partners monitor water quality in the lake, in tributary streams, and from the tap. They also respond to spills, collect hazardous materials from residents and construct stormwater treatment facilities to capture pollution before it enters the lake.

The LWMP recognizes the overlap between recreation and land preservation, which rely on each other to succeed. Preserved land that can support low-impact recreation is made accessible to the public. Recreational activities that adversely impact the watershed's natural functions are discouraged or prevented. Impacts from boating on the lake (e.g., fuel spills, invasive species transport, and shoreline erosion from wakes) are managed by providing adequate boater amenities and educating boaters and visitors about these risks.

PROGRAM OVERVIEW

Addressing the Challenges (continued)

Objective:

A high quality of life is maintained for our community and watershed residents.

Management Challenge:

The Lake Whatcom watershed is a desirable place to live and visit because of its beauty and access to recreational opportunities. The ability to boat, swim and enjoy the view of bright blue water contribute to a high quality of life enjoyed by both the community as a whole and watershed residents. Impacts to the lake that threaten those uses, including poor water quality, invasive species, unpleasant odors or unusable docks or beaches, could negatively affect quality of life and watershed property values.

Our Response:

All aspects of the LWMP work together to protect watershed health and water quality which in turn protects quality of life and property values. Watershed residents play an important role. LWMP success depends on their stewardship. The LWMP provides incentives and assistance to help residents reduce their impact. Property owners are encouraged to install water quality landscape improvements through the Homeowner Incentive Program. Residents are provided a guide to watershed living that gives them information and tools to enjoy their property without contributing to ongoing problems. The city and county have adopted rules for development in the watershed that ensure residents can enjoy their property while protecting the lake.

All of the uses and benefits of the lake are protected from aquatic invasive species infestations.

Aquatic invasive species (AIS) pose a significant long-term risk to all uses of Lake Whatcom. The introduction of zebra and quagga mussels would have highly detrimental impacts to water quality, recreation and property values. These tiny mussels could encrust pipes resulting in costly impacts to drinking water systems. Invasive aquatic plants can spread quickly throughout the lake, outcompeting native species, and resulting in blooms impacting shorelines, water access, and fishing. AIS are not easily controlled or eliminated. An infestation would likely create a permanent change in the lake with unknown consequences.

The LWMP has had a dedicated AIS prevention program since 2012. Throughout the boating season, inspectors work throughout the watershed to prevent the introduction of AIS and to educate boaters on their risk. This team of trained specialists provides on-site inspections for watershed residents and work at boat launches around the lake. If needed, the AIS crew uses specialized equipment to decontaminate boats before they enter the lake. These inspectors also staff boat launches at other lakes in the county to protect Lake Whatcom from AIS that may be introduced, or are already present, in those waterbodies.

PROGRAM OVERVIEW

Focus on Phosphorus

Lake Whatcom Management Program (LWMP) activities focus on reducing phosphorus levels in Lake Whatcom in response to federal Clean Water Act requirements and the state Total Maximum Daily Load (TMDL) process. The TMDL plan sets a target for phosphorus reduction and a timeline for achieving the target. In response to this process, phosphorus has become a major guiding issue for the five-year work plans over the past decade.

What is Phosphorus?

Phosphorus is a naturally occurring nutrient that stimulates plant growth and is essential for animal and plant life.

Where does phosphorus come from?

Phosphorus is an element found in soils, sediments and organic material. Phosphorus is transported by water and air. Specific sources include: erosion, fertilizers and pesticides, organic material (e.g., leaves, grass clippings, and other compost), animal waste, sewage effluent, and phosphorus-based soaps and detergents.

How does phosphorus get into the lake?

Phosphorus is primarily transported to the lake through stormwater runoff. On natural landscapes, stormwater slowly seeps into the ground where it is filtered by forests and soils. Human activity in developed landscapes increases the amount of phosphorus in stormwater above natural levels. Runoff flowing across surfaces such as roads, roofs, driveways and yards picks up pollutants like phosphorus and flows directly into the nearest ditch or storm drain leading to the lake.

Why is phosphorus a problem?

Phosphorus promotes algal growth. When algae die, the decomposition process depletes oxygen in the lake affecting the aquatic ecosystem and releasing additional phosphorus from lake sediments. Algae also impact water quality taste and odor and add to water treatment costs. Some types of algae are toxic and can cause health issues for swimmers and pets.

The City of Bellingham and Whatcom County have been working together for over a decade to protect Lake Whatcom and reduce phosphorus loading to the lake by:

- Adopting stormwater and land use regulations to reduce phosphorus pollution.
- Constructing, operating, and maintaining stormwater treatment facilities.
- Providing residential retrofit programs to reduce phosphorus pollution from existing developed lots.
- Preserving land in the watershed that might otherwise be susceptible to development or other land disturbance activities.

The city and county are required to make continued progress toward TMDL targets through their National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permits. The current permits are in effect from August 1, 2019 – July 31, 2024 and include specific actions that the city and county are required to complete during this permit cycle.

These required actions have been incorporated into this work plan and noted with (TMDL REQUIRED). **See the table on pages 30-31 for a complete listing of TMDL required activities with a timeline.**

What about Bacteria?

While phosphorus in stormwater entering the lake is a focus of many efforts of the LWMP, addressing bacteria flowing into streams that lead to the lake is also an important component of watershed protection and restoration.

Bacteria levels have been found to exceed water quality standards in eleven tributaries to Lake Whatcom, many of which flow through developed areas. The Department of Ecology tests for specific types of bacteria that are commonly associated with residential areas, from sources like leaking septic systems, sewer system overflows, and pet and livestock waste left exposed to rainfall. The TMDL requires that the city and county address the sources of these pollutants to protect public health in and around these streams and their outlets.

Fortunately, many of the practices employed to reduce phosphorus also help to reduce bacteria entering the streams or the lake. These include improvements that filter stormwater, encouraging residents to manage animal waste at home and in public spaces, and educating homeowners about proper maintenance of septic systems.

PROGRAM OVERVIEW

Program Development & Accomplishment Timeline

| 1992 - 1999 | 2000 - 2004 | 2005 - 2009 | 2010 - 2014 | 2015 - 2019 |
|--|---|---|---|--|
| <p>1992: Joint Resolution adopted to establish common goals for Lake Whatcom watershed</p> <p>1992: City stormwater capital improvement program began</p> <p>1993: Sudden Valley Community Association began density reduction program to remove 1,400 potential dwelling units</p> <p>1998: Lake Whatcom Management Program (LWMP) established by Interlocal Agreement</p> <p>1998: Lake Whatcom placed on Washington's list of polluted water bodies due to low dissolved oxygen levels; Tributary creeks listed for high bacteria levels; Total Maximum Daily Load (TMDL) process began.</p> <p>1999: County Water Resource Protection Overlay District and Stormwater Special District established</p> <p>1999: LWMP 1999 Work Plan adopted</p> | <p>2000: LWMP 2000-2004 Work Plan adopted</p> <p>2000: City stormwater capital improvement program expands to address phosphorus</p> <p>2000: Interjurisdictional Coordinating Team (ICT) created to coordinate activities and programs between jurisdictions</p> <p>2001: City adopted first land use regulations for new development on properties that drain to Basin 1 (Lake Whatcom Reservoir Regulatory Chapter [BMC 16.80])</p> <p>2001: City stormwater utility established; provided funding for Lake Whatcom protection</p> <p>2001: City Lake Whatcom Property Acquisition Program began</p> <p>2001: Watershed Advisory Board established</p> <p>2002: County rezone reduced 1,800 potential dwelling units</p> | <p>2005: LWMP 2005-2009 Work Plan adopted</p> <p>2005: City and county passed phosphorus fertilizer ban</p> <p>2005: City and county banned boats with carbureted 2-stroke engines</p> <p>2006: County stormwater capital improvement program with focus on phosphorus treatment began</p> <p>2008: Lake Whatcom Policy Group formed</p> <p>2008: City Residential Stormwater Retrofit Program began</p> <p>2009: City amended the Lake Whatcom Reservoir Regulatory Chapter</p> | <p>2010: LWMP 2010-2014 Work Plan adopted</p> <p>2011: Homeowner Incentive Program launched</p> <p>2012: Aquatic Invasive Species Prevention Program began</p> <p>2013: County amended Title 20 to create the Lake Whatcom Watershed Overlay District to reduce impacts from development and land use activities</p> <p>2014: Sudden Valley Community Association joined Policy Group</p> <p>2014: Department of Natural Resources (DNR) finalized reconveyance of 7,800 acres in the watershed to Whatcom County Parks</p> | <p>2015: LWMP 2015-2019 Work Plan adopted</p> <p>2016: Lake Whatcom TMDL for phosphorus and fecal coliform approved by Environmental Protection Agency (EPA)</p> <p>2016: New phosphorus loading model developed</p> <p>2017: Homeowner Incentive Program revised and expanded</p> <p>2019: Began update of lake response model</p> <p>2019: County Lake Whatcom stormwater utility established to provide funding for Lake Whatcom protection</p> <p>2019: City and county National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permits issued (TMDL response requirements included in the new permit)</p> |

