



Fall 2018

Environmental Impact Statement for West Horton Road Extension Phase 1

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Environmental Impact Statement for West Horton Road Extension Phase 1



Prepared by: Sarah Anderson, Lucas Dubois, Madeleine Jones,
David Simpson, and Corey Stever

Prepared for: Dr. Tamara Laninga
Environmental Studies (ENVS) 493; Fall 2018
Huxley College of the Environment --- Western Washington University

Dear Concerned Citizen,

The following document analyzes the potential impacts of expanding West Horton Road in the Cordata Neighborhood of Bellingham, Washington. The scope of this document examines the potential negative impacts of this road expansion on the natural and built environment. This document was created in compliance with the State Environmental Policy Act (SEPA) and follows the Washington Administrative Code (WAC) 197-11.

This Environmental Impact Statement (EIS) was prepared for the capstone, ENVS 493, under the supervision of Dr. Tammi Laninga. It was prepared as an academic exercise and should not be treated as an official document.

West Horton Road is located in North Bellingham. The Cordata Park proposal has been approved and a parking lot will be constructed on the southeast corner of the park. However, there is currently no road connecting the community to the future parking lot location. The park is built in an area of Bellingham that has fewer parks compared to the rest of the city; thus, the road project is necessary to connect the park with the community. This EIS looks at the impacts of building the road extension and potential ways to mitigate any negative outcomes from building the road.

The goals of this EIS are to determine the impacts of the West Horton Road expansion on the natural and built environment and to develop mitigations on these impacts. This project scope is limited to the quarter mile proposed stretch of road and the immediate surrounding area.

Thank you for your interest in the West Horton Road expansion.

Sincerely,

Sarah Anderson, Lucas Dubois, Madeleine Jones, David Simpson, and Corey Stever

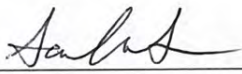
Environmental Impact Assessment
Huxley College of the Environment

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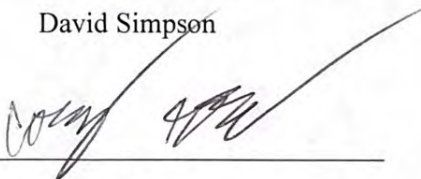
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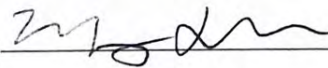
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Sarah Anderson

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Date 12/19/2018 _____

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Dr. Tamara Laninga
ENVS 493
Huxley College of the Environment -- WWU

Sarah Anderson, Lucas Dubois, Madeleine Jones,
David Simpson, and Corey Stever

This document constitutes a class project undertaken by students of Western Washington University, Huxley College of the Environment. It has not been done at the request of any people representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector

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Glossary

Bioswale: Sloping, vegetated ditches meant to catch and filter water runoff.

COB: City of Bellingham.

EIA: Environmental Impact Assessment.

EIS: Environmental Impact Statement.

EPA: Environmental Protection Agency.

Greenhouse Gas: Any gas that when present in the atmosphere acts as an insulator and traps heat and hinders its release into space, leading to global warming.

Habitat Fragmentation: The disturbance of native habitats into fragments, resulting in a loss of connectivity in the remaining habitat.

LED: Light emitting diode, a type of light bulb which is more energy efficient.

Mitigation: The action of reducing the adverse effects of something.

Mitigation Parcel: An area of land that is restored to offset the negative impacts of a project, often regarding natural ecological services.

NEPA: National Environmental Policy Act.

NOx: Nitrous Oxide Gas.

Tributary: A river or stream flowing into a larger river or lake.

Permeable Pavement: A surface that allows water to seep through to the underlying soil, simultaneously filtering out pollutants.

Photosynthesis: A process within plant cells that uses sunlight to convert water (H₂O) and carbon dioxide (CO₂) into sugars that are then stored within the plant.

Stormwater: Surface water in abnormal quantity resulting from heavy rains or snow.

SSC: Sanitary Service Company.

Fact Sheet

Project Title

West Horton Road Extension Phase 1

Description of Project

West Horton Road currently dead-ends into a roundabout. The proposed action is to build an extension of road to connect the west terminus of West Horton Road to Aldrich Road to its west. The road extension would feature one traffic lane in each direction, one bike lane in each direction, and sidewalks on both sides.

Description of Location

The project site is located at approximately 48°48'15.2"N 122°30'18.9"W, between the western terminus of West Horton Road and Aldrich road roughly ¼ mile to its west. This area is zoned RS (single-family residential) in the City of Bellingham. The location is currently wooded, and designated wetland status.

Proposer

City of Bellingham Public Works Department

Lead Agency

City of Bellingham Planning and Community Development Department

Contributors (Authors)

Sarah Anderson, Leader (runs meetings, keeps track of overall progress)

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Acknowledgments

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Issue Date

December 11, 2018

Public Presentation Time and Date

December 4, 2018 at 10:30am

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Executive Summary

The West Horton Road Extension is a multi-phase project that will connect Horton Road to Aldrich Road. Phase one of the project, what this EIS examines, focuses on a quarter mile stretch of road which will provide access to the Cordata Park parking lot (Figure ES.1). Northern Bellingham is currently under served with park access, and this road allows access to the park (see Appendix item 1). Additionally, due to increased development in the area, the area would benefit from another east-west arterial street with sidewalks and bike lanes.

