

3.3 WETLANDS

3.3.1 Regulatory Context

The Washington State Environmental Policy Act (SEPA) requires an analysis of impacts of a proposed action on all elements of the built and natural environment, including wetlands.

Under the federal Clean Water Act, the U.S. Army Corps of Engineers (Corps) has the responsibility and authority to regulate the discharge of dredged or fill material into streams and wetlands. Section 404 of the Clean Water Act requires a permit to place fill material in wetlands. The Corps uses the following definition of wetlands for administering the Section 404 permit program:

“Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

The state Growth Management Act (GMA) requires that the Corps definition be used in all local critical areas regulations. Both Snohomish County and Bothell have adopted critical areas regulations that categorize wetlands by size and type. Within the City of Bothell, wetlands are regulated under Bothell Municipal Code (BMC) 14.04.200. Wetlands are divided into three categories, with buffers ranging from 50 to 100 feet in width:

- Category 1 Wetland is a wetland that meets any of the following criteria:
 - a. The presence of species listed by the federal government or the state of Washington as endangered, threatened, sensitive or priority, or the presence of essential or outstanding actual habitat for those species;
 - b. A wetland having 40 to 60% permanent open water in dispersed patches with two or more classes of vegetation;
 - c. A wetland equal to or greater than 10 acres in size and having three or more wetland classes, one of which is open water; or
 - d. The presence of plant associations of infrequent occurrence.
- Category 2 Wetland is a wetland that meets any of the following criteria:
 - a. A wetland greater than one acre in size;
 - b. A wetland equal to or less than one acre in size and having three or more wetland classes;
 - c. A wetland equal to or less than one acre that has a forested wetland class;
 - d. The presence of heron rookeries or raptor nesting trees.

- Category 3 Wetland is a wetland that is equal to or less than 1 acre in size and that has two or fewer wetland classes.

In Snohomish County, wetlands are regulated under the Snohomish County Critical Areas Regulations (Snohomish County Code [SCC] 30.62.300) and are classified into four categories.

Category 1 Wetlands satisfy one or more of the following criteria:

- Are equal to or greater than 10 acres in size, hydrologically connected, and contain three or more wetland classes, each covering 10% or more of the wetland, one of which is open water;
- Have been documented by the Washington State Department of Fish and Wildlife (WDFW) priority habitat species program as regionally significant waterfowl or shorebird concentration areas;
- Are bog/fen systems one acre or larger;
- Are mature forested wetlands equal to or greater than 10 acres in size; and
- Are estuarine (in an estuary, the lower course of a river where the river's current meets the sea's tide).

Category 2 wetlands satisfy one or more of the following criteria:

- Are equal to or greater than five acres in size and contain three or more wetland classes;
- Are mature forested wetlands less than 10 acres in size; and
- Are bog/fen systems less than 1 acre in size.

Category 3 wetlands satisfy none of the criteria for Category 1, 2, or 4 wetlands.

Category 4 wetlands satisfy none of the criteria for Category 1, 2, or 4 wetlands and are:

- Are nonriparian (nonstream-side) wetlands less than one acre in size, with only one wetland class, and greater than 90% coverage of any combination of invasive/exotic plant species as listed in the Snohomish County Critical Areas Regulations.

Snohomish County Critical Areas Regulations also specify wetland buffer width requirements in both urban and non-urban areas within unincorporated Snohomish County. To encourage housing development in urban areas and because wildlife habitat in urban areas is considered to be of lower quality than in rural areas, the County has lower buffer width requirements for wetlands in Urban Growth Areas (UGAs). Buffers within the UGA range from 25 to 100 feet depending on the category and classification of the wetland.

Project area wetlands within the city limits of Bothell were classified according to BMC 14.04.200, and wetlands that occur in Snohomish County were classified according to SCC 30.62.300. In addition, all wetlands in the project area were assessed a rating

using the Washington Department of Ecology's *Washington State Wetlands Rating System for Western Washington* (Ecology 1993). This is a four-tiered rating system in which Category I wetlands are the most valuable and Category IV wetlands are the least valuable. Wetland ratings are used by regulatory agencies to help determine wetland buffers, mitigation replacement ratios and permitted uses in wetlands. Ratings are based on a wetland's sensitivity to disturbance, rarity within a region, and functions. Generally, wetlands have a higher rating if they have not been altered significantly by urbanization, have structural and spatial diversity, and are hydrologically connected to streams. Wetland rating information for each wetland is available in the Wetland Field Reconnaissance Summary Report (Appendix B).