PROGRAM OVERVIEW

Reporting Metrics

Reporting metrics are data Lake Whatcom Management Program (LWMP) partners use to track the progress of programs and on-the-ground activities or to quantify communication and outreach efforts. Reporting metric updates will be provided in annual progress reports and the five-year accomplishments report.

Work plan reporting metrics are not intended to provide an overall evaluation of Lake Whatcom watershed health or water quality trends. This type of long-term evaluation occurs separately through efforts such as Western Washington University’s Institute for Watershed Studies Lake Whatcom Monitoring Project.

Different program areas measure progress in different ways. A comprehensive Lake Whatcom Watershed Baseline Survey was established in 2018 to help evaluate the effectiveness of outreach efforts and to inform future work plan priorities. This survey will be repeated every five years and the results will provide information on watershed residents’ attitudes, knowledge and behaviors. When applicable to specific activities included in this work plan, key metrics from this survey are also included as reporting metrics. Examples include:

- The proportion of watershed residents who have used alternative methods of transportation in the past year.
- The proportion of watershed residents who are knowledgeable about proper hazardous materials disposal.
- The proportion of watershed residents who are knowledgeable about AIS and compliance with inspection requirements.

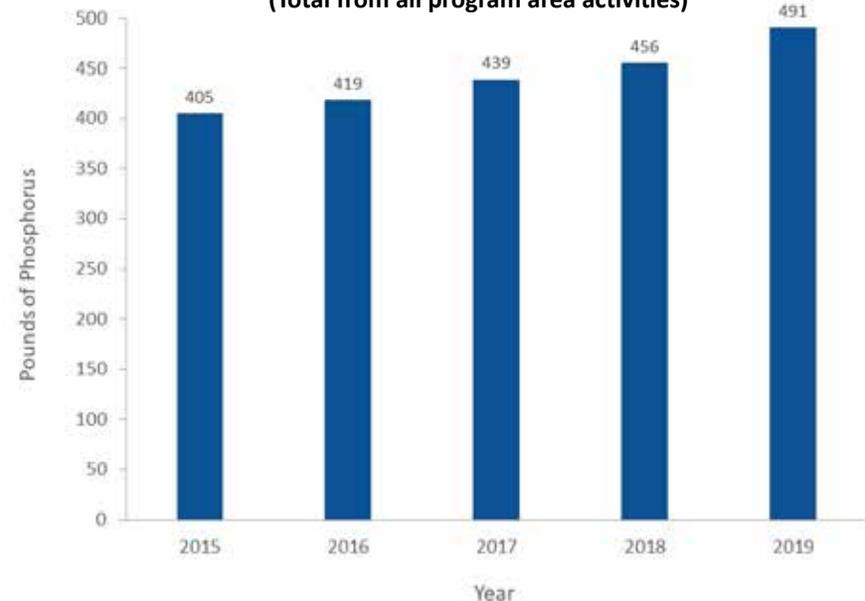
Progress made in our stormwater program area is demonstrated by tracking efforts by the City of Bellingham and Whatcom County to meet Total Maximum Daily Load (TMDL) targets for reducing phosphorus and bacteria loading to the lake. Cumulative efforts to date (2004 to 2019) have resulted in a reduction of approximately 491 pounds of phosphorus per year entering Lake Whatcom (15% of current TMDL target amount of 3,150 pounds of phosphorus per year by 2066*). Over the next five years, the activities outlined in this plan will accomplish additional phosphorus reductions while also reducing bacteria levels in tributaries.

*Target is subject to change pending modeling results.

Several new reporting metrics have been included in this work plan to better quantify progress or to provide more information regarding on-the-ground activities or changes in the Lake Whatcom watershed. One of these new metrics will estimate the water quality benefits from land preservation efforts by providing an estimate of the maturity of vegetation on each of the protected parcels. The functional status of protected watershed properties will be assigned to one of three categories based on the maturity of the site’s vegetation: early succession (first nine years of restoration), mid-succession (10 to 30 year forested), or mature forest function (beyond 30 years).

Other metrics have been carried over from the last work plan and aim to provide us with ongoing information regarding trends in the watershed. Some of these trends inform work plan priorities while others provide interesting information regarding the changes in the watershed. Examples include our ongoing efforts to reduce the number of pounds of phosphorus entering Lake Whatcom (Figure 1) and the number of watercraft inspections for aquatic invasive species that have been conducted between 2015 and 2019.

Figure 1: Pounds of phosphorus reduced per year (Total from all program area activities)



PROGRAM OVERVIEW

Program Areas and Objectives

The Lake Whatcom Management Program (LWMP) focuses efforts in ten program areas. The 2020-2024 Work Plan uses the same program areas as the previous five-year plan. As LWMP partners, the City of Bellingham, Whatcom County, and the Lake Whatcom Water and Sewer District are the leads responsible for accomplishing the work described in this plan.

Additional partners play important roles to help achieve work plan goals. Key partners include: Sudden Valley Community Association, Washington State Departments of Ecology and Natural Resources, WSU Whatcom County Extension, Watershed Advisory Board members, Western Washington Institute for Watershed Studies, Whatcom Conservation District, and Whatcom Land Trust.

1. Land Preservation

Preserve and restore land that might otherwise be susceptible to development or other land disturbance to protect water quality and fish and wildlife habitat.

2. Stormwater

Protect and restore water quality in Lake Whatcom and its tributaries by using best practices to collect, treat, and manage stormwater runoff from developed areas throughout the watershed.

3. Land Use

Prevent water quality and quantity impacts from new development, redevelopment, and forest practices.

4. Monitoring & Data

Collect and manage data to increase our understanding of water quality and pollution sources, reduce uncertainty in the Lake Whatcom loading and response models, and guide management decisions.

5. Hazardous Materials

Prevent water quality impacts associated with improper storage and handling of hazardous materials, and ensure that spill prevention and response programs adequately protect water quality.

6. Recreation

Provide access to recreational opportunities that are consistent with water quality goals.

7. Aquatic Invasive Species

Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and minimize impacts associated with established invasive species.

8. Utilities & Transportation

Prevent water quality and quantity impacts from water, sewer, and transportation systems.