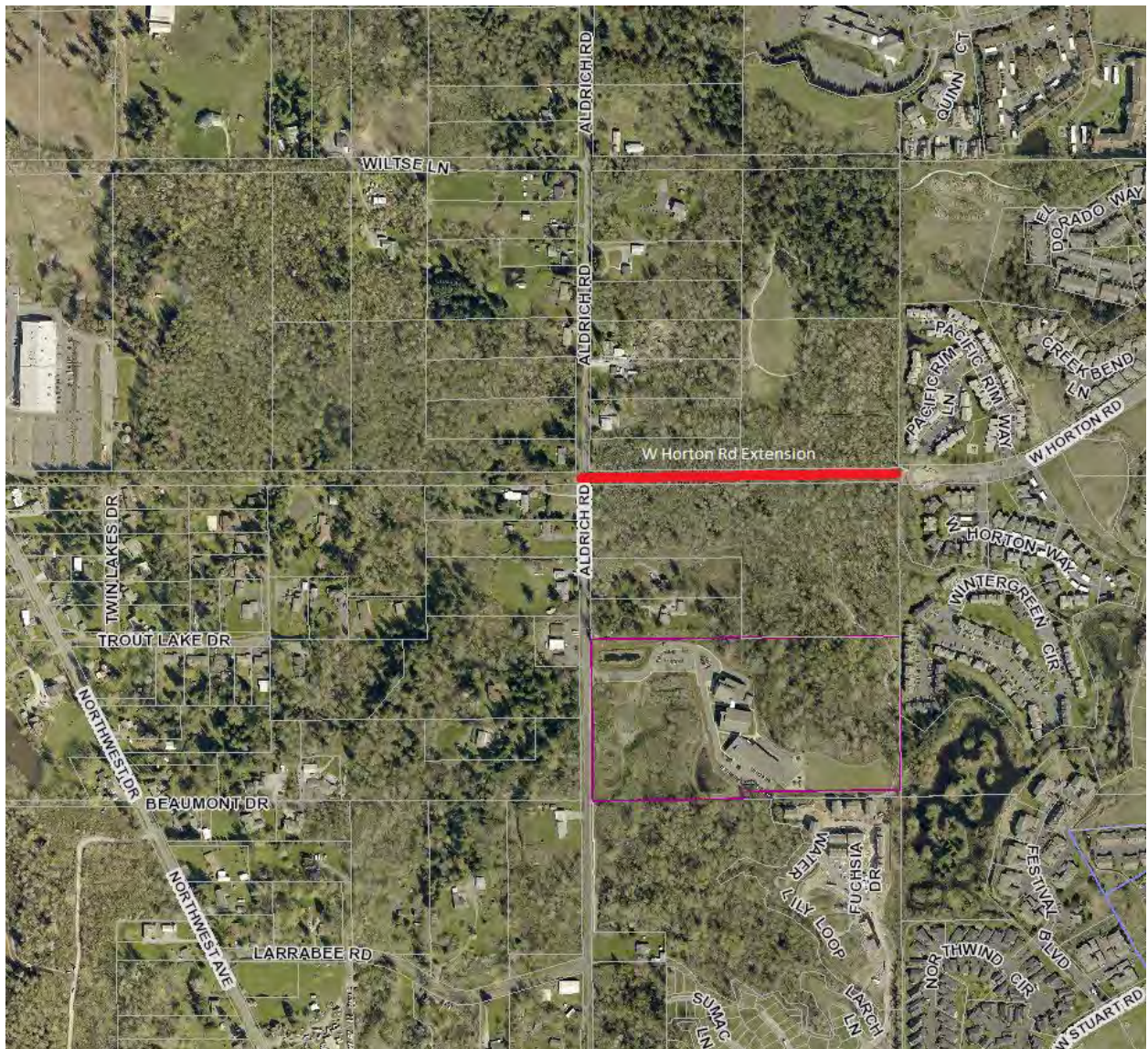


Figure ES.1 Map of project site and surrounding area. (COB CityIQ (2016)).



Figure ES.2 Photograph showing West Horton Rd. near its western terminus. (Sarah Anderson, 2018).

Phase one of the project provides vehicle access to Cordata Park by connecting West Horton Road to the southern parking lot; this requires extending West Horton Road to connect Horton Road with the park. There is currently no way to access the park by vehicle. Not building the road, or suggesting an alternative action, are not options being considered by the City of Bellingham. Therefore, the focus of this report is on mitigation measures to reduce the adverse impacts from this project.

The purpose of this document is to examine the environmental and social impacts of extending West Horton Road. Specifically, this analysis examines the effect on earth, air, water, as well as plant and animal life. Additionally, the report examines how this road expansion could impact energy and natural resources, environmental health, land and shoreline use, aesthetics, light and glare, recreation, historic and cultural preservation, transportation, public services, and utilities. This EIS will evaluate the impacts of the above and inform the public of these findings.

Wetlands are the largest area of significant adverse impacts; however, this lost area will be offset by the acquisition mitigation parcels. "Wetlands contain a disproportionate amount of the earth's total soil carbon; holding between 20 and 30% of the estimated 1,500 Pg of global soil carbon

despite occupying 5–8% of its land surface” (Nahlik, 2016). Mitigation for lost wetlands is a SEPA requirement as well as recovering these environmental benefits lost through the project.

This project has been in development for ten years, and has taken this long due to funding issues. Part of the funding comes from federal sources; thus, the project is required to follow National Environmental Impact Assessment (NEPA) standards. Aside from this, there are no areas of controversy and uncertainty.

Decision Matrix

Table ES.1 Decision Matrix.

+1 Positive, -1 Negative, 0 no impact	No Action	Proposed Action	Proposed Action with Mitigations
Natural Environment			
Earth	0	-1	0
Air	0	-1	-1
Water	0	-1	-1
Plants	0	-1	0
Animals	0	-1	-1
Energy and Natural Resources	0	-1	-1
Built Environment			
Aesthetics	0	0	+1
Light and Glare	0	-1	0
Recreation	-1	0	+1
Environmental Health	0	-1	0
Land Use	0	+1	+1
Transportation	0	+1	+1
Cultural and Historic Preservation	0	0	0
Fire, Police and Medical (Emergency Services)	0	+1	+1
School, Maintenance, Solid Waste, and Stormwater (non- emergency services)	0	+1	+1
Total	-1	-4	+2

1.0: Project Overview

Historical Background

The West Horton Road Extension in north Bellingham would connect the existing West Horton Road to Aldrich Road. The road extension would provide access to a parking lot on the southside of Cordata Park. Currently, there is no road access to the park, only trail systems. This significantly reduces the community use of the park and limits the users to those who are local and able-bodied. The road extension is about a quarter mile long and will be built through an undeveloped wetland area, impacting the natural environment but no dwellings or people (Figure 1).

Cordata Park was approved by the Bellingham Parks Department in 2008 and opened in 2010. There is an uneven distribution of parks in the City of Bellingham, with the north section of town having much fewer parks (see Appendix item 1). However, this area of town is seeing a lot of residential and commercial development. Due to these demographic pressures, the park was pushed through without the inclusion of an access road, leaving the Bellingham Public Works Department (Project Proponent) to create access. Unfortunately, funding has been a major challenge, as the area could have a substantial environmental impact from the construction of the new road, causing lengthy delays.

