Fall 2018

Environmental Impact Assessment Whatcom Waterway Aeration Stabilization Basin

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Whatcom Waterway
Aeration Stabilization Basin

Environmental Impact Assessment

December 11, 2018

Environmental Studies (ENVS) 493- Fall 2018
Western Washington University
Bellingham, WA 98226

Environmental Impact Assessment
Huxley College of the Environment

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Date 12/11/18

Letter to Concerned Citizen

December 11, 2018

Dear Concerned Citizen,

As part of a class project, our team conducted an Environmental Impact Assessment (EIA) analyzing impacts of proposed actions for the Port of Bellingham's Aeration Stabilization Basin (ASB) in Bellingham Bay. Our analysis is based off of the State Environmental Policy Act (SEPA) review process and identifies the likely significant environmental impacts.

The ASB is a wastewater treatment lagoon built in 1979 to treat industrial wastewater from the Georgia Pacific pulp mill. Today, the ASB is owned and managed by the Port of Bellingham (POB) and treats stormwater from the Downtown Waterfront, Log Pond, and Marine Trades areas. The site is part of one out of twelve sites in Bellingham Bay being managed by the Department of Ecology to clean up contaminated sediments under the Model Toxics Control Act. As part of the redevelopment of the Bellingham Waterfront District, the POB is considering different options for the ASB.

Our EIA looks at three options for the ASB site: 1) The proposed action is to fill half of the ASB for development and turn the other half into a Clean Ocean Marina, 2) the alternative action is to develop the entire ASB into a Clean Ocean Marina, 3) and the no action alternative considers the impacts of leaving the ASB as is. This EIA analyzes the environmental impacts of all three options on the following SEPA elements: earth, water, plants, animals, environmental health, land and shoreline, aesthetics, transportation, utilities and economy, and recreation. Mitigation measures are reviewed to reduce or avoid these environmental impacts.

This EIA was done under the supervision and guidance of our professor, Dr. Tammi Laninga, professor of environmental studies at Western Washington University and Brian Gouran, Port of Bellingham's Director of Environmental Programs.

We thank you for your interest and concerns regarding the ASB.

Sincerely,

The Aeration Stabilization Basin Team

ENVIRONMENTAL IMPACT ASSESSMENT

Whatcom Waterway
Aeration Stabilization Basin

Prepared for:
Dr. Tamara Laninga
Environmental Studies (ENVS) 493
Huxley College of the Environment
Western Washington University

Prepared by:
Candice Trusty, Katie Kissinger, Micah Litowitz, Natasha Motley, Shelby Owens

December 11, 2018

"This report represents a class project that was carried out by students of Western Washington University, Huxley College of the Environment. It has not been undertaken at the request of any persons representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector."

Fact Sheet

Title
Whatcom Waterway Aeration Stabilization Project

Proposed Action
Phase I: Clean up contaminated sediments inside the Aeration Stabilization Basin.

Phase II: Fill in 14 acres of the ASB site with sediment dredged from Whatcom Waterway. Develop 7 acres into public parks and trails, half an acre into public beach, and allot 7 acres for commercial development. The remaining 14 acres of the ASB site will be converted into a Clean Ocean Marina.

Alternative Action
Phase I: Clean up contaminated sediments inside the Aeration Stabilization Basin.

Phase II: Develop the entire 28 acres of the ASB site into a Clean Ocean Marina.

No Action
Leave the ASB in its current state.

Project Location
Bellingham Bay, Washington. North of Whatcom Waterway and south I & J Street Waterway. Bordered by Bellingham Bay on the east and the Central Waterfront on the west.

Legal Location
Township: 38 North
Range: 2 East
Section: 25
Latitude: 48.7506 North
Longitude: -122.4939 West

Proposers
Port of Bellingham

Lead Agency
Remediation: Department of Ecology
Development: City of Bellingham

Permits and Approvals
City of Bellingham:

- Building permit
- Electrical permit
- Construction Stormwater permit
- Grading Permit
- Critical Area Ordinance
- Critical Area Ordinance
- Public Works permit
- Shoreline Substantial Development Permit

Washington State Department of Ecology:

- Boatyard NPDES permit
- Construction NPDES permit
- NPDES Phase II Municipal Stormwater permit

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Issue date
December 11, 2018

Public Presentation
Port of Bellingham Harbor Center Room
Monday, December 3, 10:30-11:00 am

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Executive Summary

The Port of Bellingham (POB) has a court order with the Washington State Department of Ecology to address several cleanup sites within the Bellingham Waterfront District. The Aeration Stabilization Basin (ASB) is included in the Whatcom Waterway cleanup site due to contaminated sediments within the basin. The POB has plans to remediate the sediments and transform the entire ASB into a marina, but since that original proposal, demand for more boat slips has decreased. The POB is exploring alternative uses for the ASB site and what the environmental impacts of those uses would be.

One proposed action for the 28-acre ASB site is a partial fill and use of half the site as a marina. This proposed action would include two phases: a remediation phase and development phase. Remediation would involve dredging the contaminated sediments and filling 14 acres of the site with sediments from Whatcom Waterway. These sediments would be capped and the basin would be opened to Bellingham Bay. The development phase would use the created land for 7 acres of commercial development, 7 acres of public parks and trails, and half an acre of beach (Figure ES 1). The 14 acres remaining in the basin would be developed into a Clean Ocean Marina. A proposal for the commercial development area is to build a cultural center.

Figure ES 1. The Proposed Action to fill half the ASB and use the other half for a marina. (Source: POB Powerpoint, 2018)

The objective of the proposed action is to clean up the site's contamination and transform the ASB site into a space that is used and appreciated by the community. The proposed action would allow for opportunities for economic development, habitat restoration, and public enjoyment of the downtown waterfront.

The alternative action would be to continue with the POB's plan and develop the entire ASB site into a Clean Ocean Marina with open access to Bellingham Bay (Figure ES 2). This would also involve a remediation phase and a development phase. The no action alternative is to allow the ASB site to remain in its current condition.

Figure ES 2: The alternative proposal for the ASB.
(Source: POB Powerpoint, 2018)

The Whatcom Waterway ASB Environmental Impact Assessment analyzes what the most significant environmental impacts from these actions would be. This assessment found that the most significant impacts occur during the construction of the site. These temporary impacts can be mitigated for by using best management practices (BMPs) during construction. The increase in land and development on the site, with the proposed action, and overwater structures in the alternative, can have significant impacts on surface waters, earth elements, environmental health, and land and shoreline use. These impacts can be mostly mitigated for by using Low Impact Development strategies. Redevelopment of the site would increase habitat for marine plants and animals, add to the aesthetics of the site, and boost economic development and recreation for the Bellingham community. The benefits of redevelopment outweigh the minor impacts caused during construction and the increase in land and overwater structures. According to the decision matrix the alternative action has the least amount of environmental impacts compared to the proposed action and taking no action (Table ES 1). However, it is an important part of the POB's mission to promote economic development in Bellingham and the proposed action appears to be the better option for

this end. In conclusion, the proposed action is what is recommended because of the beneficial opportunities that would be provided like habitat restoration projects, economic opportunity, and an overall transformation of an area that has a lot of options for the community and POB.