9. Education & Engagement

Educate and engage watershed residents and visitors to promote and facilitate the adoption of behaviors that protect water quality.

10. Administration

Implement the Lake Whatcom Management Program Work Plan and provide opportunities for public input.

PROGRAM AREA

Land Preservation

OBJECTIVE: Preserve and restore land that might otherwise be susceptible to development or other land disturbance to protect water quality and fish and wildlife habitat.

**2020-2024
Estimated Investments:
\$19.5 million**



The Land Preservation and Recreation program areas share two important objectives: protection of the watershed's water quality and provision of recreational opportunities in the watershed. These objectives are front and center for both of the program areas; however, each has a different emphasis. Land Preservation actions primarily seek to protect water quality, with an additional objective of providing for passive recreational opportunities where appropriate.

1.1 Property Protection

Purchase property or use other measures, such as conservation easements and donations, to prevent development and other land use disturbances that degrade the natural functions of the watershed.

1.1.1. Purchase watershed properties based on evaluation criteria and availability.

1.2 Property Management

Manage watershed properties to improve the watershed's natural functions that protect water quality and fish and wildlife habitat.

1.2.1. Implement management plans that address forestry, recreation (facilities, trails, roads), and vegetation (planting and maintenance) management needs for all city and county properties.

Reporting Metrics:

- Number of development units removed from the watershed per year
- New acres acquired or otherwise protected per year
- Total cumulative acres in protected status updated annually
- Acres in preservation program that are in early succession (0-9 years old), in mid-succession (10-30 years old), and mature forest (>30 years old) updated every five years

PROGRAM AREA

Stormwater

OBJECTIVE: Protect and restore water quality in Lake Whatcom and its tributaries by using best practices to collect, treat, and manage stormwater runoff from developed areas throughout the watershed.

**2020-2024
Estimated Investments:
\$16.9 million**



The Lake Whatcom Management Program (LWMP) addresses stormwater pollution by working with landowners throughout the watershed and experts in the fields of engineering and water chemistry. Strategies include preventing pollution at its source, filtering it through native soils and vegetation, and treating it using engineered stormwater facilities and other emerging technologies.

2.1 Capital Improvements

Construct and retrofit capital facilities to reduce water quality and quantity impacts associated with stormwater runoff.

- 2.1.1. Construct capital stormwater facilities in accordance with capital improvement plans adopted by the City of Bellingham and Whatcom County as part of ongoing watershed-scale planning efforts (TMDL REQUIRED).
- 2.1.2. Complete an evaluation of the effectiveness of built stormwater treatment and flow control facilities, and an assessment of overall performance in reducing phosphorus and bacteria (TMDL REQUIRED).
- 2.1.3. Develop retrofit plans for existing facilities and program projects for design and construction in accordance with resources, budget, and need (TMDL REQUIRED).
- 2.1.4. County will complete two subwatershed master plans to identify specific strategies for target areas.
- 2.1.5. Update capital improvement project list annually (TMDL REQUIRED).
- 2.1.6. Pursue funding opportunities, including grants, for projects identified in capital or retrofit list(s).

2.2 Residential Stormwater Solutions

Address unmanaged runoff and phosphorus from private properties around Lake Whatcom.

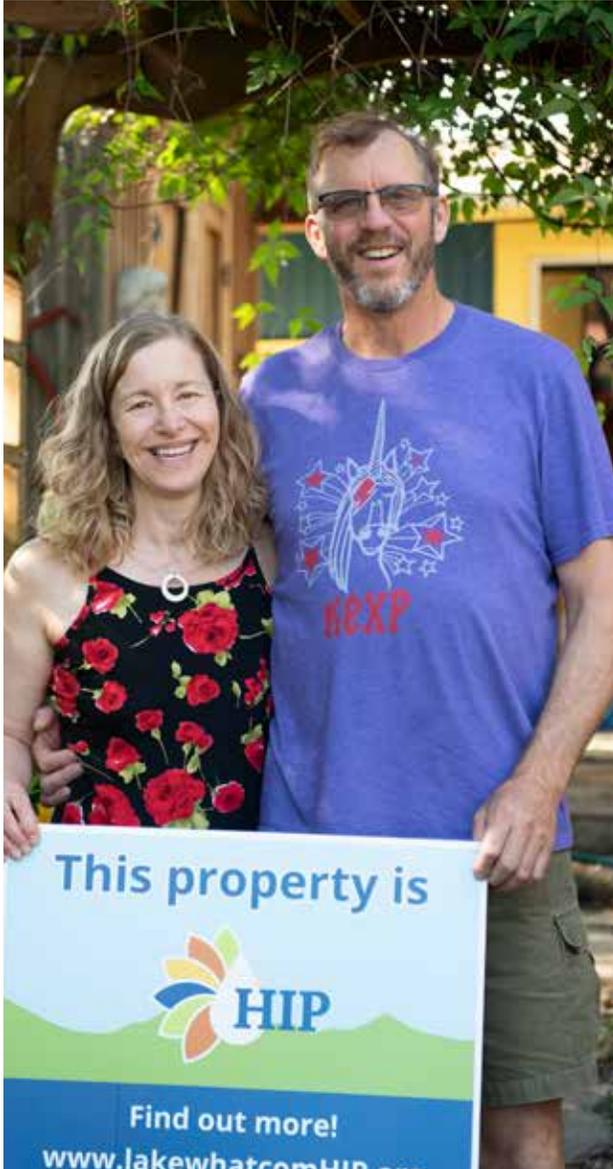
- 2.2.1 Provide technical and/or financial assistance for residential-scale retrofits of private property that result in phosphorus- or flow-limiting projects through the Homeowner Incentive Program (HIP) or similar programs that encourage voluntary stewardship by landowners.
- 2.2.2 Evaluate and develop neighborhood-scale retrofit projects in public rights-of-way and community space.

PROGRAM AREA

Stormwater

OBJECTIVE: Protect and restore water quality in Lake Whatcom and its tributaries by using best practices to collect, treat, and manage stormwater runoff from developed areas throughout the watershed.

**2020-2024
Estimated Investments:
\$16.9 million**



2.2 Residential Stormwater Solutions (continued)

Address unmanaged runoff and phosphorus from private properties around Lake Whatcom.

- 2.2.3. Provide inspections and/or technical assistance to owners of private stormwater facilities and document performance toward water quality improvements for properly maintained systems.
- 2.2.4. Conduct annual private stormwater facility maintenance workshops to instruct owners about system needs and maintenance requirements (TMDL REQUIRED).
- 2.2.5. Develop and disseminate Lake Whatcom watershed-specific education and outreach messaging that encourages residents to act to protect water quality.

2.3 Public Stormwater Facilities and Infrastructure

Operate, inspect, and maintain all public stormwater facilities and infrastructure.

- 2.3.1. Conduct regular inspection and maintenance of public stormwater facilities (TMDL REQUIRED).
- 2.3.2. Conduct infrastructure maintenance activities and research and evaluate water quality benefits for activities that may include, but are not limited to, enhanced street sweeping, catch basin cleaning, and permeable pavement sweeping.

2.4 Integrate Water Quality Improvements Across Program Areas

Provide assistance to other program areas to achieve water quality improvement goals.

- 2.4.1. Provide technical assistance and consulting to other program areas and estimate water quality benefits gained through combined efforts and partnerships.

Reporting Metrics:

- Pounds of phosphorus reduced per year through activities in the following categories (TMDL REQUIRED):
 - Phosphorus treatment and flow control capital projects
 - Homeowner Incentive Program (HIP) improvements
 - Land use regulations
 - Operations and maintenance activities

PROGRAM AREA

Land Use

OBJECTIVE: Prevent water quality and quantity impacts from new development, redevelopment, and forest practices.