Proposed Action

Development of the road extension is environmentally problematic as the affected area is 98% wetlands and includes a seasonal stream. While the desired two-lane road with bike lanes and sidewalks on both sides will likely have significant environmental impacts, most will be short term during the construction phase. It is the goal of this EIS to understand the entire environmental impact of this road extension, identify mitigation strategies, and produce a clear and concise review of the proposal including a suggested plan of actions. Building a road in this quarter-mile area of wetland could lead to further development of the area; however, it is not a primary concern in this report.

The project has been in development for ten years and is proposed to have construction underway in 2019. As proposals and permits are well past the governmental approval stage, funding is the primary factor in slowing down the project. Access to the park is long overdue, especially as the north end of Bellingham is underserved by parks. Additionally, there are very few east-west connecting roads in this part of North Bellingham, causing some traffic circulation issues. This project would alleviate connectivity problems in this area by providing an additional east-west connection, creating more route options for trips in this vicinity. It would also allow access to Cordata Park, currently cut off from vehicle traffic, and facilitate the completion of the park. Further delays would negatively affect the citizens of this area by continuing to underserve them in regard to public parks. However, the project could be delayed by further funding needs if environmental impacts are determined to need extensive mitigations, such as in the form of a mitigation parcel.

No Action Alternative

Cordata Park has already been approved and established, this road is necessary to provide access to the park. A no action alternative for the West Horton Road expansion project is not realistic due to the current stage of the project.

Mitigation Measures

Mitigation measures will focus on the most affected elements of the natural and built environment. For the natural environment these include: Earth, Air Quality, Odor, Climate, Water, Plants, Animals and Energy/Natural Resources. Effects on the built environment in the form of Aesthetics, Light/Glare, Recreations, Community Health, Land Use, Cultural/Historical Preservation, Transportation, Public Services and Utilities will also be evaluated. Once the effects are determined, mitigation measures will be suggested for each element.



Figure 1 Map of project site and surrounding area. (COB CityIQ (2016)).

2.0: Natural Environment

2.1 Earth

Existing Conditions:

The site is flat with little to no slope directly adjacent to Cordata Park. There is residential development by the entryway of the proposed extension. The entire site may be subjected to earthquake shaking and should be considered to have a high seismic risk, with or without redevelopment. The steepest slope on the site is approximately 8%. The general type of soil found on the site is spodosols which develop when exposed to coniferous vegetation (Helfrich, 2014). This type of soil tends to consist of loam and silt which generally consist of sand and clay.

Proposed Action:

The proposed construction on this site will be a two-lane roadway with an additional bike lane and sidewalk. The approximate width of the roadway is 45ft (COB, 2016). The paving material will be concrete. The temporary impacts will occur primarily during the construction process. These include: erosion, sedimentation (which has the possibility to adversely affect wetland of which this site is on), and soil contamination caused by accidental leakage of the construction materials. Erosion and soil pollution caused by construction are main areas of concern. There is a mild risk of land sliding during construction because of the sediment disturbance. However, there are no indicators of unstable soil, therefore the chances of a landslide are slim. There is also the risk of soil run-off to the adjacent residential developments; this negative impact is very slim and not the main concern.

Mitigation:

In order to minimize erosion and soil pollution on the affected project site, mitigation will include, but is not limited to, vegetation management and best management practices. In accordance with the *COB Development Guidelines and Improvement Standards*, when it is appropriate, there will be grass seeding at the dispersal rate of 150 pounds per acre on all areas requiring roadside seeding (COB, 2016). Another vegetation mitigation is the use of mulching; the COB standards say that when using mulch, it needs to be applied at the rate of 2,000 pounds per acres (COB, 2016). To maximize the protection of adjacent development, the soil and sediment will be kept on-site using vegetated buffer strips (COB, n.d.). To mitigate against soil pollution, any loose building material (cement, sand, etc.) will regularly be inspected for spillage (Gray, 2018). There will also be no burning of materials on the construction site (Gray, 2018). Any wastewater generated from the site will be collected and put into labeled settlements tanks which will then be filtered. The clear water will be discarded and leftover sludge will be disposed of according to EPA regulations (Gray, 2018). Best management practices will be implemented to control erosion, sedimentation, and soil pollution.

No Action:

The project proposal would not be completed, leaving the land in its current natural state. The earth element would continue as it currently remains.

2.2 Air

2.2.1 Air Quality

Existing Conditions:

The Clean Air Act of 1963 requires the Environmental Protection Agency (EPA) to establish and enforce acceptable standards for a number of air pollutants to levels shown to concentrations that have no adverse effect on public health and welfare. These set standards dubbed the National Ambient Air Quality Standards are set for six major air pollutants: lead, ozone, nitrogen dioxide, particulate matter, carbon monoxide, and sulfur dioxide. In monitoring these pollutants, the EPA uses localized Air Quality Index scores that are compiled by the State Department of Ecology on a 0 (good) to 400 (very bad) scale (CAA Nutshell, 2017). Presently, October 26, 2018, the air score for Bellingham, WA, is 30 with ozone being the highest concern followed by particulate matter (AirNow, 2018).

It would be expected that at the proposed site's air quality would be above average. The natural forested land and wetlands of the site improve air quality, "by the interception of particulate matter on plant surfaces and the absorption of gaseous pollutants through the leaf stomata. However, the magnitude and value of the effects of trees and forests on air quality and human health across the United States remains unknown" (Hirabayashi, 2014). The site's wetlands are another important way in improving air quality; "holding between 20 and 30 percent of the estimated 1,500 Pg of global soil carbon despite occupying 5-8% of its land surface" (Nahlik, 2016). Additionally, the site is not in close proximity to any large-scale sources of any of these pollutants.

Proposed Action:

Temporary: The proposed road extension would result in air pollution from construction equipment and cement production. Construction equipment pollution is very difficult to measure and predict quantitatively, however "(construction) diesel-powered vehicles and equipment account for nearly half of all nitrogen oxides and more than two-thirds of all particulate matter emissions from US transportation sources" (Union of Concerned Scientists, 2018). As to the latter, it is estimated that approximately 900 kg of carbon dioxide (CO₂) is released per ton of cement produced by current practices (Hasanbeigi et al., 2010). A rough estimate for the project- at .25 miles long, 50 feet across, and at 6 inches deep would require around 0.70 tons of pre-mixed concrete, releasing 600 kg of CO₂. Converting natural environment to a road would be expected to remove some air pollution-removing benefits discussed in the previous section, but not significantly on a large scale.

Continuous: This road extension will allow for vehicles to pass through this area, which locally slightly increases expected NO_x and small particles pollutions from the exhaust. However, this would create a route that would lower travel time and distance especially for those who live in the area and should have a net beneficial effect on air pollution.