Table ES 1. Decision Matrix for quantifying environmental impacts
1= Best Action, 2=Neutral Action, 3=Worst Action

Environmental Element	Proposed Action	Alternative Action	No Action
Earth	2	1	3
Water	2	1	3
Plants	1	2	3
Animals	1	2	3
Environmental Health	2	1	3
Land and Shoreline	2	1	3
Aesthetics	1	2	3
Transportation	3	2	1
Utilities	2	1	3
Recreation	1	2	3
Economic Dev.	1	2	3
Total	18	17	31

Glossary of Terms and Abbreviations

ASB- Aeration Stabilization Basin
Berm / Breakwater wall - a flat strip of raised land surrounding the ASB.
Bioswale- landscape elements designed to concentrate or remove debris and pollution out of surface runoff water.
BMP- Best Management Practices
BWD- Bellingham Waterfront District
Capping- Addition of clean sediments
COB- City of Bellingham
Contaminate- to make something impure by exposure to or addition of a poisonous or polluting substance.
CWA- Clean Water Act
DOE- Department of Ecology
DNR- Department of Natural Resources
Dredge- clean out the bed of (a harbor, river, or other area of water) by scooping out mud, weeds, and rubbish with a dredge.
EIA- Environmental Impact Assessment
EIS- Environmental Impact Statement
EPA- Environmental Protection Agency
GP- Georgia Pacific
Georgia Pacific- former pulp, chemical and tissue plant in Bellingham.
Hg- Mercury
Land reclamation- is the process of creating new land from oceans, riverbeds, and or lakes.
LEED- Leadership in Energy and Environmental Design
LID- Low Impact Development
Mitigation - the action of reducing the severity, seriousness, or negative impact of something.
MTCA- Model Toxics Control Act
NOAA- National Oceanic and Atmospheric Administration
POB- Port of Bellingham
RSE- Recreational Shoreline Environment
SWPPP- Stormwater Pollution Prevention Plan
TMDL- Total Maximum Daily Load
TESC- Temporary Erosion and Sediment Control
WDFW- Washington Department of Fish and Wildlife
WSDOE- Washington State Department of Ecology
WRIA- Water Resource Inventory Area

Section 1: Project Overview

1.1 History and Context

The Aeration Stabilization Basin (ASB) is a 28-acre wastewater treatment lagoon located in Bellingham Bay, Washington. It was built in 1979 by Georgia Pacific (GP) to treat industrial wastewater from their pulp and paper mill (Figure 1) (Port of Bellingham, n.d.). Previously, GP had been largely unregulated and was dumping various waste products directly into the bay. Mercury was one of the pollutants released into the waters by the Chlor-alkali plant that produced chlorine and sodium hydroxide by bleaching wood fibers (WSDOE, n.d.). However, in 1972 the United States passed the Clean Water Act (CWA), which allowed the Environmental Protection Agency (EPA) to regulate pollutant discharges (EPA, n.d.). In 2001, the pulp mill closed down after years of cutbacks due to the economy and officially stopped all production in 2007 (POB, 2018). In 2005, the Port of Bellingham (POB) acquired the former GP property, including the ASB site (POB, n.d.). Today, the ASB is still used to treat stormwater from the Downtown Waterfront, Log Pond, and Marine Trades area (POB, 2018).

Figure 1. Construction of the ASB (Source: POB Powerpoint, 2018)

As a result of the past industrial uses, the ASB is now a Model Toxics Control Act (MTCA) area due to the contamination levels of its sediments. It is part of the Whatcom Waterway cleanup site, which is one of twelve sites on the Bellingham Waterfront that

are required by the state MTCA and Federal CWA to be cleaned up (Figure 2). These sites are being managed by the Department of Ecology (DOE) under the cleanup regulations of the MTCA (DOE, n.d.; DOE, 2003). The twelve cleanup sites are part of the Bellingham Bay Demonstration Pilot Project. This project is a partnership between the POB and fourteen other federal, state, local and tribal agencies coordinating efforts to cleanup legacy contamination, restore habitat, control pollution, and improve land uses of the downtown waterfront. The work of the POB and other project partners is being guided by the Bellingham Bay Comprehensive Strategy and developments are still being planned (POB, n.d.; DOE, n.d.).

The POB has plans to clean up the sediments inside the ASB and redevelop the entire site into a Clean Ocean Marina (POB, 2018). Since the original proposal of that plan, concerns have arisen over the decreasing demand for boat moorage. The POB is exploring alternative uses for the ASB site.

Figure 2. Location of the ASB and other Bellingham Bay cleanup sites (Source: DOE, n.d.)

1.2 Proposed Action

The POB's proposed action consists of two phases: remediation and development. The remediation phase involves the clean-up of contaminated sediments inside the ASB. The development phase includes filling in half the ASB and using the created land for a public park, trail, beach, and cultural center (Figure 3). The other half of the ASB would be developed into a Clean Ocean Marina. The steps in each of the phases are outlined below.

Figure 3. Proposed action: Fill half the ASB and develop other half as marina.
(Source: POB Powerpoint, 2018)

Phase I: Remediation

- Step 1- The water level inside the ASB would be lowered and the effluent pipe leading to the Bay closed off. All water treatment equipment would be removed.
- Step 2- All contaminated sediments inside the ASB would be dredged and shipped to an upland site for treatment and disposal. Any remaining water would be pumped out and treated for contaminants and suspended solids before being discharged to the sanitary sewer system (POB, 2008).
- Step 3- Fourteen of the twenty-eight acres inside the ASB would be filled in by building land out from the shoreline with sediments dredged from Whatcom Waterway (Figure 3). The infilled land and the bottom of the basin would be capped with clean sediments.

- Step 4- The ASB would be filled to the appropriate elevation with water from Bellingham Bay. The berm would be opened on the Whatcom Waterway side to allow access to marine waters.

Phase II: Development

- Step 1-Six and a half acres created by the infill will be allotted for commercial development, which could include a cultural center. Seven acres could be developed into a public park and trails, and half an acre would be used to extend the public beach (Table 1). The remaining fourteen acres of the ASB would be converted into a Clean Ocean Marina.
- Step 2- Existing brownfield lands owned by the Port would be developed into a parking lot for public access to the marina and cultural center.

Table 1. Land-use of ASB site for proposed action

Land-Use	Acreage
Marina	14
Commercial Development	6.5
Park and Trail	7
Beach	0.5
Total	28

1.3 Alternative Action

The alternative action is to reconstruct the entire ASB into a Clean Ocean Marina (Figure 4). The alternative action would also require two phases: remediation and development. The remediation phase would include the same first two steps taken in the proposed action, as well as capping of the basin floor. The development phase would include the construction of the marina and the use of existing Port owned lands to develop a marina office and parking lot. The steps in each of the phases are outlined below (POB, 2008).

Figure 4. Alternative Action: Development of full Clean Ocean Marina
(Source: POB Powerpoint, 2018)

Phase I: Remediation

- Step 1- The water level inside the ASB would be lowered and the effluent pipe leading to the Bay will be closed off. All water treatment equipment would be removed.
- Step 2- All contaminated sediments inside the ASB would be dredged and shipped to an upland site for treatment and disposal. Any remaining water would be pumped out and treated for contaminants and suspended solids before being discharged to the sanitary sewer system (POB, 2008).
- Step 3- Dredged sediments from Whatcom Waterway would placed inside basin to appropriate elevation. The basin would be capped with clean sand sediments.
- Step 4- The ASB would be filled to the appropriate elevation with water from Bellingham Bay. The berm would be opened on the Whatcom Waterway side to allow access to marine waters.

Phase II: Development

- Step 1- The full twenty-eight acres inside the ASB would be constructed into a Clean Ocean Marina.
- Step 2- Existing brownfield lands owned by the Port would be used to develop a marina office, public restroom facility, and parking lot for public access to the marina and existing trail.

1.4 No Action Alternative

The no action alternative would be to leave the ASB as it stands and allow it to continue operating as a wastewater lagoon.

Section 2: The Natural Environment

Elements of the natural environment that are likely to be significantly impacted by the actions of these projects are included in this section. The elements that are being analyzed include: earth, water, plants, and animals. In this section, the conditions that exist today on the ASB site and in proximity to the site are described for each element. The anticipated impact on each of these elements is described for the proposed action, alternative action and the no action alternative. Mitigation measures to avoid or decrease these impacts are included for each element.

2.1 Earth

This subsection describes the existing topographic and soil conditions of the ASB site, including geologic hazards of the area. Assessment of the significant impacts that the proposed action and alternative action are likely to have on the earth elements are provided. The consequence of taking no action on the site is included. Mitigation measures for these impacts are proposed.

