
The Environment Element identifies existing natural environmental systems in Blaine, regulations regarding those systems, and ways to further protect those systems.

One of these systems is surface water. Surface water includes streams, flood plains, bays and wetlands. Shoreline areas in Blaine are located on the shores of Drayton Harbor, Semiahmoo Bay, and Dakota Creek in the Drayton Harbor Watershed.

Drayton Harbor is a protected bay, sheltered by Semiahmoo Spit from the Georgia Straits. Drayton Harbor has historically been a productive commercial, tribal, and recreational shellfish harvesting area until the closure of the bay in 1999 due to fecal bacteria pollution. Today, WSDH upgraded 575 acres of the bay to Conditionally Approved commercial harvesting area, but seasonal closure from November through January continues.

The City of Blaine updated their SMP, and development regulations in 2016 to provide additional protection to “shorelines of the state.” In addition, the City of Blaine has adopted the most recent version of the Stormwater Management Manual for Western Washington.

Wetland protection is addressed through Blaine’s CAO, and are classified according to WSDOE most recent wetland rating system based on function and value. Buffers for these wetlands are dependent on the level of function and value.

Another type of environmental system is groundwater. Included in this are aquifer recharge areas.

The City completed the BGMPFHR in 1992, which details location of aquifer recharge areas and land use controls to protect these areas. Five aquifers were identified, composed of either sand or sand and gravel, and were found to be capable of providing groundwater for municipal, agricultural, industrial, or single family uses. The study recommends developing a wellhead protection program for the Boundary Upland area, which is the main recharge area for shallow aquifers.

Geologically hazardous areas are another environmental system in Blaine. Geologically hazardous areas include active and potential landslide areas, erosion hazard areas, and seismic hazard areas and tsunami hazard areas. Active and potential landslide areas are located along shorelines in Blaine, and most common surrounding Semiahmoo Spit and Dakota Creek. Seismic hazard areas are primarily on Marine Drive.

Fish, wildlife, and habitat are another environmental system addressed in the element. Blaine is comprised mainly of forested areas and estuarine habitats. Forested areas provided habitat for animals like beavers, foxes and black tailed deer. Estuarine habitats like intertidal mudflats and eelgrass beds are home to seals, great blue herons and even porpoises.

WDFW PHS in the city limits and bays include harbor seal, bald eagle, chum, surf smelt, cutthroat, coho, chinook, bull trout, steelhead, Pacific Sand Lance, hard shell clam, Dungeness crab, Pacific Herring, shorebird and waterfowl concentrations, biodiversity areas and corridor, and surface waters.

The main goal of the environment element is to protect critical areas.

ACRONYMNS USED IN THIS CHAPTER

BGMPFHR	Blaine Groundwater Manual Program Final Hydrologic Report
CAO	Critical Areas Ordinance
GMA	Growth Management Act
PHA	Priority Habitat Species
SMP	Shoreline Management Program
UGA	Urban Growth Area
WDFW	Washington State Department of Fish and Wildlife
WSHD	Washington State Department of Health
WSDOE	Washington State Department of Ecology

CHAPTER 9 – Environment

INTRODUCTION

Protection of the natural environment in the City of Blaine and surrounding area is essential to maintain the quality of life for residents and visitors. The natural environment contributes to groundwater recharge and water quality protection functions, stormwater storage, open space, fish and wildlife habitat, and scenic beauty, all of which are of great public value. Residents and visitors benefit from walking trails through open space, public access to beaches, birdwatching, fishing, and other recreation opportunities. The City protects the natural environment through federal, state, and local regulations and through plan and policy guidance described in this chapter.

The identification and protection of Critical Areas is a key goal of the Growth Management Act (GMA). Critical Areas are defined by the GMA as wetlands, frequently flooded areas, aquifer recharge areas, geologically hazardous areas, and fish and wildlife habitat conservation areas. The City adopted an updated Critical Areas Management Ordinance in June of 2010 (Blaine Municipal Code Chapter 17.82) that regulates development activities on land within or adjacent to critical areas within the city limits. The City identified Critical Areas using Best Available Science and maps are available in this plan. Critical Areas are addressed in relevant natural environment sections in this chapter.