Mitigation:

A way to limit the total emissions of the cement construction process is by using cement alternatives that result in less pollution. Standard cement needs limestone (CaCO₃) converted into lime (CaCO) at high heat in a process that releases carbon dioxide. However, alternative

cement recipes use replacement materials such as pulverized fuel ash aka. fly ash, ground granulated blast furnace slag, clay, and ground limestone; materials that result in very little to no additional emissions produced (BZE Rethinking Cement, 2017). Fly ash and slag are by-products of coal burning power plants and iron and steel smelting respectively, and would only require their transportation to the cement plant. Secondly, construction vehicles will meet tier 5 emissions standards, limiting nitrous oxide emissions to 0.4g/kWh and particulate matter to 0.015g/kWh (Reuter, 2017). Finally, replacing the lost wetland will restore the carbon environmental benefits lost by the road extension.

No Action:

The proposal would not be completed, leaving the land in its current natural state. We would see no significant effects on air quality.

2.2.2 Odor

Existing Conditions:

Under the Clean Air Act, states or local authorities control odor and nuisance laws. The project site's local agency, The Northwest Clean Air Agency (NWCAA) defines odor as "that property of a substance that enables its detection by the sense of smell or taste" (NWCAA, 200). They stipulate under odor nuisance regulation that any person who causes or allows odor to generate from any source that may interfere with another property owner's use or enjoyment of his or her property must use recognized best practices and control equipment to reduce odors to a reasonable minimum (NCAA, 535.3). There are no sources of odorous pollution present at the proposed project site presently.

Proposed Action:

Temporary: The anticipated sources of odor pollution are involved in the construction, such as concrete laying, are expected to be very temporary. Once the cement is cured there are very little odor. However, construction workers will be required by the NWCAA to use best practices.

Continuous: Vehicle exhaust at the proposed site should represent a minimal source of odorous pollution.

Mitigation:

Construction should occur during the day at times when most people are away from their homes (e.g., at work, school, etc.). This will limit nuisance caused by the odors as well as pollutant emissions to times when there are few people to come in contact.

No Action Alternative:

There would be no additional odors in the ambient air.

2.2.3 Climate

Existing Conditions:

The proposed site is within city limits of Bellingham, a mid-latitude city along the coast of northwest Washington. It is typically wet and mild with average temperatures ranging from 40 to 60 degrees Fahrenheit in the spring and fall, 30 to 50 degrees in the winter, and 60 to 80 in the summer. Bellingham receives an annual average of 36 inches of precipitation. Average monthly wind speed is 2.8 to 6 miles per hour with its peak in the winter. Bellingham receives wind generally from the Southeast to Southwest in the winter and summer respectively (Weatherspark, 2018).

Proposed Action:

There may be an increase in greenhouse gas emissions due to increased vehicle pollution as a result of the road extension. This may be completely counteracted by the improved routes of travel cutting down travel time and distance especially for local commuters. Climate change due to less carbon capturing by plant life resulting from the developing of the proposed road extension is a possible, but has small-scale effect.

Mitigation:

Wetland mitigation parcels will be used to retain and protect the natural environment for this project. All projects that involve the development or destruction of protected wetland require either a newly protected suitable replacement wetland or improvements to current protected wetland areas. The wetlands plants that will be protected as the mitigation parcel capture carbon through photosynthesis, one of several greenhouse gasses that lead to climate change.

No Action Alternative:

No effects on the climate would result from the proposal not being completed.

2.3 Water

Existing Conditions:

Effect on water systems present in the proposed location are unavoidable as the land is 98% wetlands. The introduction of a road with sidewalks and bike lanes will have the largest impact on the area because of the impermeable surfaces and the associated increased runoff. Runoff from the road could cause increased pollution over time. However, most pollution to the area is likely to come from the construction phase and be short term. Also present in the area is a seasonal tributary, this runs through the existing park and will flow under the road. The proposed project area is also not within a 100-year floodplain, as shown by Washington States Department of Ecology's floodplain map. Wetlands are extremely important to mitigate harmful effects against, as they offer vital ecological services such as groundwater recharge and regulating water quality.

Proposed Action:

The relative simplicity of this proposal of a single, quarter mile road, means that currently there are no new housing developments planned for along this road. As a result, there will be minimal effects. There is also no groundwater withdrawal, however if proper mitigation is not established concerning runoff, groundwater could be contaminated due to the nature of wetland environments.

Mitigation:

Northwest Ecological Services (NES) constructed a thorough feasibility report on the projected effects and likely mitigations for the affected wetland. The report is based on mitigations set forth through a separate mitigation parcel, first categorizing wetlands and identifying the affected square footage (Table 1). They also included separate categories for stream impacts and buffer impacts (NES, 2011).

Table 1. Summary of Anticipated Impacts (Source: NES, 2011, p. 6)

Category II Wetland Impact (sq. ft.)	Category III Wetland Impact (sq. ft.)	Stream Impact (sq. ft.)	Buffer Impact (sq. ft.)
22,371	2,664	1,209 or approx. 60 linear feet	33,937

Finally, estimates were given for mitigation requirements based on the impacts of the specific elements of the wetland environment (Table 2). Estimates were established on a 20:1 ratio favoring replacement on a separate mitigation parcel. NES reviewed 29 separate possible mitigation parcels, but the city has yet to pick one.

Table 2. Estimated Mitigation Requirements (Source: NES, 2011, p. 10)

Project	Creation (sq. ft.)	Creation/Enhancement (sq. ft.)	Enhancement (sq. ft.)	Preservation (sq. ft.)	Buffer Enhancement (sq. ft.)
West Horton Road Terminus to Aldrich Road	72,441	25,035 C/ 189,624 E	289,764	25,035 C/ 500,700 P	33,937

Further mitigation strategies to reduce the impact on the existing wetland, stream and associated buffers could include permeable pavement or another surface that would reduce the amount of increased runoff. Permeable pavement allows water to seep through the surface to the underlying soil while simultaneously filtering out pollutants (EPA, 2017). The addition of a drainage system and ditches to catch runoff would further mitigate the effects of increased runoff by separating the natural environment from the road. This could be achieved through the induction of bioswales, sloping ditches filled with vegetation. The vegetation serves to trap water in the ditch for as long as possible, naturally removing pollutants, silt and other debris (University of Florida, 2018). If possible, the ditches should be dug before the road is built to reduce pollution in the form of liquids from machinery and road substances getting into the natural environment. Waste catch systems on the machinery would also reduce the short-term construction phase impacts. A raised boardwalk instead of sidewalk and bike lanes would significantly reduce effects on the environment, however, due to funding issues, this is not a viable mitigation option.