Existing Conditions

The ASB site is located in Bellingham Bay and consists of a raised berm containing an open-air lagoon. It is connected to the Central Waterfront in the Waterfront District (POB, 2018). The berm is armored with rip-rap that lines the entire perimeter of the site. Its elevation ranges between 5-20 feet. The majority of the berm has a slope between 15.1% and 30%. It also ranges from flat to 40.1%-100% in small portions of the site (City of Bellingham, n.d.). A public trail, named the “ASB Trail,” composed of compacted gravel is located on top of the berm and follows its entire length. A small sandy pocket beach is located off the northeast corner of the site (Figure 5).

Figure 5. Earth elements on the ASB site
(Source: POB Powerpoint, 2018)

The Waterfront District, of which the ASB site is a part, was once tidal mudflats and shoreline beach. The area was filled and developed in the mid-1800s for industrial uses and the ASB was constructed in the late 70s. The materials used for raising the site grades were dredged from nearby waterways (Port of Bellingham, 2018). Sediments inside the ASB basin are contaminated due to many years of wastewater being discharged into it from past pulping operations. The main contaminants of concern are mercury and phenolic compounds, which are in concentrations that exceed state standards under the Model Toxics Control Act. The ASB site is included in the Whatcom Waterway cleanup site that is managed by the Department of Ecology (DOE, n.d.).

The ASB site and the majority of the Waterfront District is located in an area of high seismic hazard (Figure 6) This is due to the instability of infilled land. The ASB site subject to severe risk of earthquake damage from ground shaking, soil liquefaction, and tsunamis (Port of Bellingham, 2008).

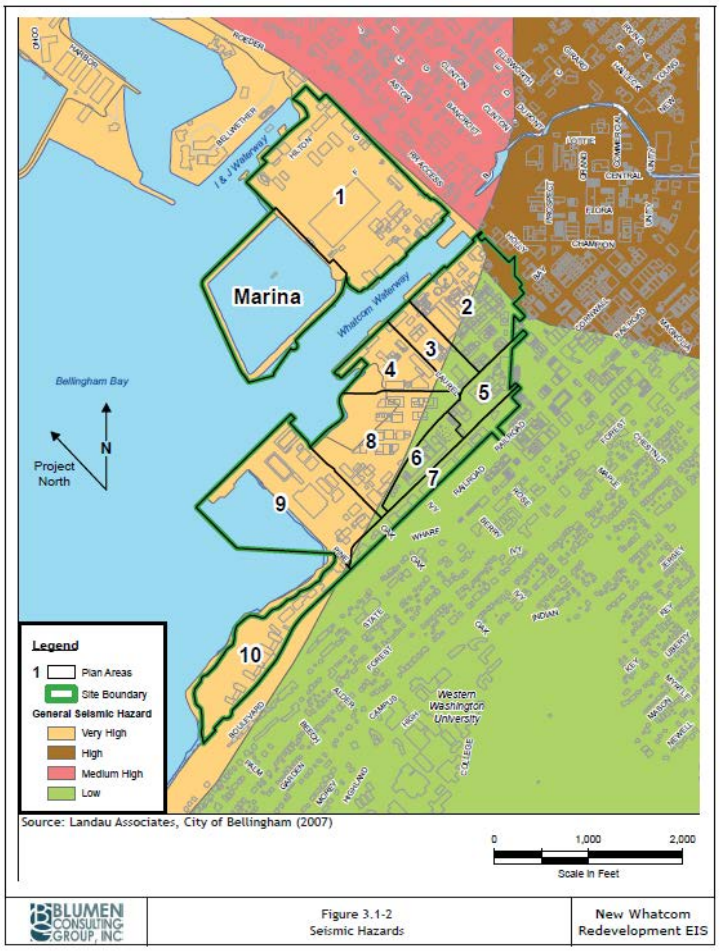

Figure 6. The ASB site is located in a high seismic risk area.

Proposed Action

Estimates for the amount of sea-level rise in Bellingham Bay by 2100 are around 2.4 feet above the current levels (POB, 2008). In anticipation of future sea-level rise, the elevation of the ASB berm would remain the same. The infilled area would match the elevation of the berm, with compensation for expected settling of the infilled land. The slope of the berm would remain the same in most areas except where beach is developed. Additional beach would extend from the existing pocket beach (Figure 5) onto the ASB site along the north edge. In this area the berm would be softened and the slope would match the existing beach. Because the perimeter of the site has a slope greater than 15% it is susceptible to erosion, particularly during construction (Figure 7).

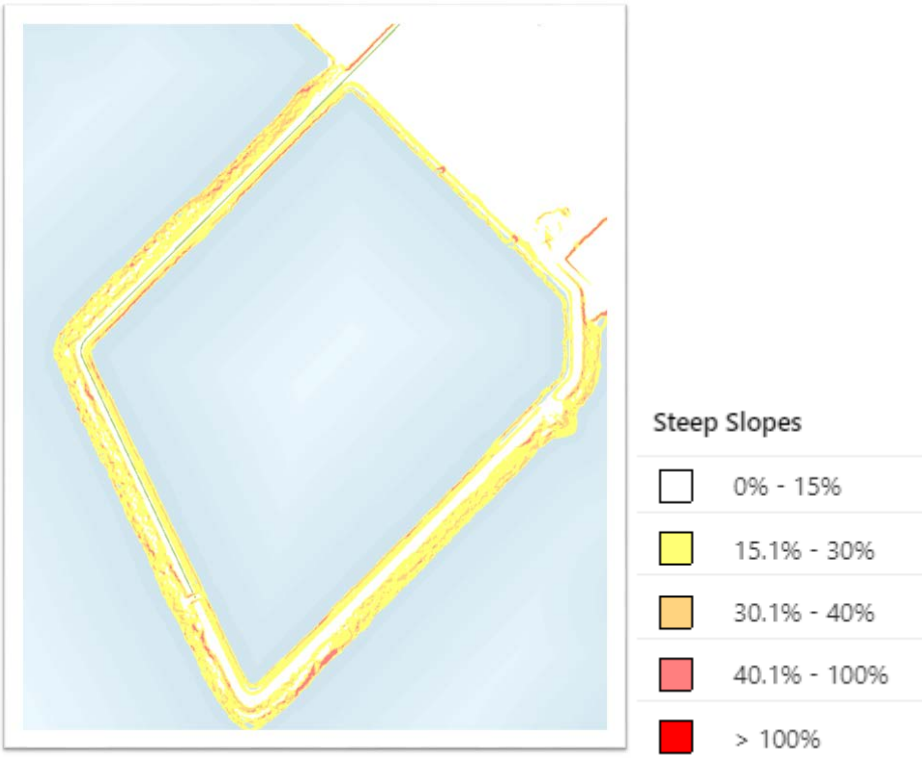

Figure 7. Slopes greater than 15% are subject to erosion hazard. (POB, 2008).

Building structures on infilled land and using large amounts of infill can result in varying degrees of settlement after construction. Settling sediments can result in damage to structures and utilities (Port of Bellingham, 2008). The addition of 14 acres of land to the ASB site and development of structures on that land has the high potential for uneven settling of the sediments.

Filling and developing land inside the ASB will increase the amount of seismic hazard area on the site. Infilled land is at high risk of damage from earthquakes due to its instability. In the case of an earthquake, the new development will be subject to significant impacts from ground shaking, liquefaction, and tsunamis.

Alternative Action

The alternative action does not require the infilling of land and therefore does not have as significant of impacts on the earth elements as the proposed action. The berm would remain the same height and slope, so it would be susceptible to erosion during the construction of the marina piers. The site remains a seismic hazard area and the berm and marina structures could be subject to significant damage in the case of an earthquake.

No Action Alternative
The site would remain a seismic hazard area and the risk of damage would be unchanged. The contaminated soils inside the ASB basin would remain and the site would continue to be a MTCA area.