The GMA also created Urban Growth Areas (UGAs) to contain growth and development within urban boundaries. A UGA of adequate size will encourage the retention of open space, conservation of fish and wildlife habitat, and development of recreational opportunities. The City has an interlocal agreement (2011) with Whatcom County concerning planning, annexation, and development within the Blaine UGA. The City's UGA is described in more detail in Chapter 4 Land Use. The City also works with and supports Whatcom County to preserve and protect the natural environment in unincorporated county. Land within the county is in the same watershed that drains to the City and Drayton Harbor and affects the City's Critical Areas.

The natural environment in this chapter is described for surface waters, groundwater, geologically hazardous areas, and fish and wildlife and their habitat.

SURFACE WATERS

Surface waters considered under the natural environment include streams, floodplains, bays, and wetlands. Regulations and planning documents related to the protection of surface waters are described in this section.

Surface water processes are viewed at the watershed level to understand how natural processes work and affect the City of Blaine. The City of Blaine shoreline

areas are located on the shores of Drayton Harbor, Semiahmoo Bay, and Dakota Creek in the Drayton Harbor Watershed.

Flood hazard areas are located along Dakota Creek, the Wharf District and portions of Semiahmoo Spit. Areas designated as frequently flooded must comply with flood hazard regulations (Blaine Municipal Code Chapter 17.86), which includes development restrictions, habitat protection, and performance requirements.

Drayton Harbor is a protected bay and is sheltered by Semiahmoo Spit from the Georgia Straits. The shorelines include the harbor marine shoreline, surrounding wetlands, and two contributing streams (California and Dakota Creeks). Drayton Harbor has been a productive commercial, tribal, and recreational shellfish harvesting area; however, pollution from fecal bacteria has disrupted safe harvest back to the 1950s. Portions of the area were closed to harvest in 1988 and the entire harbor was closed by 1999. There are currently water quality concerns in the harbor and surrounding surface water segments for bacteria and dissolved oxygen that require a Total Maximum Daily Load per federal and state regulations. ⁱ While the Washington State Department of Health upgraded 575 acres to Conditionally Approved, seasonal closure in the bay remains from November through January.

The *Drayton Harbor Watershed Action Plan* (1995), the *Drayton Harbor Shellfish Protection District Recovery Plan* (2007), and the *Drayton Harbor Watershed Fecal Coliform Total Maximum Daily Load: Phase 1* (2008) are some of the planning efforts underway to protect the harbor. The city is also currently working to improve water quality in Cain Creek through the Drayton Harbor/Semiahmoo Bay Water Quality Enhancement project.

The Washington Department of Ecology (Ecology) and the Port of Bellingham completed a draft legal agreement in April 2012 for the Blaine Marina, Inc. site in Blaine. Cleaning up the site is necessary to protect people, plants, birds and other life from exposure to harmful levels of contamination. The final agreement will require the port to perform an interim cleanup action to repair a damaged bulkhead, study the environmental conditions of the site, and analyze cleanup options. After a draft cleanup action plan is approved by Ecology, the plan will be implemented at the site.ⁱⁱ

The City of Blaine Shoreline Master Program (SMP) and development regulations have been updated (2016) to provide additional protection to "shorelines of the state." The SMP supersedes the Critical Areas Ordinance for critical areas within shoreline management areas, except where specific provisions of the Critical Areas Ordinance are referenced. The SMP protects marine shorelines and Dakota

ⁱ Ecology. 2012. 303(d) waters. Available at: source:
<http://www.ecy.wa.gov/programs/Wq/303d/index.html>

ⁱⁱ Ecology. 2012. Toxics Cleanup Program: Blaine Marina, Inc. Available at:
<https://fortress.wa.gov/ecy/publications/documents/1209151.pdf>

Creek. Creeks and the marine environment are also protected under the Fish and Wildlife Habitat Conservation Areas in the Critical Areas Ordinance. The 2016 SMP is being reviewed by Ecology at the same time that this Plan is being drafted and adopted.