No Action:

The no action option would be the ideal choice for wetland health, as it would have no effects on the environment. Due to the important ecological services that wetland environments provide, the no action option is substantially more appealing when considering water in the natural environment for this road extension.

2.4 Animals

Existing Conditions:

The site proposed for the West Horton Road extension impacts several wetland sites, specifically the freshwater/forested shrub wetland (Washington Department of Fish and Wildlife, 2009).

There are no endangered or threatened species in the area, and according to the National Oceanic and Atmospheric Administration's fish tracking tools, the site does not appear to be important for salmon habitat (NOAA, 20015). The proposed road extension is in an area with existing urban development. There are typical urban animals in the area, including squirrels, deer, bats, opossums, rabbits, racoons, skunks, and various species of birds. (Whatcom Humane Society, 2018)

Proposed Action:

Building the road extension would have impacts on the animals in this area. Habitat disruption and encroachment would cause harmful impacts on the animals. The road extension is a quarter mile. It is not on a migration route and does not impact or threaten any endangered or threatened species in Washington. While there are impacts on the animal's habitat, they are minimal, and the primary impacts are those associated with habitat fragmentation.

Mitigation:

The road project is short. Mitigations can happen in the way that the road is built and minimizing the impacts to the other areas of the habitats. Ensuring that construction equipment has been checked to ensure that no alien species are introduced can protect the habitat remaining (Notice Nature, 2007). Adding bird and bat boxes to the park after completion of construction would facilitate the return of any birds or bat species that could be displaced during the construction process. Additionally, during the construction process species may be displaced, educating residents on how to deal with displaced species could minimize death of species.

No Action:

If the road extension project did not proceed then there would be no impacts on animals.

2.5 Plants

Existing Conditions:

The West Horton Road extension project site is currently a wooded wetland. Plants growing at the site include mostly deciduous trees, including Red Alder and Black Cottonwood, some evergreen trees, shrubs including Hardhack and Twinberry, and wet soil plants, like Slough Sedge, due to the site's status as a wetland. Some noxious weeds such as Butterfly Bush and Tansy Ragwort

have been identified near or adjacent to the project site, but no endangered or protected species have been identified (City of Bellingham (2003) “CityIQ Wetland Inventory Layer”).

Proposed Action:

The proposed action is to build a quarter-mile road, which would require removal of any plants in the new right of way. The short extension will not result in a significant number of plant being removed. Additionally, the project does not threaten any endangered or protected plant species. The overall impact on plant life from the project will be relatively minimal.

Mitigation:

The project is not very large. Mitigating plant removal could take several forms. Eradication of noxious weeds nearby the project site, planting of native species alongside the new road, and planting of native species in any acquired mitigation sites are all potential options to mitigate the loss of plants in the project site. An identified method of enhancement of this wetland is the planting of conifers (City of Bellingham (2003). “CityIQ Wetland Inventory Layer”).

No Action:

A no action alternative would have no effects on the current plants at the site. This would be ideal in the sense that no plants would be removed, and no mitigation would need to take place. However, the effects to plant life the proposed action would have are not significant enough to require no action on their own.

2.6 Energy and Natural Resources

2.6.1 Energy Efficiency

Existing Conditions:

The proposed site as a natural land area has no associated energy demands.

Proposed Action:

Temporary: This project will involve road construction equipment powered by diesel engines that range in their fuel efficiency. For example, a new relatively small CAT compactor roller is expected to use about 5 gallons of diesel per hour of operation (CAT, 2018). Most of the equipment machinery will be similarly as energy intensive. These energy requirements are relatively small and will only last the short duration of the road’s construction.

Standard concrete will be used for this extension of road as standard practice for the City of Bellingham. For 2016, it was estimated that for each ton of cement it takes 91 kWh of energy (COB, 2016). These numbers should be fairly consistent with today to allow for analysis. A rough estimate for the project- at .25 miles, 50 feet across, and at 6 inches deep would require around 0.70 tons of pre-mixed concrete. Therefore, an estimated 60 kWh of energy would be used in the cement production process.

Continuous: A small amount of energy costs would incur as a result of the associated street lights along the road. The city uses high efficiency LED lights that use 50 to 60 percent less energy than traditional high-pressure sodium lights (COB, 2015). Additionally, vehicles running on diesel, gasoline, or electricity will now be able to use this road but should not negatively affect the total of energy used by these vehicles.

Mitigation:

Using alternative materials, instead of limestone, can eliminate nearly half of the energy used compared to traditional cement production (BZE Rethinking Cement 2017). Options discussed previously such as fly ash and slag can replace lime in standard cement and result in significantly less energy costs in cement construction.

Using solar powered street lights can cut down or eliminate energy needs for the road extension lighting (Solar LED, 2018). Solar power can be a good supplement but likely will not present a complete replacement of electricity demands due to a lack of sufficient sunlight for parts of the year.

No Action:

There would be no effect on energy usage.

2.6.2 Nonrenewable Resources

Existing Conditions:

There are no nonrenewable resources associated with the site.

Proposed Action:

The construction process involves the use of diesel-engine equipment. The total amount of diesel used in running the construction equipment is unknown, used temporarily, and is not viewed as significant. The road extension will allow for vehicles, often with gasoline and diesel engines, to travel through the site, but their net effect is unknown due to this extension presenting a shorter route of travel for some vehicles.

Mitigation:

The construction vehicles will follow Tier five nonroad emissions standards introduced in 2019. Although this doesn't directly call for increased efficiency in engines, instead focusing on emissions, more efficient engines are a byproduct of these upgrades. The final effect of this is reduced expected usage of diesel by these vehicles used in construction.

No Action:

No effect on nonrenewable resources.

2.6.3 Conservation and Renewable Resources

Existing Conditions:

The project site is currently in a natural forested state and its trees are considered renewable resources. As discussed in section 2.5 Plants, there are no critical tree species present at the site. The site's trees are common for the region and requires no special protection.

Proposed Action:

A section of these trees in the path of the road extension will have to be cut down to allow for the project. There may be development along the road in the future which would cause more trees to be cut down, however, this is not considered in the scope of this proposal.