2020-2024
Estimated Investments:
\$1.8 million



The Lake Whatcom Management Program (LWMP) uses development regulations and assessments of forestry activities to minimize water quality impacts from development and logging.

3.1 Development

Use development regulations to protect water quality.

- 3.1.1. Coordinate with Lake Whatcom partners when developing or revising development regulations.
- 3.1.2. Track all building and development activities in the watershed and make information accessible to agencies and the public through the Annual Buildout Report.
- 3.1.3. Monitor newly established Native Vegetation Protection Areas for five years as required by code to ensure success.
- 3.1.4. Provide outreach to watershed residents to increase understanding of and compliance with land use and stormwater regulations.

3.2 Forestry

Assess forestry activities to verify that adverse water quality impacts are minimized.

- 3.2.1. Review reports written by the Interjurisdictional Committee on Department of Natural Resources (DNR) forestry activities.
- 3.2.2. Review and comment on private forest practice applications.

PROGRAM AREA

Land Use

OBJECTIVE: Prevent water quality and quantity impacts from new development, redevelopment, and forest practices.

2020-2024
Estimated Investments:
\$1.8 million



3.2 Forestry (continued)

Assess forestry activities to verify that adverse water quality impacts are minimized.

- 3.2.3. Engage with private forest landowners to achieve consistency with the Lake Whatcom Landscape Plan.
- 3.2.4. Track permitted forest practice activities (including harvests, replanting, road building and abandonment, and herbicide spraying).
- 3.2.5. Collaborate with the DNR to improve mapping of forest practice activities in GIS to improve tracking capabilities.

Reporting Metrics:

- Acres of native vegetation protected as forest in perpetuity as a result of land use regulations
- Acres of developed surface treated by phosphorus-limiting Best Management Practices (BMPs) installed to meet land use regulation requirements
- Proportion of watershed residents who are knowledgeable of phosphorus-neutral development regulations measured every five years through the Lake Whatcom Watershed Baseline Survey
- Acres of timber harvested and replanted on forest lands per year
- Miles of road constructed/abandoned on forest lands per year
- Acres of land treated with herbicides on forest lands per year

Monitoring and Data

OBJECTIVE: Collect and manage data to increase our understanding of water quality and pollution sources, reduce uncertainty in the Lake Whatcom loading and response models, and guide management decisions.

**2020-2024
Estimated Investments:
\$3.4 million**



The Lake Whatcom Management Program (LWMP) works to implement studies, conduct monitoring, and improve modeling programs to further understand water quality and pollution sources in the Lake Whatcom watershed. Key efforts include lake and tributary monitoring, evaluating effectiveness of existing Best Management Practices (BMPs), updating load and response models, assessing on-site sewage (OSS) systems and managing data.

4.1 Lake Whatcom Monitoring

Continue long-term baseline water quality monitoring in Lake Whatcom.

- 4.1.1. Contract with Western Washington University Institute for Watershed Studies to provide annual report regarding water quality and trends in Lake Whatcom and tributaries.
- 4.1.2. Evaluate monitoring results and receive updates on water quality trends.

4.2 Tributary Monitoring

Continue long-term baseline monitoring of Lake Whatcom tributaries including the collection of data on total suspended solids, phosphorus and fecal coliform concentrations.

- 4.2.1. Provide annual data input for loading and response models.
- 4.2.2. Oversee and refine tributary monitoring contracts to improve hydrologic model.
- 4.2.3. Evaluate tributary monitoring results and determine policy implications.

4.3 Stormwater Monitoring

Conduct monitoring to evaluate stormwater facilities for their effectiveness at removing phosphorus and fecal coliform.

- 4.3.1. Use data to develop recommendations to improve removal of phosphorus and fecal coliform by stormwater facilities; update Best Management Practices (BMPs) as needed.

Monitoring and Data

OBJECTIVE: Collect and manage data to increase our understanding of water quality and pollution sources, reduce uncertainty in the Lake Whatcom loading and response models, and guide management decisions.

**2020-2024
Estimated Investments:
\$3.4 million**



4.4 Phosphorus Loading and Response Models

Continue to support data collection needed to improve accuracy of phosphorus loading and lake response models.

- 4.4.1. Update and recalibrate the phosphorus loading model with additional data and incorporate recommendations from third party review (TMDL REQUIRED).
- 4.4.2. Continue to collect high quality stream flow, water quality, and weather data.
- 4.4.3. Update lake response model to better define phosphorus reduction goals.

4.5 On-Site Sewage System Impact Assessment

Conduct monitoring along Northshore Drive to assess on-site sewage systems (OSS, also called septic systems) in the watershed.

- 4.5.1. Conduct follow-up investigation to assess impacts on Lake Whatcom water quality.
- 4.5.2. Evaluate study results and discuss policy implications.

4.6 Baseline Data

Manage and develop summaries of monitoring data and reports.

- 4.6.1. Review and summarize monitoring studies and reports to determine water quality trends and policy implications, and make information easily accessible to the public.
- 4.6.2. Maintain and update data catalog.
- 4.6.3. Track the status of Ecology-approved Quality Assurance Project Plans (TMDL REQUIRED).

Reporting Metrics:

- Number of lake water quality samples collected per year
- Number of tributary water quality samples collected per year
- Number of samples exceeding water quality standards

PROGRAM AREA

Hazardous Materials

OBJECTIVE: Prevent water quality impacts associated with improper storage and handling of hazardous materials and ensure that spill prevention and response programs adequately protect water quality.

**2020-2024
Estimated Investments:
\$225,000**



The Lake Whatcom Management Program (LWMP) promotes the proper management of hazardous materials to prevent pollution from entering stormwater systems. These efforts are especially important in the Lake Whatcom watershed to protect our community's drinking water source.

5.1 Hazardous Materials

Facilitate removal of hazardous materials from watershed residences.

- 5.1.1. Conduct hazardous materials collection event at locations in the watershed (TMDL REQUIRED).
- 5.1.2. Promote and provide education on proper use, storage and disposal of hazardous materials.

5.2 Spill Prevention and Response

Protect water quality by providing adequate spill prevention, response and disposal programs.

- 5.2.1. Continue to detect and remediate illicit discharges, connections, and improper disposal, including spills into the City of Bellingham stormwater system or Lake Whatcom Water and Sewer District sewer system.
- 5.2.2. Educate watershed residents and visitors on how to prevent and report spills.
- 5.2.3. Continue to record and respond to calls regarding illicit discharges or spills received via the stormwater hotline number.
- 5.2.4. Review spill response procedures and reporting protocols.
- 5.2.5. Conduct ongoing field staff training regarding spill prevention and response.

Reporting Metrics:

- Pounds of all hazardous materials collected from watershed residents per collection event(s) (TMDL REQUIRED)
- Pounds of phosphorus-containing materials collected from watershed residents per collection event(s) (TMDL REQUIRED)
- Number of spills, illicit discharges, or hazardous material incidents reported in the watershed
- Proportion of watershed residents who are knowledgeable about proper hazardous materials disposal measured every five years through the Lake Whatcom Watershed Baseline Survey
- Proportion of watershed residents who are knowledgeable about how to report spills measured every five years through the Lake Whatcom Watershed Baseline Survey

Recreation

OBJECTIVE: Provide access to recreational opportunities that are consistent with water quality goals.