The Blaine Stormwater Utility has the primary authority and responsibility for carrying out the city's comprehensive drainage and storm sewer plan for city and private storm and surface water management. City-adopted land disturbance regulations, covering the activities of clearing, grading, and filling, require compliance with Puget Sound Water Quality Authority Standards to protect surface water. The City has adopted the most recent version of the Stormwater Management Manual for Western Washington.

Wetlands are fragile ecosystems that assist in the reduction of erosion, flooding, and water pollution. Wetlands also provide important habitat for wildlife, plants, and fisheries. In the Critical Areas Ordinance wetland areas are classified according to the wetland function and value, with Category 1 being the most important and Category 4 being least valuable. Depending on the level of function for wildlife habitat, wetlands require buffer widths of between 25 to 250 feet that protect the function and values of the wetland. A large number of Category 2 through 4 wetlands are located along streams and are generally more concentrated adjacent to Drayton Harbor. This classification system predates recent changes by Ecology, but there is a conversion method that can be applied to mesh the two systems.

Wetlands can, in some cases, act as a buffer between dissimilar land uses, such as manufacturing and residential uses. In particular, the Pipeline Road UGA may be developed in such a way that the extensive wetlands in the area will serve as buffers. The City also supports centralized mitigation in larger tracts designed to create greater ecological values and benefits in industrial/manufacturing areas and outside city limits in the Drayton Harbor Watershed. Buffer zones provide lasting benefits to the community in the form of preserved open spaces, pedestrian circulation, wildlife habitat, and recreational opportunities.

GROUNDWATER

Aquifer recharge areas per the Critical Areas Ordinance include wellhead protection areas, sole source aquifers, and unprotected aquifers that require detailed studies and performance requirements for new proposals. Aquifer recharge areas located in the city and surrounding area are described in this section.

The Drayton Harbor Watershed is included in the western extent of the Sumas-Blaine surficial aquifer and coincides with the recessional outwash deposits in the Custer Trough, which extend to the harbor. The Upper California Creek and much of the Custer Trough to the north in the Boundary Upland provide water storage capacity as described below.

The City completed the *Blaine Groundwater Management Program Final Hydrogeologic Report* (1992) to provide more detailed information about the location of aquifer recharge areas and recommend land use controls to protect these areas. The study identified five aquifers composed of either sand or sand and gravel that are capable of providing groundwater for municipal, agricultural, industrial, or single family uses. Recommendations from the study were to develop the wellhead protection program for the Boundary Upland area, which is the main recharge for the shallow aquifers.

The wellhead protection area and high aquifer recharge area are southeast of the city limits and UGA, which recharges the groundwater supply serving the entire Blaine-Birch Bay area. The protection area was identified based off the amount of time it would take for contaminants moving at the same rate of groundwater to reach the well within one, five, and 10 years. There are also several city wellheads and low to moderate potential recharge areas within city limits and to the east in unincorporated county. Since the wellhead protection area and several city wellheads are in unincorporated county coordination with Whatcom County is ongoing to protect the water supply. There are no aquifer recharge areas in the western portion of Blaine.

GEOLOGICALLY HAZARDOUS AREAS

Geologically hazardous areas identified in the Critical Areas Ordinance include active landslide areas, potential landslide areas, erosion hazard areas, seismic hazard areas and tsunami hazard areas. Active and potential landslide areas are located along the shoreline and on steep slopes in the city. Active landslides are the most common surrounding the Semiahmoo uplands. Erosion hazard areas are primarily found along shorelines, particularly Semiahmoo Spit and the Wharf District. The seismic hazard area is primarily on Marine Drive at the harbor and park. Geologically hazardous areas require detailed studies and performance requirements for new proposals.