Mitigation:

The use of a wetland mitigation parcel will protect the natural tree and plant growth within the parcel. Replacing trees lost in the road extension can be done in this parcel. However, as these trees are not in serious danger of extinction, therefore, this is of low priority.

No Action:

The site will remain in a natural forested condition with no effected renewable resources.

3.0: The Built Environment

3.1 Aesthetics

Existing Conditions:

Currently, the West Horton Road leads to a dead-end roundabout, this then leads to two entrances of Cordata Park. There are evergreen and deciduous trees as well as common shrubbery. In the proposed construction area, there are gravel trails that lead to the west side of Cordata Park.

Proposed Action:

The proposed action will clear a quarter mile roadway from West Horton Road to Aldrich Road. The tallest permanent structure will be street lamps that are approximately 25 feet tall. No views in the immediate vicinity will be obstructed.

Mitigation Measures:

There will be no mitigation for aesthetics.

No Action:

Without the proposed project, there will be no effect on the existing conditions.

3.2 Light & Glare

Existing Conditions:

Currently, there is no source of light or glare within the quarter mile vicinity between the dead-end of West Horton Road and Aldrich Road. The entryway of the Cordata Park is close to residential developments that do have street lamps; however, this does not affect the road extension vicinity.

Proposed Action:

The West Horton Road Extension will have fixed XSP series LED street lighting. The dome of street light is approximately 26.2”x 4.6”x 14.5” with a pole height approximately 25’ (Mckinstry, 2015). The street LED lights will only be used during non-daylight hours. The purpose of the lights is to safely illuminate the two-lane roadway for pedestrians, cyclists, and drivers. The proposed project will not create a safety hazard or interfere with the views of humans. The major effect from this permanent impact is to the wildlife that live within the vicinity. Nocturnal animals sleep cycle will be radically altered. Their habitat will be lit at night and change their sleep cycle into thinking it is the day (IDA, n.d.). The proposed action is on a wetland home to amphibians, the artificial light can affect nighttime croaking which is a major part of their mating ritual (IDA, n.d.).

Mitigation:

During construction, there will be specific times implemented when construction can take place to reduce the amount of construction light onto the adjacent residential developments. The street lights will have a hood-like structure that direct the light toward the ground mitigating light pollution. When the light is directed to the ground, it prevents the glare from affecting the surrounding area. The rest of the area will be dark, allowing the animals to resume their natural

routines. The lights will be set on automatic timers that will go on and off when the sun goes down and comes back up. The impacts on the species will be small as the species currently living in the area affected by the residential lighting will have moved. The species who stayed will have adapted to the artificial light.

No Action:

The expansion would remain unlit.

3.3 Recreation

Existing Conditions:

Cordata Park is located at the end of West Horton Road in the Guide Meridian/Cordata Neighborhood. The park has many opportunities to recreate, including but not limited to: walking trails, a playground, covered shelters, open lawn-space, and a basketball court (The Berger Partnership PS, 2008). The proposed project site currently consists of a few crushed gravel pathways.

Proposed Action:

The proposed project will create access to the future parking lot on the Cordata Park map. The nature paths would be replaced by the roadway. The main impact on recreation will be a limitation of access to the park from the south end during construction.

Mitigation:

To mitigate the limited access, temporary street signs will be placed on West Horton showing a detour to the NE entrance of the park.

No Action:

There would be no effect to the Cordata Park.

3.4 Environmental Health

Existing Conditions:

There are no current hazards or toxins around the site. No pipelines exist or have existed here in the past.

Proposed Action:

No chemicals will be stored or created during the construction process. Building the road would result in increased noise. The construction during the process would create noise pollution. This is a temporary impact. When constructed, the road extension will possibly result in increased traffic which could also have noise impacts.

Mitigation:

During the construction process taking measures to reduce the noise from the construction should mitigate any nuances or damage. To avoid impacting the residents of the neighborhood during the construction process, as the area affected is primarily residential, doing construction during the day, instead of during night hours would mitigate noise impacts on the

residents. Additionally, switching off equipment when not in use will significantly reduce noise from the project. Using electric compressors instead of gas or diesel will also limit the noise impacts.

No Action:

As there are no toxic impacts, not building the road does not affect this. No action on the road project would diminish the amount of noise, however, because the road is relatively short and would be a shorter project, the largest impacts from noise are minimal.

3.5 Land Use

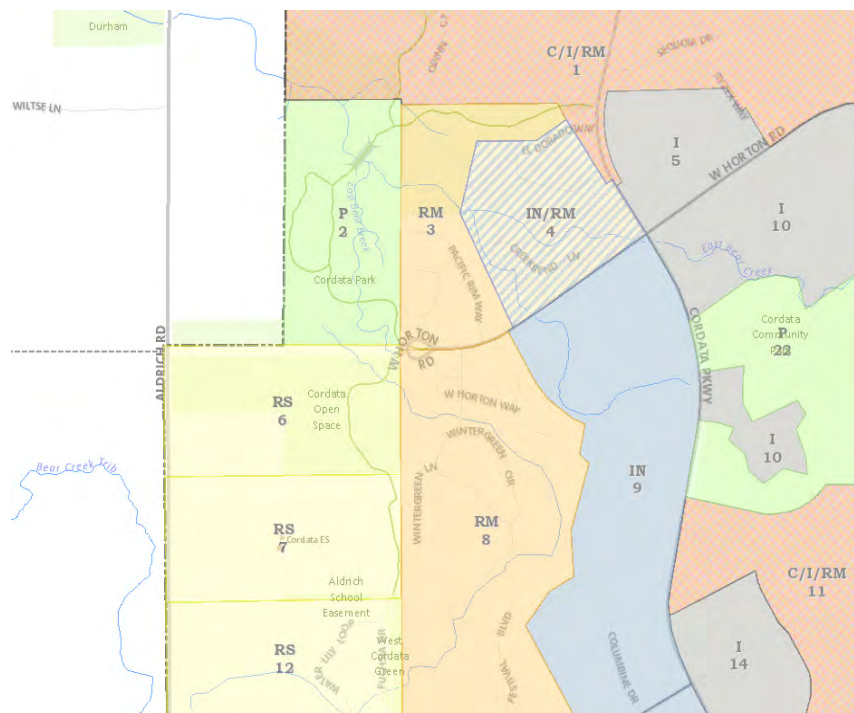


Figure 3. Zoning map of vicinity surrounding project site. (COB CityIQ, 2016).