Mitigation
Erosion is primarily a temporary impact during the construction and development phase of the proposed and alternative actions. Erosion impacts can be mitigated through the use of best management practices (BMPs) during construction. These include (POB, 2008):

- Minimizing the areas of exposure
- Limiting ground movement to the dry season
- Using sedimentation control devices to retain eroding materials
- Use stabilization measures to reduce runoff from sloped areas

Damage to structures and utilities from settling sediment and seismic activity can be mitigated for through the design of structures, such as deep foundations, and ground improvement techniques. When planning the designs for structures on the ASB site, the use of seismic design and most recent codes and engineering standards should be used.

2.2 Water

This subsection describes the existing conditions of surface waters in and surrounding the ASB site. Significant impacts on surface water from the proposed action, alternative action and taking no action, are analyzed. Mitigation measures that can be taken to reduce or avoid these impacts are proposed. There is no significant source of groundwater on the ASB site.

Existing conditions
The ASB site is located in Washington State Water Resource Inventory Area (WRIA) 01 and is part of the greater Nooksack drainage basin (Washington State Department of Fish and Wildlife, 2011; POB, 2008). The site is located adjacent to Bellingham Bay, Whatcom Waterway, and I & J Street Waterway. Bellingham Bay is approximately 28 square miles and is the receiving waters of the Nooksack River. Whatcom Waterway receives freshwater surface discharge from Whatcom Creek (POB, 2018). Because the site is located in the bay, it is subject to tidal influences (POB, 2008). The site is also located in a 100-year flood zone according to FEMA-2017 (COB, n.d.).

The ASB can hold about 250 million gallons of wastewater. It receives and treats stormwater from the Downtown Waterfront, Log Pond, and Marine Trades area (POB, 2018). The stormwater runoff from these areas is collected through ditches, culverts and underground pipes. The combined effluent is discharged to a pump station located across from the ASB on the other side of Whatcom Waterway. The pump station discharges the stormwater effluent into the ASB through a 700-ft long force main that extends under the Whatcom Waterway. Treated water is then pumped out of the ASB through a 60-inch diameter pipe that extends 8,000 feet into Bellingham Bay (POB, 2008). Surface runoff from impervious surfaces on the ASB site discharge either directly into the open-air lagoon or into the surrounding water bodies.

A Combined Sewer Overflow (CSO) is located in the SE corner of the ASB site. In the case of a heavy rainstorm, the CSO releases stormwater from other areas of the watershed directly into the Bay. The city is allowed one overflow event per year according to their NPDES permit (POB, 2008).

Inner Bellingham Bay is listed under the Washington 303(d) list of impaired water bodies for impairments due to potential toxic effects from contaminated sediments. The Federal Clean Water Act (CWA) enforced by the US Environmental Protection Agency (EPA) mandates that states establish a Total Maximum Daily Load (TMDL) for surface waters that do not meet state water quality standards. In 2001, a TMDL was prepared for Inner Bellingham Bay. The parameters addressed by TMDL included sediment bioassay, 4-Methylphenol, Mercury, Phenol and wood waste. Investigations showed that there are no ongoing sources of contamination, only the need for remediation of contaminated sediments from historic contamination sources. The cleanup of the existing contaminated sediments are conducted under the authority of the Model Toxics Control Act (MTCA) cleanup regulation, implemented by Ecology (Department of Ecology, 2003). The ASB is included in the Whatcom Waterway cleanup site which is one of twelve contaminated sites in the Bellingham Bay area (Figure 8). Sediments in the ASB contain mercury and phenolic contaminants in concentrations that exceed state standards under the MTCA. The sediment contamination of the Whatcom Waterway sites is the result of past industrial uses (DOE, n.d.).

Figure 8. ASB (Whatcom Waterway) one of twelve clean-up sites in Bellingham Bay managed by the Department of Ecology.

Proposed Action

Construction of the proposed site would result in a temporary increase in erosion and potential pollution from construction equipment. Potential short-term water quality impacts include an increase in turbidity, and suspended and settleable solids. Spills and leaks from construction equipment could include fuels, oil, or hydraulic fluid. Any use of concrete during construction also has the potential to contaminate the soil and nearby surface waters (POB, 2008).

The proposed action would increase the amount of impervious surface on the ASB site by 14 acres, which will result in an increase in the amount of surface runoff from the site. Surface runoff can carry many types of pollutants from the developed site into surrounding water bodies and have adverse effects on humans and marine biota. These pollutants and water quality impacts can include (POB, 2008):

- Nutrients
- Pesticides
- Heavy Metals
- Oil, grease, and Total Petroleum Hydrocarbons
- Fecal Coliform
- Increased Total Suspended Solids (TSS)

- Increased Temperature
- Increased Biochemical Oxygen Demand (BOD)

The proposed marina increases the potential sources of pollution to the marine environment from boats and marina users. Potential sources of pollution include (Clean marine, n.d.) (POB, 2008):

- Fuel and oil spills
- Toxic chemicals and paints from boats
- Dust and debris from boat maintenance
- Trash and fish waste

Alternative Action
Construction of the full marina will have temporary water quality impacts from erosion and potentially pollutants from construction equipment. The alternative action will increase the amount of impervious surfaces on the site, mainly in the form of overwater structures in the marina. This has the potential to increase pollutants getting into the marine environment from runoff of these structures. The potential sources of pollution from boats and marina users are listed in the proposed action above.

No Action Alternative
The ASB site would remain a MTCA site and a potential source of contamination to surrounding surface waters.

Mitigation
The temporary increase in water quality impairment during construction of the ASB site can be reduced through the use of Temporary Erosion and Sediment Control (TESC) Best Management Practices (BMPs). Before the start of construction a Stormwater Pollution Prevention Plan (SWPPP) should be prepared and the strategies for this plan should be implemented throughout the construction process (POB, 2008). These BMPs can include:

- Minimizing the areas of exposure
- Schedule construction for dry season
- Plant ground cover shortly after finishing construction
- Route surface runoff away from disturbed soils
- Use erosion control and slope stabilization devices

To mitigate for the increase in land and impervious surfaces to the site, Low Impact Development (LID) strategies should be used. These strategies mimic natural process

of infiltration, filtration, storage and evapotranspiration, and utilize stormwater on site to in order to protect water quality of surrounding aquatic environments. LID decreases the amount of stormwater runoff from the site and treats runoff before it makes it into receiving water bodies. Types of LID strategies that can be used for the ASB site include (DOE, 2019) (EPA, n.d.):

- Minimizing impervious surfaces
- Green roofs
- Bioswales/Rain gardens
- Permeable pavements
- Native vegetation for landscape features

Pollution from boats and marina users can be minimized by the use of BMPs by The Port in the operation of the marina. These BMPs include the management of (POB, 2008):

- Bilge water discharge
- Fuel dock operation and maintenance
- Hazardous and solid wastes
- Oil spills
- Sewage

By implementing these BMPs, the marina can go through a certification process to become a Certified Clean facility. Staff members and marina users can go through a comprehensive training in BMPs that include (Clean Marine, n.d.):

- Fuel and oil spill clean up
- Use and storage of toxic chemicals and paints
- Types of hull paints allowed in the marina
- Types of boat maintenance allowed in the marina
- Proper bilge cleanup

2.3 Plants

This section describes the existing aquatic and terrestrial plants in the area around the project site. Impacts for the proposed action, alternative action, and no action plans have been explored. Mitigation strategies have also been outlined to reduce the negative impacts of the proposed and alternative action plans.