**2020-2024
Estimated Investments:
\$4.7 million**



The Recreation and Land Preservation program areas share two important objectives: protection of the watershed's water quality and provision of recreational opportunities in the watershed. These objectives are front and center for both of the program areas; however, each has a different emphasis. Recreation program area activities are focused on the nexus between recreational activities and facilities and watershed stewardship.

6.1 Recreational Facilities

Develop or improve recreational facilities to support recreational opportunities while reducing impacts to lake water quality.

- 6.1.1. Operate and maintain existing recreational amenities (including parking, signage, picnic sites, shelters, information kiosks, trash and pet waste receptacles, and restrooms) and explore options for improving existing facilities and providing amenities where they do not currently exist.
- 6.1.2. Create low maintenance nutrient- and pesticide-free landscapes in public parks.
- 6.1.3. Infiltrate or treat stormwater following stormwater Best Management Practices (BMPs).
- 6.1.4. Ensure recreational opportunities offered through third-party vendors are in line with water quality goals.

6.2 Trails

Develop or improve trails and park roads to reduce impacts to water quality.

- 6.2.1. Build and maintain trails and park roads in accordance with appropriate BMPs to prevent erosion and ensure runoff is infiltrated and/or treated before reaching a water body.
- 6.2.2. Remove trails and roads that were not constructed using BMPs, where feasible.
- 6.2.3. Connect trails to other parks, trails, facilities and transportation networks.
- 6.2.4. Provide trailhead amenities such as restrooms, pet waste stations, and information kiosks, where appropriate.
- 6.2.5. Install directional signs on trails to discourage off-trail usage.

Recreation

OBJECTIVE: Provide access to recreational opportunities that are consistent with water quality goals.

**2020-2024
Estimated Investments:
\$4.7 million**



6.3 Public Access

Provide low impact public access opportunities.

- 6.3.1. Provide public access using existing parks, launches, and trails whenever possible.
- 6.3.2. Explore ways to improve bike lanes and transit services to recreational facilities.
- 6.3.3. Maintain and develop access to key viewpoints in the watershed.

6.4 Public Information and Stewardship

Provide watershed stewardship information to recreational users.

- 6.4.1. Educate watershed residents and visitors about recreational practices that protect water quality.
- 6.4.2. Engage recreational user groups (e.g. mountain bikers, horseback riders, boaters, etc.) in practices that protect water quality.

Reporting Metrics:

- Miles of user built trails decommissioned per year
- Miles of forest roads maintained in accordance with Forest Practices Act requirements per year
- Number of pet waste stations maintained in the watershed per year
- Estimated number of individuals using parks/trails in the watershed per year
- Number of interpretive/informational exhibits installed or maintained per year

PROGRAM AREA

Aquatic Invasive Species

OBJECTIVE: Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and minimize impacts associated with established invasive species.

**2020-2024
Estimated Investments:
\$2.8 million**



The Lake Whatcom Management Program (LWMP) launched the Aquatic Invasive Species (AIS) Prevention Program in 2012 with the goal of preventing the introduction of zebra and quagga mussels and other aquatic invasive species to Lake Whatcom. Program elements that are highlighted in this section include education and outreach, watercraft inspection and decontamination, and monitoring and response.

7.1 Prevention

Implement prevention programs to minimize introduction and spread of AIS into Lake Whatcom and nearby waterbodies.

- 7.1.1. Implement mandatory watercraft inspection and decontamination program at Lake Whatcom and Lake Samish.
- 7.1.2. Inform watershed residents, boaters and other lake visitors about AIS issues and engage them in prevention activities through informational materials, online education tools, community events and public meetings, and in-person conversations during inspections.

7.2 Early Detection and Monitoring

Implement comprehensive aquatic invasive species monitoring program for Lake Whatcom and nearby waterbodies.

- 7.2.1. Conduct regular zebra/quagga mussel monitoring events in Whatcom County waters.
- 7.2.2. Detect new introductions and monitor the extent and density of established aquatic invasive species through activities such as: aquatic plant surveys, shoreline monitoring events, trapping and water sampling.
- 7.2.3. Develop a voluntary AIS monitoring and reporting program for Lake Whatcom.

PROGRAM AREA

Aquatic Invasive Species

OBJECTIVE: Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and minimize impacts associated with established invasive species.

**2020-2024
Estimated Investments:
\$2.8 million**



7.3 Management and Response

Establish effective plans for managing and responding to new infestations in a timely manner.

- 7.3.1. Develop AIS Rapid Response Plan for Lake Whatcom.
- 7.3.2. Identify all current management tools and Best Management Practices (BMPs) that could be implemented in Lake Whatcom to address any potential species of concern.
- 7.3.3. Coordinate and collaborate with staff from state and regional agencies/organizations when developing and implementing control and mitigation strategies.

Reporting Metrics:

- Number of new AIS introductions per year
- Number of watercraft inspections conducted per year
- Number of watercraft decontaminations conducted per year
- Number of people who completed online AIS Awareness Course per year
- Number of non-boating visitors interacted with at check stations per year
- Proportion of watershed residents who are knowledgeable about AIS and compliance with inspection requirements measured every five years through the Lake Whatcom Watershed Baseline Survey

Utilities and Transportation

OBJECTIVE: Prevent water quality and quantity impacts from water, sewer, and transportation systems.

**2020-2024
Estimated Investments:
\$8.9 million**



The Lake Whatcom Management Program (LWMP) supports responsible management of public infrastructure that serves watershed residents, which is critical in mitigating impacts to Lake Whatcom's water quality. Proactive maintenance of water, sewer, and road infrastructure within the watershed, coupled with effective water supply management and public education, can reduce development-related impacts.

8.1 Water

Manage water supply systems to minimize water quality and quantity impacts.

- 8.1.1. Conduct water audits to detect and repair water system leaks.
- 8.1.2. Encourage water-use efficiency through outreach and rebate programs.

8.2 Sewage

Reduce water quality degradation from sanitary sewer and on-site sewage (OSS or septic) systems.

- 8.2.1. Provide sewer service to areas with OSS systems when justified.
- 8.2.2. Maintain and replace sewer infrastructure to reduce the potential of sewage overflows.
- 8.2.3. Enforce OSS system operation and maintenance regulations, maintain OSS database and respond to failing systems.

PROGRAM AREA

Utilities and Transportation

OBJECTIVE: Prevent water quality and quantity impacts from water, sewer, and transportation systems.

**2020-2024
Estimated Investments:
\$8.9 million**



8.3 Roads and Transportation

Inform watershed residents and visitors about alternative transportation opportunities and design and develop transportation systems to protect water quality.

- 8.3.1. Employ road design standards to reduce impacts to water quality.
- 8.3.2. Perform enhanced maintenance actions (i.e. additional street sweeping, more frequent cleaning of catchbasins, more frequent replacement of stormwater filters, etc.) to reduce impacts to water quality.
- 8.3.3. Inform watershed residents and visitors about alternative transportation opportunities in the watershed.
- 8.3.4. Examine opportunities to improve bike and pedestrian mobility, including signage, to encourage and promote the use of alternative transportation.
- 8.3.5. Work with Whatcom Transit Authority to preserve and promote public transit routes.

Reporting Metrics:

- Number of bike and pedestrian mobility improvements made per year
- Proportion of watershed residents who have used alternative methods of transportation in the past year measured every five years through the Lake Whatcom Watershed Baseline Survey
- Estimated gallons of water conserved in the City of Bellingham and Lake Whatcom Water and Sewer District service areas per year
- Number of OSS system failures reported in the watershed per year
- Number of sewer overflows into Lake Whatcom per year
- Proportion of watershed residents who are knowledgeable of water conservation concerns in regards to water supply from Lake Whatcom measured every five years through the Lake Whatcom Watershed Baseline Survey

PROGRAM AREA

Education and Engagement

OBJECTIVE: Educate and engage watershed residents and visitors to promote and facilitate the adoption of behaviors that protect water quality.