3.3.2 Affected Environment

Corridor Overview

The south project area is located primarily within the City of Bothell, while the north project area is located within Snohomish County. The project area is experiencing rapid growth and development but still retains some rural character. Land use within the project area is dominated by single-family residential development, much of it on large rural lots. Commercial and multifamily development is present adjacent to I-405 and within the City of Bothell in the south project area. The north project area is entirely within the Snohomish County Urban Growth Area, which is predicted to continue to grow and develop over the next 20 years. As a result of this rapid growth, many of the abundant streams and wetlands in the project area have experienced degradation due to increasing urbanization (see also Section 3.2 Water Resources). Stream headwaters have been filled and/or built upon, as have many wetlands. Buffer areas have been encroached upon and forest cover is decreasing.

The proposed project area is located within the North Creek watershed. Located to the west of the project area, North Creek flows north to south through the watershed, eventually draining into the Sammamish River, which in turn drains into Lake Washington. Two tributaries to North Creek, Palm Creek and Cole Creek, run along the existing portion of 39th north of 228th (see Figure 3.3-1). Both streams flow southwest to North Creek. Cole Creek is about one mile long and flows into North Creek at river mile 2.3. Palm Creek is 1.8 miles long and flows into North Creek about 2000 feet upstream of the confluence with Cole Creek.

Twenty-six wetlands were identified in the project area, ranging from relatively undisturbed, forested, Category 1 wetlands to Category 4 wetlands consisting of farm ponds created by damming of streams. A mosaic of forested and scrub-shrub wetlands extend south from the headwaters of Cole Creek to the southern end of the project corridor at 240th. Wetland 4, associated with the upper Cole Creek watershed, is considered to be a Category I wetland, signifying a mature forested wetland greater than 10 acres in size (SCC 30.62.300). Other wetlands in the project area are interrupted by roads and various residential and commercial developments. For example, at least 13 project-area wetlands are bounded by roads for some portion of

their perimeter. Streams and wetlands are maintained primarily by groundwater, the primary source of which is an aquifer of sand and gravel. This aquifer is the most important source of groundwater in the Snohomish County area (Newcombe 1952).

Vegetation in the project area includes grasses, shrubs, hardwood and conifer trees, and a variety of introduced and invasive plants. Plant species observed in upland and wetland communities are presented in the Wetland Reconnaissance Summary Report (Appendix B).

Soils in the project vicinity vary from moderately well drained Alderwood gravelly sandy loams to the somewhat excessively drained Everett and poorly drained McKenna soils (Soil Conservation Service 1983). Everett soil is composed of very gravelly sand and is usually 60 inches and deeper. The McKenna soils are associated with wetlands and stream corridors in the project area. The McKenna soils are listed as hydric soils on the Snohomish County Hydric Soil List (DeBose and Klungland 1983). For more information on soils and groundwater, see Sections 3.1 and 3.2.

Wetland Identification

South Project Area

Wetland conditions in the project area are described in detail in the Wetland Field Reconnaissance Summary Report (Appendix B). Information from that report is summarized here.

The National Wetland Inventory (NWI) (U.S. Fish and Wildlife Service 2003a) identifies seven wetland systems near the south project area. A field reconnaissance for the proposed Bothell Connector Project identified 26 wetlands in the south project area (Figure 3.3-1). Of these 26 wetlands, one was rated as a Category 1, eleven as Category 2, ten as Category 3, and four as Category 4 wetlands. Wetlands 1 through 7 are in unincorporated Snohomish County; the remaining wetlands are within the City of Bothell. Although formal wetland delineations have not been conducted, project-area wetlands are estimated to range in size from 0.1 acre to more than 10 acres. Wetland types include emergent, scrub-shrub, open water, forested, and riverine wetlands. Many of these wetlands are associated with perennial and intermittent streams, while others are associated with artificially created farm or landscaping ponds.

Wetlands in the project area are dominated by a variety of plant communities. Stream-associated wetlands have a forested overstory containing western red cedar, black cottonwood, red alder, and western hemlock. The shrub and herb layers are dominated by salmonberry, blackberry, skunk cabbage, vine maple, lady fern, and swordfern. Scrub-shrub wetlands are typically dominated by a dense canopy of salmonberry, red-osier dogwood, blackberry, Douglas spirea, and red alder. Herbaceous wetlands are characterized by soft rush, creeping buttercup, skunk cabbage, reed canarygrass, and a variety of other native and non-native grasses.