The topography within the City of Blaine surrounding Drayton Harbor is relatively flat. The underlying geology of the marine shores is composed of glaciomarine drift deposited in the Everson Interstade during the Pleistocene epoch. The drift is characterized by moderately to well sorted gravel, silt, sand, and clay.

Drayton Harbor Watershed is divided into three distinct areas of surficial geology. These include the Boundary Upland, the Custer Trough, and the California Creek drainage basin. The Boundary Upland is composed of fine-grained glaciomarine drift and sand and gravel. The Custer Trough, to the south, is a section of the Sumas outwash plain. Farther south, in the California Creek drainage, the geology transitions to Sumas Stade and Bellingham drift.

Fluvial sediment produced by creeks provides small quantities of beach sediment to the Drayton Harbor shore. The Semiahmoo Spit is composed of Quaternary

beach deposits, transported through northward net shore-drift. The tide flats of the harbor contain sand, silt, clay, and gravel.

FISH, WILDLIFE, AND HABITAT

Blaine, the UGA and the surrounding area provide habitat for a variety of plant and animal species. Forested areas comprise 21-percent of the Drayton Harbor Watershed and are most prevalent close to the Canadian border and along the floodplains. Forested areas provide habitat for mammals such as opossums, shrews, moles, mountain beaver, weasels, red foxes, Douglas squirrels, Townsend's chipmunks, porcupines, skunks, coyotes, and black tailed deer. Freshwater and estuarine wetlands along the shoreline and the mouth of Dakota Creek provide a unique plant and animal habitat which supports resident and anadromous salmonids, including Coho and chum salmon, steelhead, and cutthroat trout.

Estuarine habitats, such as the intertidal mud flats and eelgrass beds of Drayton Harbor, provide food and refuge for a variety of fish and invertebrate species such as Pacific herring, surf smelt, northern anchovy, juvenile salmonids, Dungeness crab, and many other hard-shell species. Oysters are commercially raised in Drayton Harbor, but harvest is seasonally restricted as previously described due to water quality concerns. Drayton Harbor's estuarine wetland also provides habitat for harbor seals, porpoises, and birds such as great blue herons, loons, saltwater ducks, geese, osprey, bald eagles, and other shore birds. Birds and over-wintering waterfowl in the Pacific Flyway are an important resource for the city enjoyed by residents and visitors alike. The annual Wings over Water Northwest Birding Festival in Blaine celebrated its 13th year in March 2016 to celebrate migratory birds that pass through the surrounding coastal waters.

Threatened and endangered species are protected under the Federal Endangered Species Act of 1973 by the U.S. Fish and Wildlife Service (USFWS). Endangered species are in danger of extinction while threatened species are likely to become endangered within the foreseeable future. Critical habitat areas are designated by the USFWS as essential to a threatened and endangered species' conservation. Threatened and endangered species and critical habitat were identified within the city limits through the USFWS in March 2016.ⁱⁱⁱ Threatened birds species that have the potential to occur in the city include marbled murrelet, streaked horned lark, and yellow-billed cuckoo. The Canada lynx is also a threatened mammal that has the potential to occur in the city. Fish species that are threatened include bull trout, and critical habitat for bull trout and Chinook salmon. Killer whale critical habitat was also identified and the city manages floodplains consistent with the 2008 Biological Opinion.^{iv} The bald eagle was delisted from being endangered in 2007 but are still protected as described below.

ⁱⁱⁱ USFWS. 2016. Information for Planning and Conversation. Available at: <https://ecos.fws.gov/ipac>

^{iv} National Marine Fisheries Service. 2008. FEMA Biological Opinion. September.

Washington Department of Fish and Wildlife (WDFW) Priority Habitat Species (PHS) in the city limits and bays include harbor seal, bald eagle, chum, surf smelt, cutthroat, coho, chinook, bull trout, steelhead, Pacific Sand Lance, hard shell clam, dungarees crab, Pacific Herring, shorebird and waterfowl concentrations, biodiversity areas and corridor, and surface waters.