**2020-2024
Estimated Investments:
\$825,000**



The Lake Whatcom Management Program (LWMP) educates and engages community members in the protection of Lake Whatcom. Education and engagement (i.e., outreach) work plan components are divided into three types. **General Lake Whatcom** outreach activities are designed to reach a general audience and provide a broad array of information about the Lake Whatcom watershed. **Program area-specific** outreach activities apply to a specific target audience and often include assistance or incentives to help community members take a specific action to protect Lake Whatcom. Outreach activities are listed both in relevant program areas and in the Education and Engagement section. **Community-wide** outreach activities are incorporated into education and engagement efforts that target a broader, community-wide audience, but which also may benefit Lake Whatcom.

9.1 General Lake Whatcom Education and Engagement

Provide education and outreach to watershed residents, property owners, visitors, and the community about Lake Whatcom and the Lake Whatcom Management Program.

- 9.1.1. Provide information about Lake Whatcom and its watershed as well as Lake Whatcom Management Program activities and programs to watershed residents, property owners, visitors, community members and elected officials (TMDL REQUIRED).
- 9.1.2. Maintain and enhance up-to-date information and resources online.
- 9.1.3. Measure watershed residents' understanding of watershed issues and adoption of stewardship practices at least once every five years and use the results to adapt programs and direct resources more effectively (TMDL REQUIRED).
- 9.1.4. Provide education and engagement for program-specific activities included in this work plan, in addition to those specified under 9.2. Due to the large number of programmatic activities, this outreach support may constitute a large body of work. For example, efforts may include outreach to support the Homeowner Incentive Program (HIP), other stormwater retrofit projects, and water quality and AIS monitoring programs.

Reporting Metrics:

- Number of households (new and existing) sent informational materials per year (TMDL REQUIRED)
- Number of unique visitors to Lake Whatcom Management Program website per year
- Level of watershed residents' knowledge of and participation in key stewardship practices measured every five years through the Lake Whatcom Watershed Baseline Survey

PROGRAM AREA

Education and Engagement

OBJECTIVE: Educate and engage watershed residents and visitors to promote and facilitate the adoption of behaviors that protect water quality.

**2020-2024
Estimated Investments:
\$825,000**



9.2

Program Area-Specific Education and Engagement

The following program area-specific education and engagement activities are also listed under their respective program areas. Any reporting metrics for these activities can be found under the respective program areas.

Stormwater

- 2.2.4. Conduct annual private stormwater facility maintenance workshops to instruct owners about system needs and maintenance requirements (TMDL REQUIRED).
- 2.2.5. Develop and disseminate Lake Whatcom watershed-specific education and outreach messaging that encourages residents to act to protect water quality.

Land Use

- 3.1.4. Provide outreach to watershed residents to increase understanding of and compliance with land use and stormwater regulations.

Hazardous Materials

- 5.1.1. Conduct a hazardous materials collection event at locations in the watershed (TMDL REQUIRED).
- 5.1.2. Promote and provide education on proper use, storage and disposal of hazardous materials.
- 5.2.2. Educate watershed residents and visitors on how to prevent and report spills.

Recreation

- 6.4.1. Educate watershed residents and visitors about recreational practices that protect water quality.
- 6.4.2. Engage recreational user groups (e.g. mountain bikers, horseback riders, boaters, etc.) in practices that protect water quality.

Aquatic Invasive Species

- 7.1.2. Inform watershed residents, boaters and other lake visitors about AIS issues and engage them in prevention activities through informational materials, online education tools, community events and public meetings, and in-person conversations during inspections.

PROGRAM AREA

Education and Engagement

OBJECTIVE: Educate and engage watershed residents and visitors to promote and facilitate the adoption of behaviors that protect water quality.

**2020-2024
Estimated Investments:
\$825,000**



9.2 Program Area-Specific Education and Engagement (continued)

The following program area-specific education and engagement activities are also listed under their respective program areas. Any reporting metrics for these activities can be found under the respective program areas.

Utilities and Transportation

- 8.1.2. Encourage water-use efficiency through outreach and rebate programs.
- 8.3.3. Inform watershed residents and visitors about alternative transportation opportunities in the watershed.

9.3 Community-Wide Education and Engagement with Lake Whatcom Benefit

The following community-wide education and engagement activities target a broader, community-wide audience but may also benefit Lake Whatcom.

- 9.3.1. Pet waste: city- and county-wide programs that support pet waste pick up at home and in parks
- 9.3.2. Vehicle leaks: city-wide awareness campaign that uses advertising (e.g. print, bus and movie theater ads) to prompt vehicle owners to check leaks and fix them.
- 9.3.3. Car washing: city-wide awareness campaign that uses advertising (e.g. print, bus and movie theater ads) to prompt vehicle owners to wash their vehicles at a car wash.
- 9.3.4. Yard care: city- and county-wide workshops to educate and encourage residents to use sustainable yard care practices.
- 9.3.5. On-site sewage (OSS) system maintenance: county-wide program to support proper maintenance of OSS systems (septic systems).
- 9.3.6. School program: city-wide program to educate Bellingham School District students about Bellingham's water treatment systems and water conservation principles.

PROGRAM AREA

Administration

OBJECTIVE: Implement the Lake Whatcom Management Program (LWMP) Work Plan and provide opportunities for public input.

**2020-2024
Estimated Investments:
\$700,000**



The Lake Whatcom Management Program (LWMP) facilitates collaboration between the City of Bellingham, Whatcom County, the Lake Whatcom Water and Sewer District, and other partners. Meeting facilitation, reporting, budget development, and other administrative activities are all critical to the success of the program.

10.1 Meeting Coordination

Coordinate and provide staff support for LWMP meetings and information-sharing opportunities.

- 10.1.1. Hold meetings of the Lake Whatcom Watershed Advisory Board to discuss management program issues and receive citizen comments and suggestions.
- 10.1.2. Hold monthly meetings of the Data Management Team to address issues related to monitoring, modeling, Total Maximum Daily Load (TMDL) requirements and other data management.
- 10.1.3. Hold meetings of the Interjurisdictional Coordinating Team to oversee work plan implementation efforts and work product development.
- 10.1.4. Hold meetings of the Lake Whatcom Joint Policy Group to discuss Lake Whatcom policy topics and provide guidance and direction to staff.
- 10.1.5. Hold annual Joint Councils and Commission meeting to discuss LWMP Work Plan and accomplishments.
- 10.1.6. Hold Lake Whatcom Management Committee meetings as needed to provide staff with administrative direction.

10.2 Public Information

Coordinate education and engagement efforts by LWMP staff and partners. Inform the community about opportunities for involvement in public meetings, comment periods and decision making processes.

- 10.2.1. Provide notice of public meetings and other opportunities for public involvement on the LWMP website.
- 10.2.2. Provide periodic updates to the Bellingham City Council, Whatcom County Council, and Lake Whatcom Water and Sewer District Board of Commissioners.
- 10.2.3. Conduct public presentations as needed.

Administration

OBJECTIVE: Implement the Lake Whatcom Management Program (LWMP) Work Plan and provide opportunities for public input.

**2020-2024
Estimated Investments:
\$700,000**



10.3 Work Plans and Reports

Support development of work plans, presentations and reports.