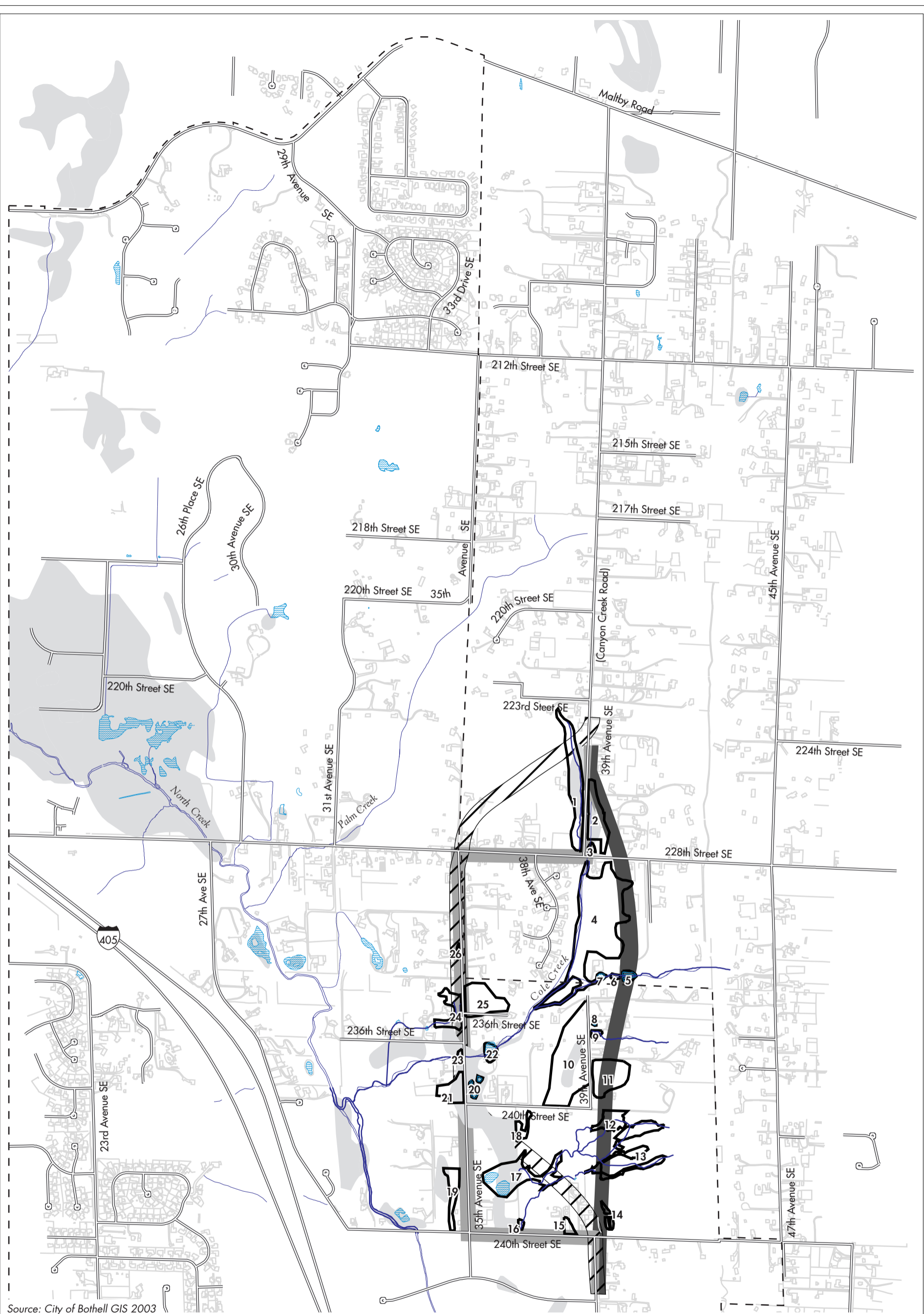








FIGURE 3.3-1

PROJECT AREA WETLANDS

-  Alternative 1
-  Alternative 2
-  Alternative 3
-  Bothell city limits
-  NWI wetlands
-  project area wetlands

Wetlands provide a number of functions in the biological and hydrological landscape. Wetland functions include providing habitat for plants and animals, removing sediment, nutrients, and contaminants from surface water, reducing peak flows and storing flood waters, and recharging groundwater. Those wetlands that are artificially created ponds provide good water retention and water quality treatment. Many of the wetlands in the south project area provide good habitat for aquatic invertebrates, amphibians, breeding songbirds, and small mammals, particularly the forested wetlands and those associated with perennial surface water. The highest quality wetlands in the project area are Wetlands 1, 4, 17, 22, and 25, based on a number of factors, including association with Cole Creek, presence of mature conifers, size, and habitat diversity. However, most of the wetlands in the project area are disturbed in some way, either by modified vegetation, constrained outlets, artificial boundaries created by roads, or the presence of invasive species.