Existing Conditions

According to a report from the Department of Natural Resources (DNR) there are no sensitive or endangered plant species in the area surrounding the ASB (2000). According to a survey from the submerged vegetation monitoring program, eelgrass (*Zostera marina*) was the only species that was found in the area surrounding the basin (Figure 9). While eelgrass is not an endangered plant species, it is a crucial part of the environment and provides valuable habitats to many different kinds of marine life. The ASB is located near downtown Bellingham, in an urban area. As a result, there is limited space for terrestrial plants to grow. Plants found growing on the trails near the ASB include mostly noxious weed species such as butterfly bush (*Buddleja davidii*) and common tansy (*Tanacetum vulgare*). Native plants onsite include a few Douglas firs (Pseudotsuga menziesii).

Figure 9. Coverage of eelgrass near the ASB site (DNR, 2008)

Proposed Action

The proposed action involves filling in half of the ASB. Seven acres of the land created by the fill will be developed into a public park and trails, one acre will be public beach to extend the existing pocket beach, and six acres will be for commercial development and open space. The remaining half of the ASB would be a new marina. Adding a new marina will increase the amount of boat traffic, increasing the amount of light and noise disturbance from the boats and docks. During construction, a portion of the breakwater wall that currently encloses the ASB, would be removed to allow boats to access the new marina.

Alternative Action

The alternative action plan is to build a full marina inside the ASB. This plan would involve tearing down part of the breakwater wall that currently encloses the ASB. This would distribute particles of soil and sediment into the water, which could increase turbidity. Since eelgrass is an aquatic flowering plant rather than a grass or seaweed, it is reliant on clear water to photosynthesize. Eelgrass is also sensitive to temperature and grows best in cold water.

No Action

The no action plan would leave the ASB as is. Since it is completely closed to Whatcom Waterway and Bellingham Bay there is not much risk of contaminated water exiting the ASB. There are contaminated sediments that are currently at the bottom of the ASB. If left untouched the contaminants could eventually leach into the lower layers of sediment and possibly contaminate groundwater.

Mitigation

Mitigation actions would include using best management practices during construction to ensure the surrounding eelgrass beds would not be significantly damaged or negatively impacted. For the terrestrial plants, it is advised to remove the invasive *Buddleja davidii* and *Tanacetum vulgare* from the site. The proposed action involves converting seven acres of the filled land into a park. This would be a great opportunity to plant native vegetation. Adding vegetation can help to stabilize shorelines. Removing a portion of the breakwater wall of the ASB would not be advised during the warmest parts of the year or during the peak eelgrass growing season. Combining warm temperatures with the stress of turbidity from construction activity could cause a larger reduction of eelgrass in the area (NOAA, 2014). Adding a vegetated buffer filled with native plants on the filled in land along the border of the water could help keep structures and people a safe distance from the edge of the shore.

2.4 Animals

This section describes the existing marine animals in the area around the project site. Impacts for the proposed action, alternative action, and no action plans have been explored. Mitigation strategies have been recommended to reduce and/ or eliminate the negative impacts on animals outlined below.

Existing Conditions
Since the ASB is located in an urban area at the POB there is not much space for terrestrial animal species to inhabit the site. Some birds including ducks and geese have been observed in the water inside the ASB. In the water outside the bounds of the ASB there are many marine animals that call the surrounding eelgrass beds home. This includes mammals such as harbor seals. There are also species of fish such as herring, perch, and juvenile salmon. Invertebrates that live in eelgrass beds include crabs, clams, sea stars, urchins, snails, and anemones.

Proposed Action
The proposed action is filling in half of the ASB for commercial development. This action would increase boat traffic, as well as light and noise pollution. With more boats present in the bay there is an increased chance of boats interacting with marine life such as harbor seals. This course of action would create 14 acres of new land, seven of which will be green space. This green space if planted with native vegetation as recommended earlier, could also potentially provide habitat for small birds, rodents, and invertebrates.

Alternative Action
The alternative action of developing a full marina within the bounds of the ASB would cause an increase in boat traffic would impact marine life. The larger species such as harbor seals would see some of the biggest impacts from boat traffic because they have the highest chance of coming into contact with a boat or humans. Crabs could also be affected if the area around the new marina would be open for sport crabbing.

No Action
This plan would involve leaving the ASB as is and making no changes to the site. Since the ASB is a closed environment there would be no other significant changes in impacts to animals as long as the structure remains in place. Even though the ASB is enclosed by breakwater walls, the majority of the walls were not on existing shoreline. This means that most of the breakwater walls do not have as big of an impact an habitat that such walls typically have when they are placed on existing shorelines.

Mitigation

One mitigation measure would be restoring salmon habitat by protecting eelgrass beds during construction. Other mitigation strategies would include using softer armoring on some of the marina walls. Shoreline armoring has been linked with harming habitats for many marine creatures, most notably forage fish (Focus on Shoreline Armoring, 2010). Forage fish are prey for other important marine species in Puget Sound including salmon. It is also suggested that the POB consults with the Washington Department of Fish and Wildlife (WDFW) and the Lummi and Nooksack Nations in regards to what is best for salmon habitat restoration and protecting this area for generations to come. Both the proposed action and the alternative action would result in more underwater potential habitat being created for marine life. This new habitat should be used to its full capacity.

Section 3: The Built Environment

3.1 Environmental Health

Existing Conditions

The ASB is filled with contaminated sediments and polluted water that was released from Georgia Pacific from 1979 until GP closed in 2001. The most harmful of the contaminants is mercury. While mercury does occur naturally in the environment, the manufactured waste that had been released into the ASB since its construction occurred at significantly high rates. Mercury combines with carbon in water, soil, or plants to form methylmercury which is a neurotoxin. This form of mercury can cause adverse health effects when humans or animals are exposed to high levels. These health effects include abnormal behavior, slowed reproduction, and death (EPA, 2018). As seen in Figure 11, mercury can bound sediments together and because of this, it makes cleanup of this site extremely difficult. The ASB is fenced off from the public due to the hazardous chemicals found in the site.

Figure 10. Mercury found in sediments
(Stark, 2013)

Proposed Action

The dredged contaminated sediment from the ASB would be laid out on land to dry, making it easier to transport. This dry sediment would be shipped via train to Seattle. From there it would be loaded onto trucks and driven to a landfill in Eastern Washington. The clean-up of contaminated properties is regulated by the Washington State Model Toxics Control Act (MTCA). MTCA is a citizen-mandated law and is the state counterpart to the federal Superfund law. Ecology is the lead agency responsible

for the implementation and enforcement of MTCA. The cleanup levels would be in accordance to state law and develop protective land uses.

The significant impacts that could occur during this process include contamination of crew and workers who would be in direct contact with soils. However, crew members may not be the only ones at risk as the site is located in an industrial area where many people work. Air quality degradation of the surrounding area may occur due to the exposure of the underwater sediments. Also, trespassers would be at risk if they are unaware of the hazardous chemicals found on site.

Alternative Action
The clean-up and dredging of the site would occur, however there would be no filling. The ASB lagoon may be opened to marine waters and restored as a clean ocean marina. The impacts of the alternative action are mostly temporary. Cleaning up the site through the alternative or proposed action would decrease the toxicity of the ASB as well as the surrounding areas.

No Action
The ASB would be left as it is with no cleanup, which presents many hazards for the surrounding area. The mercury found in sediment is deep and due to this, it would take a significant amount of time for the Hg levels to reach a relatively safe level naturally (Randall, 2013).

Mitigation Measures
A crew would be in contact with the contaminated sediments during cleanup. Due to this, all persons working in the cleanup site would be required to take a 40-hour hazardous materials training in accordance with WAC 296-843. The training ensures correct handling of the contaminated soils. To further protect from contamination, all crew would need to wear and know the limitations of:

- Protective suits
- Chemically resistant boots
- Masks
- Eye Wear
- Respiratory Equipment
- Hard hats
- Visibility Vests

The health of the crew members would need to be monitored throughout the cleanup process by a health professional who gives checkups every week. By monitoring the

levels of exposure, it would prevent adverse health effects that may be developed. To safeguard the site during remediation, signs need to posted warning possible trespassers that this is a hot zone. The air quality would need to be monitored throughout the remediation phase to prevent the subjection to those who work around the ASB site.