Existing Conditions:

The project site is currently undeveloped, with the land consisting of wooded wetlands. No current developed uses exist. Zoning classification for the site is designated as RS (single-family residential). The area immediately adjacent to the north of the project site is a community park consisting mostly of walking trails. In the area surrounding the project site there is some development consisting almost entirely of residential buildings, including apartments and single-family homes.

Proposed Action:

The proposed action would change the land use of the site to a roadway. It would provide a human use to this site while there currently is not one. There is no other development other than the road extension in this project proposal. Any further development that might occur alongside this new roadway would be an indirect impact of the project. There are currently no plans for future development along the road extension.

Mitigation:

Conversion of mitigation parcels currently used as farming or working forest land to wetlands would mitigate the loss of the wetland area present at the project site. This could include demolition of structures on those sites.

No Action:

A no action alternative would result in the site remaining unused. The proposed project would be a beneficial use of the land, making it the ideal option in this sense.

3.6 Cultural and Historic PreservationExisting Conditions:

From data gathered from the Department of Archeology, it appears there are no buildings built before 1970 (WISAARD, 2018). While there are no explicit sites that appear to be of note to the Indigenous People, it is important to note that this project takes place on occupied Coast Salish land.

Proposed Action:

The road extension could have the potential to damage sites of importance to the Coast Salish People.

Mitigation:

To avoid potentially harmful impacts on Coast Salish land it is recommended to consult with Indigenous people in the region to ensure that they are not left out of the conversation. Furthermore, consultation would eliminate the risk of damaging possibly sacred land.

No Action:

Not building the road would continue to limit park access, therefore no action is not a feasible option. As the impacts to cultural and historic preservation are minimal, no action and action have similar impacts.

3.7 TransportationExisting Conditions:

There is no transportation elements at the project site. It is undeveloped, wooded land. On the two ends of the project site are two roads, Aldrich Road on the west edge and West Horton Road which terminates on the east edge. There are walking trails adjacent to the site which lead north into Cordata Park and south to Cordata Elementary School. Both of these trails begin at the terminus of West Horton Road on the east edge of the project site.

Proposed Action:

The proposed action would benefit transportation connectivity because it would connect the western terminus of West Horton Road with Aldrich Road to its west. New roadway will consist of one traffic lane in each direction, bicycle lanes in both directions, and sidewalks on both sides (see Appendix item 2). There will also be the possibility of bus stops added to the road extension, which would extend the existing Whatcom Transit Authority Route 24. This project will improve connectivity for automobiles as well as bicyclists and pedestrians. In addition to

enhancing route options in the area, this project will also provide access to a new parking lot being built at Cordata Park. It will also provide easier access to Cordata Elementary School from its northwest. This park will generate approximately 3.5 trips per peak hour on this road (Hooper, 2017).

Mitigation:

This project does not have any expected negative impacts on transportation other than minor temporary local parking and circulation congestion due to workers and equipment.

No Action:

No action would result in no impact on transportation. The proposed action is assessed to have beneficial impact on transportation networks, making this the most ideal option in terms of transportation.

3.8 Public Services

3.8.1 Fire, Police, Medical (Emergency Services)

Existing Conditions:

All emergency services to this project site are serviced by the City of Bellingham, although, the site's current non-developed state would not normally necessitate these services.

Fire: The City of Bellingham has eight fire stations staffed 24 hours a day by at least 32 personnel and responds to all types of incidents (COB, 2018). The nearest of these "Station 6" is approximately 2.2 miles away via roads from the site. There is no expected need for fire services for the site at present.

Police and Emergency Medical: Again, in its non-developed state there is no expected need of these services to the site. However, if the need arose, the nearest accesses to the site are at the two ends of the proposed road extension.

Proposed Action:

The proposed action would extend the road from the current western end of West Horton Road to Aldrich Road. This is anticipated to slightly increase the need of all emergency services to this area. This demand is driven almost entirely by vehicular accidents that could occur on this stretch of road. Conversely, it could present a more direct and quicker route for emergency responders to report to an incident and lessen vehicle traffic on neighboring roads.

Mitigation:

The proposed action should not negatively affect emergency services and would therefore not require any form of mitigation.

No Action:

There would be no change in Emergency Services demands.

3.8.2 Schools, Maintenance, Solid Waste, Stormwater (Non-Emergency Services)

Existing Conditions:

Schools: The city of Bellingham has 22 public primary and secondary schools in its district. The nearest school to the project site is Cordata Elementary School and is within a few hundred feet south of the site. West Horton Road acts as a dividing line for determining the school district of attendance for a child. Those living just to the south of Horton Road are encouraged to attend Cordata Elementary, Shuksan Middle, or Squaticum High School depending on their age and or grade of schooling. All those who live to the north of Horton Road are a part of Meridian School District instead (Bellingham Public Schools, 2018).

Maintenance: The site is within Bellingham city limits, and therefore would fall under the city's Public Works Department, however, in its current natural state it has not needed any maintenance services.

Solid Waste: The Whatcom County Solid Waste Department is responsible for several functions to maintain environmentally conscious, and economic waste management practices. These include recycling and disposal systems, litter control, and several other functions to maintain environmentally conscious, and economic waste management practices. They coordinate and oversees services of waste and recycling collection in the county (Whatcom County, 2018). The service provider for curbside refuse pick up the site is within operating service of Sanitary Service Company (SSC). Presently, there is no need for these services for our site.

Stormwater: Stormwater management is critical in limiting and controlling stormwater as a method of polluting. "Rain becomes stormwater when it travels over our yards, roads, and sidewalks" (COB, 2018). If stormwater is not managed properly it can result in flooding. The city has to include proper stormwater drainage for all roads to ensure that roads.

Proposed Action:

Schools: There is no anticipated increase in school attendance expected as a direct result of the construction of the road extension. However, future development along the road may increase attendance to local schools.

Maintenance: The city's Public Works Department will be responsible for the maintenance of the road including repairs, litter pick-up, cleaning, and snow and ice removal.

Solid Waste: Upon the completion of the project there is no expected impact directly to solid waste management, except in collection from Cordata Park. However, future development and Cordata Park built along the road will require waste and recycling services.

Stormwater: The road extension will require stormwater management methods that connect to the existing system. Both ends of the extension have built in methods for stormwater management. West Horton has storm mains and ditches that feed into a wet pond (CityIQ, 2018). Aldrich has ditches to feed into its own wet pond to the south. Possibly one or both of these could facilitate the stormwater management needs. New stormwater holding ponds may have to be constructed for this project.