The most significant wetland in the project area is Wetland 4, located in the upper Cole Creek watershed. Wetland 4 is a Category 1 wetland that covers approximately 11.4 acres and is supported by numerous seeps and springs. Dominated by western red cedar, western hemlock, black cottonwood, and red alder, Wetland 4 is considered a mature forested wetland. Shrubs within the wetland include salmonberry, red-osier dogwood, and Douglas spirea, while herbaceous vegetation includes skunk cabbage, soft rush, and creeping buttercup. Wetlands such as Wetland 4 generally have high habitat suitability for a wide variety of wildlife because of their high structural diversity, high native species richness, and good riparian condition.

North Project Area

In the north project area, Wetlands 1, 2, and 3 are forested and scrub-shrub wetlands located near the intersection of 228th and 39th (see Figure 3.3-1). There are no wetlands north of 223rd in the project area. Together, wetlands 1, 2, and 3 comprise a large wetland system that forms the headwaters of Cole Creek. Wetland hydrology is derived from both groundwater and surface runoff from surrounding uplands. Palm Creek and Cole Creek both flow southwest through the north project area. No wetlands are known to be associated with Palm Creek near 39th.

3.3.3 Environmental Impacts

General

All action alternatives would affect wetlands and their buffers in the project area to some extent. Alternative 1 would affect the most wetland acreage, the only Category 1 wetland (as regulated by Snohomish County), and the most undeveloped wetlands. Alternatives 2 and 3 would affect similar amounts of wetlands, but Alternative 2 would affect the edges of wetlands that are already disturbed by roadways. Alternative 3 would affect several relatively undisturbed wetlands, including Wetlands 1 and 17. Alternative 3 would also create or affect more stream crossings (four) than either Alternative 1 (three crossings) or Alternative 2 (one crossing).

Permanent wetland and wetland buffer fill impacts would result from construction of any of the proposed action alternatives, and permanent increases in impervious surface area would likely lead to some degradation of wetlands from associated increases in sediment and contaminant loads from runoff. Preliminary wetland fill impacts of each of the three action alternatives are displayed in Table 3.3-1. This table only includes direct impacts to wetlands and does not include estimated wetland buffer impacts. The affected wetlands are shown in Figure 3.3-1.

Table 3.3-1: Estimated Wetland Impacts by Action Alternative¹

Wetland Category	Alternative 1 Wetland Fill (Acres)	Alternative 2 Wetland Fill (Acres)	Alternative 3 Wetland Fill (Acres)
1	0.9	0.0	0.0
2	0.7	1.0	1.3
3	1.2	0.5	0.3
Total	2.8	1.5	1.6

¹ Impact by acres is approximate and is based on reconnaissance surveys and preliminary engineering information. Formal wetland delineations would be required prior to any ground-disturbing activities in or adjacent to wetlands.

Most of the potentially affected wetlands have already been modified and disturbed, and many wetland buffers are significantly disturbed or absent because of roads and residential or commercial development. Nevertheless, the proposed action alternatives could fragment several large forested wetlands into smaller parcels. Also, the project would further degrade wetlands adjacent to roads by reducing their size, increasing runoff, and reducing their habitat. All affected wetlands would require mitigation according to all applicable local, state, and federal regulations.

Alternative 1: 39th Avenue SE Alignment

South Segment (Initial Phase)

Direct Impacts

Construction Impacts. Alternative 1 would affect the largest wetland area (a total of 2.8 acres), the most undisturbed wetlands, and is the only alternative that affects a Category 1 wetland (as regulated by Snohomish County). This alternative would also have the greatest temporary impact on wetlands during construction.

The proposed road improvements would have narrow linear impacts on wetlands adjacent to the road. Road construction and widening would result in the loss of wetlands. Clearing, filling, grading, and excavation during road construction would adversely affect Category 1, Category 2, and Category 3 wetlands and wetland buffers (Table 3.3-1).