- 10.3.1. Oversee the development of the Lake Whatcom Management Program five-year work plan and annual Lake Whatcom Management Program progress and monitoring reports.
- 10.3.2. Oversee performance measure tracking and reporting.
- 10.3.3. Develop 2024-2029 Lake Whatcom TMDL Implementation Tasks (TMDL REQUIRED).
- 10.3.4. Develop Lake Whatcom watershed-specific operational plan for managing public areas (TMDL REQUIRED).

10.4 Funding

Establish work plan funding needs and strategy to support work plan implementation.

- 10.4.1. Seek funding necessary to implement LWMP programs.
- 10.4.2. Identify and pursue grant funding as opportunities arise.
- 10.4.3. Manage stormwater fee rolls and watershed protection fund.

10.5 Regulatory Agencies

Support work plan implementation by communicating with agencies.

- 10.5.1. Communicate with regulatory agencies regarding Lake Whatcom water quality, natural resources and land use activities in the watershed.

10.6 Contracts

Oversee a variety of consultant and contractor projects, contracts and work products.

- 10.6.1. Manage and oversee all contracts with consultants and contractors.

TMDL Required Actions

This table lists activities required under the 2019-2024 NPDES stormwater permits. To download a copy of Appendix 2: <https://ecology.wa.gov>, search for “Western Washington Phase II Municipal Stormwater Permit”, look under “current permit documents”.

TMDL Required Actions from the Western Washington Phase II Municipal Stormwater Permit Appendix 2

| Program Area | Responsible Party | Activity and/or Reporting Metric | Due Date <i>*submitted with NPDES Annual Report for work completed previous year</i> |
|---------------------|--------------------------------------|--|---|
| Stormwater | City of Bellingham Whatcom County | Construct capital stormwater facilities in accordance with capital improvement plans adopted by the City of Bellingham and Whatcom County as part of ongoing watershed-scale planning efforts (Activity 2.1.1.). | Annually on March 31* |
| Stormwater | City of Bellingham Whatcom County | Complete an evaluation of the effectiveness of built stormwater treatment and flow control facilities, and an assessment of overall performance in reducing phosphorus and bacteria (Activity 2.1.2.). | March 31, 2021* |
| Stormwater | City of Bellingham Whatcom County | Develop retrofit plans for existing facilities and program projects for design and construction in accordance with resources, budget and need (Activity 2.1.3.). | March 31, 2024* |
| Stormwater | City of Bellingham Whatcom County | Update capital improvement projects list annually (Activity 2.1.5.). | Annually on March 31* |
| Stormwater | Whatcom County | Conduct annual private stormwater facility maintenance workshops to instruct owners about system needs and maintenance requirements (Activity 2.2.4.). | Annually on March 31* |
| Stormwater | City of Bellingham Whatcom County | Conduct regular inspection and maintenance of public stormwater facilities (Activity 2.3.1.). | Annually on March 31* |
| Stormwater | City of Bellingham Whatcom County | Pounds of phosphorus reduced per year through (Reporting Metric): (1) Treatment and flow control capital projects (2) Homeowner Incentive Program BMPs (3) Land use regulations (4) Operation and maintenance activities | Annually on March 31* |
| Monitoring and Data | City of Bellingham Whatcom County | Update and recalibrate the loading model with additional data and incorporate recommendations from third party review (Activity 4.4.1.). | March 31, 2024* |

TMDL Required Actions

TMDL Required Actions from the Western Washington Phase II Municipal Stormwater Permit Appendix 2

| Program Area | Responsible Party | Activity and/or Reporting Metric | Due Date <i>*submitted with NPDES Annual Report for work completed previous year</i> |
|--------------------------|--------------------------------------|---|---|
| Monitoring and Data | City of Bellingham Whatcom County | Track the status of Ecology-approved Quality Assurance Project Plans (Activity 4.6.4.). | Annually on March 31* |
| Hazardous Materials | Whatcom County | Conduct a hazardous materials collection event at locations in the watershed (Activity 5.1.1.). | March 31, 2024* |
| Hazardous Materials | Whatcom County | Pounds of all hazardous materials collected from watershed residents per collection event(s) (Reporting Metric) | March 31, 2024* |
| Hazardous Materials | Whatcom County | Pounds of phosphorus-containing materials collected from watershed residents per collection event(s) (Reporting Metric) | March 31, 2024* |
| Education and Engagement | City of Bellingham | Provide information about Lake Whatcom and its watershed as well as Lake Whatcom Management Program activities and programs to watershed residents, property owners, visitors, community members and elected officials (Activity 9.1.1.). | July 31, 2024 (end of permit) |
| Education and Engagement | City of Bellingham | Number of households (new and existing) sent informational materials per year (Reporting Metric) | Annually on March 31* |
| Education and Engagement | City of Bellingham | Measure watershed residents' understanding of watershed issues and adoption of stewardship practices at least once every five years and use the results to adapt programs and direct resources more effectively (Activity 9.1.3.). | December 31, 2023 (five-year cycle started in 2018) |
| Administration | City of Bellingham Whatcom County | Develop 2024-2029 Lake Whatcom TMDL Implementation Tasks (Activity 10.3.3.). | December 31, 2023 |
| Administration | City of Bellingham | Develop a watershed-specific operational plan for managing public areas (Activity 10.3.4.). | March 31, 2024* |

2020-2024 Work Plan – Cost Estimates

| 2020-2024 Work Plan Cost Estimates | | | | |
|------------------------------------|----------------------|---------------------|-----------------------|---------------------|
| Program Area | Staff Costs | Capital Costs | Other Costs | 5-Year Total |
| 1. Land Preservation | \$1,125,000 | \$18,000,000 | \$400,000 | \$19,525,000 |
| 2. Stormwater | \$2,680,574 | \$9,410,000 | \$4,863,500 | \$16,954,074 |
| 3. Land Use | \$1,875,000 | – | – | \$1,875,000 |
| 4. Monitoring & Data | \$513,497 | – | \$2,931,775 | \$3,445,272 |
| 5. Hazardous Materials | \$160,545 | – | \$65,000 | \$225,545 |
| 6. Recreation | \$1,328,550 | \$3,367,000 | \$66,500 | \$4,762,050 |
| 7. Aquatic Invasive Species | \$2,292,082 | – | \$574,041 | \$2,866,123 |
| 8. Utilities & Transportation | \$2,531,760 | \$4,560,000 | \$1,834,000 | \$8,925,760 |
| 9. Education & Engagement | \$686,845 | – | \$139,500 | \$826,345 |
| 10. Administration | \$602,500 | – | \$100,000 | \$702,500 |
| LWMP Work Plan Total | \$13,871,352* | \$35,337,000 | \$10,974,316** | \$60,182,668 |

*Staff costs include actual budgeted staff costs for each program area (including benefits).

**Other costs include supplies, materials, equipment, consultant fees, interfund charges, taxes, bank charges, and procedural costs.