Mitigation:

Stormwater could be treated on-site to allow it to be safely discharged in the remaining local wetland area, although this may be costly and require constant monitoring.

No Action:

No impacts to schools, maintenance, or solid waste management will result from the No Action Alternative

3.9 Utilities

Existing Conditions:

Neighboring roads and neighborhoods are fully incorporated to all standard utility services offered within the city. These include: electricity, natural gas, telecommunications (internet, cable, and phone line), water, and wastewater.

Electricity services are provided by Puget Sound Energy.

Natural gas services are provided by Cascade Natural Gas.

Telecommunications are provided by Centurylink (DSL) and Xfinity (Cable) and StarTouch Broadband or Sound Internet Services/Pogozone (Fixed Wireless) (geoISP)

Water and Wastewater Services are provided by the city.

Curbside Refuse Pickup is within operating service of Sanitary Service Company (SSC).

Proposed Action:

The proposed road extension will also include extending all standard utilities such as water, sewer, stormwater, and electricity. All of these will be required by Cordata Park to be constructed on the North side of the road. It may also include extending other privately-owned utilities such as natural gas and cable.

Mitigation:

The proposed action should not negatively affect utilities and would therefore not require any form of mitigation.

No Action:

There will be no extension of coverage for utilities if this proposal doesn't occur.

Chapter 4: Conclusion and Recommendations

Decision Matrix:

Table 3 -Decision matrix

+1 Positive, -1 Negative, 0 no impact	No Action	Proposed Action	Proposed Action with Mitigations
Natural Environment			
Earth	0	-1	0
Air	0	-1	-1
Water	0	-1	-1
Plants	0	-1	0
Animals	0	-1	-1
Energy and Natural Resources	0	-1	-1
Built Environment			
Aesthetics	0	0	+1
Light and Glare	0	-1	0
Recreation	-1	0	+1
Environmental Health	0	-1	0
Land Use	0	+1	+1
Transportation	0	+1	+1
Cultural and Historic Preservation	0	0	0
Fire, Police and Medical (Emergency Services)	0	+1	+1
School, Maintenance, Solid Waste, and Stormwater (non- emergency services)	0	+1	+1
Total	-1	-4	+2

Analysis:

As shown in the decision matrix, the best option for this project is to proceed forward with the project as planned, but with the inclusion of additional mitigation strategies as outlined in the specific report sections. While there will be impacts from the project on the natural and built environment due to the community need for park access, there is no alternative but to build the road.

Recommendations:

In conclusion, the road project should proceed as planned. However, it should move ahead with the additional mitigation measures as outlined above in the earlier sections. Emphasis and particular attention should be placed on the areas of water, plants, and earth, as the project will have the largest impact on these areas.

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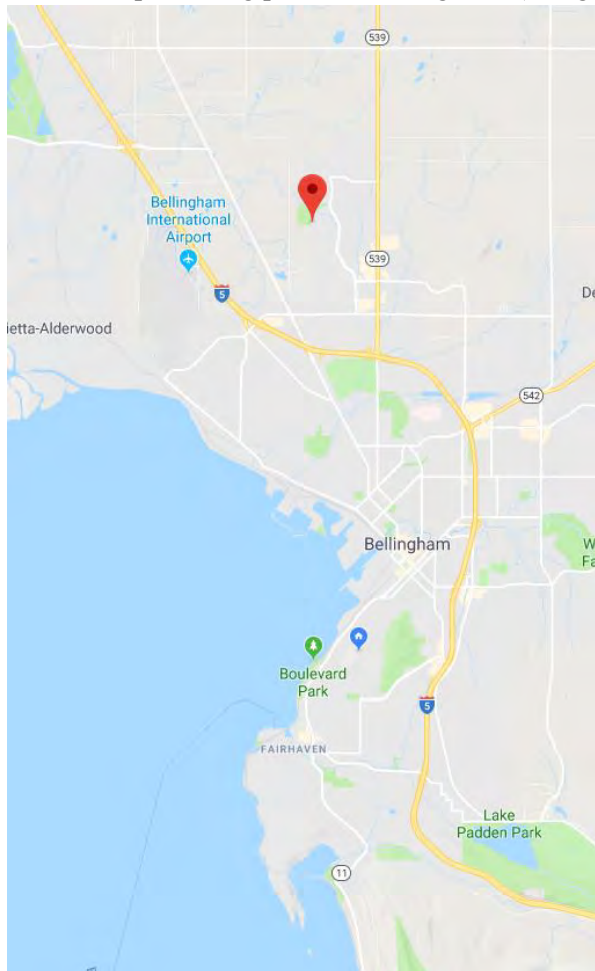
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6.0 Appendix

Item 1 Map showing parks in Bellingham. (Google Maps, 2018).



Project #3: West Horton Road Multimodal Corridor Extension, Phase 1 (Horton terminus to Aldrich Road)

PROJECT NARRATIVE: Regional growth and development and the 30-acre Cordata Park with parking access from Horton requires that West Horton Road be extended as a secondary arterial street with Tier 1 sidewalks and Tier 1 bicycle lanes on both sides from the current terminus to Aldrich Road. Environmental impacts require land acquisition, off-site mitigation, and attempts to minimize the road prism footprint. Dedicated left-turn lanes will be needed at the intersection of W. Horton/Aldrich.

MULTIMODAL TRANSPORTATION BENEFITS: Access, safety, connectivity for school children, pedestrians, park and trail users, bicyclists, vehicles, freight trucks, & possible future WTA transit route.

PROJECT STATUS: Feasibility studies, wetland delineations, & survey completed 2009-2011; land acquisition & mitigation planning 2012-2015; 60% PE & Design 2016; construction anticipated 2018.

No.	PROJECT DESCRIPTION	FUNDING SOURCE	Cost Estimates (000's) 2018 Dollars							PROJECT TOTALS
			Previous Budget	FUNDED			UNFUNDED			
			2019	2020	2021	2022	2023	2024		
3	West Horton Road Multimodal Corridor Improvements-Phase 1 (Current terminus to Aldrich Road)	Street	1,100	600						
		TBD Non-Motor	300	500						
		Private Mitigation	1,312							
		Federal STP/Map 21	1,800	Build						
		Subtotal	4,512	1,100						5,612

TRANSPORTATION IMPACT FEES COLLECTED
RIGHT-OF-WAY ACQUISITION NECESSARY

Yes, if local public funds are used
No