Alternative 1 would construct a new road with a center turn lane, sidewalks, and bicycle lanes. Facilities for stormwater treatment/detention, stream crossings, and wetland mitigation would also be constructed. Construction of 39th would impact approximately

0.9 acre of Wetland 4, the Category 1 forested wetland associated with Cole Creek south of 228th. Alternative 1 would also impact several scrub-shrub wetlands associated with other seeps and streams to the south.

Operation Impacts. Operation and maintenance of the new road alignment would require periodic vegetation maintenance, which could include mowing and tree trimming as well as the use of selected herbicides. Other duties would be to maintain roadside ditches for drainage; occasional winter road treatments such as plowing, salting, or gravel application; and hazardous tree removal. Mowing and other maintenance would likely inhibit growth of shrubs and trees. Any roadside chemicals could enter wetland surface waters, causing potential negative effects on water quality and habitat for sensitive wildlife species.

Indirect and Cumulative Impacts

Filling of wetlands would result in the loss of wetland functions such as downstream water quality improvement and flood control. Noise from higher volumes of traffic could permanently disturb or deter wildlife from use of wetlands, thereby lowering the wetland's habitat value to wildlife. Drainage patterns and hydrology would be altered by the placement of fill and the reduction of storage volume. Increases in impervious surface may alter groundwater hydrologic regimes over time by increasing runoff. Reduced wetland buffers and removal of vegetation would lessen the ability of the wetlands to filter stormwater flows by reducing infiltration, would decrease riparian habitat, and would eliminate shade. These impacts could increase downstream streambank instability, sedimentation, and water temperature, all of which contribute to decreased water quality. Additional pollutants from road runoff (such as suspended solids, oil and grease) could enter wetlands and streams if stormwater is uncontrolled and untreated. However, the proposed project includes stormwater treatment that would create an overall improvement over existing conditions (see also Section 3.2 Water Resources).

The proposed project would contribute to a trend of declining water quality in the watershed associated with increasing urbanization (see Section 3.2 Water Resources). The proposed project could facilitate the conversion of vacant, undeveloped land to residential uses by improving access and reducing traffic congestion. This growth could have additional adverse impacts on wetlands if they are filled or affected to make way for the development.

North Segment (Future Phase)

Direct Impacts

Construction Impacts. Alternative 1 would have no direct impacts on wetlands north of 223rd.

Operation Impacts. Operation impacts along the north segment would be the same as those described for the south segment.

Indirect and Cumulative Impacts

No significant indirect or cumulative impacts on wetlands are anticipated. However, the project could contribute to a general decline in water quality and habitat functionality of wetlands in the project area because of ongoing development (see south segment discussion above).

Alternative 2: 35th Avenue SE Alignment

South Segment (Initial Phase)

Direct Impacts

Construction Impacts. Alternative 2 would affect the smallest wetland area during construction (1.5 acres) but would affect the largest number of wetlands (12). These wetlands have all been previously disturbed and modified (Figure 3.3-1). If not properly controlled by Best Management Practices (BMPs), erosion and runoff during construction could decrease water quality in adjacent wetlands by increasing suspended sediments and chemical pollutants.

Operation Impacts. Because all affected wetlands are already adjacent to existing roads, the operational impacts of Alternative 2 would be similar to existing conditions.

Indirect and Cumulative Impacts

Indirect effects of Alternative 2 would be less than those described for Alternative 1 in the south segment because the potentially affected wetlands have been previously disturbed. Indirect effects of stormwater runoff on wetland water quality would likely be reduced along 35th because of the construction of stormwater treatment facilities where none now exist.

Alternative 2 would cause a short-term cumulative reduction of 1.5 acres of previously disturbed wetlands in the project area. In the long term, the loss of wetlands would be offset by required wetland mitigation.

North Segment (Future Phase)

Alternative 2 would have no direct, indirect, or cumulative impacts on wetlands in the north segment.

Alternative 3: 35th/39th Avenue SE Alignment

South Segment (Initial Phase)

Direct Impacts

Construction Impacts. Alternative 3 would affect slightly more wetland area (1.6 acres) than Alternative 2. Alternative 3 would bisect two large wetlands (Wetlands 1 and 17), significantly reducing their wildlife habitat and groundwater recharge functions. Wetland 1 is a 3.7-acre Category 2 wetland that forms the headwaters of Cole Creek, whereas Wetland 17 is a relatively undisturbed 3.9-acre Category 2 wetland with good habitat diversity. The remaining wetland impacts under Alternative 3 would be similar to Alternative 2.