3.2 Land and Shoreline

Existing Conditions

The ASB is located within the Whatcom Waterfront District, currently it is “designated as a recreational shoreline environment where the primary uses within shoreline jurisdiction are public recreation, open space and habitat restoration” (POB, 2018, pg. 22). The ASB is zoned as urban village, and currently there is a commercial space, All American Marine that is directly behind the ASB, at 411 W Chestnut St. The 28 acre lagoon is surrounded by a breakwater wall about eight feet tall. Currently, it is considered an undeveloped area and no buildings are located within the ASB. The site only contains bulkheads and wharfs from its past historical industrial use. Public access is from the north side of the lagoon via a trail that has been created as part of the waterfront redevelopment project (Figure 12). The site provides public access; however, it can be improved drastically, as the shoreline master program states, “areas identified for establishment or enhancement of shoreline public access may include but should not be limited to… perimeter of Georgia Pacific ASB” (COB, 2013, pg. 13). The ASB is listed under the MTCA, which means this site has multiple steps for the environmental cleanup process.

Figure 11. Square footage of ASB
(COB, n.d.)

Proposed Action

Phase 1 of the proposed action would involve dredging and transporting the contaminated sludge. Land reclamation would occur by dredging and filling half of the space for commercial use and open space. The remaining area would be developed as a marina and habitat restoration projects. The commercial space could be a cultural center to highlight the history and heritage of the area. The proposed action is compatible and aligned with the future goals and intentions for the Bellingham Waterfront District, as the master plan states, “job opportunities, environmental restoration, and increased public access and recreational opportunities on the waterfront have been identified as priorities for this area” (POB, 2018, pg. 3).

Phase I: Remediation

- The contaminated soil will have to be removed and shipped to a landfill. Impacts can occur during the removal of the sediments to the surrounding shoreline habitats, as stated “the reclamation site and dredging site both undergo biological, physical and chemical impacts...dredging may affect the physical environment by changing the bathymetry, current velocity and wave conditions” (Mostafa, 2012).

Phase II: Development

- The removal of bulkheads and wharfs within the ASB could soften the shoreline. The ASB would be transformed into 14 acres of a Clean Ocean Marina, 7 acres into a park and open space, 6 acres into a commercial space, and 0.5 acre beach along the north side of the site.
- After the development of the commercial space, parks, and marina there will be numerous long-term impacts that would need to be mitigated. For example, developing half of the space into a marina would have a variety of environmental impacts when it is open to the public. Impacts can include oil spills, illegal dumping, and sewage and water discharges. The conversion of the ASB would have more pedestrian, bicyclists, and recreational users to the area, which could cause impacts toward habitat restoration projects.

Figure 12. North side beach of the ASB

Alternative Action
The alternative action would have short-term impacts during the remediation phase. Like previously stated, it would cause habitat destruction while dredging the contaminated soil. It would have long term impacts during the development phase and the transformation of the area into a marina. For example, converting the entire space into the marina would result in an increase in boaters and recreational users to the area that can pollute, and cause destruction to the surrounding habitats. However, the transformation of the ASB will provide opportunities for habitat restoration projects like fish passage corridors and enhancement of eelgrass beds.

No Action
Leaving the ASB in its current condition would not create any land or shoreline. It would not allow opportunity to restore marine habitat. Therefore, with no action taken against the ASB it would leave more of an environmental impact then the proposed or alternative action. Also, it would violate the court order agreement that the POB has with the WSDOE.

Mitigation
The development would allow shoreline habitat restoration projects to occur. The site currently has many bulkheads and wharfs that would need to be removed thus softening

the shorelines. With climate change, sea level rise is an issue for coastal towns, and Bellingham is no exception; therefore, the land created would require proper setbacks, as well as maintaining the current height of the breakwater wall of 8 feet.

To mitigate phase II impacts, the POB should assure that it follows Clean Ocean Marina guidelines; a program that assists in providing environmentally clean facilities and aims to protect waters from pollution through a variety of management practices (Cleanmarina.org, 2017). Mitigation measures for the marina in the proposed and alternative action are BMPs that staff and recreational users of the area would implement, such as:

- Good Boat-Keeping Practices
- Education through signs and notices
- Marina Rules and Regulations
- Waste and Recycling Receptacles
- Spill Prevention and Rapid Clean-Up Plans

To minimize impacts of the commercial development (e.g., cultural center and marina office, etc.), the buildings should be Leadership in Energy and Environmental Design (LEED) certified. This internationally recognized green building certification enables the building to be efficient, more sustainable, and cost effective. For example, using local and natural materials for building materials, solar panels for energy use, and projects like green roofs or rain gardens to help promote sustainable designs. A strategy to help minimize impacts from site visitors are to have clearly marked and aesthetically appealing signage for the open spaces that are created.

3.3 Aesthetics

This section describes aesthetics and buildings in the area. Impacts for the proposed action, alternative action, and no action plans are discussed.

Existing Conditions

The only current structures at the ASB include a 7 foot security fence surrounding the ASB, the berm which contains the water within the ASB, and a small control building in the southernmost corner.

Proposed Action

Construction at the site would temporarily increase noise pollution from equipment. Construction equipment would temporarily block views in the immediate vicinity and might be considered unappealing to the public.

The ASB is designated as a Recreational Shoreline Environment where the primary uses within shoreline jurisdiction are public recreation, open space, and habitat restoration (POB, 2018). Buildings within a Recreational Shoreline Environment are limited to 25 feet. This restriction excludes antennas, but includes smoke stacks, chimneys, and vents. One building would be built, possibly containing a cultural center. The building would abide by the Recreational Shoreline Environment guidelines and remain at or under 25 feet.

Masts of sailboats and tall vessels docked in the marina half of the ASB could minimally obstruct views of Bellingham Bay from the immediate vicinity.

Alternative Action
No buildings taller than 25 feet will be permitted inside marina area. One small building will be permitted as a marina office. Masts of sailboats and tall vessels docked in marina could minimally obstruct views of Bellingham bay from the immediate vicinity. Outside of the marina, no views of Bellingham Bay will be blocked.

Mitigation
Including a park and trails on the filled half of the ASB will provide aesthetic appeal to the public. The park would incorporate native trees and shrubbery and grass fields, as well as berms and/or vegetated buffers around buildings and the park. Bioswales and other low impact stormwater treatment techniques will be incorporated into the park landscape to provide more aesthetic appeal while reducing impacts of stormwater runoff and maximizing ecological value in a cost-effective way. Where above ground utility infrastructure is needed, efforts should be made to minimize visual impacts. For example, street lights should be shielded to avoid off-site light impacts.

The building's exterior should be made out of attractive materials and colors. The majority of the exterior walls should be made of shatterproof windows to maximize views of Bellingham Bay.

The marina office should be kept to a minimum, and ensure that exterior of the building is constructed of attractive materials and colors.

No Action
There are currently no buildings obstructing views in the ASB. There is an 7 foot security fence surrounding the ASB that is necessary to keep people out. Since there are no current buildings, and the fence is low enough, no views are obstructed except to those standing directly next to the fence on the northern side of the ASB. However,

considering the ASB is a 30-acre lagoon full of contaminated water in Bellingham's waterfront district, it is likely considered an eye-sore and a waste of space to the public.

3.4 Transportation

Existing Conditions
Currently, motorized vehicles cannot access the ASB. There is a trail that provides pedestrian and bicycle access to the site. However, it is disconnected from downtown Bellingham and thus causes isolation of the site. Both north and south sides of the ASB provides access for ships to access Squalicum Harbor or the Whatcom Creek Waterway.

Proposed Action
Phase I would occur to deepen the ASB that would allow more accessibility for boats. In addition, the creation of the marina will increase boater traffic. This will provide economic opportunities for having the capability of both motorized and emphasis on non-motorized boats for the marina. Also, a designated park would allow pedestrian walkways and bicycle trails. The proposed action would have long-term impacts for increase pedestrian, boater, and bicyclist traffic in the area.