2020-2024 Work Plan – Funding Sources

| Program Area | Partner | Funding Sources |
|--|---------------------------------------|---|
| 1. Land Preservation | Whatcom County | Conservation Futures Fund |
| | City of Bellingham | Lake Whatcom Property Acquisition Fees |
| | Lake Whatcom Water and Sewer District | Not Applicable |
| 2. Stormwater | Whatcom County | Real Estate Excise Taxes, Flood Control Zone District Taxes, Stormwater Utility Fees, Road Fund, Grants |
| | City of Bellingham | Stormwater Utility Fees, Portion of Lake Whatcom Property Acquisition Fees, Grants |
| | Lake Whatcom Water and Sewer District | Utility Fees |
| 3. Land Use | Whatcom County | Development Fees, General Fund |
| | City of Bellingham | Development Fees, General Fund |
| | Lake Whatcom Water and Sewer District | Not Applicable |
| 4. Monitoring & Data | Whatcom County | Flood Control Zone District Taxes, Stormwater Utility Fees, Road Fund |
| | City of Bellingham | Stormwater Utility Fees, Water Utility Fees |
| | Lake Whatcom Water and Sewer District | Utility Fees |
| 5. Hazardous Materials | Whatcom County | Solid Waste Excise Taxes, Flood Control Zone District, Road Fund, Grants |
| | City of Bellingham | Stormwater Utility Fees, Water Utility Fees |
| | Lake Whatcom Water and Sewer District | Not Applicable |
| 6. Recreation | Whatcom County | Conservation Futures Fund, General Fund, Real Estate Excise Taxes, Parks Special Revenue Fund |
| | City of Bellingham | Greenways Taxes, General Fund |
| | Lake Whatcom Water and Sewer District | Not Applicable |
| 7. Aquatic Invasive Species | Whatcom County | Flood Control Zone District Taxes |
| | City of Bellingham | Water Utility Fees, Boat Inspection Fees |
| | Lake Whatcom Water and Sewer District | Utility Fees |
| 8. Utilities and Transportation | Whatcom County | Road Fund |
| | City of Bellingham | Street Funds, Utility Fees |
| | Lake Whatcom Water and Sewer District | Utility Fees |
| 9. Education and Engagement | Whatcom County | Flood Control Zone District Taxes, Stormwater Utility Fees, Road Fund |
| | City of Bellingham | Stormwater Utility Fees, Water Utility Fees |
| | Lake Whatcom Water and Sewer District | Utility Fees |
| 10. Administration | Whatcom County | Flood Control Zone District Taxes, Road Fund, Stormwater Utility Fees |
| | City of Bellingham | Stormwater Utility Fees, Water Utility Fees |
| | Lake Whatcom Water and Sewer District | Utility Fees |

Resources

Land Preservation

Lake Whatcom Property Acquisition Program
cob.org/services/environment/lake-whatcom/pages/lw-property-acquisition-program.aspx

Whatcom County Parks & Recreation—Reconveyance
whatcomcounty.us/625/Lake-Whatcom-Reconveyance

Protected Property in the Lake Whatcom Watershed Map
cob.org/documents/pw/lw/acquisition-land-map.pdf

Stormwater

Lake Whatcom Management Program Capital Improvement Projects
lakewhatcom.whatcomcounty.org/our-programs/capital-projects

City of Bellingham 2007 Comprehensive Stormwater Plan
cob.org/documents/pw/storm/2007-stormwater-comp-plan.pdf

Whatcom County 2008 Lake Whatcom Comprehensive Stormwater Plan
whatcomcounty.us/1022/Lake-Whatcom-Comprehensive-Stormwater-Pl

Whatcom County Lake Whatcom Capital Project Plan Update
whatcomcounty.us/DocumentCenter/View/30912

Homeowner Incentive Program
lakewhatcomHIP.org

Land Use

Bellingham Municipal Code (BMC) 16.80 (Lake Whatcom Reservoir Regulatory Chapter), 15.42 (Stormwater Regulations), 16.55 (Critical Areas Ordinance), Title 22 (Shoreline Master Program) codepublishing.com/wa/bellingham/

Whatcom County Code (WCC) 20.51 (Lake Whatcom Watershed Overlay District & Stormwater Regulations), 16.16 (Critical Areas Ordinance), Title 23 (Shoreline Management Program) codepublishing.com/wa/whatcomcounty/

Lake Whatcom Watershed Annual Build-Out Analysis Reports
lakewhatcom.whatcomcounty.org/resources

Monitoring and Data

Lake Whatcom Monitoring Reports
cedar.wvu.edu/lakewhat_annualreps/

Lake Whatcom Data Catalog
Copies of documents are available at the Whatcom County Public Works Water Resources Library and the Bellingham Public Library

Hazardous Materials

Whatcom County Emergency Management Plan
whatcomready.org/wp-content/uploads/2012/06/Whatcom-County-CEMP-2008.pdf

Whatcom County Disposal of Toxics
whatcomcounty.us/833/Disposal-of-Toxics-Facility

Stormwater Hotline: (360) 778-7979
cob.org/services/environment/stormwater/pages/stormwater-report-form.aspx

Recreation

Whatcom County Parks and Recreation—Reconveyance
whatcomcounty.us/625/Lake-Whatcom-Reconveyance

Lookout Mountain Forest Preserve and Lake Whatcom Park Recreational Trail Plan
whatcomcounty.us/DocumentCenter/View/23920

Whatcom County Comprehensive Parks, Recreation and Open Space Plan
whatcomcounty.us/DocumentCenter/View/14547

City of Bellingham Comprehensive Parks, Recreation and Open Space Plan
cob.org/Documents/planning/comprehensive-plan/2016-pro-plan.pdf

Resources

Aquatic Invasive Species

Lake Whatcom Aquatic Invasive Species Program Annual Reports and Documents
lakewhatcom.whatcomcounty.org/resources

Whatcom Boat Inspections
whatcomboatinspections.com

Aquatic Invasive Species Awareness Course
whatcomboatinspections.com/ais-awareness-course

2019 Inspection Results Story Map
whatcomboatinspections.com/2019-story-map

Whatcom Boat Inspections Hotline: (360) 778-7975

Utilities and Transportation

City of Bellingham Drinking Water Quality Reports
cob.org/services/environment/lake-whatcom/pages/water-quality.aspx

Lake Whatcom Water and Sewer District Consumer Confidence Reports
lwwsd.org/for-customers/quality-consumer-confidence-reports/

City of Bellingham Water Conservation Resources
cob.org/conserve

Whatcom County On-Site Sewage System Program, WCC 24.05
whatcomcounty.us/documentcenter/view/2053

Lake Whatcom Water and Sewer District 2018 Water System Comprehensive Plan
lwwsd.org/resources/water-system-comprehensive-plan/

Lake Whatcom Water and Sewer District 2014 Sewer Comprehensive Plan
lwwsd.org/resources/comprehensive-sewer-plan/

Whatcom Smart Trips
whatcomsmartrips.org/

Community Energy Challenge
sustainableconnections.org/energy/energychallenge

Education and Engagement

Lake Whatcom Management Program
lakewhatcom.whatcomcounty.org

City of Bellingham Lake Whatcom Stewardship
cob.org/services/environment/lake-whatcom/pages/stewardship-solutions.aspx

WSU Whatcom County Extension Sustainable Landscaping
whatcom.wsu.edu/ch/sustainable.html

Homeowner Incentive Program
lakewhatcomHIP.org

Lake Whatcom Watershed Baseline Survey 2018
lakewhatcom.whatcomcounty.org/LakeWhatcomWatershedBaselineSurveyFindings2018_Final.pdf

Administration

1992 Lake Whatcom Joint Resolution
lakewhatcom.whatcomcounty.org/1992JointResolution.pdf

Lake Whatcom Management Program Work Plans and Progress Reports
lakewhatcom.whatcomcounty.org/resources

Lake Whatcom Meetings and Agendas
lakewhatcom.whatcomcounty.org/news

Lake Whatcom Management Program Contacts
lakewhatcom.whatcomcounty.org/contacts



View from Bloedel Donovan | Photo by T. Ward, 2018

Lake Whatcom Management Program Contacts:

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Clare Fogelsong, (360) 778-7900, cfogelsong@cob.org

Whatcom County Public Works
Gary Stoyka, (360) 778-6230, gstoyka@co.whatcom.wa.us

Lake Whatcom Water and Sewer District
Justin Clary, (360) 734-9224, justin.clary@lwwsd.org



www.lakewhatcom.whatcomcounty.org