Operation Impacts. The northern portion of Alternative 3, just before it joins 39th, would cross Wetland 1, creating more of an adverse impact on wetland water quality and hydrology to this wetland than either Alternative 1 or 2. Similarly, the southern curve of Alternative 3 would have an adverse impact on Wetland 17 that is not affected by either Alternative 1 or 2. Other operational impacts such as necessary road maintenance would be similar the impacts described in Alternative 1.

Indirect and Cumulative Impacts

Indirect and cumulative impacts of Alternative 3 would be similar in nature to Alternative 2. Overall, indirect effects on wetland water quality from stormwater runoff could be improved compared to existing conditions because of proposed stormwater treatment.

North Segment (Future Phase)

Alternative 3 would have no direct, indirect, or cumulative impacts on wetlands in the north segment.

Alternative 4: No Action

Under Alternative 4, no project-related impacts to wetlands would occur. No clearing, grading or filling would occur for road construction. Existing stormwater runoff and drainage patterns would be maintained, and no additional treatment or retention of stormwater runoff would occur. Land in the project area would continue to be subject to residential and other development, which may adversely affect wetlands. Incremental improvements to existing roadways and addition of new roadway in support of this development would also occur. These improvements would happen in a piecemeal manner and could adversely affect wetlands although the total impact is not known at this time.

The No Action Alternative would include some minor roadway improvements on existing portions of the road network within and near the project area that will occur regardless

of whether the proposed project is built. Also expected are routine maintenance activities such as striping, sign and shoulder maintenance, vegetation maintenance, stormwater control, utility maintenance, and signalization. Such ongoing road construction in the project area would affect a small amount of wetlands, mostly in previously disturbed roadside areas. Other road improvement projects have the potential to increase impervious surface in the project area, which can increase runoff into adjacent wetlands, potentially decreasing water quality.

3.3.4 Mitigation Measures

Standard mitigation sequencing is based on avoiding and minimizing impacts as much as possible and mitigating for unavoidable wetland impacts. The project would be designed to avoid wetland impacts by including features such as retaining walls. Additionally, several design options were evaluated to avoid and minimize impacts on the Category 1 wetland associated with Cole Creek south of 228th (Wetland 4). Of the different design options that were considered for Alternative 1, the proposed alignment evaluated in this document avoids Wetland 4 to the greatest possible extent while meeting the transportation project's needs.

Impacts on wetlands and their associated buffers that cannot be avoided would be mitigated in accordance with provisions of the Snohomish County and City of Bothell critical areas regulations (see Section 3.3.1) and where applicable Washington Department of Ecology guidelines. In addition to critical areas regulations at the local level, mitigation measures would also comply with Section 404 Clean Water Act requirements for compensatory wetland mitigation as regulated by the U.S. Army Corps. Wetland mitigation may consist of wetland creation, restoration, and/or preservation and would require buffers to ensure long-term wetland protection. Wetland mitigation ratios vary from 1:1 (1 acre of mitigation for each acre of impact) to 12:1 (12 acres of mitigation for each acre of impact), depending on the type, class, and location of the affected wetland, as well as the type of mitigation. Mitigation of buffer impacts, such as enhancing the quality of buffers and /or increasing buffer widths, would be required for unavoidable buffer impacts.

Although proposed mitigation sites have not yet been identified, all mitigation will be placed within the basin or subbasin in which wetland impacts occur. Mitigation would be subject to ongoing maintenance and monitoring requirements established during the permit review process.

Best Management Practices (BMPs) would be used during construction to minimize short-term noise, sedimentation, and contamination impacts. Typical BMPs would include sediment fences, check dams, temporary seeding, mulching, jute netting, and construction timing restrictions (e.g., during low-flow conditions). Stormwater treatment facilities would be designed to meet all state and local requirements. Other BMPs that would be applied are:

- All work would comply with applicable environmental permit conditions.
- Limits of disturbance would be marked by barrier fencing adjacent to critical areas to minimize soil disturbance caused by vegetation clearing and grading.
- Temporarily disturbed areas would be revegetated once construction is complete.

Wetland mitigation cost estimates for the south segment are described in the Wetland Field Reconnaissance Report (Appendix B).

3.3.5 Significant Unavoidable Adverse Impacts

With appropriate mitigation measures in place, no significant unavoidable adverse impacts on wetlands are expected.