During phase II the construction the building and parking lot would cause long-term environmental impacts because they are usually constructed of impermeable surfaces which are unable to filtrate storm water runoff (EPA, 2008). Also, the parking lot would decrease the amount of available green space, which is important for the community and has aesthetic value.

Alternative Action
The alternative action of having the entire space be a marina would result in more boater traffic and marine transportation to occur. This could threaten current and proposed habitat restoration. There would be space for pedestrian walkways and bicycle trails, along with a small marina office and public restrooms.

Mitigation
To minimize impacts from the parking lot, different materials should be considered. For example, painting it a lighter color like gray or white will minimize the heat that is reflected off of the lot in the summer months. Landscaping in the parking lot should include native plant species and rain gardens.

The park will have pedestrian walkways and bicycle trails. Users can cause problems, such as vegetation loss and habitat destruction, by leaving designated trails. To reduce trail user impacts, signs should be posted to inform people of the designated trails.

3.5 Utilities

Existing Conditions
The site is currently serviced by limited utilities. The ASB is used as a stormwater treatment and drainage for the area across the Whatcom Waterway where Waypoint Park and the Granary Building are located.

Proposed Action
All utilities are expected to significantly increase with the development of the half marina. However, it also depends on how the site is developed. The increased utilities may pose more risk for hazards, such as fire or spillage.

1. Water: There is a potable water main located down C Street. Extension of the water line would require a high level of water pressure due to the low level of the land.

2. Electricity: The nearest electrical substation is located on Roeder Avenue between F Street and E Street. Electricity will be extended via below grade lines.

3. Stormwater: Runoff empties out into the ASB from the old Georgia Pacific site. This would need to be rerouted to another area or an area of the marina could be blocked off for stormwater. One of the port's main priorities is making sure that storm water is not polluted when it is discharged into the bay (Port of Bellingham, 2018).

4. Gas: Natural gas line would have to be extended to the area depending on the development of the site. Gas currently is connected to an industrial building that is located less than a 0.1 mile away from the ASB site.

5. Sanitary Sewer: Sewage pipes are located down C Street and will need to be extended to accommodate new development. The sewage line will need to be in accordance with the City's Capital Facilities Plan. Due to this extension, older sewage lines will also need to be replaced.

Alternative Action
All utilities will need to be extended to support a marina office and bathrooms for boaters who will use the full marina.

No Action
Utilities would not have to be expanded to service the ASB. The stormwater that is treated and discharged into the basin would not have to be rerouted.

Mitigation Measures
The extension of electrical to support the lights in the marina could be supplemented by using solar power. Even in the northwest, solar power can be used to supply electricity directly to the source. This reduces the amount of transmission loss which makes it more energy efficient. Solar powered lights could be used in the marina to reduce electricity demand of Puget Sound Energy.

Stormwater is currently released into the ASB from the old GP site and other sections of the Port of Bellingham. The old GP site is now Waypoint Park and will be hooked up to the updated City of Bellingham stormwater system. However, other parts of Bellingham's waterfront will still need to reroute their stormwater runoff system. The other option would be to section off a fraction of the marina to designate for the stormwater runoff. Incorporating rain gardens will minimize pollution of stormwater from the development located right on Bellingham Bay. Sufficiently designed rain gardens can prevent trash and even finer pollutants from entering the ocean while also providing open space. The use of thirsty concrete will reduce water from runoff into the bay by allowing rain to be absorbed into the ground.

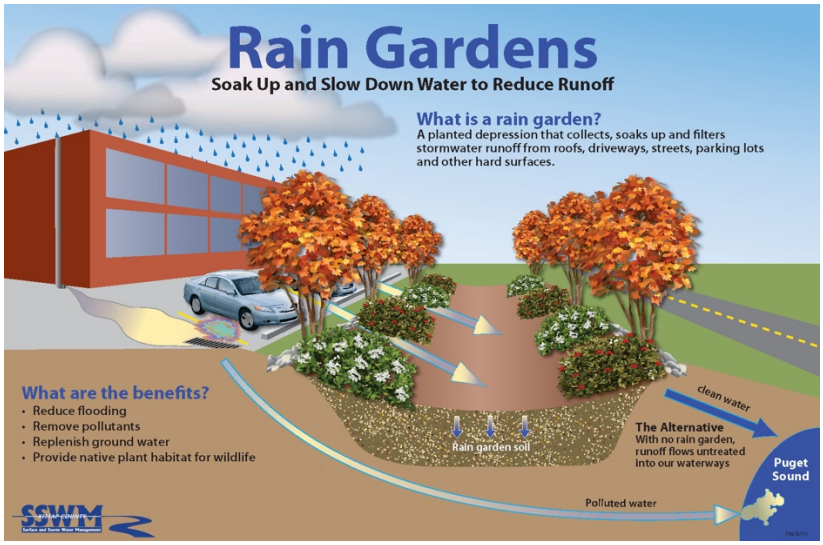

Figure 13. Rain Garden Diagram (Center for Sustainable Infrastructure, 2015)

All utilities will be placed underground within the road network. This decreases the need for maintenance as severe weather or other events will reduce the possible impacts of the underground utilities. Heating and cooling pipes should be installed to eliminate the need for AC units or furnaces and boilers. The point source production of the heating and cooling pipes increases energy efficiency.

3.6 Recreation

This section describes the existing recreation opportunities in the area and around the project site. Impacts for the proposed action, alternative action, and no action plans are discussed.

Existing Conditions

There is a wide gravel trail that surrounds the ASB (Figure 15). It is a semi-popular trail for runners, dog walkers, and cyclist. The Department of Natural Resources (DNR) owns the south west corner of the trail. DNR has closed off that section of the trail using a small gate. Pedestrians often ignore the trail closure and go around the gate in order to continue the loop.

Figure 14. ASB Trail
(Elsworth, 2015)

There is public beach access across the ASB trail at the northernmost corner (Figure 16,17). The beach is less than one third of an acre and is primarily used for walking and picnicking. The City of Bellingham's Waypoint Park is located across the Whatcom

Waterway from the ASB. Waypoint Park includes a pedestrian path, cycling path, beach access, a multi-use lawn, and historic artifacts from GP.

Figure 15. Public beach access
(Elsworth, 2015)

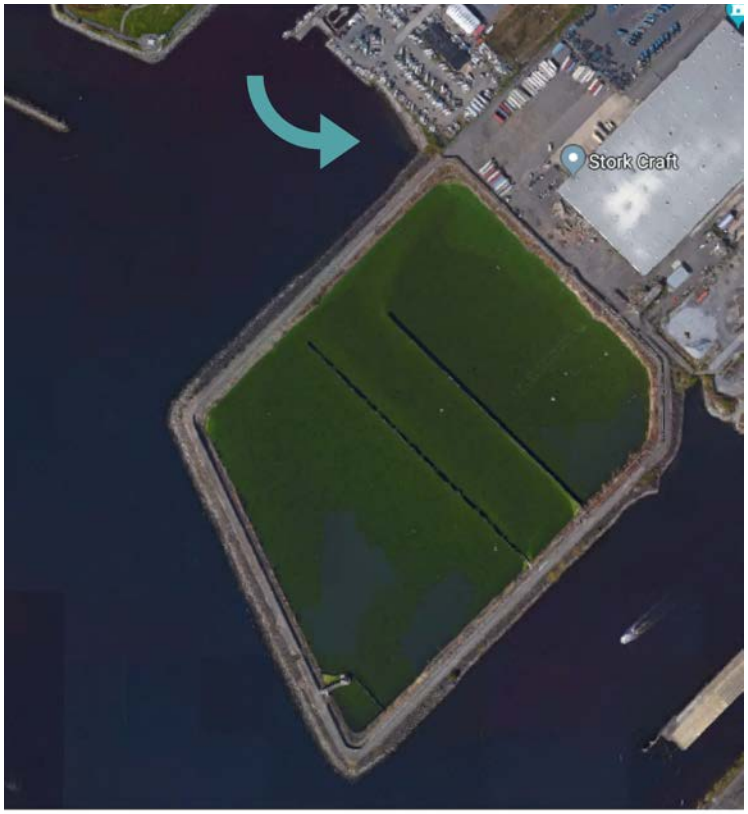

Figure 16. Location of public beach access in reference to lagoon

Proposed Action
Recreation opportunities from the ASB trail and the beach access would be temporarily closed during construction due to safety hazards.