Federally threatened and endangered species, PHS, shellfish areas, kelp and eelgrass beds, fish and non-fish bearing surface water, and other natural areas are protected under fish and wildlife habitat conservation areas in the Critical Areas Ordinance and in the City’s SMP (2016). Fish and wildlife habitat conservation areas designations under the ordinance include bald eagle habitat, eelgrass beds, herring spawning area, commercial shellfish area, recreational shellfish area, smelt spawning area, Pacific sand lance spawning area, and salmonid and anadromous fish bearing streams. Fish and Wildlife Habitat Conservation Areas require detailed studies, performance requirements and mitigation for new proposals. The SMP also addresses measures to protect anadromous fish and their habitat.

Several plans and inventories also support protection of wildlife habitat including the *Semiahmoo Bay Marine Wildlife Protection Plan* (2002) and the *Avian Inventory and Habitat Assessment* (2005) for Drayton Harbor, and Semiahmoo Bay and Spit.

ENVIRONMENT GOALS, POLICIES, AND ACTIONS

GOAL 1: Protect Critical Areas which contribute to the quality of life for the human and natural environment in Blaine and the surrounding area.

POLICIES

- 1.1 *Critical Areas* - Development in areas that have designated Critical Areas are conducted in a way that minimizes impacts to the area and complies with the Critical Areas Ordinance.
- 1.2 *Interagency Coordination* - The City coordinates with county, state and federal agencies to ensure the protection of Critical Areas.
- 1.3 *Landowners* - Land use and development regulations ensure that property owners are allowed reasonable use of their private property.

ACTIONS

- A. City staff should actively enforce the Clearing and Grading and Critical Areas Ordinances and use the Stormwater Utility to protect Critical Areas.

- B. The City should encourage clustering of development and facilitate provision of existing utilities and services to protect Critical Areas and buffers from other land uses.
- C. The City should work with Whatcom County to encourage the protection of Critical Areas within the Blaine UGA and unincorporated county. Proposed zoning for UGA areas will require dedication of open space and protection of Critical Areas.
- D. The City should periodically review development trends, existing land use and environmental regulations, building and construction codes, and improvement standards to ensure that they are not overly restrictive and are consistent with state, federal, and county requirements. In no event should a regulation be so restrictive as to result in unconstitutional taking of private property for public use without just compensation.
- E. The City should build upon its interpretive signage program and install educational signage where appropriate to provide information to the public about the benefits and functions of Blaine’s Critical Areas.

GOAL 2: Protect surface waters including bays, creeks, floodplains, and wetlands and their watersheds.

POLICIES

- 2.1 *Critical Areas* - Development in areas that have designated shorelands, creeks, floodplains, and wetlands are conducted in a way that minimizes impacts to the area and that complies with the Critical Areas Ordinance. Wherever possible, shorelines, creeks, floodplains, and wetlands are utilized as buffers between dissimilar land uses. It is the policy of the City to have no net loss of shoreline or wetland functions or values.
- 2.2 *Landscaping* - The City encourages the retention of natural vegetation or replacement of disturbed vegetation with appropriate native landscaping or ground cover to prevent erosion and protect water quality.
- 2.3 *Interagency Coordination* - The City coordinates with county, state and federal agencies to ensure the protection of surface and groundwater within the Drayton Harbor Watershed.
- 2.4 *Restoration* – The City actively pursues restoration opportunities identified for reaches in the adopted SMP (2016). The City should also seek opportunities to increase public access to shorelines in a way that protects ecological functions and values.

ACTIONS

- A. The City should work closely with Whatcom County, Ecology, Port of Bellingham and other appropriate agencies to closely monitor and protect the water quality of Drayton Harbor by reviewing and implementing recommendations in the *Drayton Harbor Watershed Action Plan* (1995),

Drayton Harbor Watershed Fecal Coliform Total Maximum Daily Load: Phase 1, and the Blaine Marina, Inc. cleanup program.