After construction, the ASB trail would reopen but be shorter than the original ASB trail. Public beach access will be extended from a third of an acre to a full acre. This requires dredging and removal of debris in the area, but would inevitably increase beach access.

The proposed action would have 7 acres of parks and trails, including multi-use lawns and picnick areas. A cultural center is the suggested use for commercial development tp align with the designated recreational shoreline environment (POB, 2018). A cultural center would increase art and educational opportunities within the community and have an overall positive social impact.

Alternative Action
Construction for a full clean ocean marina would temporarily close access to the existing ASB trail and public beach access to the one third acre beach located across the trail on the north corner of the ASB.

After construction, a full clean ocean marina would still include the ASB trail. It would also increase recreational opportunities for boaters, but primarily boat owners. This action would also open up more opportunities for commercial cruise vessels, such as the Alaskan charters.

No Action
Existing trail will remain open for public use, DNR side of the trail will remain as government property.

Mitigation

Short term:
-Include signage that directs pedestrians to nearby recreational areas, such as Waypoint Park while the ASB trail is closed during construction.

Long Term:
-Develop cultural center in filled half of the ASB to increase art and educational opportunities
-Extend a walking trail from the newly developed park to connect Waypoint Park to make up for shortened ASB trail

-Include a bike path that extends to Waypoint Park
-Development playground in proposed park area
-Include areas within the marina for kayakers and paddle boarders to launch

3.7 Economic Development

Existing Conditions

One of the Port's main priorities for the Whatcom Waterway clean up is economic development (POB, 2018). The area that is located around the ASB are primarily industrial sites, such as All American Marine. This shipyard was built a few years ago and created over 60 jobs in the area (Gallagher, 2017). Bellingham has a lower than average unemployment rate across the state of Washington, however it is 1.5% higher than Seattle's unemployment rate (Figure 18). Throughout the 1900s, Bellingham's waterfront was primarily used for industrial sites that included Georgia Pacific and a few other pulp mills that introduced many jobs in the area. In 2001, Georgia Pacific stopped all production after years of slowing down due to economic decline (POB, 2018). This has left Bellingham's waterfront in a state of transition from an industrial area to a public space with development and parks.

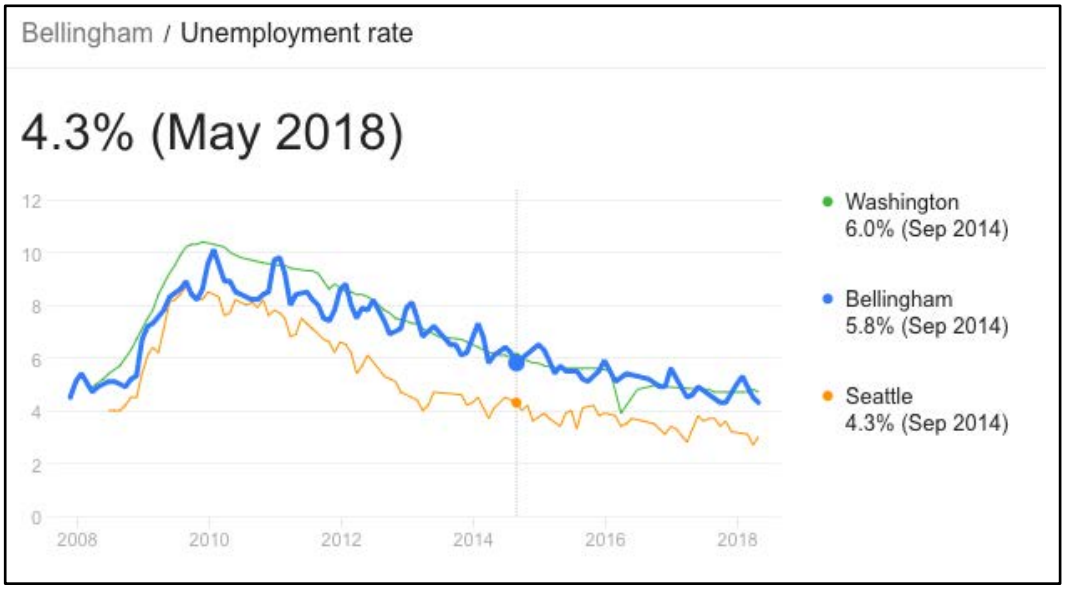

Figure 17. Unemployment rate in Bellingham 2014

Proposed Action

Half development of the site provides 14 acres for development. Depending on the development of the site, there could be a significant increase in the amount of jobs in this area. The half development gives the best of both worlds in the creation of jobs,

while also having the ability to mitigate environmental concerns. Compared to the full development of the site, the process of clean up and adding land material would be a lot cheaper in terms of costs. The long-term economic gains of development would be able to pay back the cost of the cleanup. In the short term, there would be significant increase in construction jobs for remediation and development of the site.

Alternative Action
This option would have fewer upfront costs compared to the development of half of the ASB. A full marina would increase boat recreation which could bring in tourism. Boat recreation could include boat rentals of non-motorized boats or even a sea plane touring company. The increased boat traffic in Bellingham would bring more jobs to companies in the area dedicated to boating. This would also increase the need for maintenance workers for the POB.

No Action
The real property value of the site and the surrounding area will decline due to the contamination. It will continue to be blocked off from public use and will serve no economic purpose.

Mitigation Measures
The environment surrounding the ASB is industrial. However, the ASB trail is a popular spot for people to walk their dog or enjoy bay views. Economic development does not have to reduce the amount of open space or opportunities to increase culture or art. Mitigation measures that are recommended for the proposed action is to build a cultural center and a park. The park, cultural center, and marina would increase jobs through the Port of Bellingham. The cultural center could also be rented out for events to increase income of the center.

Section 4: Summary of Findings

The results of this assessment found that the most significant impacts of developing the ASB site occur during the construction of the site. These temporary impacts can be mitigated by using BMPs during construction. Development of the site can have significant long-term impacts on surface waters, earth elements, environmental health, and land and shoreline use. These impacts can be mostly mitigated for by using Low Impact Development strategies. Development of the site would increase habitat for marine plants and animals, add public recreational opportunities, and boost economic development for the Bellingham community. The benefits of development would outweigh the short-term impacts caused during construction and other more long-term impacts. Our decision matrix shows that the alternative action would be the best option

for having the least amount of environmental impacts. The proposed action has slightly more environmental impacts, mostly due to the increase in land on the site to be developed (Table 2). However, because part of the POB's mission is to promote economic development in Bellingham, the proposed action appears to be the better option for this outcome. The cost of having slightly more environmental impacts and benefits of boosting the economy of downtown Bellingham will need to be considered.

4.1 Decision Matrix

Table 2. Decision Matrix for quantifying environmental impacts

Environmental Element	Proposed Action	Alternative Action	No Action
Earth	2	1	3
Water	2	1	3
Plants	1	2	3
Animals	1	2	3
Environmental Health	2	1	3
Land and Shoreline	2	1	3
Aesthetics	1	2	3
Transportation	3	2	1
Utilities	2	1	3
Recreation	1	2	3
Economic Dev.	1	2	3
Total	18	17	31

1= Best Action, 2=Neutral Action, 3=Worst Action

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