- B. The City should continue public outreach through the Drayton Harbor/Semiahmoo Bay Water Quality Enhancement project and develop a public education program to inform the public about wetland functions and values and increase awareness of wetland regulations.
- C. The City should work with landowners and regulatory agencies to develop a "collective mitigation" strategy for wetland mitigation in the Pipeline Road UGA and nearby manufacturing/industrial areas in the city.

GOAL 3: Protect groundwater as the only source of potable water for Blaine residents and for agricultural and industrial uses.

POLICIES

- 3.1 *Critical Areas* - Development in areas that have designated wellhead protection areas, sole source aquifers, and unprotected aquifers are conducted in a way that minimizes impacts to groundwater.
- 3.2 *Interagency Coordination* - The City coordinates with county, state, and federal agencies to ensure the protection of groundwater in aquifer recharge areas.

ACTIONS

- A. The City should work with Whatcom County to encourage the protection of groundwater within the existing Blaine UGA and explore annexation or inclusion within the UGA of the water supply.
- B. The City should develop a public education program to inform the public about aquifer recharge areas and increase awareness of their protection.

GOAL 4: Protect geologically hazardous areas including landslide, erosion, and seismic hazard areas, which present health and safety concerns to residents in Blaine and the surrounding area.

POLICY

- 4.1 *Critical Areas* - Development in areas that have designated geologically hazardous areas are restricted and in compliance with the Critical Areas Ordinance. Wherever possible, buffers protect geologically hazardous areas from other built environment land uses.

ACTIONS

- A. City staff should actively enforce building codes and development standards and restrictions to protect the health and safety of residents and visitors from geologically hazardous areas.

- B. The City should actively enforce design standards and restrictions in the Critical Areas Ordinance for designated geologically hazardous areas.
- C. The City should work with home owners adjacent to designated geologically hazardous areas and home owners associations to develop an annual inspection program of storm water systems and slope stability to minimize the potential for failure, which can lead to increased landslides and ecological damage to Critical Areas.

GOAL 5: Protect fish, wildlife, and their habitat.

POLICIES

- 5.1 *Critical Areas* - Development in areas that have designated fish and wildlife habitat conservation areas are restricted and mitigated in a way that minimizes impacts to habitat and that complies with the Critical Areas Ordinance. Wherever possible, designated habitat is utilized as buffers between dissimilar land uses. It is the policy of the City to have no net loss of riparian habitat function.
- 5.2 *Landscaping* - The City supports the retention of natural vegetation or replacement of disturbed vegetation with appropriate native landscaping or ground cover to provide habitat for fish and wildlife.
- 5.3 *Restoration* – The City actively pursues restoration opportunities identified for reaches in the SMP (2016) to reestablish ecological processes or functions and protect salmonid habitat.

ACTIONS

- A. City staff should actively enforce the Critical Areas Ordinance to protect fish, wildlife, and their habitat.
- B. The City should work closely with Whatcom County, Ecology, WDFW, USFWS, and other appropriate agencies to closely monitor and protect federal and state threatened and endangered species.
- C. The City should continue public outreach through public events such as the Wings over Water Northwest Birding Festival and develop a public education program to inform the public about fish and wildlife habitat in Blaine and the surrounding area.
- D. The City should work with landowners and regulatory agencies to develop a “collective mitigation” strategy for fish and wildlife habitat conservation areas mitigation in manufacturing/industrial areas in the city and UGA.
- E. *Interagency Coordination* - The City should coordinate with county, state, and federal agencies to ensure the protection of federally threatened and endangered species, PHS, and other fish and wildlife habitat conservation

areas designations. Proposed zoning for UGA areas will require dedication of open space and protection of habitat.

- F. The City should explore opportunities to provide additional recreational fishing public access facilities along with educational interpretive signage. Such facilities should be designed in strategic locations for residents and visitors, and with environmental sensitivity.